

BUZZARDS

BAY

1986

WATER QUALITY SURVEY DATA

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF WATER POLLUTION CONTROL

THOMAS C. McMAHON DIRECTOR



BUZZARDS BAY
1986
WATER QUALITY SURVEY DATA

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FOREWORD

The Massachusetts Division of Water Pollution Control was established by the Massachusetts Clean Water Act, Chapter 21 of the General Laws as amended by Chapter 685 of the Acts of 1966. Included in the duties and responsibilities of the Division is the periodic examination of the water quality of various coastal waters, rivers, streams and ponds of the Commonwealth, as stated in section 27, paragraph 5 of the Acts. This section further directs the Division to publish the results of such examination together with the standards of water quality established for the various waters. The Technical Services Branch of the Division of Water Pollution Control has, among its responsibilities, the execution of this directive. This report is published under the Authority of the Acts and is among a continuing series of reports issued by the Division presenting water quality data and analyses, water quality management plans, baseline and intensive limnological studies and various special studies.

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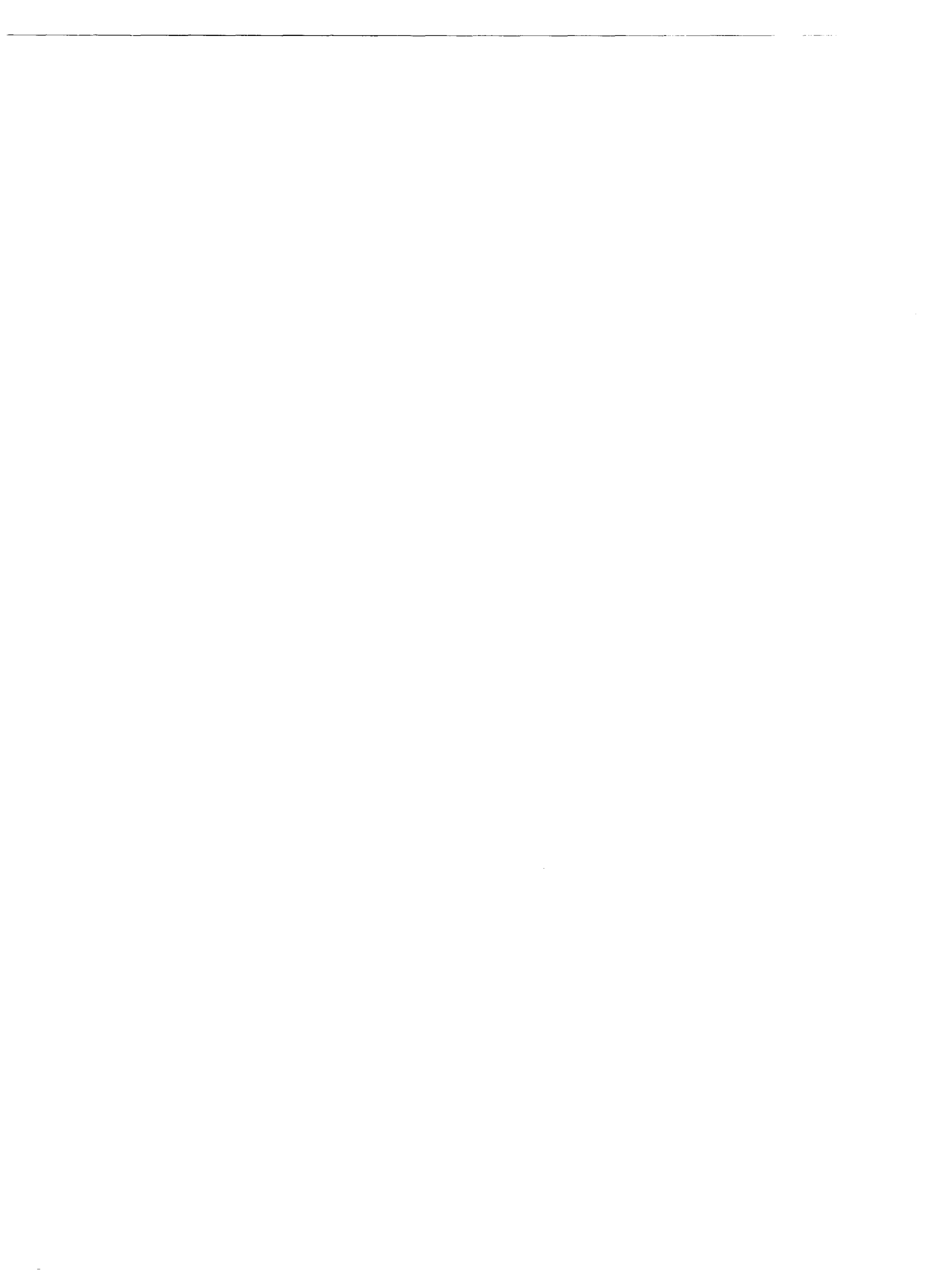
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ABSTRACT

Water quality data were collected from 54 stations located within the principal rivers, estuaries, inner embayments and outer bay portions of Buzzards Bay. Stations located within the Westport River Drainage Basin were sampled during the period of June 24-25. Stations located within the Paskamanset/Slocums River and the Buttonwood Brook/Apponagansett Bay Drainage Basins were sampled from July 22-25. The Acushnet River Drainage Basin stations were sampled during the period of October 14-16. The Outer Bay stations, located south of an imaginary line drawn from Mattapoisett Harbor to Woods Hole, and the Elizabeth Island stations were sampled on August 26, and October 28, 1986.

Sample parameters included temperature, dissolved oxygen, pH, BOD₅, total Kjeldahl-nitrogen, ammonia-nitrogen, nitrate-nitrogen, total phosphorus, orthophosphate, total alkalinity, total solids, suspended solids, dissolved solids, turbidity, chlorides, salinity, specific conductivity, and total and fecal coliform bacteria. Water samples at selected stations within the Paskamanset/Slocums River Drainage Basin were also analyzed for total metals (cadmium, total chromium, copper, lead, mercury, and nickel). Flow data for the major freshwater sources is reported. Meteorological conditions, the time of high and low tides, percent oxygen saturation, water quality classification, present and future use of water bodies sampled, and land use and population data are also reported.



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INTRODUCTION

The Division of Water Pollution Control is required by the Federal Clean Waters Act PL 92-500 Amendments of 1972 to conduct periodic water quality monitoring studies to chart progress towards meeting the goals established in the Basin plan. The water quality data is also used in conjunction with two other plans also required by PL 92-500. Section 201 of the amended Clean Waters Act develops the detailed engineering plans necessary for construction of a treatment facility; while Section 208 of the Act deals with the watersheds (regions) overall approach to waste management. In both cases the collection of water quality and coliform data is critical to establishing the baseline information necessary to evaluating the success of the recommended pollution abatement programs.

The Buzzards Bay 1986 surveys represent the Division of Water Pollution Control's (DWPC), first extensive water quality surveys into the lower reaches of the basin since the mid-70's. Previous efforts included a 1971 survey of water quality within the Acushnet River and New Bedford Harbor area; a 1975 water quality survey of the western shore of Buzzards Bay from the Rhode Island/Massachusetts state line to Buttermilk Bay in Bourne and a special water quality study which conditions in outer New Bedford Harbor.

Due to the size of the Basin and limitations in equipment and personnel a decision was made to survey the Basin by area (Figure 1).

They are as follows:

- Area I - The subdrainage basins and inner embayments of the Rhode Island/Massachusetts state line to the Fairhaven/Mattapoissett town line.
- Area II - The subdrainage basins and inner embayments from the Fairhaven/Mattapoissett town line to Buttermilk Bay in Bourne.
- Area III - The subdrainage basins and inner embayments of the eastern shore from the Cape Cod Canal to Woods Hole, Falmouth.
- Area IV - The Elizabeth Islands.
- Area V - The Outer Bay, the waters seaward of the headlands out to the mouth of the Bay.

During 1985 the Division conducted surveys within Areas II, III and the Outer Bay. This data set is reported in the Buzzards Bay 1985 Water Quality Survey Data Part A report. The sections surveyed in 1986 included Area I, selected stations in the Elizabeth Islands (Area IV), and Outer Bay (Area V) south of an imaginary line drawn between the towns of Mattapoissett and Woods Hole, Falmouth south to the mouth of the Bay. The station locations are shown in their respective subdrainage basins in Figures 5-9.

Sample station location were selected using the following criteria:

- a) Historical data, i.e., stations sampled during previous DWPC surveys or by the United States Geological Survey (USGS) or by other researchers.
- b) Stations are upstream or downstream of a known pollution source.
- c) At the confluence of a major tributary or within the main channel.
- d) Within the transitional zone between fresh and saline waters where salinity measurements range between 0‰ and 15‰. These stations were most easily accessed from the land and were included under the generic term of intertidal stations.

During the time period of June 20-24, the Division conducted the first of the subdrainage basins studies in the Westport River Drainage Basin. The survey included the establishment of a series of stations (15), within the main stems of the Westport river, major tributaries, the estuarine portion and outer harbor.

Most of the land within the watershed of 47,000 acres remains largely undeveloped. It is comprised largely of forested land with smaller areas of non-forested wetlands and lakes. Agriculture occupies the second largest land use within the basin, although the last 35 years have seen a significant increase in residential, commercial and industrial land usage. Soils within the Basin have been classified by the United States Soil Conservation Service (SCS). They have been found to consist predominately of glacial till, with over 85% of the soils being rated as severe for on-site sewage disposal due to spring high water tables and/or the presence of a substratum of compact glacial till or other restrictive layers.

The town of Westport has in large part retained its rural character as evidenced by the large number of dairy farms, many of which are located along the relatively steep-sloped East Branch valley, from head of the Westport to Hix Bridge. Over the years a number of studies have shown a shift from pasture grazing to more intensive feedlot operations which has resulted in a concentration of animal wastes.

The scope of the Division of Water Pollution Control's Technical Services Branch survey during the time period of July 21-24, included the establishment of a series of stations (20), within the main stem of the Paskamanset River, its principle tributaries, the estuarine portion called the Slocums River, within the Buttonwood Brook/Apponagansett Bay drainage basin and finally out into the outer bay. The municipalities within the watershed include the city of New Bedford, and the towns of Freetown, Westport, and Dartmouth, with the majority of the acreage lying within the town of Dartmouth. Much of the land within the watershed remains largely undeveloped. It is comprised largely of forested land which includes considerable areas of wetlands particularly within the Acushnet Cedar Swamp,

which is the headwaters of the Paskamanset, and within the Paskamanset River Valley itself. Over the last 35 years agriculture has been replaced as the predominant land usage by a mix of residential, commercial, and industrial development, particularly within the corridor bounded by Route 195 to the north and Route 6 to the south. Soils within the basin have been classified by the United States Soil Conservation Service (SCS). The Paxton-Woodbridge-Whitman association makes up 71% of the total. This soil association is rated as severe for on-site sewage disposal due to spring high water tables and/or the presence of a substratum of compact glacial till or other restrictive layers.

The town of Dartmouth's principal water quality concerns have largely centered on the deteriorating water quality within the Paskamanset River Valley, with the problems being associated with the forementioned urbanization between Routes 195 and 6. Other concerns include possible contamination of the town of Dartmouth's water supply due to hazardous wastes from neighboring New Bedford, the effective cleanup and possible residual effects associated with the Superfund cleanup of the Resolve hazardous waste, and closure of large portions of the productive shellfish beds within Apponagansett Bay due to coliform bacteria levels in excess of state and federal health standards. In 1970 the town put into operation a sewage treatment facility which provides secondary treatment by the extended aeration process. The chlorinated effluent is discharged into the bay via an ocean outfall located 3,000 feet off Mishaum Point. The facility has an average daily design capacity of 2.0 MGD and an existing collection system of some 62 miles. Waste sludge is disposed of at the town landfill located along the lower reaches of the river. In 1983 the engineering firm of Fay Spofford and Thorndike prepared a draft facility plan to increase the system to include an additional 31.4 miles of lateral sewer and 1.5 miles of force main to handle approximately 64% of the town's population (14,500/24,000 - 1980 population estimate). This addition will necessitate the expansion of the discharge to 4.2 MGD. Currently the town is evaluating several methods of disposing of this additional waste, by land application or the more likely alternative of ocean disposal.

The scope of the Acushnet River/New Bedford Harbor survey conducted during the time period October 13-16 shifted somewhat from that taken in previous studies. The subwatershed is easily the most urbanized of all the subwatersheds within the Buzzards Bay Coastal Drainage Basin. Nearly 50% of the basins' population resides within the estimated 15 square mile subwatershed. It includes most of the city of New Bedford and portions of the neighboring towns of Dartmouth, Fairhaven, Acushnet, and Freetown. The headwaters of the Acushnet River are found at the outlet of the New Bedford Reservoir. The upper reaches of the river flow through rural and suburban lands for roughly three miles before becoming tidally influenced just below the Main Street Bridge. Virtually all the westerly shore of the estuary below this point has been altered. Considerable acreage has been allotted to accommodate an industrial complex which includes remnants of the once extensive textile industry, several factories which manufacture rubber products, a large producer of copperware and several producers of capacitors. The harbor, shared by the city of New Bedford and the town of Fairhaven, is the regions' principal commercial port and one of the most important

fishing ports in the nation. In 1984 the value of landings was reported at 107.7 million dollars, making it, in terms of dollar value, the most important fishing port in the country (Massachusetts Division of Marine Fisheries 1985).

The Acushnet River/New Bedford Harbor drainage basin contains many of the same types of nonpoint sources found in the other subwatersheds, such as agricultural, urban runoff, and marinas. The dominant problems, however, appear to be from point source discharges, with over 60% (17/27) of the NPDES permits within the entire Buzzards Bay basin being located within this drainage basin. A second major source is associated with the severe and wide spread problem of contaminated sediments within the estuary, inner harbor and outer harbor. Over 900 acres have been designated by the EPA as a U.S. Superfund Hazardous Waste site. The contamination of the Acushnet River estuary and harbor with polychlorinated biphenyls (PCBs) was first documented in the mid 1970s when researchers from Woods Hole encountered interference while analyzing sediment samples from the harbor for aromatic hydrocarbons. Further testing revealed that two industrial operations were discharging waste-waters containing PCBs by direct discharge and indirectly through the New Bedford Municipal wastewater treatment facility. Sediments underlying the entire New Bedford Harbor contain elevated levels of PCBs and heavy metals. Concentrations range from a few parts per million (ppm) to well over 100,000 ppm. A "New Bedford Harbor Superfund Fact Sheet" provided by the EPA Region I office in February 1986, estimated that over 1,200 samples of water, sediments, fish, lobsters and other organisms have been collected within the estuary, harbor and outer bay in the previous two years. Given this level of effort the Division chose to focus its efforts on further documenting the influences of the major point sources including several of the CSOs. Continuity with previous Buzzards Bay surveys was maintained by including eight water quality stations within the freshwater, intertidal and embayment zones. Data on NPDES discharges will be reported under a separate cover in the near future.

Within this subdrainage basin there exist two POTW's, the Fairhaven sewage Treatment Facility and the New Bedford STP. The Fairhaven plant is an extended aeration secondary treatment facility which discharges its chlorinated effluent of 3 MGD into the inner harbor just inside (north) of the hurricane dike. The New Bedford Plant discharges its primary treated effluent some 3,000 feet out from Clark Point into Buzzards Bay. The New Bedford Plant has a long history of mismanagement and poor treatment. With a daily flow over 30 MGD, it is by far the dominant point source in the basin. During rain events a significant portion of the collection system bypasses its contents through 29 combined sewer overflows located in the Acushnet river estuary, the harbor and in Clark Cove.

On October 28, 1986, with the assistance of the Massachusetts Division of Marine Fisheries (MDMF) the last six stations within the lower outer bay and Elizabeth Islands were surveyed. All chemical analyses were complete by the end of November, 1986.

Field sampling was conducted according to methods described in this report and accordance with the Division's standard operating procedures document

which were developed from standardized and approved sampling methodologies. Copies of this document are on file at the Technical Services Branch office in Westborough, MA. For specific information consult the materials and methods section as well as Tables 67-69 for details concerning sampling schedules, parameters, collection methods, analytical and QA/QC procedures.

DESCRIPTION OF BASIN

Buzzards Bay Drainage Basin (95)

Buzzards Bay is a prominent coastal embayment on the New England Coast nestled between Cape Cod and southern Massachusetts. The mouth of the Bay opens south into Rhode Island Sound. Along its western shore the drainage basin is formed by seven coastal river basins, with a total drainage area of approximately 350 square miles. From east to west the major river basins are: Agawam, Wankinco, Weweantic, Mattapoissett, Acushnet, Paskamanset/Slocums, and Westport.

Along the easterly shore from the Cape Cod Canal to Woods Hole, Falmouth, small river basins provide an additional 35 square miles of drainage area. The prominent freshwater streams along the eastern shore from north to south are: The Back River, Pocasset River, Wild Harbor River, and Herring Brook. A chain of islands (the Elizabeth Chain), separated by tidal channels (holes) forms the southeastern side of the Bay.

Geologically, the Buzzards Bay Basin is characterized as a low granitic upland with glacial till and outwash deposits forming the soils. The terrain can be described as low and gently rolling with numerous lakes and marshes. Maximum elevations range between 200 to 300 feet in the northern most reaches of the basin.

The Bay itself is 28 miles long, averages eight miles in width and has an average depth of 50 feet in the central basin. The surface area of the Bay is estimated to be 235 square miles.

The numerous harbors and coves located along its jagged coastline are used extensively for recreational and commercial purposes. There are over 4,300 slips and moorings along the Bay. Over 20,000 vessels pass through the Cape Cod Canal and Buzzards Bay annually, transporting over 19 million tons of commercial cargo including most of the number 2 fuel used in New England. New Bedford Harbor is the industrial and commercial center of the basin, carrying over from its earlier days as a principal whaling port. It is now one of the most important fishing ports in the United States. The estuary and harbor also suffer the most severe water quality problems - these problems can be attributed to combined sewer overflows, industrial discharges, municipal sewage treatment plant discharges, and contaminated sediments.

The contamination of the Acushnet River estuary and harbor with polychlorinated biphenyls (PCBs) was first documented in the mid 1970's when researchers from Woods Hole encountered interference while analyzing sediment samples from the harbor for aromatic hydrocarbons. Further testing revealed that two industrial operations were discharging wastewaters containing PCB's by direct discharge and indirectly through the New Bedford Municipal Wastewater Treatment Facility. Sediments underlying the entire New Harbor contain elevated levels of PCBs and heavy metals. Concentrations range from a few parts per million to well over 100,000 ppm.

Problems attributed to other harbors within the basin include street runoff from urban development, discharges from failing septic systems and water craft, leachate from landfills and agricultural runoff.

FIGURE I

BUZZARDS BAY COASTAL DRAINAGE BASINS

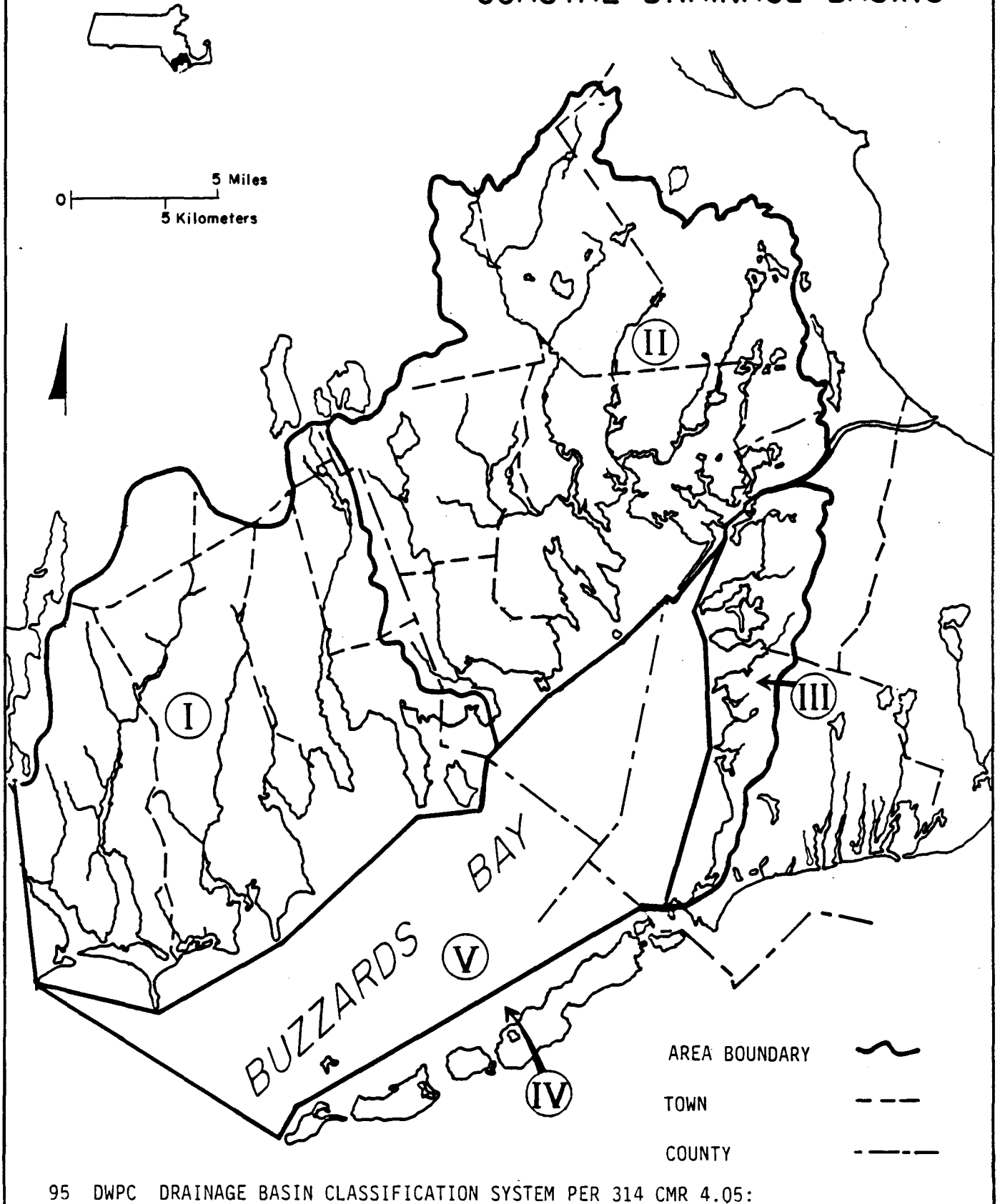


TABLE 1

BUZZARDS BAY BASIN AREA I - CLASSIFICATION

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION*	CLASSIFICATION
New Bedford Reservoir, Acushnet	Emergency water supply	Same	B	B
Acushnet River from the outlet of New Bedford Reservoir, Acushnet, to Hamlin Road, Acushnet, New Bedford	Bathing, recreational boating, fish and wildlife propagation,	Same	B	B
Acushnet River from Hamlin Road, Acushnet, New Bedford, to Main Street, Acushnet, New Bedford	Recreational boating, fish and wildlife propagation, fishing, waste waste assimila- tion	Bathing, recreational boating, fish & wildlife propagation, fishing	C	B
Acushnet River from Main Street, Acushnet, New Bedford, to Route 6, Acushnet, New Bedford, Fairhaven	Recreational boating, fish and wildlife propagation, fishing, industrial processing and cooling, waste assimilation	Bathing, recreational boating, fish & wildlife propagation, fishing, industrial processing and cooling	U ¹	SB
Inner New Bedford Harbor New Bedford, Fairhaven	Recreational boating, fish & wildlife propagation, fishing, industrial processing & cooling, waste assimilation	Bathing, recreational boating, fish and wildlife propagation, fishing, industrial processing & cooling	U ²	SB
Outer New Bedford Harbor, New Bedford, Fairhaven	Recreational boating, fish & wildlife propa- gation, fishing, indus- trial processing & cooling, waste assimilation	Bathing, recreational boating, fish & wildlife propagation, industrial processing & cooling shellfishing	SC ³	SA

TABLE 1 (CONTINUED)

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION	CLASSIFICATION
Clark Cove, New Bedford, Dartmouth	Bathing, recreational boating, fish & wildlife propagation, fishing, industrial processing & cooling, assimilation	Bathing, recreational boating, fish & wildlife propagation, fishing, industrial processing & cooling, shellfishing	SB	SA
Apponagansett Bay, Dartmouth	Bathing, recreational boating, fish & wildlife propagation, fishing	Bathing, recreational boating, fish & wildlife propagation, fishing, shellfishing	SB	SA
Paskamanset River Dartmouth, New Bedford	Bathing, recreational boating, fish & wildlife propagation, fishing	Same	B1	B
Slocums River, Dartmouth	Bathing, recreational boating, fish & wildlife propagation, fishing, shellfishing	Same	SA	SA
Shingle Island River Dartmouth	Bathing, recreational boating, fish & wildlife propagation, fishing	Same	B	B
Noquochoke Lake, Dartmouth	Bathing, recreational boating, fish & wildlife propagation, fishing	Same	B	B
Westport River, East Branch from the outlet of Noquochoke Lake, Dartmouth, to Old County Road, Westport	Recreational boating, fish & wildlife propa- gation, fish	Bathing, recreational boating, fish and wildlife life propagation, fish	C	B

TABLE 1 (CONTINUED)

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION	CLASSIFICATION
Westport River, West Branch, Westport	Bathing, recreational boating, fish & wildlife life propagation, fishing, shellfishing	Same	SB ⁷	SA
Nasketucket Bay, Fairhaven, Mattapoisett	Bathing, recreational boating, fish & wildlife propagation, fishing, shellfishing	Same	SA	SA

* SOURCE: Massachusetts Department of Environmental Quality Engineering, Southeast Regional Office, shellfish sanitation records.

Massachusetts Department of Fisheries, Wildlife & Environmental Law Enforcement, Division of Marine Fisheries Report, entitled, "Massachusetts Marine Fisheries Assessment of Mid-Decade," 1985.

- ¹ All of the tidal portions of the Acushnet River closed to fishing and shellfishing by Massachusetts Department of Public Health. Chapter 130, Section 74 M.G.L.
- ² All of the Inner Harbor is closed to fishing and shellfishing of any kind by the Massachusetts Department of Public Health. Chapter 130, Section 74 M.G.L.
- ³ All of the Outer Harbor is closed to lobstering, inner portions from Ricketsons Point, Dartmouth to Wilbur Point Fairhaven closed to the taking of ground fish by Massachusetts Department of Public Health. Chapter 130, Section 74 M.G.L.
- ⁴ All of Clark Cove closed to lobstering, the taking of ground fish and shellfishing by the Massachusetts Department of Public Health. Chapter 130, Section 74 M.G.L.
- ⁵ Portions of Apponagansett Bay closed to shellfishing in accordance with provisions of Chapter 130, Section 74 M.G.L.
- ⁶ Portions of Westport River East Branch closed to shellfishing in accordance with provisions of Chapter 130, Section 74 M.G.L.
- ⁷ Portions of Westport River West Branch closed to shellfishing in accordance with provisions of Chapter 130, Section 74 M.G.L.

TABLE 2

BUZZARDS BAY BASIN AREA IV & V - CLASSIFICATION

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION*	CLASSIFICATION
All other freshwater streams within Buzzards Bay Basin	--	--	--	B
All other coastal waters within Buzzards Bay Basin	--	--	--	SA

* Cuttyhunk Pond seasonally closed to shellfishing in accordance with provisions of Massachusetts General Laws Chapter 130, Section 74A.

FIGURE 2 BUZZARDS BAY

AREA I

BASIN CLASSIFICATION

BASIN BOUNDARY	
TOWN	
COUNTY	
STATE	

NOTE: SEE FIGURE 1 FOR LOCATION OF AREA I

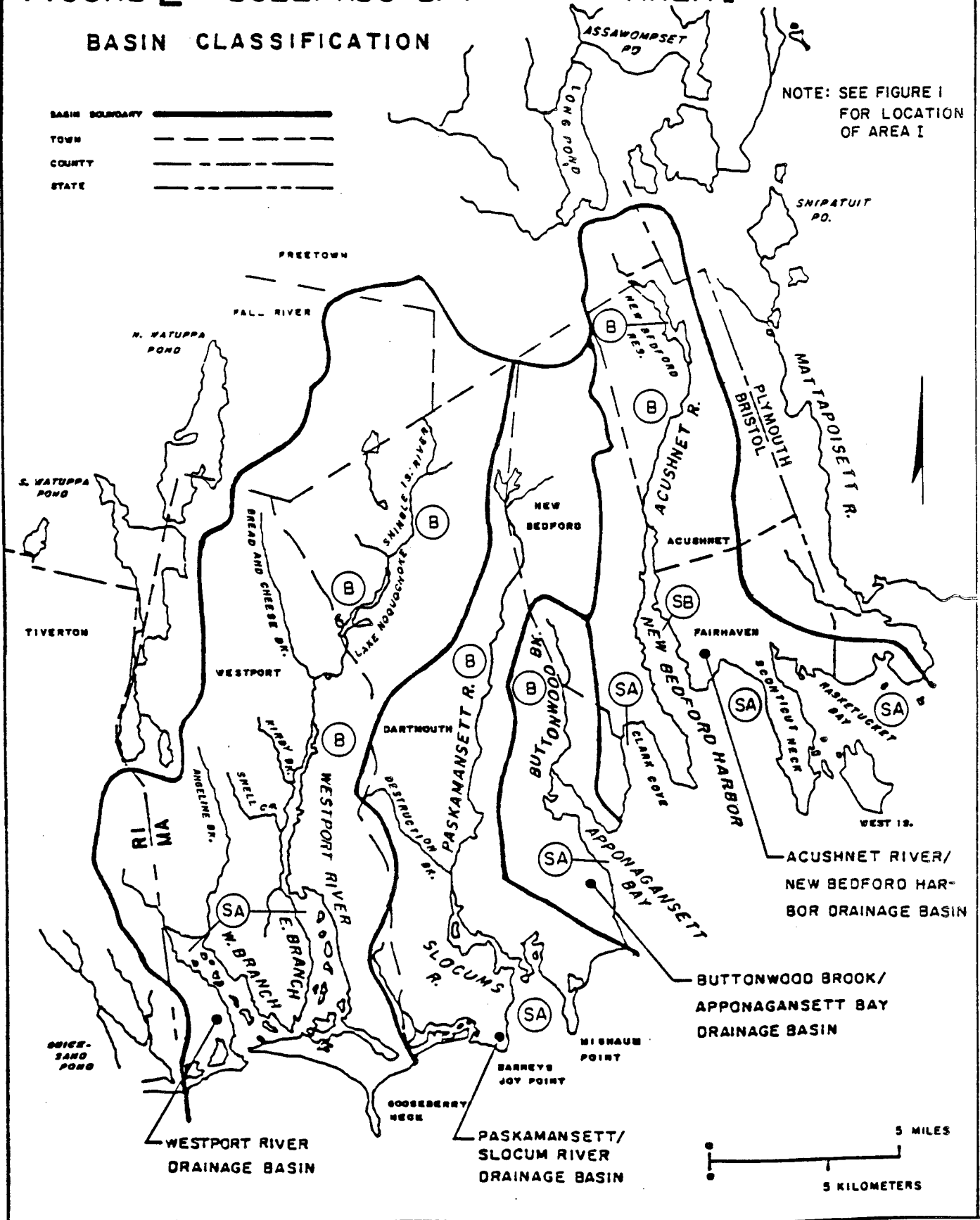
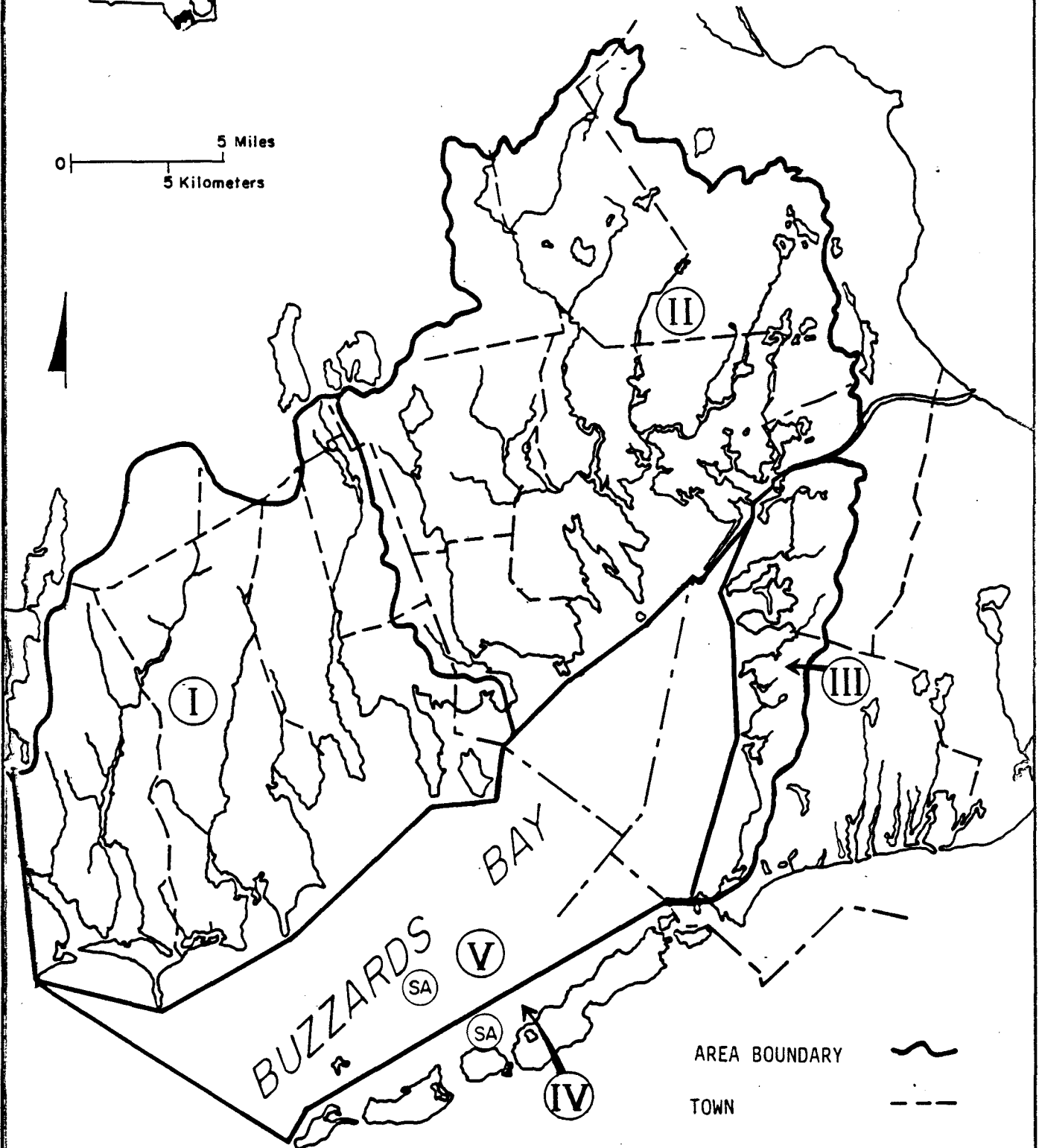
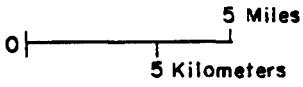


FIGURE 3

ELIZABETH ISLANDS / OUTER BAY

AREAS IV & V

BASIN CLASSIFICATION



95 DWPC DRAINAGE BASIN CLASSIFICATION SYSTEM PER 314 CMR 4.05:

TABLE 3

BUZZARDS BAY BASIN CITIES AND TOWNS

LAND AREA - POPULATION

MUNICIPALITY	INCORPORATED (year)	LAND AREA (sq. mi.)	AREA IN BASIN (% of total)	POPULATION 1980	1980 DENSITY (persons/sq.mi.)
Acushnet	1860	18.00	100	9,704	484
Bourne	1884	41.02	11	13,874	338
Carver	1790	38.41	84	6,988	182
Dartmouth	1664	60.91	100	23,966	393
Fairhaven	1812	12.15	100	15,759	1,297
Freetown*	1785	34.57	19	7,058	204
Kingston*	1726	18.55	4	7,362	397
Marion	1852	14.28	100	3,932	275
Mattapoisett	1857	17.46	100	5,597	321
Middleborough*	1669	69.98	21	16,404	234
New Bedford	1847	18.99	96	98,478	5,186
Plymouth	1620	97.57	47	35,913	368
Rochester	1686	33.76	93	3,205	95
Wareham	1739	36.68	100	18,457	503
Westport	1787	53.01	85	13,763	250
Gosnold	--	12.65	--	63	5

* These communities are not considered members of the Buzzards Bay Basin planning area due to their relatively small percentage of land area within the basin.

Communities marked with bold type are located in Area I

SOURCE: Cities and Town Monographs, Department of Commerce and Development, Commonwealth of Massachusetts

?
Fairhaven
Fall River?

MATERIALS AND METHODS

The sampling techniques varied with the date and location of the station. Freshwater stations were generally sampled four times over two consecutive days, once during early morning hours and again under late afternoon conditions. Where twice daily samples were collected, separate composite samples of each days' water chemistry, nutrients and heavy metals were obtained by combining equal volumes from the morning and afternoon collections. Intertidal stations were generally sampled four times over two consecutive days, twice on outgoing tides and twice on incoming tides. Inner embayment stations were generally sampled once on outgoing tides, one meter below the surface, using a 2.2 liter alpha style Van Dorn sampler manufactured by Wildlife Supply, Saginaw, Michigan, 48602. Salinity and temperature were measured with a model 33 SCT meter, manufactured by the Yellow Springs Instrument Co., Inc., Yellow Springs, Ohio 45387. Samples for dissolved oxygen and bacterial levels were collected from each station during each run. The dissolved oxygen content of the freshwater and estuarine surface waters was measured by the modified Winkler method. Saturation values for dissolved oxygen were calculated from Table A-6 found in Elements of Wastewater Supply and Wastewater Disposal by Fair, Geyer. 1965 fifth edition. John Wiley & Sons, Inc. 615 p.

Temperature and pH measurements were made "in situ" at each station during each sampling run. pH measurements were made with an Orion Model 211 field pH meter, manufactured by Orion Research Incorporated, Cambridge, MA 02119. Selected stations within the freshwater zone were monitored for flow using the wading rod method. Outer bay and Elizabeth Island stations were sampled once, water chemistry and nutrient samples were collected one meter below the surface and one meter above the bottom, using a 2.2 liter, Beta style Van Dorn sampler manufactured by Wildlife Supply, Saginaw, Michigan, 48602. The Division also obtained dissolved oxygen, salinity, temperature and specific conductivity profiles at the outer bay and island stations using a Hydrolab Surveyor II Model SVR2 manufactured by the Hydrolab Corporation of Austin, Texas, 78763.

Selected stations within the Westport River Drainage Basin were monitored for flow. Readings were recorded with a battery operated current meter digitizer (CMD) velocity measuring instrument or a set of headphones. Velocity was measured with a pygmy current meter (USGS #8009458) using the rod method or a Price AA meter (number TU3793) using the bridge board method.

Field sampling was conducted according to the Division's Standard Operating Procedures (SOP) document which was developed from standardized and approved methodologies. Copies of this document are on file at the Technical Services Branch Office in Westborough, MA. All of the water samples were placed in glassware which had been previously washed in phosphate free detergent, followed by a rinse of 30 percent HCl, followed by three successive rinses with dionized distilled water. Nutrient samples were fixed at the time of collection with 2 mls of 1N H₂SO₄, all samples were identified by a tag which identified the sampling location, date and time of

collection, collector and the analyses required. All samples were transported in wet ice to the Lawrence Experiment Station for analysis except for bacteria samples collected during July 20-24 for the Paskamanset/Slocums River survey. These samples were transported to the laboratory located at the Commonwealth's regional facility at the Lakeville State Hospital in Lakeville, Massachusetts.

The time for the tides referenced in the subsequent data tables are those reported for Newport, Rhode Island and corrected for local conditions according to the Elridge Tide and Pilot Book for 1986. Robert Eldridge White, Publisher, Boston, Massachusetts.

The data presented in the following tables is organized in a format which identifies the area, drainage basin, parameter, station and collection date. To determine the actual time of collection for each sample consult the dissolved oxygen data tables for the station of interest. Note that weighted means were used to estimate mean concentrations where composite and single grab samples were collected, where values are reported as less than (<) one half of the value was used to compute the mean concentration.

During the Westport River survey two stations, (4 WPE02 and 6 SNC04) were incorrectly identified and sampled as freshwater stations. At station 9 NBH30 within the Acushnet River, TSB employed a model 1680 wastewater sampler manufactured by the Instrument Specialities Company, Lincoln, Nebraska. The model 1680 is a portable device designed to collect separate sequential samples at predetermined intervals. At this station hourly samples were taken of an outgoing tide and composited into one sample.

Specific information concerning sampling schedules, parameters, collection methods, and analytical procedures used in the surveys are included in Tables 67-69.

FIGURE 4

BUZZARDS BAY

AREA I

COASTAL DRAINAGE BASINS

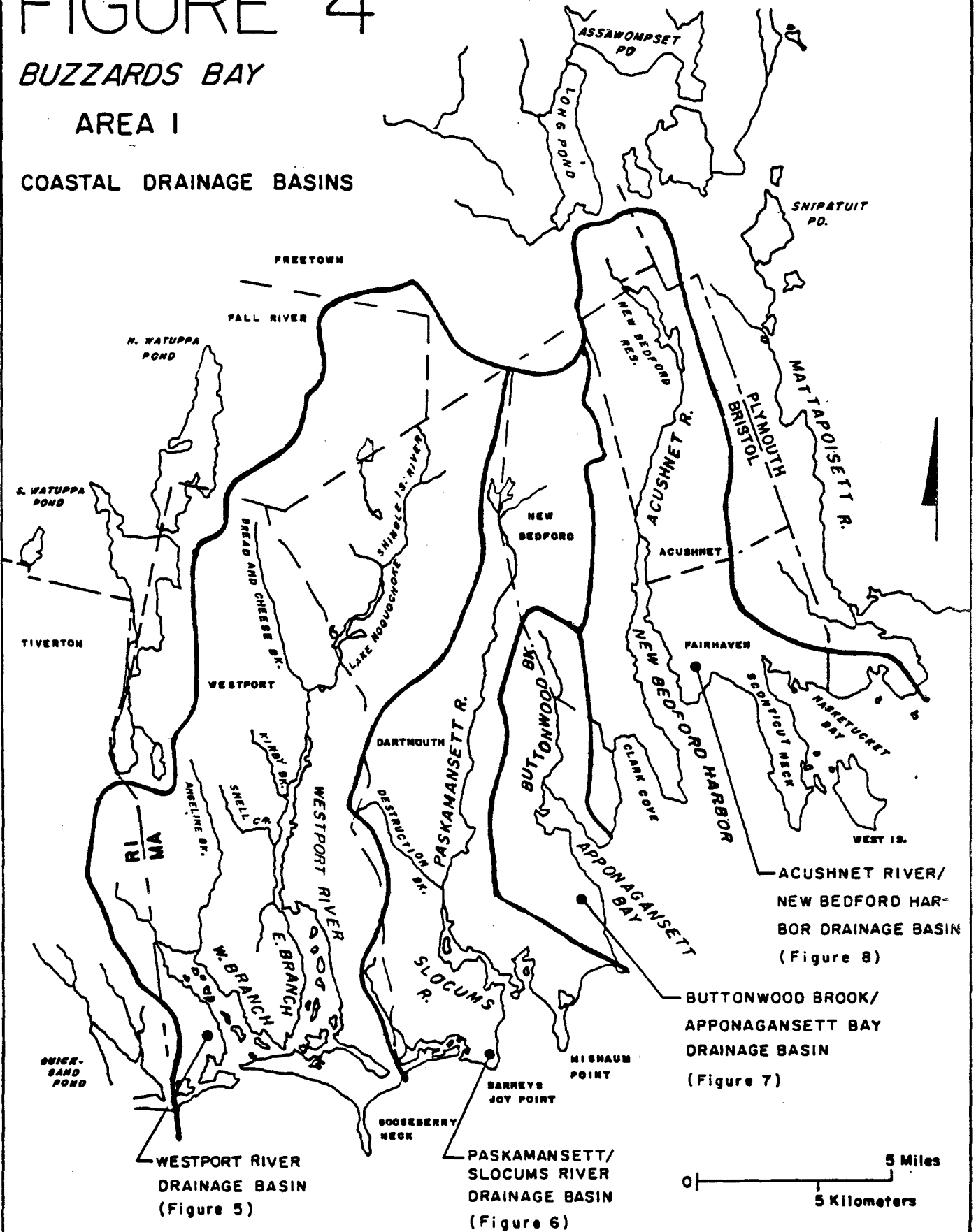


TABLE 4

1986 BUZZARDS BAY WATER QUALITY SURVEY

STATION LOCATIONS - AREA I

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	DATE SAMPLED	STATION TYPE
<u>Westport River Drainage Basin (5)</u>					
1	SIR02 Shingle Island River at North Hixville Road bridge, Dartmouth	41°40'13"N	71°01'33"W	6/24/86	FW
2	BCB04 Bread and Cheese Brook at Route 177 culvert, Westport	41°38'02"N	71°03'48"W	6/24-25/86	FW
3	WPE01 Westport River East Branch at outlet of Lake Noquochoke Route 6, Dartmouth	41°38'18"N	71°02'55"W	6/24/86	FW
4	WPE02 Westport River East Branch at County Road bridge, Westport	41°37'16"N	71°03'38"W	6/24-25/86	INT
5	KB02 Kirby Brook at Drift Road culvert, Westport	41°36'01"N	71°04'56"W	6/24-25/86	FW
6	SNC04 Snell Creek at mouth, off Drift Road, Westport	41°34'54"N	71°04'38"W	6/24-25/86	INT
7	LFS01 Unnamed stream south of landfill off Hix bridge Road, Westport	41°34'14"N	71°02'13"W	6/25/86	FW
8	WPW01 Westport River West Branch at Adamsville Road bridge, Westport	41°32'50"N	71°06'20"W	6/24-25/86	FW
9	AB02 Angeline Brook at Cornell Road culvert, Westport	41°36'20"N	71°03'12"W	6/25/86	FW
10	WPE13 Westport River East Branch at Hix Bridge, Westport	41°34'13"N	71°04'19"W	6/24-25/86	INT

TABLE 4 (CONTINUED)

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	DATE SAMPLED	STATION TYPE
<u>Westport River Drainage Basin (5) (Continued)</u>					
11 WPE14	Westport River East Branch at Little Pine Island, Westport	41°32'58"N	71°20'52"W	6/24-25/86	1B
12 WPE15	Westport River East Branch at Gunning Island, Westport	41°32'25"N	71°03'38"W	6/24-25/86	1B
13 WPH16	Westport Harbor at channel marker can #25, Westport	41°30'51"N	71°04'14"W	6/24-25/86	1B
14 WPW17	Westport River West Branch at Great Flat, Westport	41°31'10"N	71°05'30"W	6/24-25/86	1B
19 15 RIS18	Rhode Island Sound at navigation marker nun #2, entrance to Westport Harbor, Westport	41°24'57"N	71°05'00"W	6/24-25/86	1B
10 MF01	Unnamed tributary off west side of Old Pine Hill Road, Westport			6/26/86	FW
<u>Paskamanset/Slocums River Drainage Basin (6)</u>					
1 PR01	Paskamanset River at outlet of Turner Pond at Plainville Road culvert, New Bedford/Dartmouth town line	41°40'43"N	70°58'39"W	7/22-23/86	FW
2 PR02	Paskamanset River at Route 195 culvert, Dartmouth	41°39'18"N	70°58'53"W	7/22-23/86	FW
3 PR03	Culvert draining Dartmouth Mall east of Hixville road, Dartmouth	41°38'25"N	70°59'11"W	7/22-23/85	FW

TABLE 4 (CONTINUED)

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	DATE SAMPLED	STATION TYPE
<u>Paskamanset/Slocums River Drainage Basin (6) (Continued)</u>					
4 PR04	Paskamanset River south of Route 6 off Chase Road, Dartmouth	41°38'18"N	70°59'11"W	7/22-23/86	FW
5 PR05	Paskamanset River at Russells Mills Road bridge above Dartmouth landfill. Dartmouth	41°35'06"N	70°59'27"W	7/22-23/86	FW
6 PR06	Paskamanset River at Village of Russells Mills above dam, Dartmouth	41°34'17"N	71°00'18"W	7/22-23/86	FW
14 SR10	Slocums River at head on Horseneck Road, Dartmouth	41°34'20"N	71°00'48"W	7/22-23/86	INT
7 DB03	Destruction Brook at culvert on Horseneck Road, Dartmouth	41°34'21"N	71°00'47"W	7/22-23/86	FW
15 SR20	Slocums River at Gaffney Road, Dartmouth	41°32'45"N	71°00'03"W	7/22-23/86	1B
16 SR30	Slocums River at narrows by Great Neck, Dartmouth	41°32'38"N	70°59'10"W	7/22-23/86	1B
17 SR40	Slocums River at Deepwater Point, Dartmouth	41°31'42"N	70°58'40"W	7/22-23/86	1B
18 BB10	Buzzards Bay at navigation marker can #3 northeast of Dartmouth STP outfall, Dartmouth	41°31'33"N	70°56'08:W	7/22-23/86	1B
19 BB20	Buzzards Bay at Dartmouth Sewage Treatment Plant outfall, Dartmouth	41°31'15"N	70°56'35"W	7/22-23/86	1B

TABLE 4 (CONTINUED)

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	DATE SAMPLED	STATION TYPE
<u>Paskamanset/Slocums River Drainage Basin (6) (Continued)</u>					
20 BB30	Buzzards Bay approximately 100 yards down current of outfall discharge plume, Dartmouth	41°31'10"N	70°56'37"W	7/22-23/86	1B
21 BB40	Buzzards Bay approximately 400 yards down current of outfall discharge plume, Dartmouth	41°31'08"N	70°56'44"W	7/22-23/86	1B
<u>Buttonwood Brook/Apponagansett Bay Drainage Basin (7)</u>					
8 BWB01	Buttonwood Brook at Route 6 culvert New Bedford	41°38'10"N	70°57'24"W	7/22-23/86	FW
9 BWB02	Buttonwood Brook at Hawthorn Street culvert, New Bedford	41°37'38"N	70°57'14"W	7/22-23/86	FW
10 BWB03	Buttonwood Brook at Elm Street culvert, Dartmouth	41°36'05"N	70°57'35"W	7/22-23/86	FW
12 AB10	Apponagansett Bay at Padanaram Bridge, Dartmouth	41°35'10"N	70°35'10"W	7/22-23/86	INT
13 AB20	Apponagansett Bay at New Bedford Yacht Club Pier, Dartmouth	41°35'05"N	70°56'50"W	7/22-23/86	INT
20 TBW	Tributary to Buttonwood Brook at Hawthorn Street culvert, Dartmouth	41°36'05"N	70°37'49"W	7/24/86	FW
21 ABK20	Apponagansett Brook at Russells Mills Road, Dartmouth	41°36'05"N	70°57'47"W	7/24/86	INT
22 AB30	Cove east of Star of the Sea Drive, Apponagansett Bay, Dartmouth	41°35'24"N	70°57'42"W	7/24/86	INT

TABLE 4 (CONTINUED)

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	DATE SAMPLED	STATION TYPE
<u>Acushnet River/New Bedford Harbor Drainage Basin (8)</u>					
1 ACR020	Acushnet River at Leonard Street culvert, Acushnet	41°43'27"N	70°53'53"W	10/14-15/86	FW
2 DB010	Deep Brook off Middle Road, above ponds, Acushnet	31°42'43"N	70°54'46"W	10/14-15/86	FW
3 UNB01	Unnamed Brook north of Howard School on Middle Road, Acushnet	41°42'08"N	70°55'16"W	10/14-15/86	FW
4 ACR02	Acushnet River at Hamlin Road culvert, Acushnet	41°41'51"N	70°54'56"W	10/14-15/86	FW
5 UNB03	Unnamed Brook east of Middle Road, across from Norwood and Westland Streets, Acushnet	41°41'32"N	70°55'15"W	10/14-15/86	FW
6 ACR03	Acushnet River at Main Street above falls, Acushnet	41°40'55"N	70°55'12"W	10/14-16/86	FW
8 ACR10	Acushnet River at Coggeshall Street bridge, New Bedford	41°39'27"N	70°55'07"W	10/14-16/86	INT
9 NBH30	New Bedford Harbor at Hurricane Gate, New Bedford	41°37'27"N	70°54'23"W	10/14-16/86	1B

22

Numbers in () refer to drainage basin figure number

from ~~MBBBA~~
DEP Water Quality

FIGURE 5

WESTPORT RIVER DRAINAGE BASIN

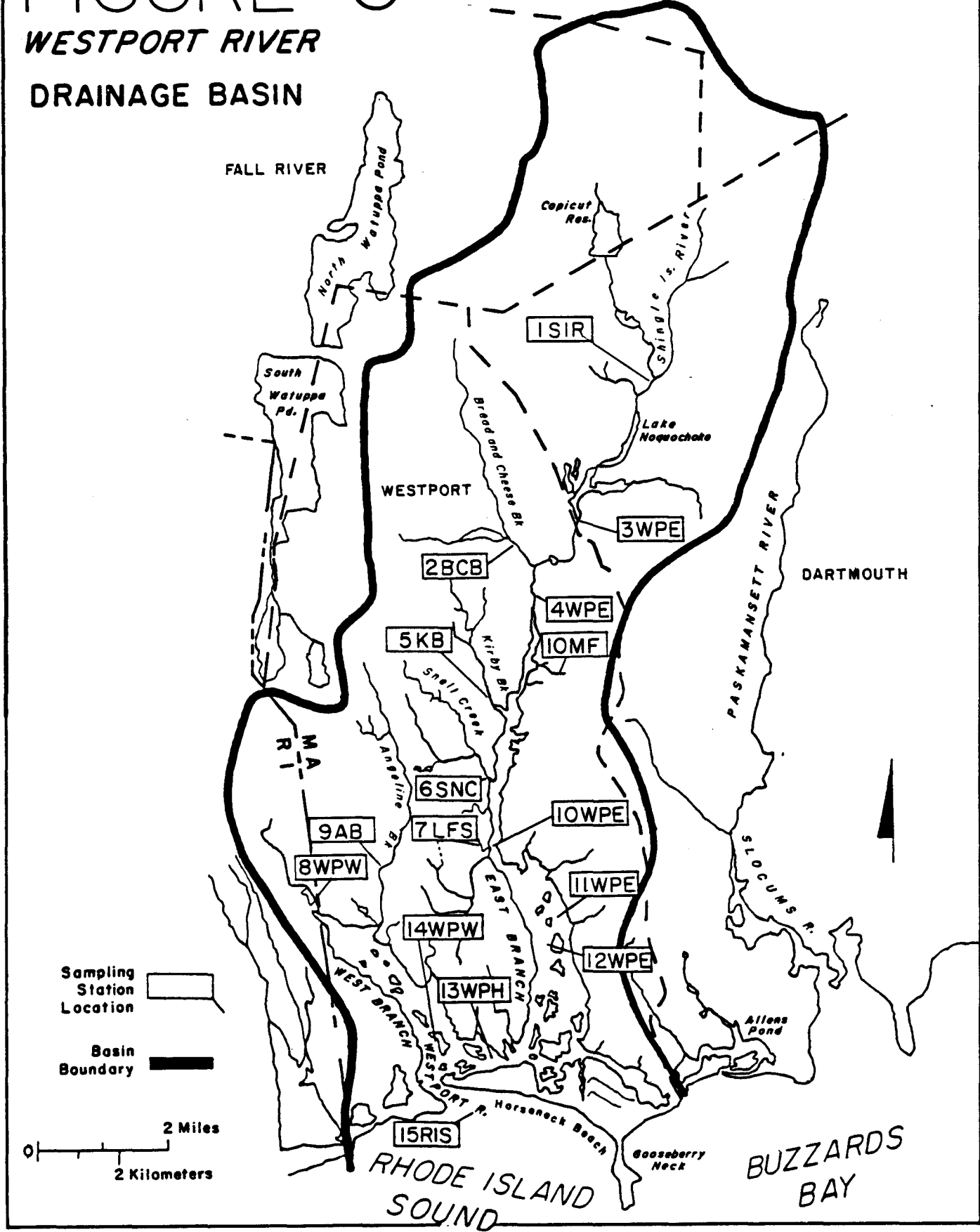


FIGURE 6

PASKAMANSETT/SLOCUMS RIVER

DRAINAGE BASIN

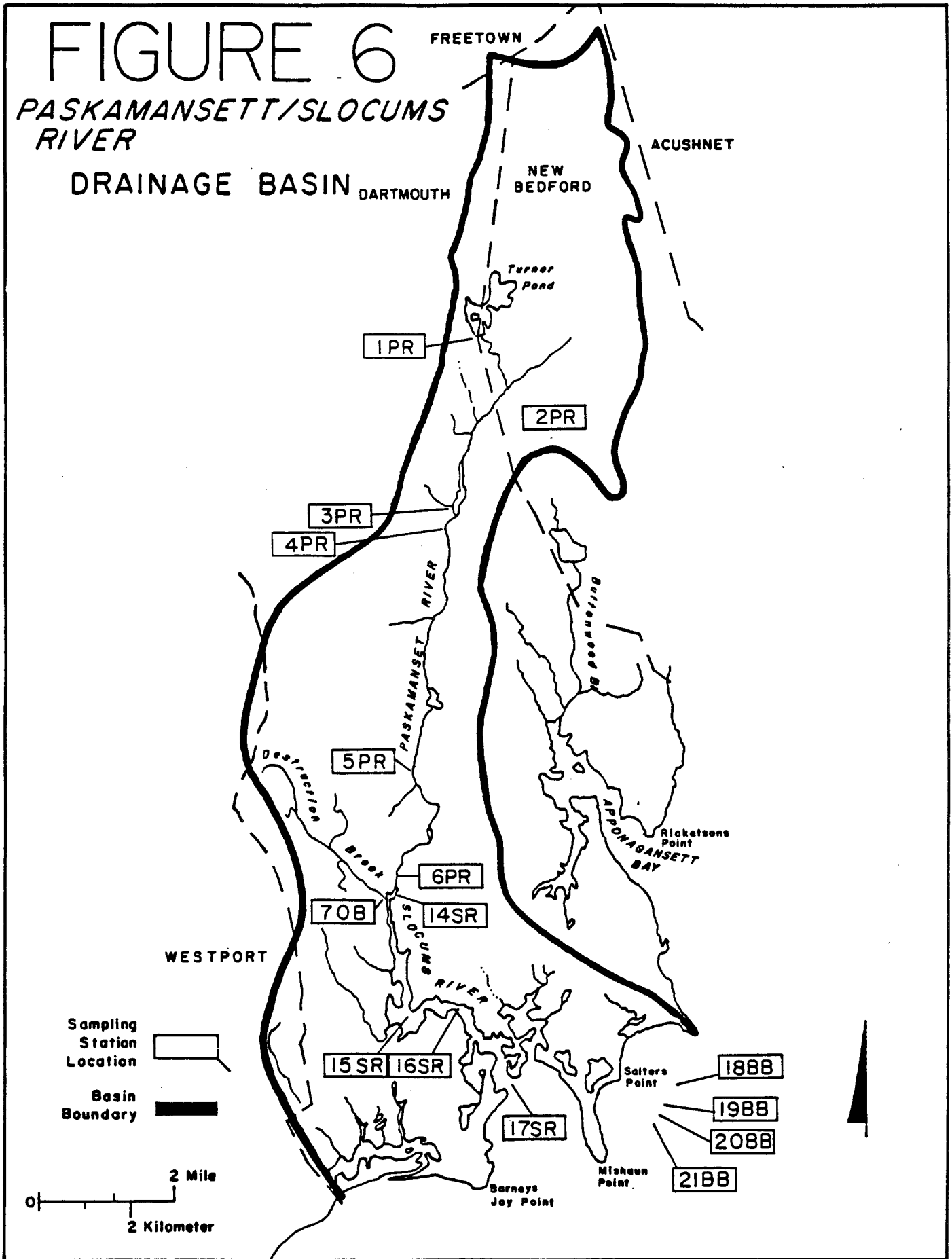


FIGURE 7

BUTTONWOOD BROOK / APPONAGANSETT BAY

DRAINAGE BASIN

NEW BEDFORD

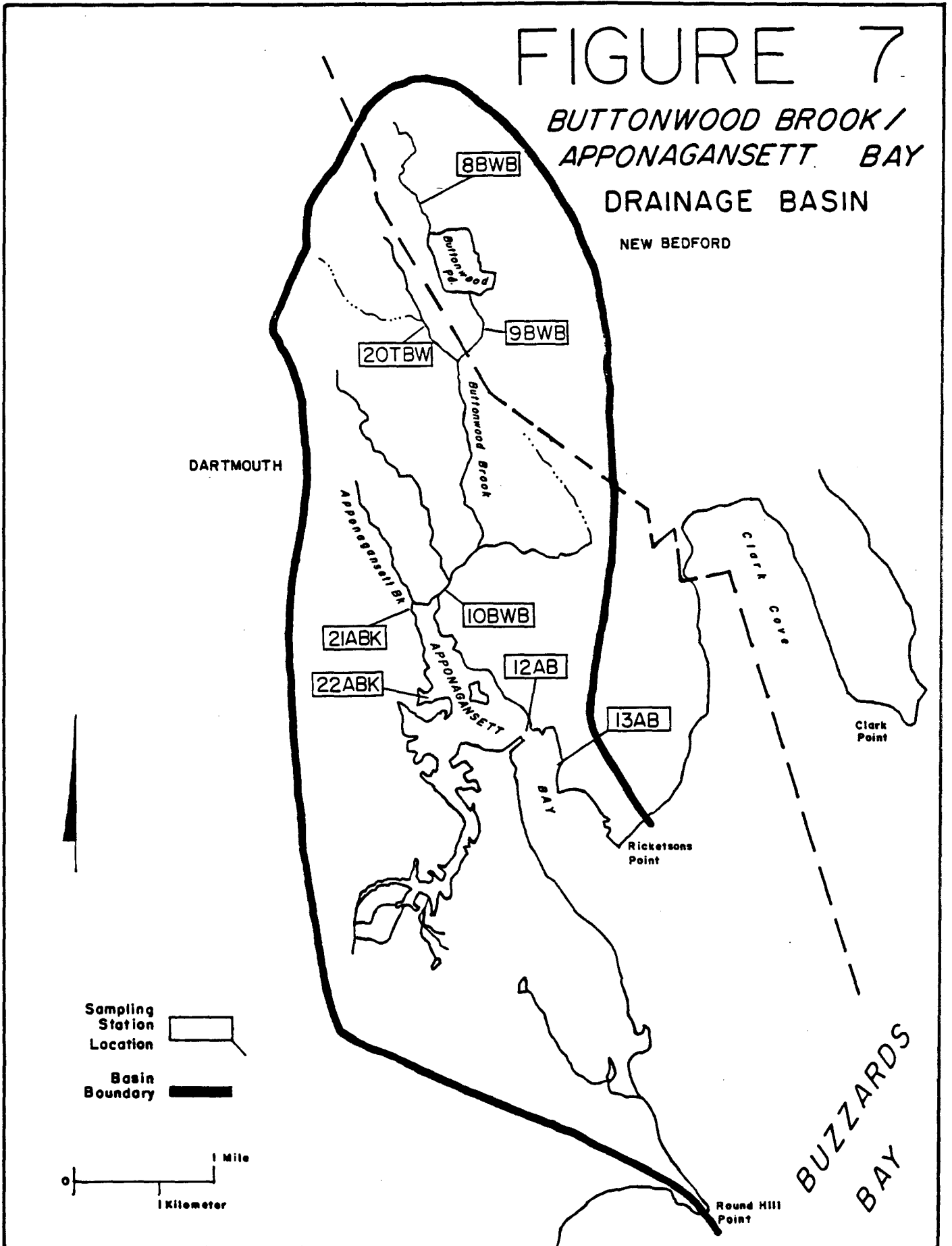


FIGURE 8

ACUSHNET RIVER / NEW BEDFORD DRAINAGE BASIN

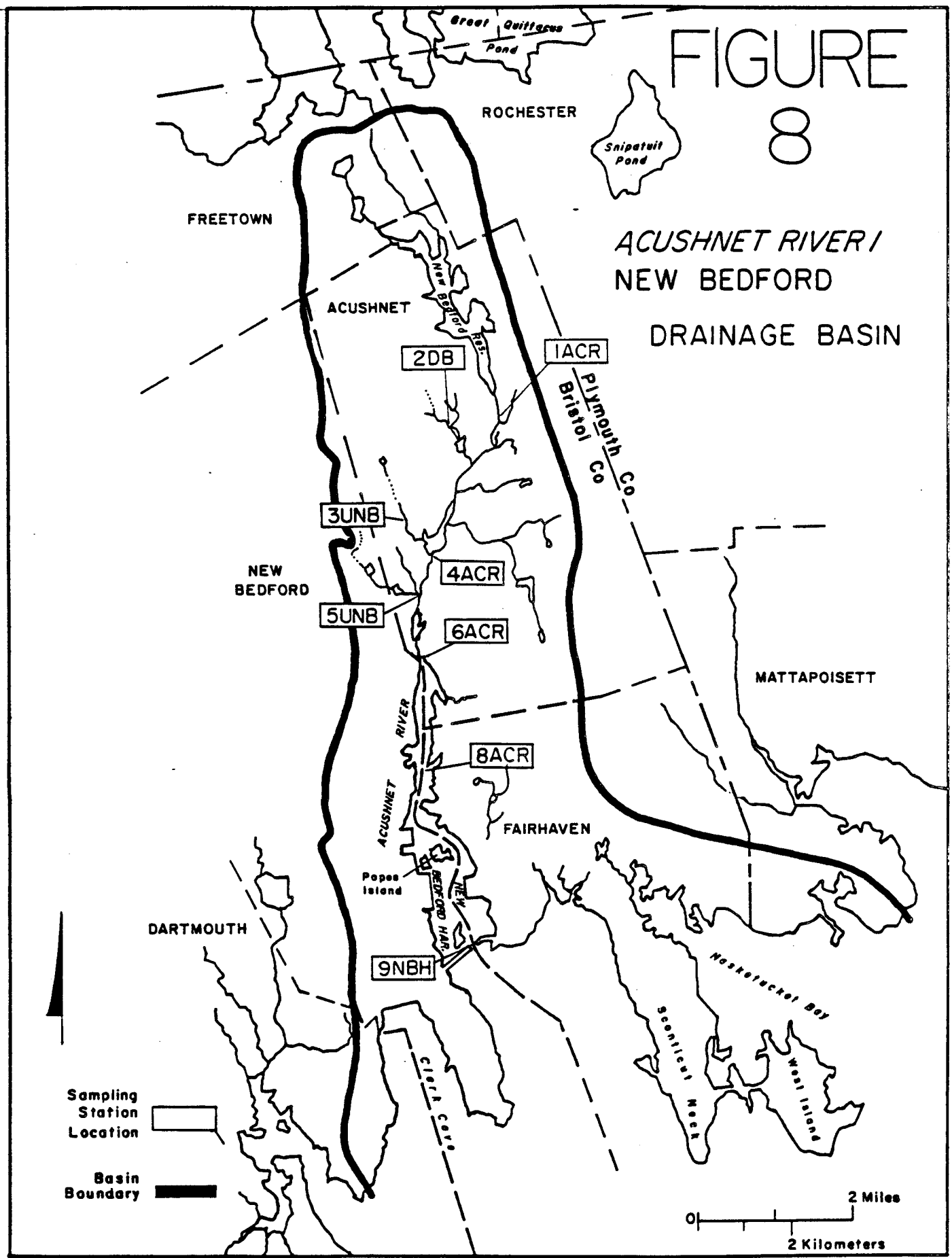


TABLE 5

1986 BUZZARDS BAY WATER QUALITY SURVEY

STATION LOCATIONS - AREA IV ELIZABETH ISLANDS (15), AREA V OUTER BAY (17)

STATION NUMBER	LOCATION DESCRIPTOR	LATITUDE	LONGITUDE	LORAN C BEARINGS	DATE SAMPLED
1 CP10	Cuttyhunk Pond - Center Harbor	41°25'50"N	70°55'69"W	14250.1 25543.0	10/28/86
6 WPI10	Weepecket Island lee (east) side	41°30'83"N	70°43'48"W	14155.8 25455.8	8/26/86
2 NSI10	Nashawena Island - west of bell #7	41°26'94"N	70°53'54"N	14231.6 25529.0	10/28/86
3 BB10	Outer Bay - east of R8 gong near station Q (Sanders) (1)	41°29'13"N	70°52'52"W	14215.0 25527.4	8/26/86 10/28/86
4 NUI10	Naushon Island west of Island. Station 9 (NEA) (1)	41°30'14"N	70°49'60"W	14195.2 25505.9	8/26/86 10/28/86
5 BB20	Buzzards Bay halfway between "WI" gong and "RB" nun. Station K (Sanders) (1)	41°32'77"N	70°43'02"W	14145.0 25460.0	8/26/86

(1) See references

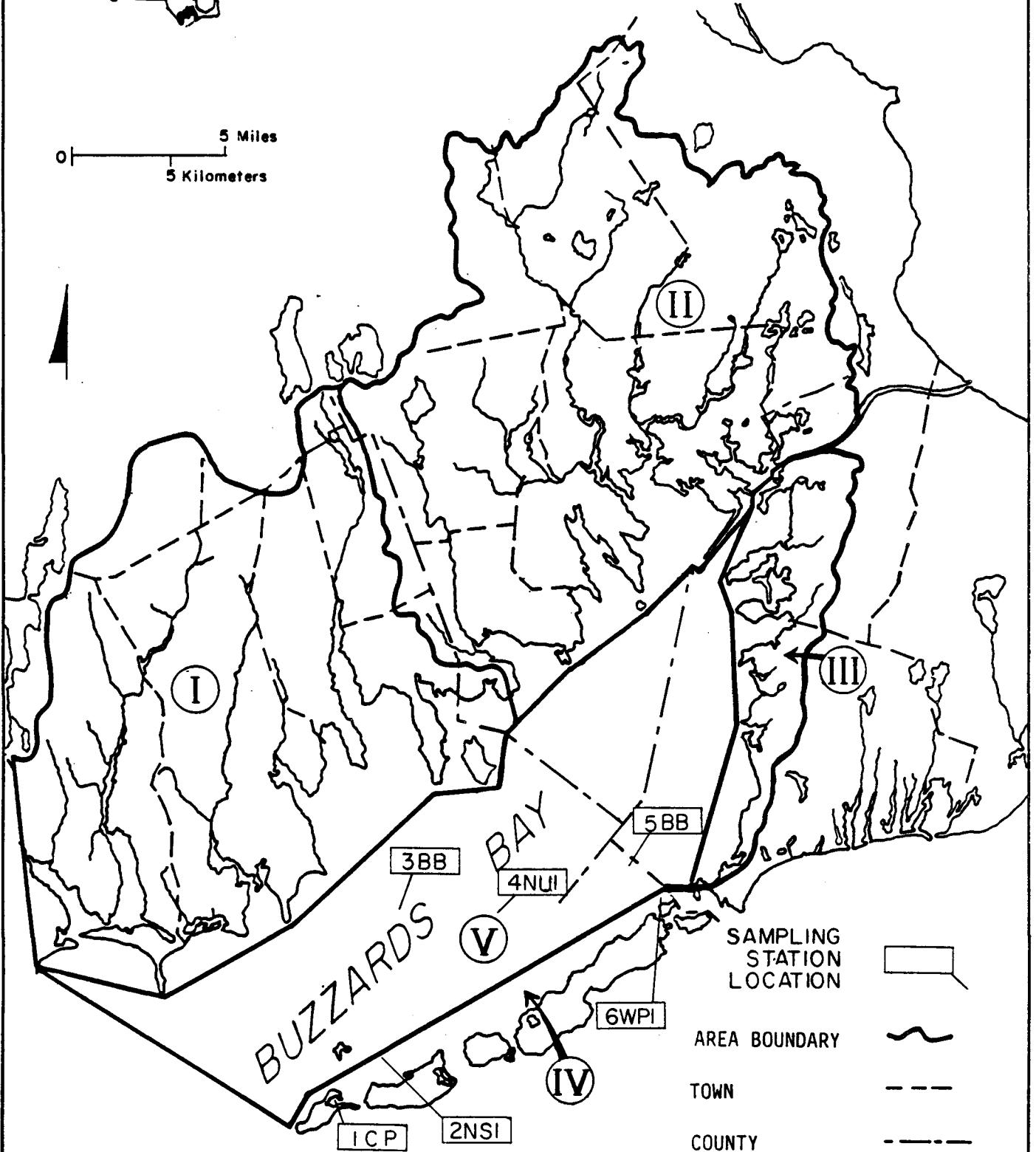
FIGURE 9

ELIZABETH ISLANDS / OUTER BAY

AREA IV and AREA V



0 — 5 Miles
0 — 5 Kilometers



95 DWPC DRAINAGE BASIN CLASSIFICATION SYSTEM PER 314 CMR 4.05:

TABLE 6

1986 BUZZARDS BAY WATER QUALITY SURVEY

SUMMARY OF METEOROLOGICAL CONDITIONS AND REPORTED TIMES FOR HIGH AND LOW WATER

(Meteorological Conditions Recorded at New Bedford Public Works
Lat. 40°38'N - Long. 70°56'W

(Tides Referenced to Newport, Rhode Island and Corrected to Local Harbors)

DATE:	6/20	6/21	6/22	6/23	6/24	6/25
Maximum Temperature (°F)	70	69	80	76	78	69
Minimum Temperature (°F)	56	55	55	62	62	56
Rainfall (in.)	0.11	--	--	0.01	0.20	--
High Tide (Westport Harbor)				0934	1026	1122
Low Tide				1541	1637	1733
DATE:	7/19	7/20	7/21	7/22	7/23	7/24
Maximum Temperature (°F)	80	70	83	83	86	86
Minimum Temperature (°F)	66	64	68	65	64	66
Rainfall (in.)	--	T	0.01	--	--	--
High Tide (South Dartmouth)			0845	0937	1027	1116
Low Tide			1434	1525	1616	1707
DATE:	8/21	8/22	8/23	8/24	8/25	8/26
Maximum Temperature (°F)	75	78	76	71	75	79
Minimum Temperature (°F)	60	61	60	59	58	58
Rainfall (in.)	0.42	0.41	T	0.16	--	--
High Tide (Bird Island)				1244	1337	
Low Tide					0538	0615
DATE	10/11	10/12	10/13	10/14	10/15	10/16
Maximum Temperature (°F)	57	64	65	66	62	59
Minimum Temperature (°F)	39	48	54	60	59	46
Rainfall (in.)	--	--	0.02	1.38	--	--
High Tide (New Bedford)			0459	0552	0640	0725
Low Tide			1117	1218	1303	1346
DATE	10/23	10/24	10/25	10/26	10/27	10/28
Maximum Temperature (°F)	68	59	57	54	52	68
Minimum Temperature (°F)	54	43	36	47	48	52
Rainfall (in.)	0.05	--	--	0.36	0.22	0.05
High Tide (Cuttyhunk, Pond Ent.)					1601	1650
Low Tide					0838	0951

T = Trace

NOTE: Sample dates highlighted in **bold type**. Data compiled National Climate Data Center, Climatological Data New England, June 1986, Vol. 98, Number 6. July 1986, Vol. 98, Number 7. August 1986, Vol. 98, Number 8. October 1986, Vol. 98, Number 10.

TABLE 7

1986 BUZZARDS BAY WATER QUALITY SURVEYS

COMPARISON OF PARAMETERS MEASURED VS AREA AND STATION CLASS

PARAMETER	AI	FW	AI	INT	AI	1B	AIV	1B	AV	OB
Actual vs Proposed Stations	25-23(1)		8-6(1)		14-14		2-2		8-6(1)	
Temperature	79-82		22-26		20-29		15-16		96-99*	
pH in situ	73-82		18-26		6-0		0-0		0-0	
Specific Conductivity	77-82		17-26		16-29		13-15		93-99	
Chlorides	80-82		19-26		24-29		0-0		0-0	
Total Alkalinity	80-82		11-26		13-29		0-0		0-0	
Total Hardness	67-82		5-26		0-0		0-0		0-0	
Total Solids	80-82		19-26		24-29		2-4		7-16	
Suspended Solids	80-82		19-26		24-29		2-4		7-16	
Dissolved Oxygen	78-92		19-26		23-29		2-4		7-16	
Turbidity	41-82		8-26		13-29		--		--	
Salinity	0-0		--		--		15-18		94-102*	
Dissolved Oxygen	78-82		22-26		20-29		14-16		93-99	
Totak Kjeldahl-Nitrogen	81-82		19-26		24-29		14-16		96-99	
Ammonia-Nitrogen	81-82		19-26		24-28		2-4		5-20	
Nitrate-Nitrogen	73-82		2-26		0-0		2-4		5-20	
Total Phosphorus	81-82		19-26		24-28		2-4		5-20	
Total Coliform	66-82		16-26		3-28		0-4		5-20	
Fecal Coliform	68-82		22-26		25-28		0-4		5-20	
BOD ₅	80-82		9-26		14-28		0-0		0-0	
Total Metals	2-23		0-0		0-0		0-0		0-4	
Salinity	0-0		--		--		13-15		91-94	
Depth	0-0		0-0		0-0		13-15		79-99	
Flow	--		--		--		--		--	
Ortho Phosphate	65-82		14-26		12-28		2-4		5-20	

* Total for all depths

(1) Sampled two more stations than originally proposed

-- Not sampled

TABLE 8

1986 BUZZARDS BAY AREA I DISSOLVED OXYGEN DATA

WESTPORT RIVER DRAINAGE BASIN

TIME (hrs)-TEMPERATURE (°C)-DISSOLVED OXYGEN (mg/l)-

CHLORIDE (mg/l)-SATURATION (%)

DATE:	6/24/86		6/25/86	
RUN:	A.M.	P.M.	A.M.	P.M.
STATION NUMBER				
1 SIRO2	*	0510	--	--
	**	16.0	--	--
	***	6.9	--	--
	****	6.0	--	--
	*****	69.3	--	--
2 BCB04		0920	1507	0600
		18.0	18.0	14.0
		7.5	7.5	7.5
			29	28
		78.6	78.6	72.3
3 WPE01		0900	--	--
		20.0	--	--
		5.8	--	--
		13	--	--
		63.2	--	--
4 WPE02		0935	1520	0646
		17.0	19.0	18.0
		7.6	8.1	7.9
			21	18
		78.0	86.6	82.8
5 KB02		0950	1535	0655
		18.0	16.0	17.0
		7.2	7.6	7.5
			33	35
		75.5	76.4	77.0
6 SNC04		1011	1545	0710
		17.0	16.0	16.0
		8.0	7.7	8.1
			160	115
		82.0	83.5	81.3

TABLE 8 (CONTINUED)

DATE:	6/24/86		6/25/86	
	A.M.	P.M.	A.M.	P.M.
<u>STATION NUMBER</u>				
7 LFS01	--	--	0735	--
	--	--	16.0	--
	--	--	5.6	--
	--	--	64	--
	--	--	56.2	--
8 WPW01	1031	1605	0750	1610
	19.0	20.0	16.0	20.0
	5.9	8.1	6.4	8.8
	--	27	--	19
	63.1	88.3	64.3	96.0
9 AB02	--	--	0815	--
	--	--	17.0	--
	--	--	7.9	--
	--	--	14	--
	--	--	81.1	--
10 WPE13	--	1430	--	1520
	--	21.7	--	22.5
	--	7.5	--	7.8
	--	13,000	--	12,250
	--	96.9	--	101.8
11 WPE14	--	1540	--	1640
	--	22.0	--	21.5
	--	7.4	--	8.8
	--	14,500	--	14,570
	--	97.2	--	1.16
12 WPE15	--	1605	--	1715
	--	21.0	--	20.5
	--	8.2	--	8.8
	--	15,500	--	15,500
	--	107.0	--	114.8
13 WPH16	--	1630	--	1755
	--	19.0	--	19.0
	--	8.4	--	8.9
	--	16,500	--	16,250
	--	106.8	--	112.8

TABLE 8 (CONTINUED)

DATE:	6/24/86		6/25/86	
RUN:	A.M.	P.M.	A.M.	P.M.
<u>STATION NUMBER</u>				
14 WPW17	--	1655	--	1815
	--	21.0	--	20.0
	--	8.0	--	8.7
	--	17,250	--	17,000
	--	106.4	--	113.2
15 RIS18	--	1725	--	1830
	--	19.0	--	17.0
	--	8.3	--	8.0
	--	16,750	--	17,750
	--	107.7	--	99.5

* Time (hr.) -- Not sampled
 ** Temperature (°C) 6/24/86 high tide 1026 - low tide 1637
 *** Dissolved Oxygen (mg/l) 6/25/86 high tide 1122 - low tide 1733
 **** Chloride (mg/l)
 ***** Saturation (%)

Saturation values calculated from Table A-6 found in elements of Wastewater Supply and Wastewater Disposal by Fair & Geyer 1965. Fifth edition. John Wiley & Sons, Inc. 615 p.

Stations 2,4,5,6, and 8 chlorides reported from composite sample
 Stations 1,3,7 and 9 collected as single grab samples

TABLE 9

1986 BUZZARDS BAY AREA I DISSOLVED OXYGEN DATA

PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

TIME (hrs)-TEMPERATURE (°C)-DISSOLVED OXYGEN (mg/l)-
CHLORIDE (mg/l)-SATURATION (%)

DATE:		7/22/86		7/23/86		
RUN:		A.M.	P.M.	A.M.	P.M.	
<u>STATION NUMBER</u>						
1	PRO1	*	0552	1507	0540	1455
		**	20.0	24.4	20.0	28.9
		***	4.2	4.2	4.3	5.8
		****		26		20
		*****	45.8	49.2	46.9	74.0
2	PRO2		0525	1453	0525	1441
			17.8	23.3	17.8	23.3
			5.1	5.4	5.3	4.9
				23		22
			53.5	62.2	55.6	56.6
3	PRO3	--		1531	0600	1513
		--		18.9	16.7	19.4
		--		8.6	8.7	8.5
		--		61		62
		--		92.0	89.3	90.1
4	PRO4		0619	1541	0612	1526
			18.9	21.7	19.4	22.2
			4.9	4.7	4.8	4.7
				26		28
			43.9	53.2	51.3	53.2
5	PRO5		0819	1733	0830	1700
			18.3	20.6	17.8	21.1
			5.6	5.0	5.6	5.1
				25		27
			58.7	55.6	58.7	56.7
6	PRO6		0837	1756	0805	1711
			20.6	23.9	20.6	24.4
			5.3	5.0	4.9	5.0
				28		24
			59.0	58.6	** 54.5	58.6

TABLE 9 (CONTINUED)

DATE:	7/22/86		7/23/86	
RUN:	A.M.	P.M.	A.M.	P.M.
<u>STATION NUMBER</u>				
7 DB03	0845	1802	0818	1730
	18.9	21.1	18.9	21.1
	7.2	6.7	7.4	7.0
		61		23
	77.0	74.5	79.1	77.9
14 SR10	1100	--	--	1205
	22.6	--	--	23.7
	5.4	--	--	5.5
	10,250	--	--	7,500
	67.8	--	--	69.5
15 SR20	1150	--	--	1225
	23.0	--	--	25.0
	6.8	--	--	7.5
	15,000	--	--	15,500
	91.5	--	--	105.5
16 SR30	--	1230	--	1305
	--	23.5	--	24.5
	--	7.1	--	7.8
	--	16,000	--	15,750
	--	98.4	--	110.0
17 SR40	--	1250	--	1325
	--	22.7	--	23.6
	--	7.2	--	7.8
	--	16,500	--	16,500
	--	98.6	--	108.7
18 BB10	--	1520	--	--
	--	21.3	--	--
	--	7.5	--	--
	--	17,500	--	--
	--	100.1	--	--
19 BB20	--	1430	--	--
	--	21.4	--	--
	--	7.5	--	--
	--	17,000	--	--
	--	99.5	--	--

TABLE 9 (CONTINUED)

DATE:	7/22/86		7/23/86	
RUN:	A.M.	P.M.	A.M.	P.M.
STATION NUMBER				
20 BB30	--	1450	--	--
	--	21.4	--	--
	--	7.5	--	--
	--	17,250	--	--
	--	99.8	--	--
21 BB40	--	1510	--	--
	--	21.4	--	--
	--	7.8	--	--
	--	17,500	--	--
	--	102.4	--	--

* Time (hr.) -- Not sampled
 ** Temperature (°C) 7/22/86 high tide 0937 - low tide 1525
 *** Dissolved Oxygen (mg/l) 7/23/86 high tide 1027 - low tide 1616
 **** Chloride (mg/l)
 ***** Saturation (%)

Stations 1-7 chlorides reported from composite samples

TABLE 10

1986 BUZZARDS BAY AREA I DISSOLVED OXYGEN DATA
 BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN
 TIME (hrs)-TEMPERATURE (°C)-DISSOLVED OXYGEN (mg/l)-
 CHLORIDE (mg/l)-SATURATION (%)

DATE:	7/22/86		7/23/86		
RUN:	A.M.	P.M.	A.M.	P.M.	
STATION NUMBER					
8 BWB01	*	0634	1555	0625	1538
	**	16.7	22.2	16.7	23.3
	***	7.3	8.5	7.4	8.9
	****		46		45
	*****	74.9	96.2	76.0	102.5
9 BWB02		0650	1612	0635	1551
		18.9	23.9	19.4	25.0
		3.6	3.9	3.3	4.6
			25		25
		38.5	45.7	35.3	54.9
10 BWB03		0723	1625	0705	1603
		17.8	21.1	17.2	22.2
		7.8	9.0	7.8	8.5
			24		23
		81.2	100.1	80.1	96.3
12 AB10		0807	1714	0743	1644
		21.1	22.8	21.1	23.9
		5.0	7.8	5.7	7.6
		17,500	17,500	17,500	17,000
		66.7	108.0	76.1	106.5
13 AB20		0747	1656	0725	1630
		20.0	23.3	20.0	24.4
		6.1	8.1	6.5	7.4
		17,500	17,500	17,500	17,000
		79.8	112.1	85.1	103.7

* Time (hr.) -- Not sampled
 ** Temperature (°C) 7/22/86 high tide 0937 - low tide 1525
 *** Dissolved Oxygen (mg/l) 7/23/86 high tide 1027 - low tide 1616
 **** Chloride (mg/l)
 ***** Saturation (%)

Station 8-10 chlorides reported from composite samples

TABLE 11

1986 BUZZARDS BAY AREA I DISSOLVED OXYGEN DATA
 ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN
 TIME (hrs)-TEMPERATURE (°C)-DISSOLVED OXYGEN (mg/l)-
 CHLORIDE (mg/l)-SATURATION (%)

DATE:		10/14/86	10/15/86	10/15/86	10/16/86
RUN:		P.M.	A.M.	P.M.	A.M.
<u>STATION NUMBER</u>					
1ACR020	*	1212	0635	1301	0707
	**	14.4	12.0	14.0	10.0
	***	8.0	8.3	9.0	8.4
	****	11	--	11	11
	*****	77.1	76.6	86.8	74.3
2 DB010		1235	650	1312	0720
		14.0	12.0	13.0	8.0
	A		4.7	5.7	5.8
	point				
		8.0	--	10	11
	57.9	43.4	53.8	49.2	
3 UNB01		1307	0704	1322	0730
		18.0	11.0	13.0	8.0
		7.5	8.1	8.6	9.5
		9.0		15	15
		78.6	73.1	81.1	80.5
4 ACR02		1307	0715	1334	0741
		18.0	12.0	15.0	7.0
		4.3	3.8	6.8	3.6
		19		23	22
		45.1	35.1	67.0	29.8
5 UNB03		1330	0730	1348	0758
		18.0	12.0	14.0	7.0
		6.4	8.0	8.2	8.0
		19		22	25
		67.1	73.9	79.1	66.8
6 ACR03		1348	0742	1400	0810
		16.5	12.0	15.0	11.0
		7.5	7.1	7.9	7.4
		18		48	90
		77.0	65.6	77.8	67.3

TABLE 12

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - FRESHWATER STATIONS

SUMMARY OF DISSOLVED OXYGEN DATA (mg/l) (MAX.-MIN.-MEAN)

STATION NUMBER	MAXIMUM	MINIMUM	MEAN	NUMBER OF READINGS
1 SIR02		6.9		1
1 BCB04	7.5	7.4	7.5	4
3 WPE01		5.8		1
5 KB02	8.4	7.2	7.7	4
8 LFS01		5.6		1
8 WPW01	8.8	5.9	7.3	4
9 AB02		7.9		1
1 PR01	5.8	4.2	4.6	4
2 PR02	5.4	4.9	5.2	4
3 PR03	8.7	8.5	8.6	3
4 PR04	4.9	4.7	4.8	4
5 PR05	5.6	5.0	5.3	4
6 PR06	5.3	4.9	5.1	4
7 DB03	7.4	6.7	7.1	4
8 BWB01	8.9	7.3	8.0	4
9 BWB02	4.6	3.3	3.9	4
10 BWB03	9.0	7.8	8.3	4
1 ACR020	9.0	8.0	8.4	4
2 DB010	5.7	4.7	5.2	3
3 UNB01	8.6	7.5	8.1	4
4 ACR02	6.8	3.8	5.0	4
5 UNB03	8.2	6.4	7.5	4
6 ACR03	7.9	7.1	7.5	4

For single measurements, value is assumed to be minimum.

..

TABLE 13

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - TIDAL STATIONS

SUMMARY OF DISSOLVED OXYGEN DATA (mg/l) (MAX.-MIN.-MEAN)

STATION NUMBER	MAXIMUM	MINIMUM	MEAN	NUMBER OF READINGS
4 WPE02	8.2	7.6	8.0	4
6 SNC04	8.6	7.7	8.1	4
10 WPE13	7.8	7.5	7.7	2
11 WPE14	8.8	7.4	8.1	2
12 WPE15	8.8	8.2	8.5	2
13 WPH16	8.9	8.4	8.7	2
14 WPW17	8.7	8.0	8.4	2
15 RIS18	8.3	8.0	8.2	2
14 SR10	5.5	5.4	5.5	2
15 SR20	7.5	6.8	7.2	2
16 SR30	7.8	7.1	7.5	2
17 SR40	7.8	7.2	7.5	2
18 BB10		7.5		1
19 BB20		7.5		1
20 BB30		7.5		1
21 BB40		7.7		1
12 AB10	7.8	5.0	6.5	4
8 ACR10	7.6	6.5	7.1	3
4 WPE02	8.2	7.6	8.0	4
6 SNC04	8.6	7.7	8.1	4

For single measurements, value is assumed to be minimum.

TABLE 14

1986 BUZZARDS BAY AREAS IV AND V

PROFILES - DEPTH (m), TEMPERATURE (°C), DISSOLVED OXYGEN (mg/l),
SALINITY (‰)

DATE	TIME	STATION NUMBER	DEPTH (m)	TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/l)	SALINITY (‰)
8/26/86	1045	5BB20	S	20.00	7.30 (W)	--
			1.0	20.69	7.69	31.2
			2.0	20.74	7.59	31.2
			3.0	20.66	7.60	31.2
			4.0	20.33	7.60	31.2
			5.0	20.28	7.45	31.2
			6.0	20.25	7.33	31.3
			7.0	20.25	7.29	31.3
			8.0	20.24	7.07	31.4
			9.0	20.25	6.94	31.4
			10.0	20.18	6.80	31.3
			11.0	20.02	6.24	31.4
			12.0	19.95	6.07	31.5
			13.0	19.80	6.60	31.5
			14.0	19.70	6.67	31.5
15.0	19.62	6.02	31.4			
8/26/86	1230	6WPI10	S	20.00	7.50 (W)	--
			1.0	20.50	8.00	31.3
			2.0	20.44	7.77	31.4
			3.0	20.13	7.79	31.4
			4.0	20.16	7.76	31.4
			5.0	20.31	7.76	31.4
			6.0	20.03	7.71	31.4
			7.0	19.96	7.59	31.4
			8.0	19.85	7.42	31.5
			9.0	19.81	7.40	31.5
			10.0	19.73	7.35	31.5
			11.0	19.69	7.21	31.4
			12.0	19.69	7.21	31.4
			12.0	19.69	7.19	31.6
			12.5 (B)	--	--	--
8/26/86	1400	4NUI10	S	20.00	7.70 (W)	--
			1.0	19.78	8.25	31.5
			2.0	19.77	7.93	31.5
			3.0	19.72	7.87	31.5
			4.0	19.60	7.85	31.5
			5.0	19.25	7.75	31.6
			6.0	19.12	7.66	31.6
			7.0	19.01	7.64	31.6
			8.0	18.98	7.59	31.6
			9.0	18.95	7.52	31.6

TABLE 14 (CONTINUED)

DATE	TIME	STATION NUMBER	DEPTH (m)	TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/l)	SALINITY (‰)
8/26/86	1400	4NUI10	10.0	18.92	7.46	31.6
			11.0	18.91	7.45	31.6
			12.0	18.86	7.40	31.5
			13.0	18.55	7.32	31.5
			14.0	18.43	7.28	31.7
			15.0	18.35	7.21	31.7
			16.0	18.31	7.20	31.7
			17.0	18.29	7.16	31.6
		17.2 (B)				
8/26/86	1445	3BB10	S	20.00	7.70 (W)	--
			1.5	19.96	8.10	31.6
			2.0	19.99	7.95	31.6
			3.0	20.02	7.91	31.6
			4.0	20.03	7.89	31.5
			5.0	19.90	7.87	31.6
			6.0	19.83	7.94	31.6
			7.3	19.54	7.87	31.5
			8.0	19.48	7.78	31.7
			9.0	19.48	7.76	31.6
			10.0	19.43	7.55	31.6
			11.0	19.32	7.36	31.6
			12.0	19.26	7.33	31.7
			13.0	19.13	7.23	31.7
			14.0	18.97	7.23	31.7
			15.0	18.77	7.15	31.7
			16.0	18.75	7.14	31.7
17.0	18.45	7.05	31.8			
		17.5 (B)	--	--	--	
10/28/86	1030	1CP10	--	--	--	--
			1.0	12.52	7.86	32.3
			2.0	12.55	7.75	32.4
			2.1 (B)			
10/28/86	1115	2NSI10	--	--	--	--
			1.0	13.59	8.67	32.4
			2.0	13.60	8.44	32.5
			3.0	13.60	8.40	32.5
			4.0	13.60	8.37	32.5
			5.0	13.58	8.33	32.7
			6.0	13.58	8.29	32.5
			7.0	13.56	8.27	32.6
			8.0	13.56	8.23	32.3
			9.0	13.54	9.15	32.7
			10.0	13.53	8.12	32.5
			11.0	13.53	8.10	32.6
			12.0	13.53	8.06	32.6
		12.1 (B)				

TABLE 14 (CONTINUED)

DATE	TIME	STATION NUMBER	DEPTH (m)	TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/l)	SALINITY (‰)
10/28/86	1155	3BB10	--	--	--	--
			1.0	13.60	8.61	32.4
			2.0	13.62	8.45	32.6
			3.0	13.62	8.35	32.6
			4.0	13.62	8.29	32.7
			5.0	13.62	8.29	32.7
			5.0	13.62	8.25	32.7
			6.0	13.62	8.27	32.7
			7.0	13.62	8.24	32.6
			8.0	13.62	8.21	32.7
			9.0	13.62	8.22	32.4
			10.0	13.61	8.15	32.6
			11.0	13.62	8.11	32.6
			12.0	13.62	8.14	32.5
			13.0	13.62	8.11	32.6
			14.0	13.62	8.11	32.6
			15.0	13.62	8.08	32.6
16.0	13.62	8.06	32.8			
		16.8 (B)				
10/28/86	1240	4NUI10	--	--	--	--
			1.0	13.65	8.61	32.5
			2.0	13.71	8.45	32.6
			3.0	13.64	8.39	32.4
			4.0	13.63	8.36	32.5
			5.0	13.63	8.32	32.6
			6.0	13.62	8.27	32.5
			7.0	13.62	8.30	32.4
			8.0	13.61	8.27	32.7
			9.0	13.61	8.21	32.5
			10.0	13.60	8.18	32.5
			11.0	13.60	8.15	32.6
			12.0	13.59	8.16	32.7
			13.0	13.59	8.06	32.6
			14.0	13.60	8.03	32.6
			15.0	13.60	8.00	32.7
			16.0	13.60	7.97	32.5
		16.6 (B)	--	--	--	

-- = Not sampled

(B) = Depth to bottom

(W) = Winkler Method at surface

Profiles obtained with a Hydrolab Surveyor II Digital Display Unit and Sonde

8/26/86 high tide 1327 - low tide 1858 at entrance to Cuttyhunk Pond

10/28/86 high tide 1650 - low tide 0951 at entrance to Cuttyhunk Pond

TABLE 15

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

BOD₅ DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 SIRO2*	2.0	--	--	--	
2 BCB04*		1.2		1.5	1.4
3 WPE01*	1.2	--	--	--	
4 WPE02**		1.2		1.2	1.2
5 KB02*		1.2		1.8	1.5
6 SNC04**		0.9		2.1	1.5
7 LFS01*	--	--	1.8	--	
8 WPW01*		2.4		2.4	2.4
9 ABO2*	--	--	1.2	--	
10 WPE13**	--	1.8	--	3.3	2.6
11 WPE14**	--	2.1	--	3.0	2.6
12 WPE15**	--	1.8	--	1.8	1.8
13 WPH16**	--	1.2	--	1.5	1.4
14 WPW17**	--	1.5	--	2.4	2.0
15 RIS18**	--	0.9	--	1.2	1.1

* Freshwater station - Stations 1, 3, 7 and 9 individual grab samples
Stations 2, 5 and 8 composite samples

** Tidal station - Stations 4 and 6 composite samples (see Method section)
Stations 10-15 individual grab samples

-- Not sampled

TABLE 16

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

BOD₅ DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		6/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocums River Drainage Basin

1 PR01*		3.9		3.0	3.5
2 PR02*		2.1		2.7	2.4
3 PR03* (1)		2.1		1.5	1.8
4 PR04*		2.7		2.7	2.7
5 PR05*		1.5		1.5	1.5
6 PR06*		2.1		1.5	1.8
7 DB03*		1.8		1.8	1.8

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-24/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8 BWB01*		1.5		0.9	--	1.2
9 BWB02*		2.1		1.8	--	2.0
10 BWB03*		0.9		0.9	--	0.9
20 TBW10** (2)	--	--	--	--	1.8	1.8
21 ABK20**	--	--	--	--	2.4	2.4
22 AB30**	--	--	--	--	--	--

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86

** Tidal station - individual grab samples

-- Not sampled

TABLE 17

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

BOD₅ DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86		10/14-16/86 MEAN
	P.M.	A.M.	P.M.	A.M.	P.M.	
1 ACRO20*	3.3		1.8	2.1	--	2.4
2 DB1010*	6.0		0.9	1.2	--	2.7
3 UNB01*	3.6		2.1	0.6	--	2.1
4 ACRO2*	8.0		9.3	4.8	--	7.4
5 UNB03*	3.9		1.8	0.9	--	2.2
6 ACRO3*	0.9		1.8	2.4	--	1.7
8 ACR10**	--	2.4	1.2	--	--	2.0
9 NBH30**	--		3.0 (1)	2.7 (2)	--	2.9

* Freshwater Station - Stations 1-6 composited only on 10/15/86

** Tidal Station - (1) individual grab samples
(2) hourly composite of outgoing tide - see
Methods section

-- Not sampled

TABLE 18
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 TOTAL KJELDAHL-NITROGEN DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/26/86	6/24-25/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN
1 SIRO2*	0.63	--	--	--	--	
2 BCB04*	--	1.00	--	0.41	--	0.70
3 WPE01*	0.87	--	--	--	--	
4 WPE02**	--	0.53	--	0.38	--	0.46
5 KB02*	--	0.66	--	0.97	--	0.82
6 SNC04**	--	1.55	--	0.82	--	1.19
7 LFS01*	--	--	0.85	--	--	
8 WPW01*	--	1.40	--	0.84	--	1.12
9 ABO2*	--	--	0.50	--	--	
10 MF01*	--	--	--	--	9.0	
10 WPE13**	--	1.40	--	1.40	--	1.40
11 WPE14**	--	2.00	--	1.60	--	1.80
12 WPE15**	--	2.00	--	3.20	--	2.60
13 WPH16**	--	2.70	--	2.80	--	2.75
14 WPW17**	--	1.30	--	2.70	--	2.00
15 RIS18**	--	1.20	--	1.80	--	1.50

* Freshwater station - Stations 1,3,7,9 and 10MF individual grab samples

** Tidal station - Stations 2,5, and 8 composite samples

-- Not sampled

TABLE 19

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL KJELDAHL-NITROGEN DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Paskamanset/Slocums River Drainage Basin

1	PRO1*		1.30		0.96	1.13
2	PRO2*		1.40		1.40	1.40
3	PRO3*(1)	--	0.75		0.56	0.62
4	PRO4*		1.40		1.90	1.65
5	PRO5*		1.10		1.50	1.30
6	PRO6*		1.20		1.40	1.30
7	DB03*		1.00		0.45	0.73
14	SR10**	--	2.00	--	2.30	2.15
15	SR20**	--	1.80	--	2.20	2.00
16	SR30**	--	1.80	--	1.80	1.80
17	SR40**	--	1.40	--	2.20	1.80
18	BB10**	--	1.10	--	--	
19	BB20**	--	0.99	--	--	
20	BB30**	--	2.00	--	--	
21	BB40**	--	2.00	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	A.M.	

Buttonwood Brook/Apponagansett Bay

8	BWB01*		1.00		0.54	--	0.77
9	BWB02*		2.60		2.30	--	2.45
10	BWB03*		0.77		0.39	--	0.58
12	AB10**	1.60	1.80	2.20	1.40	--	1.75
13	AB20**	1.60	1.40	2.20	1.10	--	1.58
20	TBW10*(2)	--	--	--	--	1.40	
21	ABK20*(2)	--	--	--	--	0.98	

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86

** Tidal station - individual grab samples
 -- Not sampled

TABLE 20

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

TOTAL KJELDAHL-NITROGEN DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	1.40		0.37	0.72	0.72
2 DBO010*	2.60		0.91	1.10	1.38
3 UNB01*	1.30		0.38	0.69	0.69
4 ACR02*	6.10		5.50	2.30	4.85
5 UNB03*	0.78		0.62	0.33	0.59
6 ACR03*	1.00		0.53	0.98	0.76
8 ACR10**(1)	2.0	1.20	1.80	1.80	1.70
9 NBH30**		--	0.56(1)	1.20(2)	1.04

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - (1) individual single grab samples
(2) hourly composite of outgoing tide - see
Methods section

-- Not sampled

TABLE 21
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 AMMONIA-NITROGEN DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/26/86	6/24-25/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN
1 SIRO2*	0.09	--	--	--	--	
2 BCB04*	--	0.05	--	0.15	--	0.10
3 WPE01*	0.04	--	--	--	--	
4 WPE02**	--	0.04	--	0.10	--	0.07
5 KB02*	--	0.10	--	0.08	--	0.09
6 SNC04**	--	0.13	--	0.21	--	0.19
7 LFS01*	--	--	0.04	--	--	
8 WPW01*	--	0.36	--	0.22	--	0.29
9 ABO2*	--	--	0.06	--	--	
10 MF01*	--	--	--	--	2.2	
10 WPE13**	--	0.04	--	0.08	--	0.06
11 WPE14**	--	<0.02	--	0.12	--	<0.07
12 WPE15**	--	<0.02	--	0.30	--	<0.16
13 WPH16**	--	<0.02	--	0.04	--	<0.03
14 WPW17**	--	0.02	--	0.60	--	0.31
15 RIS18**	--	0.04	--	0.06	--	0.05

* Freshwater station - Stations 1,3,7,9 and 10MF individual grab samples
 Stations 2,5 and 8 composite samples

** Tidal station - Stations 4 and 6 composite samples
 Station 10WPE - 15 individual grab samples

-- Not sampled

TABLE 22

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

AMMONIA-NITROGEN DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocums River Drainage Basin

1	PR01*		0.05		0.10	0.08
2	PR02*		0.10		0.15	0.13
3	PR03*(1)	--	0.60		0.10	0.27
4	PR04*		0.10		0.25	0.18
5	PR05*		0.10		0.10	0.10
6	PR06*		0.10		0.15	0.13
7	DB03*		0.05		0.10	0.08
14	SR10**	--	<0.02	--	0.40	<0.21
15	SR20**	--	0.05	--	0.05	0.05
16	SR30**	--	<0.02	--	0.10	<0.06
17	SR40**	--	0.35	--	0.05	0.20
18	BB10**	--	0.05	--	--	
19	BB20**	--	0.20	--	--	
20	BB30**	--	0.10	--	--	
21	BB40**	--	1.10	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-23/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		0.10		0.10	0.10
9	BWB02*		0.50		0.40	0.45
10	BWB03*		0.05		0.10	0.08
12	AB10**	0.10	0.05	0.13	0.05	0.08
13	AB20**	0.05	0.30	0.05	0.15	0.14
20	TBW10*(2)	--	--	--	0.10	
21	ABK20**	--	--	--	0.10	

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86

** Tidal station - individual grab samples

-- Not sampled

TABLE 23

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

AMMONIA-NITROGEN DATA (mg/l)

STATION NUMBER	10/14/86		10/15/86		10/16/86	10/14-16/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACRO20*	--	0.02		0.02	0.16	0.05
2 DB010*	--	0.04		0.04	0.04	0.04
3 UNB01*	--	0.06		<0.02	0.58	<0.17
4 ACRO2*	--	2.70		2.70	2.10	2.55
5 UNB03*	--	0.49		0.03	0.04	0.15
6 ACRO3*	--	0.47		0.23	0.07	0.25
8 ACR10**(1)	--	0.58	0.63	0.45	0.09	0.44
9 NBH30**	--	--	--	0.10(1)	0.15(2)	0.14

* Freshwater station - Stations 1-6 composited only on 10/15/86

** tidal station - (1) individual grab samples
(2) hourly composite of outgoing tide - see
Methods section

-- Not sampled

TABLE 24

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

NITRATE-NITROGEN DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/26/86
	A.M.	P.M.	A.M.	P.M.	A.M.
1 SIRO2*	0.50	--	--	--	--
2 BCBO4*	--	--		1.20	--
3 WPE01*	0.30	--	--	--	--
4 WPE02**	--	--		0.70	--
5 KBO2*	--	--		0.90	--
6 SNC04**	--	--		1.90	--
8 WPW01*	--	--		1.00	--
10 MF01*	--	--	--	--	0.04

* Freshwater station - Stations 1, 3, 7 and 9 individual grab samples
Stations 2,5, and 8 composite samples

** Tidal station - Stations 4 and 6 composite samples
Stations 10WPE - 15 individual grab samples

-- Not sampled

TABLE 25

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

NITRATE-NITROGEN DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Paskamanset/Slocums River Drainage Basin

1 PRO1*		0.70		1.00	0.85
2 PRO2*		0.40		0.70	0.55
3 PRO3*(1)	--	1.50		1.40	1.43
4 PRO4*		0.90		1.30	1.10
5 PRO5*		0.40		0.70	0.55
6 PRO6*		0.40		0.50	0.45
7 DB03*		0.40		0.90	0.65

STATION NUMBER	7/22/86		7/23/86		7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Buttonwood Brook/Apponagansett Bay

8 BWB01*		1.60		0.90	1.25
9 BWB02*		6.00		1.80	3.90
10 BWB03*		1.50		1.50	1.50

* Freshwater station - composite samples
(1) single grab on 7/22/86 only

-- Not sampled

TABLE 26

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

NITRATE-NITROGEN DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	0.1		0.4	0.5	0.35
2 DB010*	0.2		0.2	1.5	0.53
3 UNB01*	0.7		0.9	1.5	1.00
4 ACR02*	2.9		1.0	1.5	1.60
5 UNB03*	0.7		0.2	0.2	0.33
6 ACR03*	0.5		0.4	11.0	3.08

* Freshwater station - Stations 1-6 composited only on 10/15/86

TABLE 27

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

TOTAL PHOSPHORUS DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/26/86	6/24-25/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN
1 SIR02*	0.06	--	--	--	--	
2 BCB04*	--	0.05	--	0.10	--	0.07
3 WPE01*	0.07	--	--	--	--	
4 WPE02**	--	0.02	--	0.07	--	0.05
5 KB02*	--	0.12	--	0.13	--	0.13
6 SNC04**	--	0.07	--	0.08	--	0.08
7 LFS01*	--	--	0.09	--	--	
8 WPW01*	--	0.12	--	0.16	--	0.14
9 ABO2*	--	--	0.09	--	--	
10 MF01*	--	--	--	--	3.2	
10 WPE13**	--	0.18	--	0.19	--	0.19
11 WPE14**	--	0.08	--	0.20	--	0.14
12 WPE15**	--	0.03	--	0.11	--	0.07
13 WPH16**	--	0.05	--	0.04	--	0.05
14 WPW17**	--	0.07	--	0.12	--	0.10
15 RIS18**	--	0.08	--	0.11	--	0.10

* Freshwater stations - Stations 1,3,7 and 9 individual grab samples
Stations 2,5 and 8 composite samples

** Tidal stations - Stations 4 and 6 composite samples
Stations 10WPE - 15 individual grab samples

-- Not sampled

TABLE 28

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL PHOSPHORUS DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-24/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Paskamanset/Slocum River Drainage Basin

1	PRO1*		0.12		0.09	0.11
2	PRO2*		0.14		0.14	0.14
3	PRO3*(1)	--	0.06		0.08	0.07
4	PRO4*		0.19		0.13	0.16
5	PRO5*		0.14		0.14	0.14
6	PRO6*		0.17		0.11	0.14
7	DB03*		0.10		0.08	0.09
14	SR10**	--	0.28	--	0.14	0.21
15	SR20**	--	0.14	--	0.11	0.13
16	SR30**	--	0.17	--	0.11	0.14
17	SR40**	--	0.11	--	0.40	0.26
18	BB10**	--	0.07	--	--	
19	BB20**	--	0.24	--	--	
20	BB30**	--	0.10	--	--	
21	BB40**	--	0.22	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	A.M.	

Buttonwood Brook/Apponagansett Bay

8	BWB01*		0.08		0.04	--	0.06
9	BWB02*		0.26		0.25	--	0.26
10	BWB03*		0.08		0.09	--	0.09
12	AB10**	0.15	0.17	0.14	0.16	--	0.16
13	AB20**	0.48	0.13	0.14	0.17	--	0.23
20	TBW10*(2)	--	--	--	--	0.12	
21	ABK20**	--	--	--	--	0.09	

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86 only

** Tidal station - individual grab samples

-- Not sampled

- TABLE 29

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

TOTAL PHOSPHORUS DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86 MEAN
	P.M.	A.M.	P.M.	A.M.	
1 ACR020*	0.06		0.05	0.07	0.06
2 DB010*	0.16		0.13	0.15	0.14
3 UNB01*	0.18		0.06	0.06	0.09
4 ACR02*	3.10		1.2	1.0	1.63
5 UNB03*	0.29		0.15	0.18	0.19
6 ACR03*	0.09		0.16	0.09	0.13
8 ACR10**(1)	0.13	0.18	0.14	0.13	0.15
9 NBH30**	--	--	0.19 (1)	0.22 (2)	0.22

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal stations - (1) individual grab samples
(2) hourly composite of outgoing tide - see
Methods section

-- Not sampled

TABLE 30

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

ORTHOPHOSPHATE DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Paskamanset/Slocums River Drainage Basin

1	PR01*		0.08		0.08	0.08
2	PR02*		0.10		0.09	0.10
3	PR03*(1)	--	0.03		0.05	0.04
4	PR04*		0.11		0.09	0.10
5	PR05*		0.09		0.09	0.09
6	PR06*		0.11		0.08	0.10
7	DB03*		0.06		0.06	0.06
14	SR10**	--	0.06	--	0.04	0.05
15	SR20**	--	0.11	--	0.04	0.08
16	SR30**	--	0.02	--	0.04	0.03
17	SR40**	--	<0.01	--	0.39	<0.20
18	BB10**	--	0.01	--	--	
19	BB20**	--	0.14	--	--	
20	BB30**	--	0.05	--	--	
21	BB40**	--	0.04	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86 A.M.	7/22-23/86 MEAN
	A.M.	P.M.	A.M.	P.M.		

Buttonwood Brook/Apponagansett Bay

8	BWB01*		0.04		0.03	--	0.04
9	BWB02*		0.17		0.19	--	0.18
10	BWB03*		0.05		0.05	--	0.05
12	AB10**	0.07	--	0.07	0.08	--	0.07
13	AB20**	0.48	0.09	0.06	0.06	--	0.17
20	TBW10*(2)	--	--	--	--	0.11	
21	ABK20**(2)	--	--	--	--	0.05	

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86 only

** Tidal station - individual grab samples

-- Not sampled

TABLE 31

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

ORTHOPHOSPHATE DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	0.02		0.03	0.01	0.02
2 DB010*	0.06		0.07	0.05	0.06
3 UNB01*	0.07		0.04	<0.01	--
4 ACR02*	0.26		0.91	0.05	0.41
5 UNB03*	0.03		0.06	0.07	0.05
6 ACR03*	0.02		0.09	0.04	0.05
8 ACR10**(1)	0.02	0.04	0.02	0.07	0.03
9 NBH30**	--	--	0.05(1)	0.06(2)	0.05

* Freshwater station - Stations 1-6 composited only in 10/15/86

** Tidal stations - (1) Individual grab samples
(2) Hourly composite of outgoing tide - see Methods section

-- Not sampled

TABLE 32

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREAS IV AND V

TOTAL KJELDAHL-NITROGEN (mg/l) - AMMONIA-NITROGEN (mg/l)

TOTAL PHOSPHORUS (mg/l) - ORTHOPHOSPHATE (mg/l) - SALINITY (‰)

STATION NUMBER	DATE	TIME	TKN-N	NH ₃ -N	TP	PO ₄	SAL(1)
1 CP10	10/28/86	1030	1.90	0.04	0.09	0.02	32.6
6 WPI10	8/26/86	1230	1.30	0.10	0.07	0.05	31.3
2 NSI10	10/28/86	1115	1.00	<0.02	0.08	0.03	32.4
3 BB10	8/26/86	1445	0.93	0.05	0.06	0.02	31.6
	10/28/86	1155	0.90	0.69	0.07	0.01	32.4
4 NUI10	8/26/86	1400	2.20	1.30	0.07	0.04	31.5
5 BB20	8/26/86	1045	0.87	0.30	0.07	0.05	31.2

(1) Salinity measurements made with Hydrolab Surveyor II Digital Recorder and Sonde

TABLE 33

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I FRESHWATER STATIONS

SUMMARY OF WATER TEMPERATURE DATA (°C) - MAX.-MIN.-MEAN

STATION NUMBER	MAXIMUM	MINIMUM	MEAN	NUMBER OF READINGS
1 SIRO2		16.0		1
2 BCBO4	18.0	14.0	16.5	4
3 WPE01		20.0		1
5 KB02	18.0	16.0	16.8	4
8 LFS01		16.0		1
8 WPW01	20.0	16.0	18.8	4
9 AB02		17.0		1
1 PR01	28.9	20.0	23.3	4
2 PR02	23.3	17.8	20.6	4
3 PR03	19.4	16.7	18.3	3
4 PR04	22.2	18.9	20.6	4
5 PR05	21.2	17.8	19.5	4
6 PR06	24.4	20.6	22.4	4
7 DB03	21.1	18.9	20.0	4
8 BWB01	23.3	16.7	21.6	4
9 BWB02	25.0	18.9	21.8	4
10 BWB03	22.2	17.2	19.6	4
1 ACR020	14.4	12.0	13.5	3
2 DB010	14.0	12.0	13.0	3
3 UNB01	18.0	11.0	14.0	3
4 ACR02	18.0	12.0	15.0	3
5 UNB03	18.0	12.0	14.7	3
6 ACR03	16.5	12.0	14.5	3

-- Not sampled

TABLE 34

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I TIDAL STATIONS

SUMMARY OF WATER TEMPERATURE DATA (°C) - MAX.-MIN.-MEAN

STATION NUMBER	MAXIMUM	MINIMUM	MEAN	NUMBER OF READINGS
4 WPE02	19.0	17.0	18.0	4
6 SNC04	17.0	15.0	16.0	4
10 WPE13	22.5	21.7	22.1	2
11 WPE14	22.0	21.5	21.8	2
12 WPE15	21.0	20.5	20.8	2
13 WPH16	19.0	19.0	19.0	2
14 WPW17	21.0	20.0	20.5	2
15 RIS18	19.5	17.0	18.3	2
14 SR10	23.7	22.3	23.0	2
15 SR20	15.0	23.0	24.0	2
16 SR30	24.5	23.5	24.0	2
17 SR40	23.6	22.7	23.2	2
18 BB10		21.3		1
19 BB20		21.4		1
20 BB30		21.4		1
21 BB40		21.4		1
12 AB10	23.9	21.1	22.2	4
13 AB20	24.4	20.0	21.9	4
8 ACR10	17.0	12.0	14.3	3

-- Not sampled

TABLE 35

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

TOTAL ALKALINITY DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 S1R02*	9.0	--	--	--	9.0
2 BCB04*	--	3.0	--	4.0	3.5
3 WPE01*	5.0	--	--	--	
4 WPE02**	--	5.0	--	4.0	4.5
5 KB02*	--	7.0	--	8.0	7.5
6 SNC04**	--	15.0	--	--	14.5
7 LFS01*	--	--	120.0		
8 WPW01*	--	9.0		9.0	9.0
9 ABO2*	--	--	11.0		
10 WPE13**	--	78.0	--	74.0	76.0
11 WPE14**	--	88.0	--	89.0	88.5
12 WPE15**	--	95.0	--	94.0	94.5
13 WPH16**	--	101.0	--	100.0	100.5
14 WPW17**	--	100.0	--	105.0	102.5
15 RIS18**	--	99.0	--	110.0	104.5

* Freshwater stations - Stations 1,3 and 10MF individual grab samples

Stations 2,5, and 8 composite samples

** Tidal stations - Stations 4 and 6 composite samples

-- Not sampled

TABLE 36

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL ALKALINITY DATA (mg/l)

STATION	7/22/86		7/23/86		7/22-23/86
NUMBER	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocums River Drainage Basin

1	PRO1*		1.0		1.0	1.0
2	PRO2*		10.0		10.0	10.0
3	PRO3*(1)	--	29.0		31.0	30.3
4	PRO4*		13.0		12.0	12.5
5	PRO5*		12.0		12.0	12.0
6	PRO6*		14.0		14.0	14.0
7	DB03*		10.0		8.0	9.0

STATION	7/22/86		7/23/86		7/24/86	7/22-24/86
NUMBER	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		34.0		34.0	--	34.0
9	BWB02*		30.0		32.0	--	31.0
10	BWB03*		45.0		43.0	--	44.0
12	AB10**	--	101.0	--	--	--	
13	AB20**	--	102.0	--	--	--	
20	TBW10*(2)	--	--	--	--	45.0	
21	ABK20**	--	--	--	--	33.0	

* Freshwater station - composite samples (1) single grab on 7/22/86 only
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86 only

** Tidal station

-- Not sampled

TABLE 37

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER NEW BEDFORD HARBOR DRAINAGE BASIN

TOTAL ALKALINITY DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	11.0	--	9.0	8.0	9.3
2 DBO10*	5.0	--	4.0	3.0	4.0
3 UNB01*	11.0	--	22.0	25.0	20.0
4 ACR02*	34.0	--	54.0	57.0	49.8
5 UNB03*	16.0	--	24.0	31.0	23.8
6 ACR03*	18.0	--	16.0	14.0	16.0
8 ACR10**(1)	92.0	73.0	90.0	82.0	84.3

* Freshwater station - Stations 1-6 composited on 10/15/86 only

** Tidal station - (1) individual grab samples

TABLE 38

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

pH DATA IN SITU (Standard Log Units)

STATION NUMBER	6/24/86		6/25/86	
	A.M.	P.M.	A.M.	P.M.
1 SIR02*	6.35	--	--	--
2 BCBO4*	5.70	6.56	5.59	5.46
3 WPE01*	5.76	--	--	--
4 WPE02**	6.10	6.94	5.95	6.05
5 KB02*	6.61	7.11	6.19	6.30
6 SNC04**	7.04	7.32	6.66	6.71
7 LFS01*	--	--	7.15	--
8 WPW01*	6.40	7.01	6.51	6.68
9 AB02*	--	--	5.57	--

* Freshwater station

** Tidal stations

-- Not sampled

TABLE 39

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

AREA I - BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

pH DATA IN SITU (Standard Log Units)

STATION	7/22/87		7/23/87	
NUMBER	A.M.	P.M.	A.M.	P.M.

Paskamansett/Slocums River Drainage Basin

1 PR01*	4.87	4.73	4.65	4.80
2 PR02*	5.54	6.26	5.95	6.00
3 PR03*	--	6.90	5.18	6.90
4 PR04*	6.25	6.20	6.23	6.28
5 PR05*	A	6.35	6.42	6.13
6 PR06*	A	6.38	6.45	6.33
7 DB03*	A	6.30	6.57	5.66

Buttonwood Brook/Apponagansett Bay

8 BWB01*	A	7.35	7.00	7.46
9 BWB02*	A	6.70	6.76	6.80
10 BWB03*	A	7.64	7.25	7.70
12 AB10**	A	7.96	7.87	7.50
13 AB20**	A	8.08	7.97	7.53

* Freshwater station

** Tidal station

-- Not sampled

A = Equipment failure

TABLE 40

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR

pH DATA IN SITU (Standard Log Units)

STATION	10/14/86	10/15/86		10/16/86
NUMBER	P.M.	A.M.	P.M.	A.M.
1 ACR020*	6.3	5.9	6.7	6.5
2 DB010*	6.0	5.1	5.3	5.1
3 UNB01*	6.3	6.5	6.8	6.5
4 ACR02*	6.6	6.8	6.9	6.9
5 UNB03*	6.3	6.8	6.9	6.8
6 ACR03*	7.0	6.6	6.7	6.3
8 ACR10**	7.6	7.4	7.6	7.7

* Freshwater stations

** Tidal stations

-- Not sampled

TABLE 41
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 CHLORIDE DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 SIRO2A*	6.0	--	--	--	
2 BCB04*		29.0		28.0	28.5
3 WPE01*	13.0	--	--	--	
4 WPE02*		21.0		18.0	19.5
5 KB02*		33.0		35.0	34.0
6 SNC04*		160.0		--	
7 LFS01*	--	--	64.0	--	
8 WPW01*		27.0		19.0	23.0
9 ABO2*	--	--	14.0	--	
10 WPE13**	--	13,000	--	12,250	12,625
11 WPE14**	--	14,500	--	14,750	14,625
12 WPE15**	--	15,500	--	15,500	15,500
13 WPH16**	--	16,550	--	16,250	16,375
14 WPW17**	--	17,250	--	17,000	17,125
15 RIS18**	--	16,750	--	17,750	17,250

* Freshwater stations - Stations 1,3,7,9 and 10MF individual grab samples

Stations 2,5, and 8 composite samples

** Tidal stations - Stations 4 and 6 composite samples

Stations 10WPE-15 individual grab samples

-- Not sampled

TABLE 42

1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN
 BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN
 CHLORIDE DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocums River Drainage Basin

1	PRO1*		26.0		20.0	23.0
2	PRO2*		23.0		22.0	22.5
3	PRO3*(1)	--	61.0		62.0	61.7
4	PRO4*	--	26.0		28.0	27.0
5	PRO5*	--	25.0		27.0	26.0
6	PRO6*	--	28.0		24.0	26.0
7	DB03*	--	61.0		23.0	42.0
14	SR10**	--	10,250	--	7,500	8,875
15	SR20**	--	15,000	--	15,500	15,250
16	SR30**	--	16,000	--	15,750	15,875
17	SR40**	--	16,500	--	16,500	16,500
18	BB10**	--	17,500	--	--	--
19	BB20**	--	17,000	--	--	--
20	BB30**	--	17,250	--	--	--
21	BB40**	--	17,500	--	--	--

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-24/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		46.0		45.0	--	45.5
9	BWB02*		25.0		25.0	--	25.0
10	BWB03*		24.0		23.0	--	23.5
12	AB10**	17,500	17,500	17,500	17,000	--	17,375
13	AB20**	17,500	17,500	17,500	17,000	--	17,375
20	TBW10*(2)	--	--	--	--	25.0	--
21	ABK20**	--	--	--	--	190.0	--

* Freshwater station - composite samples
 (1) single grab on 7/22/86 only
 (2) single grab on 7/24/86 only

** Tidal station - individual grab samples

-- Not sampled

TABLE 43

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

CHLORIDE DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	11.0		11.0	11.0	11.0
2 DB010*	8.0		10.0	11.0	9.8
3 UNB01*	9.0		15.0	15.0	13.5
4 ACR02*	19.0		23.0	22.0	21.8
5 UNB03*	19.0		22.0	25.0	22.0
6 ACR03*	18.0		48.0	90.0	51.0
8 ACR10**	16,000	12,000	16,000	15,000	14,750
9 NBH30**(1)		--	14,500(1)	17,000(2)	16,643

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - (1) individual grab samples

(2) hourly composite of outgoing tide - see Methods section

-- Not sampled

TABLE 44

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

SPECIFIC CONDUCTIVITY DATA (umhos/cm)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 SIRO2*	70.0	--	--	--	
2 BCB04*		A		150	
3 WPE01*	74.0	--	--	--	
4 WPE02**		A		106	
5 KB02*		137		175	156
6 SNC04**		420		481	451
7 LFS01*	--	--	383	--	
8 WPW01*		86.0		106	96.0
9 ABO2*	--	--	S	--	
10 WPE13**	--	A	--	29,506	
11 WPE14**	--	A	--	33,000	
12 WPE15A**	--	A	--	36,000	
13 WPH16**	--	A	--	37,000	
14 WPW17**	--	A	--	37,000	
15 RIS18**	--	A	--	37,000	

* Freshwater station - Stations 1,3,7 and 9 individual grab samples
Stations 2,5 and 8 composite sample

** Tidal station - Stations 4 and 6 composite samples
Stations 10WPE-15 individual grab samples

A = equipment failure

-- Not sampled

TABLE 45

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

SPECIFIC CONDUCTIVITY DATA (umhos/cm)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocum River Drainage Basin

1	PRO1*		91		89	90
2	PRO2*		102		100	101
3	PRO3*(1)	--	289		280	283
4	PRO4*		115		117	116
5	PRO5*		119		127	123
6	PRO6*		118		122	120
7	DB03*		224		110	167
14	SR10**	--	22,000	--	16,000	19,000
15	SR20**	--	32,000	--	29,500	30,750
16	SR30**	--	33,000	--	29,500	31,750
17	SR40**	--	34,000	--	34,500	34,250
18	BB10**	--	32,000	--	--	
19	BB20**	--	32,000	--	--	
20	BB30**	--	33,000	--	--	
21	BB40**	--	32,000	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-24/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		243		250	--	246.5
9	BWB02*		148		160	--	154
10	BWB03*		200		220	--	210
12	AB10**	35,000	--	31,000	31,000	--	32,333
13	AB20**	36,000	31,000	34,000	31,000	--	33,000
20	TBW10*(2)	--	--	--	--	280	
21	ABK20**	--	--	--	--	680	

* Freshwater station - composite samples
(1) single grab on 7/22/86 only

** Tidal station - individual grab samples
(2) single grab on 7/24/86 only

-- Not sampled

TABLE 46

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

SPECIFIC CONDUCTIVITY DATA (umhos/cm)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACRO20*	70		78	77	76
2 DB010*	52		75	71	68.3
3 UNB01*	82		145	146	129.5
4 ACRO2*	182		250	245	231.8
5 UNB03*	124		162	189	159.3
6 ACRO3*	103		237	392	242.3
8 ACR10**(1)	32,000	26,000	31,000	29,000	29,500
9 NBH30**	--	--	32,000(1)	33,000(2)	32,143

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - (1) individual grab samples

(2) hourly composite of outgoing tide (see Methods section)

-- Not sampled

TABLE 47
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 TOTAL HARDNESS DATA

STATION NUMBER	6/24/86		6/25/86		6/26/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
1 S1R02*	15	--	--	--	--	--	--
2 BCB04*	--	12	--	10	--	--	11
3 WPE01*	15	--	--	--	--	--	--
4 WPE02*	--	12	--	11	--	--	12
5 KB02*	--	21	--	11	--	--	16
6 SNC04**	--	45	--	21	--	--	33
7 LFS01*	--	--	88	--	--	--	--
8 WPW01*	--	9.0	--	11			10
9 ABO2*	--	--	17	--	--	--	--

* Freshwater stations - Stations 1,3,7, and 9 single grab samples
 Stations 2,5, and 8 composite samples

** Tidal stations - individual grabs

-- Not sampled

TABLE 48

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

AREA I - BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL HARDNESS DATA

STATION NUMBER	7/22/86		7/23/86		7/22-24/86 MEAN
	A.M.	P.M.	A.M.	P.M.	

Paskamanset/Slocums River Drainage Basin

1 PR01*		10	--	--	
2 PR02*		16	--	--	
3 PR03*(1)	--	64	--	--	
4 PR04*		21	--	--	
5 PR06*		20	--	--	
6 PR06*		21	--	--	
7 DB03*		22	--	14	18

Buttonwood Brook/Apponagansett Bay Drainage Basin

8 BWB01*		39		43	41
9 BWB02*		29		29	29
10 BWB03*		45		48	47

* Freshwater station - composite samples
(1) single grab on 7/22/86 only

-- Not sampled

TABLE 49

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

TOTAL HARDNESS DATA

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86 MEAN
	P.M.	A.M.	P.M.	A.M.	
1 ACR020*	38		32	16	29.5
2 DB010*	28		18	14	19.5
3 UNB01*	46		34	38	38
4 ACR02*	320		58	67	126
5 UNB03*	225		39	43	86.5
6 ACR03*	64		36	47	45.8
8 ACK10**(1)	5,250	3,550	4,440	--	4,413

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - individual grab samples

-- Not sampled

TABLE 50
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 TOTAL SOLIDS DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 SIRO2*	62	--	--	--	
2 BCBO4*		140		90	115
3 WPE01*	74	--	--	--	--
4 WPE02**		120		60	90
5 KB02*		130		100	115
6 SNC04**		350		240	295
7 LFS01*	--	--	380	--	--
8 WPW01*		96		60	73
9 ABO2*	--	--	140	--	
10 WPE13**	--	25,300	--	19,800	22,550
11 WPE14**	--	29,000	--	26,700	27,850
12 WPE15**	--	31,300	--	28,200	29,750
13 WPH16**	--	33,000	--	29,700	31,350
14 WPW17**	--	34,000	--	30,600	32,300
15 RIS18**	--	34,100	--	32,100	33,100

* Freshwater station - Stations 1,3,7 and 9 individual grab samples
 Stations 2,5 and 8 composite sampled

** Tidal stations - Stations 4 and 6 composite samples
 Stations 10WPE - 15 individual grab samples

-- Not sampled

TABLE 51

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL SOLIDS (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocum River Drainage Basin

1	PR01*		90		110	100
2	PR02*		92		120	106
3	PR03*(1)	--	180		200	193
4	PR04*		91		140	116
5	PR05*		101		140	121
6	PR06*		112		120	116
7	DB03*		171		88	130
14	SR10**	--	19,900	--	14,300	17,100
15	SR20**	--	30,700	--	28,900	29,800
16	SR30**	--	31,400	--	28,900	30,150
17	SR40**	--	30,200	--	30,300	30,300
18	BB10**	--	31,400	--	--	
19	BB20**	--	30,400	--	--	
20	BB30**	--	31,600	--	--	
21	BB40**	--	31,600	--	--	

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-24/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*	--	152	--	142	--	147
9	BWB02*	--	97	--	96	--	97
10	BWB03*	--	132	--	125	--	129
12	AB10**	35,000	31,200	31,000	31,000	--	32,050
13	AB20**	35,500	31,000	31,400	31,000	--	32.225
20	TBW10*(2)	--	--	--	--	170	--
21	ABK20**	--	--	--	--	460	--

* Freshwater station - composite samples
(1) single grab on 7/22/86 only

** Tidal station - individual grab samples
** (2) single grab on 7/24/86

-- Not sampled

TABLE 52

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

TOTAL SOLIDS (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACR020*	66		18	40	36
2 DB010*	92		114	68	97
3 UNB01*	74		70	88	76
4 ACR02*	204		134	166	160
5 UNB03*	116		66	104	88
6 ACR03*	94		142	212	148
8 ACR10**(1)	29,000	24,096	28,900	26,700	27,211
9 NBH30**	--		31,900	32,300(2)	32,243

* Freshwater stations - Stations 1-6 composited only on 10/15/86

** Tidal stations - (1) individual grab samples
(2) hourly composite of outgoing tide (see Methods section)

-- Not sampled

TABLE 53

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

SUSPENDED SOLIDS DATA (mg/l)

STATION NUMBER	6/24/86		6/25/86		6/24-26/86
	A.M.	P.M.	A.M.	P.M.	MEAN
1 SIRO2*	1.5	--	--	--	
2 BCB04**		4.0		2.5	3.2
3 WPE01*	1.0	--	--	--	
4 WPE02**		4.0		2.0	3.0
5 KB02*		4.0		1.0	2.5
6 SNC04**		5.5		2.5	5.5
7 LFS01*	--	--	18.0	--	
8 WPW01*		2.0		1.0	1.5
9 ABO2*	--	--	3.0	--	--
10 WPE13**	--	6.5	--	5.5	6.0
11 WPE14**	--	10.0	--	7.0	8.5
12 WPE15**	--	8.5	--	8.0	8.2
13 WPH16**	--	14.0	--	6.5	9.2
14 WPW17**	--	6.5	--	13.0	9.8
15 RIS18**	--	12.0	--	9.5	10.8

* Freshwater station - Stations 1,3,7 and 9 individual grab samples
Stations 2,5, and 8 composite samples

** Tidal station - Stations 4 and 6 composite samples
Stations 10WPE - 15 individual grab samples

-- Not sampled

..

TABLE 54

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

SUSPENDED SOLIDS DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocum River Drainage Basin

1	PR01*		0.0		34.0	17.0
2	PR02*		4.5		39.0	21.5
3	PR03*(1)	--	0.0		20.0	10.0
4	PR04*		1.5		30.0	15.8
5	PR05*		1.0		30.0	15.5
6	PR06*		2.0		27.0	14.5
7	DB03*		0.5		2.0	1.2
14	SR10**	--	12.0	--	10.0	11.0
15	SR20**	--	11.0	--	15.0	13.0
16	SR30**	--	7.5	--	4.5	6.0
17	SR40**	--	10.0	--	6.0	8.0
18	BB10**	--	7.0	--	--	--
19	BB20**	--	7.0	--	--	--
20	BB30**	--	8.5	--	--	--
21	BB40**	--	6.5	--	--	--

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-23/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		1.5		2.0	--	1.8
9	BWB02*		5.0		2.0	--	3.5
10	BWB03*		2.0		4.5	--	3.3
12	AB10**	15.0	15.0	13.0	9.5	--	13.1
13	AB20**	8.5	14.0	9.5	8.0	--	10.0
20	TBW10*(2)	--	--	--	--	40.0	--
21	ABK20**	--	--	--	--	60.0	--

* Freshwater station - composite samples

(1) single grab on 7/22/86 only

(2) single grab on 7/24/86 only

** Tidal station - individual grab samples

-- Not sampled

TABLE 55

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER/NEW BEDFORD HARBOR DRAINAGE BASIN

SUSPENDED SOLIDS DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACRO20*	5.0		1.0	0.0	2.0
2 DB010*	7.5		2.5	0.0	3.3
3 UNB01*	9.5		1.5	1.0	4.0
4 ACRO2*	18.0		7.5	19.0	14.8
5 UNB03*	15.0		0.5	4.0	6.5
6 ACRO3*	4.0		1.0	0.0	1.7
8 ACR10**(1)	6.0	4.5	5.5	5.0	5.3
9 NBH30**	--	--	8.5(1)	5.0(2)	6.8

* Freshwater stations - Stations 1-6 composited only on 10/15/86

** Tidal stations - (1) individual grab samples
(2) hourly composite of outgoing tide (see Method section)

-- Not sampled

TABLE 56
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 TOTAL DISSOLVED SOLIDS DATA (mg/l)

NUMBER	6/24/86		6/25/86		6/24/25/86
	A.M.	P.M.	A.M.	P.M.	MEAN
1 SIRO2*	46	--	--	--	
2 BCBO4		120		86	103
3 WPE01*	55	--	--	--	
4 WPE02**		93		58	75.5
5 KB02*		120		96	108
6 SNC04**		340		220	280
7 LFS01*	--	--	260	260	
8 WPW01*		78		57	67.5
9 AB02*	--	--	120	--	
10 WPE13**	--	23,400	--	19,700	21,550
11 WPE14**	--	26,300	--	26,600	26,450
12 WPE15**	--	28,400	--	28,100	28,250
13 WPH16**	--	30,100	--	29,600	29,850
14 WPW17**	--	30,700	--	30,560	30,630
15 RIS18**	--	30,900	--	32,025	31,463

* Freshwater station - Stations 1,3,7, and 9 single grab samples
 Stations 2,5, and 8 composite samples

** Tidal station - Stations 4 and composite samples
 Stations 10WPE - 15 individual grab samples

-- Not sampled

TABLE 57

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

DISSOLVED SOLIDS DATA (mg/l)

STATION NUMBER	7/22/86		7/23/86		7/22-23/86
	A.M.	P.M.	A.M.	P.M.	MEAN

Paskamanset/Slocums River Drainage Basin

1	PRO1*		90		76	83
2	PRO2*		87		81	84
3	PRO3*(1)	--	180		180	180
4	PRO4*		89		110	100
5	PRO5*		100		110	105
6	PRO6*		110		93	102
7	DB03*		170	--	--	
14	SR10**	--	18,700	--	14,300	16,500
15	SR20**	--	28,400	--	28,900	28,650
16	SR30**	--	29,000	--	28,900	28,950
17	SR40**	--	30,190	--	30,300	30,325
18	BB10**	--	31,400	--	--	--
19	BB20**	--	30,400	--	--	--
20	BB30**	--	31,600	--	--	--
21	BB40**	--	31,600	--	--	--

STATION NUMBER	7/22/86		7/23/86		7/24/86	7/22-23/86
	A.M.	P.M.	A.M.	P.M.	A.M.	MEAN

Buttonwood Brook/Apponagansett Bay

8	BWB01*		150	--	--	--
9	BWB02*		92		94	--
10	BWB03*		130		120	125
12	AB10**	33,000	31,200	31,000	31,000	31,550
13	AB20**	32,400	31,000	31,400	31,000	31,450
20	TBW10*(2)	--	--	--	130	130
21	ABK20**	--	--	--	400	400

* Freshwater station - composite samples

(1) single grab on 7/22/86 only

(2) single grab on 7/24/86 only

** Tidal station - individual grab samples

-- Not sampled

TABLE 58
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - ACUSHNET RIVER DRAINAGE BASIN
 TOTAL DISSOLVED SOLIDS DATA (mg/l)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86 MEAN
	P.M.	A.M.	P.M.	A.M.	
1 ACR020*	43		17	40	29
2 DB010*	35		55	68	53
3 UNB01*	54		68	87	69
4 ACR02*	153		126	147	138
5 UNB03*	75		65	100	76
6 ACR03*	58		141	212	138
8 ACR10**	28,090	24,091	28,900	26,653	26,934
9 NBH30**	--	--	31,900	--	

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - individual grab samples

-- Not sampled

TABLE 59

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREAS IV AND V SOLIDS DATA

TOTAL SOLIDS (mg/l), SUSPENDED SOLIDS (mg/l), TOTAL DISSOLVED SOLIDS (mg/l),
CHLORIDES (mg/l)

STATION NUMBER	DATE	TIME	TOTAL SOLIDS	SUSPENDED SOLIDS	TOTAL DISSOLVED SOLIDS	CHLORIDES
<u>Area IV</u>						
1 CP10	10/28/86	1030	32,500	3.0	32,500	17,200
6 WPI10	8/26/86	1230	31,800	2.0	31,800	17,750
<u>Area V</u>						
2 NSI10	10/28/86	1115	32,350	2.0	32,350	17,000
3 BB10	8/26/86	1445	31,700	5.0	31,600	17,750
	10/28/86	1155	33,000	3.0	30,000	17,600
4 NUI10	8/26/86	1400	31,700	2.0	31,700	17,750
5 BB20	8/26/86	1045	31,500	1.5	31,500	17,750

TABLE 60
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - WESTPORT RIVER DRAINAGE BASIN
 TURBIDITY DATA (NTU)

STATION NUMBER	6/24/86		6/25/86		6/24-25/86 MEAN
	A.M.	P.M.	A.M.	P.M.	
1 SIRO2*	3.2	--	--	--	3.2
2 BCBO4*		1.2		1.2	1.2
3 WPE01*	2.6	--	--	--	2.6
4 WPE02**		1.1		1.5	1.3
5 KBO2*		1.5		2.1	1.8
6 SNC04**		1.2		1.1	1.2
7 LFS01*	--	--	3.7	--	3.7
8 WPW01*		1.1		1.7	1.4
9 ABO2*	--	--	0.5	--	0.5
10 WPE13**	--	2.1	--	1.6	1.9
11 WPE14**	--	2.6	--	0.4	1.5
12 WPE15**	--	2.7	--	3.7	3.2
13 WPH16**	--	1.5	--	1.6	1.0
14 WPW17**	--	1.2	--	2.5	1.9
15 RIS18**	--	1.2	--	1.2	1.2

* Freshwater station - Stations 1,3,7 and 9 single grab samples
 Stations 2,5,and 8 composite samples

** Tidal station - Stations 4 and 6 composite samples
 Stations 10WPE - 15 individual grab samples

-- Not sampled

TABLE 61
 1986 BUZZARDS BAY WATER QUALITY SURVEY
 AREA I - ACUSHNET RIVER DRAINAGE BASIN
 TURBIDITY DATA (NTU)

STATION NUMBER	10/14/86	10/15/86		10/16/86	10/14-16/86
	P.M.	A.M.	P.M.	A.M.	MEAN
1 ACRO20*	2.0		1.8	1.7	1.8
2 DB010*	3.7		1.4	1.1	1.9
3 UNB01*	7.5		1.1	0.79	2.6
4 ACRO2*	14.0		4.6	5.1	7.1
5 UNB03*	3.6		2.2	1.7	2.4
6 ACRO3*	2.2		2.6	2.0	2.3
8 ACR10**	1.4	4.0	1.9	1.9	3.1
9 NBH30**	--	--	0.84	--	

* Freshwater station - Stations 1-6 composited only on 10/15/86

** Tidal station - individual grab samples

-- Not sampled

TABLE 62

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

TOTAL AND FECAL COLIFORM DATA (colonies/100 ml)

RUN:	6/24/86		6/25/86		6/26/86	6/24-25/86 GEOMETRIC MEAN
	A.M.	P.M.	A.M.	P.M.	A.M.	
	1	2	3	4	5	
<u>STATION NUMBER</u>						
1 SIRO2* TC	500	--	--	--	--	
FC	80	--	--	--	--	
2 BCB04*	900	1,800	2,500	480	--	1,181
	60	80	500	110	--	127
3 WPE01*	50	--	--	--	--	
	<5	--	--	--	--	
4 WPE02**	800	1,900	9,000	1,000	--	1,923
	120	170	600	320	--	250
5 KB02*	60	6,000	3,500	400	--	843
	<5	2500	450	140	--	141
6 SNC04**	1,000	3,000	1,400	900	--	2,480
	200	680	600	320	--	402
7 LSF01*	--	--	630	--	--	
	--	--	130	--	--	
8 WPW01*	1,900	680	1,700	20,000	--	2,575
	300	--	--	1,500	--	671
9 AB02*	--	--	1,000	--	--	
	--	--	60	--	--	
10 MF01*	--	--	--	--	--	
	--	--	--	--	490	
10 WPE13**	--	--	--	--	--	
	--	88	--	29	--	51
11 WPE14**	--	--	--	--	--	
	--	8.7	--	18	--	13
12 WPE15**	--	--	--	--	--	
	--	8.7	--	18	--	13

TABLE 62 (CONTINUED)

RUN:	6/24/86		6/25/86		6/26/86	6/24-25/86 GEOMETRIC MEAN
	A.M. 1	P.M. 2	A.M. 3	P.M. 4	A.M. 5	
<u>STATION NUMBER</u>						
13 WPH16**	-- <8.7	-- 8.7	-- --	-- 8.7	-- --	6.9
14 WPH17**	-- --	-- <8.7	-- --	-- <8.7	-- --	4.4
15 RIS18**	-- --	-- <8.7	-- --	-- <8.7	-- --	4.4

* Freshwater station

** Tidal station

Stations 10-15 modified A-1 technique

-- Not sampled

TC = Total coliform

FC = Fecal coliform

TABLE 63

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - PASKAMANSET/SLOCUMS RIVER DRAINAGE BASIN

TOTAL AND FECAL COLIFORM DATA (colonies/100 ml)

RUN:	7/22/86		7/23/86		7/22-23/86 GEOMETRIC MEAN
	A.M.	P.M.	A.M.	P.M.	
	1	2	3	4	
<u>STATION</u>					
<u>NUMBER</u>					
1 PR01 TC	20	20	100	--	34
FC	<5	<5	10	--	4
2 PR02	500	500	420	--	472
	60	100	40	--	62
3 PR03	--	480	220	--	325
	--	10	10	--	10
4 PR04	600	600	500	--	565
	20	30	60	--	33
5 PR05	1,000	440	--	--	663
	60	110	--	--	81
6 PR06	900	520	--	--	684
	80	70	--	--	75
7 DB03	1,000	500	--	--	707
	80	40	--	--	57
14 SR10**	--	--	--	--	
	--	64	--	64	64
15 SR20**	--	--	--	--	
	--	23	--	5.8	12
16 SR30**	--	--	--	--	
	--	8.2	--	1.7	4
17 SR40**	--	--	--	--	
	--	11	--	1.7	4
18 BB10**	--	--	--	--	
	--	<5	--	--	
19 BB20**	--	--	--	--	
	--	<5	--	--	

TABLE 63 (CONTINUED)

RUN:	7/22/86		7/23/86		7/22-23/86 GEOMETRIC MEAN
	A.M. 1	P.M. 2	A.M. 3	P.M. 4	
<u>STATION NUMBER</u>					
20 BB30**	--	--	--	--	
	--	<5	--	--	
21 BB40**	--	--	--	--	
	--	<5	--	--	

* Freshwater station

** Tidal station - Stations 14-21 modifies A-1 technique

-- Not sampled

TC = Total coliform

FC = Fecal coliform

TABLE 64

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - BUTTONWOOD BROOK/APPONAGANSETT BAY DRAINAGE BASIN

TOTAL AND FECAL COLIFORM DATA (colonies/100 ml)

RUN:	7/22/86		7/23/86		7/24/86	7/22-23/86 GEOMETRIC MEAN
	A.M.	P.M.	A.M.	P.M.	A.M.	
	1	2	1	2	1	
<u>STATION NUMBER</u>						
8 BWB01* TC	2,600	1,800	2,200	--	--	2,176
FC	160	200	280	--	--	207
9 BWB02*	260	600	940	--	--	527
	110	180	150	--	--	144
10 BWB03*	400	180	380	--	--	301
	40	30	60	--	--	42
12 AB10**(1)	--	40	10	--	--	20
	8.2***	5	<5	--	--	3.5
13 AB20**(1)	--	5	20	--	--	10
	23***	<5	<5	--	--	2.5
20 TBW10*	--	--	--	--	--	
	--	--	--	--	250	
21 ABK20**	--	--	--	--	--	
	--	--	--	--	5,500	
22 AB30**	--	--	--	--	--	
	--	--	--	--	<5	

* Freshwater station -

** Tidal stations

*** Modified A-1 technique

-- Not sampled

TC = Total coliform

FC = Total coliform

(1) = Total coliform and fecal coliform data used to generate means

TABLE 65

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - ACUSHNET RIVER DRAINAGE BASIN

TOTAL AND FECAL COLIFORM DATA (colonies/100 ml)

RUN:	10/14/86		10/15/86		10/16/86	10/14-15/86 GEOMETRIC MEAN	
	A.M.	P.M.	A.M.	P.M.	A.M.		
	1	2	1	2	1		
<u>STATION</u>							
<u>NUMBER</u>							
1 ACR020*	TC	--	2,200	600	1,300	900	1,082
	FC	--	680	40	40	40	81
2 DB010*		--	12,000	1,200	2,700	2,000	2,970
		--	1,400	80	80	20	116
3 UNB01*		--	30,000	8,500	3,700	5,500	8,487
		--	8,000	1,000	60	400	662
4 ACR02*		--	430,000	780,000	340,000	70,000	298,917
		--	240,000	250,000	80,000	9,000	45,585
5 UNB03*		--	9,000	8,000	10,500	10,000	9,324
		--	3,500	600	200	400	640
6 ACR03*		--	18,000	102,000	33,000	7,000	25,520
		--	2,000	10,000	7,000	1,800	7,085
8 ACR10**		--	5,000	51,000	22,800	25,000	19,524
		--	200	5,000	1,100	2,200	1,247
9 NBH30**		--	--	6,200	700	2,300	4,639
		--	--	180	40	80	83

* Freshwater station

** Tidal station

-- Not sampled

TC = Total coliform

FC = Total coliform

TABLE 66

1986 BUZZARDS BAY WATER QUALITY SURVEY

AREA I - WESTPORT RIVER DRAINAGE BASIN

SUMMARY OF FLOW DATA (cfs)

Station 2BCB04
Bread and Cheese Brook

DATE	TIME	AVERAGE DEPTH (ft.)	AREA (sq. ft.)	VELOCITY (ft./sec.)	DISCHARGE (cfs)
6/24	0915	0.75	5.08	1.27	6.47
6/25	1005	0.69	5.14	1.08	6.37

Station 5KB02
Kirby Brook

6/24	1020	0.57	3.59	0.24	0.86
6/25	0920	0.64	3.76	0.23	0.87

Station 6SNC04
Snell Creek

6/24	1830	0.60	5.31	0.20	1.07
6/25	0612	0.57	5.38	0.16	0.88

Station 4WPE02
Westport River East Branch at Old County Road

6/24	1600	1.80	76.82	0.38	29.2
6/25	0810	1.38	54.02	2.06	26.24

TABLE 67
COMMON PARAMETERS AND COLLECTION METHODS EMPLOYED
IN 1986 BUZZARDS BAY WATER QUALITY SURVEYS

STATION TYPE	PARAMETER			
	TOTAL/FECAL COLIFORM	DISSOLVED OXYGEN	NUTRIENTS (A)	WATER CHEMISTRY (B)
Freshwater (FW)	Individual Grab	Individual Grab	C (1)	C (1)
Intertidal (2) (Int)	Individual Grab	Individual Grab	Individual Grab	Individual Grab
Inner Embayments (3)(IB)	Individual Grab	Individual Grab	Individual Grab	Individual Grab
Outer Bay (OB)	Individual Grab (4)	Individual Grab (5)	Individual Grab (4)	Individual Grab (4)

COMMENTS:

(1) Freshwater (FW) - morning and afternoon runs - below water surface composite sample

(2) Intertidal Stations (Int) - sampled on outgoing and incoming tides - below water surface

(3) Inner Embayment (IB) - sampled once on outgoing tide - 1 meter below water surface

(4) Outer Bay (OB) - sampled 1 meter below water surface

(5) Outer Bay - dissolved oxygen readings obtained at 1 meter interval - see footnote (5) Hydrolab

A - Nutrients - NH₃-N, NO₃-N, TP, PO₄, TKN (NOTE: NO₃-N not run on Int, IB, or OB samples due to interference)

B - Water Chemistry - BOD (FW + Int only), TS, SS, DS, chloride, specific conductance, turbidity, color, alkalinity, hardness

TABLE 68

COMMON SAMPLE TREATMENT METHODS EMPLOYED AT
STATIONS IN 1986 BUZZARDS BAY WATER QUALITY SURVEYS

PARAMETER	SAMPLE VOLUME	SAMPLE CONTAINER ¹	IMMEDIATE SHIPBOARD PROCESSING AND STORAGE
Dissolved Oxygen	300 ml (2)	G (1)	MnSO ₄ ; KI: no sunlight/or (5) "in situ."
Temperature	---	- (1)	In situ recorded to nearest 0.1°C/F or (4), (5), (6).
BOD ₅	1 l (2)	G (1)	Cool 4°C
pH (Standard Units)	---	- (1)	"In situ" reading with meter (3) Record to nearest 0.1/or chill to 4°C transport to LES.
Total Alkalinity	1 l (2)	G (1)	Cool 4°C.
Specific Conductance	1 l (2)	G (1)	"In situ" reading/or cool 4°C (4)(5).
Total Hardness	300 ml (2)	G (1)	HNO ₃ , pH ≤ 2.0 cool 4°C
Total Solids	1 l (2)	G (1)	Cool 4°C.
Suspended Solids	1 l (2)	G (1)	Cool 4°C.
Chloride	1 l (2)	G (1)	Cool 4°C.
Total Kjeldahl-Nitrogen	500 ml (2)	G (1)	H ₂ SO ₄ , pH ≤ 2.0, cool 4°C.
Ammonia-Nitrogen	500 ml (2)	G (1)	H ₂ SO ₄ , pH ≤ 2.0, cool 4°C.
Nitrate-Nitrogen	500 ml (2)	G (1)	H ₂ SO ₄ , pH ≤ 2.0, cool 4°C.
Total Phosphorus	500 ml (2)	G (1)	H ₂ SO ₄ , pH ≤ 2.0, cool 4°C.
Orthophosphate	500 ml (2)	G (1)	H ₂ SO ₄ , pH ≤ 2.0, cool 4°C.
Total Coliform	200 ml (2)	G (1)	Cool 4°C .
Fecal Coliform	200 ml (2)	G (1)	Cool 4°C.
Turbidity	1 l (2)	G (1)	Cool 4°C.
Color	1 l (2)	G (1)	Cool 4°C.

¹ (G) Glass

(1) & (2) see footnotes on last page

TABLE 69

SAMPLING PARAMETERS AND ANALYTICAL METHODS
EMPLOYED IN 1986 BUZZARDS BAY WATER QUALITY SURVEYS

PARAMETER	METHOD	REPORTED AS	LIMITS OF DETECTION	REFERENCE	MAXIMUM HOLDING TIME
BOD ₅	5-day oxygen depletion at 20°C	mg/l BOD	2 mg/l	Standard Methods 16th ed. sec. 412B, p418, sec. 507, p525.	48 hours
Dissolved Oxygen	Azide modification of Winkler method. 0.0375 N sodium thio-sulfate titrant, 300 ml sample	mg/l D.O.	+0.05 mg/l	Standard Methods 15th ed. sec. 421B	8 hours
pH	Electrometric, glass indicator, silver chloride reference	pH Logarithmic Units	+0.1 Standard Units	Standard Methods 16th ed., sec. 423, p249	Analyze immediately
101 Turbidity	Nephelometric. Hach Turbidi- meter. Model 2100A	Nephelometric Turbidity Units	---	Standard Methods 15th ed., sec. 214A	48 hours
Total Alkalinity	0.02 N sulfuric acid potentiometric titration to pH 4.5, Orion Model 701, Digital pH meter	mg/l CaCO ₃	---	Standard Methods 16th ed., sec. 403, p269	14 days
Suspended Solids	Filtration through standard glass fiber filter paper. Residue dried at 103-105°C. Gravimetric	mg/l S.S.	10 mg/l	Standard Methods 16th ed., sec. 403, p269	48 hours
Total Solids	Evaporation to dryness at 103-105°C. Gravimetric	mg/l T.S.	5 mg/l	Standard Methods 16th ed., sec. 209C, p96	7 days
Settleable Solids	Gravimetric settling using an Imhoff cone	ml/l sett. solid	0.1 mg/l	Standard Methods 15th ed., sec. 209F	48 hours
Total Dissolved Solids	Filtration through standard glass fiber filter paper. Residue dried at 180°C	mg/l T.D.S.	---	Standard Methods	48 hours

TABLE 69 (CONTINUED)

PARAMETER	METHOD	REPORTED AS	LIMITS OF DETECTION	REFERENCE	MAXIMUM HOLDING TIME
Total Kjeldahl-Nitrogen	Acid digestion using Technical BD-40 Block Digester. Colorimetric analysis (reaction of ammonia, sodium salicylate, sodium nitroprusside, and sodium hypochlorite in buffered alkaline medium) using Technicon Auto Analyzer II	mg/l TKN	0.05 mg/l	EPA 1979, p351.2	28 days
Ammonia-Nitrogen	Phenate method, automated. Colorimetric analysis using Technicon Auto Analyzer II	mg/l NH ₃ -N	0.02 mg/l	<u>Standard Methods</u> 15th ed., sec. 417F	28 days
102 Nitrate-Nitrogen	Hydrazine reduction method, automated. Colorimetric analysis using Technicon Auto Analyzer II	mg/l NO ₃ -N	0.1 mg/l	EPA 1983, p353.1	48 hours
Total Phosphate	Acid digestion using Technicon BD-40 Block Digester. Ascorbic acid reduction colorimetric method using Technicon Auto Analyzer II	mg/l P	0.02 mg/l	EPA 1979, p365.4	28 days
Total Coliform	Membrane filter technique	Total coliforms/ 100 ml	<10	<u>Standard Methods</u> 15th ed., sec. 908C	6 hours
Fecal Coliform	Membrane filter technique	Fecal coliforms/ 100 ml	<5	<u>Standard Methods</u> 15th ed., sec. 908C	6 hours
	Modified A-1 technique	Fecal coliforms/ 100 ml	<8.7	AOAC Official Methods of Analysis., 14th ed., 1984 p943	6 hours

TABLE 69 (CONTINUED)

PARAMETER	METHOD	REPORTED AS	LIMITS OF DETECTION	REFERENCE	MAXIMUM HOLDING TIME
Conductivity	Wheatstone Bridge type meter. Yellow springs Instrument conductivity bridge, Model 31	umhos/cm	---	<u>Standard Methods</u> 15th ed., sec. 205	28 days
Color	Visual comparison of sample with known concentrations of colored solutions	Color Units	N/A	<u>Standard Methods</u> 15th ed., sec. 204A	48 hours
Chloride	Argentometric (titration with silver nitrate)	mg/l Cl	0.5 mg/l	<u>Standard Methods</u> 15th ed., sec. 407A, p287	28 days
Temperature	"In situ" reading	C°/°F	+0.05	Omega dial temp. thermometer models K-79-8, K-79-7. Omega Engineering Inc. Stamford, CT.	Analyze immediately
Orthophosphorus	Ascorbic acid method	mg/l as P	0.01 mg/l	<u>Standard Methods</u> 16th ed., sec. 424F, p448	48 hours
Hardness	Hardness by calculation	mg, equivalent	---	<u>Standard Methods</u> 15th ed., sec. 314A	6 months
Flow	Wading Rod Pygmy Current Meter	CFS	---	Gurly No. 625 Pygmy Current Meter, Troy, NY 12181	---
Depth		meter	0.1 meters	Hydrolab Surveyer II, Model SVR2-SU Sonde Unit, Model SVR2-DV Digital readout	N/A

FOOTNOTES (TABLES 66-68)

1. Required containers, preservation techniques, and holding time, per Table II 40 CFR Part 136.
2. Massachusetts Division of Water Pollution Control, Technical Services Branch, Engineering Section, Standard Operating Procedures.
3. Service and Calibration Manual Model 211 Orion Field pH meter. Orion Research Incorporated, 840 Memorial Drive, Cambridge, MA.
4. Yellow Springs Instrument, Model 33 S-C-T meter and probe. Yellow Spring Instrument Co., Inc. Yellow Springs, Ohio 45387.
5. Hydrolab Surveyor II, Model SVR2-SU sonde unit, Model SVR2-DV Digital read out. Hydrolab Corp., P.O. Box 50116, Austin TX 78763.