Water Resources Data for Puerto Rico

Surface and Quality-of-Water Records Water Year 1977

Ground Water Records Water Year 1977

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-77-1

WATER YEAR 1977

Prepared in cooperation with the Commonwealth of Puerto Rico and with other agencies

CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

NOVEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

1977

JANUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

FEBRUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	28	30	31		

APRIL

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Water Resources Data for Puerto Rico

Surface and Quality-of-Water Records Water Year 1977

Ground Water Records Water Year 1977

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-77-1

WATER YEAR 1977

Prepared in cooperation with the Commonwealth of Puerto Rico and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For additional information write to:

District Chief, Water Resources Division
U.S. Geological Survey
G.P.O. Box 4424
San Juan, Puerto Rico 00936

1980

Preface

This report was prepared by the U.S. Geological Survey in cooperation with the Commonwealth of Puerto Rico and with other agencies by personnel of the Caribbean District of the Water Resources Division under the supervision of Craig B. Bentley, District Chief, and James L. Cook, Regional Hydrologist, Southeastern Region.

This report is one of a series issued State by State under the general direction of Philip Cohen, Chief Hydrologist, and Robert J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

BIBLIOGRAPHIC DATA SHEET	1. Report No. USGS/WRD/HD-80/068	2.	3. Recipient's Accession No

4. Title and Subtitle
Water Resources Data for Puerto Rico, 1977

5. Report Date
July 1980

6. USGS-WDR-PR-77-1

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
U.S. Geological Survey, Water Resources Division
G.P.O. Box 4424
San Juan, Puerto Rico 00936

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address
U.S. Geological Survey, Water Resources Division
G.P.O. Box 4424
San Juan, Puerto Rico 00936

13. Type of Report & Period Covered
Oct. 1, 1976 to Sept. 30, 1977

14.

15. Suplementary Notes
Prepared in cooperation with the Commonwealth of Puerto Rico and other agencies.

16. Abstracts

Water-resources data for surface-water, quality-of-water, and ground-water records for 1977 water year for Puerto Rico consist of records of discharge, water quality of streams, and water levels of wells. This report contains discharge and water-quality records for 35 gaging stations, 74 water-quality stations, and water levels for 58 observation wells. Also included are data for 17 crest-stage partial-record stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and the Commonwealth of Puerto Rico.

17. Key Words and Document Analysis **17a. Descriptors**

*Puerto Rico, *Surface waters, *Water quality, *Ground water, Aquifers, Chemical analysis, Gaging stations, Hydrologic data, Sediments, Streamflow, Water analysis, Water levels, Water quality.

17b. Identifiers/Open-Ended Terms

Commonwealth, Sampling sites

17c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
No restriction on distribution. This report may be purchased from: National Technical Information Service, Springfield, VA 22161	UNCLASSIFIED	214
	20. Security Class (This Page) UNCLASSIFIED	22. Price

ILLUSTRATIONS

ILLUSTRATIONS--Continued

TABLES

SURFACE-WATER AND WATER-QUALITY STATIONS,
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

(Letter after station name designates type of data: (d) discharge, (c) chemical, (b) biological, and (s) sediment)

SURFACE-WATER AND WATER-QUALITY STATIONS,
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

SURFACE-WATER AND WATER-QUALITY STATIONS,
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

INTRODUCTION

Surface-water, water-quality, and ground-water records for water year 1977, including records of streamflow at gaging stations and partial-record stations are given in this report, and their locations are shown in figures 1 to 19. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of Craig B. Bentley, District Chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating Commonwealth and Federal agencies in Puerto Rico.

Prior to the 1968 calendar year, water resources data for Puerto Rico have been released in a series of reports entitled "Water Records of Puerto Rico," and covered the period 1958-67. Included were records for streamflow stations, ground-water wells, and the chemical and physical characteristics of surface and ground water.

Beginning with the 1968 calendar year, surface-water records are being released separately on an annual basis. Ground-water records, and data on chemical and physical characteristics of surface and ground water are being released in companion reports covering periods of several years. Data for the 1973-74 reports were published under separate covers. Water-resources data for 1975-76 consist of one volume containing surface-water, water-quality, and ground-water records.

COOPERATION

The U.S. Geological Survey and organizations of the Commonwealth of Puerto Rico have had cooperative agreements for the systematic collection of surface-water records since 1958. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Puerto Rico Environmental Quality Board
Puerto Rico Aqueduct and Sewer Authority
Puerto Rico Water Resources Authority
Puerto Rico Industrial Development Company
Puerto Rico Department of Public Works
Puerto Rico Department of Natural Resources

Assistance in the form of funds was also given by the Corps of Engineers, U.S. Army, in collecting records for 6 gaging stations published in this report.

ACKNOWLEDGMENTS

The data in this report were collected under the direct supervision of Ferdinand Quiñones, Chief, Hydrologic Surveillance Section, and with the assistance of the following Caribbean District personnel: Héctor Colón-Ramos, Rafael Dacosta, Pedro Vázquez, Juan Ortiz-Medina, Rafael Peña, Felipe Hernández, and Ivonne Colón. The report was prepared under the supervision of Héctor Colón-Ramos, Assistant Chief, Hydrologic Surveillance Section, with the assistance of Fernando Gómez, Rafael Dacosta, Pedro Vázquez, Angel Class, Juan Ortiz-Medina and Ivonne Colón.

HYDROLOGIC CONDITIONS

Total average precipitation throughout the island of Puerto Rico during the water year was about 15 inches below normal, as recorded by the U.S. Weather Service.

At the beginning of the water year runoff conditions were slightly below average. Streamflow was, in general, decreased by lack of precipitation. Flowing conditions were maintained and records returned to near-average discharge at the end of the water year. Flow in streams was about 30 to 50 percent below that of the 1975-76 water years, respectively.

Fluctuations in ground-water levels were within the range of the previous years. Records show that water levels declined slightly through the end of June but were rising by the end of the water year.

Water-quality data collected from the streams indicate that surface waters are generally of good quality and suitable for most uses when properly treated.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also the table for converting inch-pound units to the International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multicelled plants containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer, tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Crest-stage station is a special form of partial-record station that records the highest stage of the stream that occurred between periodic visits to the station. A stage-discharge relation for each gage may be developed from discharge measurements made by indirect methods or by current meter.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet or water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/s, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{n} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Ground-water station is a well at which observations of ground-water level are made, either continuously by recorder, or periodically by hand. In addition, various chemical or physical parameters may be obtained, usually on a periodic basis.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture. Sediment concentrations may be converted to parts per million by using the factors in table 2, page 8.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (mL) or liters (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation
Silt	.004 - .062	Sedimentation
Sand	.062 - 2.0	Sedimentation or sieve
Gravel	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Table 1.--Factors for conversion of chemical constituents in milligrams per liter to milliequivalents per liter.

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*...	0.11119	Iodide (I^{-1}).....	0.000788
Ammonia as (NH_4^{+1}).	.05544	Iron (Fe^{+3})*.....	.05372
Barium (Ba^{+2}).....	.01456	Lead (Pb^{+2})*.....	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})....	.14411
Bromide (Br^{-1}).....	.01251	Magnesium (Mg^{+2})..	.08226
Calcium (Ca^{+2}).....	.04990	Manganese (Mn^{+2})*.	.03640
Carbonate (CO_3^{-2})..	.03333	Nickel (Ni^{+2})*....	.03406
Chloride (Cl^{-1})....	.02821	Nitrate (NO_3^{-1})...	.01613
Chromium (Cr^{+6})*...	.11539	Nitrite (NO_2^{-1})...	.02174
Cobalt (Co^{+2})*.....	.03394	Phosphate (PO_4^{-3}).	.03159
Copper (Cu^{+2})*.....	.03148	Potassium (K^{+1})...	.02557
Cyanide (CN^{-1}).....	.03844	Sodium (Na^{+1}).....	.04350
Fluoride (F^{-1}).....	.05264	Strontium (Sr^{+2})*.	.02283
Hydrogen (H^{+1}).....	.99209	Sulfate (SO_4^{-2})...	.02082
Hydroxide (OH^{-1})...	.05880	Zinc (Zn^{+2})*.....	.03060

*Constituents reported in micrograms per liter; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per liter to parts per million.* (All values calculated to three significant figures.)

Range of concentration in 1,000 mg/L	Divide by	Range of concentration in 1,000 mg/L	Divide by	Range of concentration in 1,000 mg/L	Divide by
0 - 8	1.00	266 - 280	1.17	540 - 554	1.34
8.05 - 24	1.01	282 - 297	1.18	556 - 570	1.35
24.2 - 40	1.02	299 - 313	1.19	572 - 585	1.36
40.5 - 56	1.03	315 - 329	1.20	587 - 602	1.37
56.5 - 72	1.04	331 - 345	1.21	604 - 617	1.38
72.5 - 88	1.05	347 - 361	1.22	619 - 634	1.39
88.5 - 104	1.06	363 - 378	1.23	636 - 650	1.40
105 - 120	1.07	380 - 393	1.24	652 - 666	1.41
121 - 136	1.08	395 - 409	1.25	668 - 682	1.42
137 - 152	1.09	411 - 424	1.26	684 - 698	1.43
153 - 169	1.10	427 - 440	1.27	700 - 715	1.44
170 - 185	1.11	443 - 457	1.28	717 - 730	1.45
186 - 200	1.12	460 - 473	1.29	732 - 747	1.46
201 - 217	1.13	476 - 489	1.30	749 - 762	1.47
218 - 232	1.14	492 - 506	1.31	765 - 780	1.48
234 - 248	1.15	508 - 522	1.32	782 - 796	1.49
250 - 264	1.16	524 - 538	1.33	798 - 810	1.50

*Based on water density of 1.000 g/mL and a specific gravity of sediment of 2.65.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants, respectively, are the two categories reported.

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells/mL of sample.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that orignates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical preipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge(tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times concentration times 0.0027.

The suspended-sediment concentration (mg/L) and suspended-sediment discharge (tons/day) except in stations 50028000 and 50115000 are based on instantaneous discharge and do not necessarily represent the actual daily discharge of suspended sediment.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electric current. It is expressed in micromhos per centimenter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, limbata is the following:

Kingdom.....Animal
Phylum.....Arthropoda
Class.....Insecta
Order.....Ephemeroptera
Family.....Ephemeridae
Genus..... Hexagenia
Species.... Hexagenia limbata

Water year in Geological Survey reports dealing with surface water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends. Thus, the water year beginning October 1, 1976 and ending September 30, 1977 is called the "1977 water year."

Weighted average is used in this report to indicate discharge-weighted average for days computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published REPORTS.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is lited between them A similar order is followed in listing stations in first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indention in a list of stations in the front of the report.

Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station such as 50028000, which appears just to the left of the station name, includes the 2-digit part number "50" plus the 6-digit downstream order number "028000."

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. The numbers shown in the grid correspond to the local numbers assigned to each well as visited in the field. An example is well 16 (fig. 1, below).

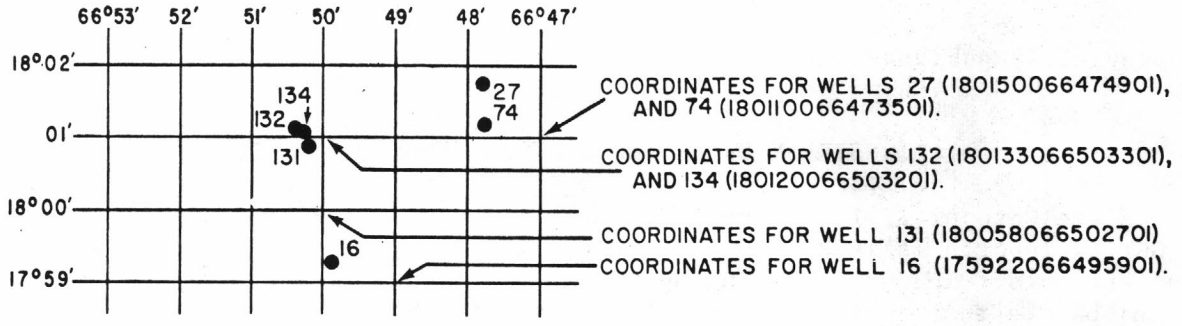

Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

SPECIAL NETWORK AND PROGRAMS

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams. In addition, observations of factors affecting the stage-discharge relation or the weather records, and other information are used to supplement base data in determining the daily flow. Records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is loose in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams a table showing the daily discharge and monthly and yearly discharge is given. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station

and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES"

are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

Data collected at partial-record water-quality stations follows the information for continuous-record sites. Data for partial-record discharge stations are presented in one table. This table shows the annual maximum stage and discharge at crest-stage stations.

Accuracy of field data and computed results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good," within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 ft^3/s; to tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface-water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for

parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross sections is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

Table 3.--Degrees Celsius (°C) to degrees Fahrenheit (°F)*
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F
15.0	59	21.0	70	27.0	81
15.5	60	21.5	71	27.5	82
16.0	61	22.0	72	28.0	82
16.5	62	22.5	72	28.5	83
17.0	63	23.0	73	29.0	84
17.5	64	23.5	74	29.5	85
18.0	64	24.0	75	30.0	86
18.5	65	24.5	76	30.5	87
19.0	66	25.0	77	31.0	88
19.5	67	25.5	78	31.5	89
20.0	68	26.0	79	32.0	90
20.5	69	26.5	80		

* °C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures; hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference either to mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a large unit.

SELECTED REFERENCES

American Public Health Association, and others, 1976, Standard methods for the examination of water and wastewater, (14th ed.): American Public Health Association, New York, 1,193 p.

Brown, Eugene, Skougstad, M. W., and Fishman, M. J., 1970, Methods for collection and analysis of water samples for dissolved minerals and gases: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 160 p.

Colby, B. R., and Hembree, C. H., 1955, Computations of total sediment discharge, Niobrara River near Cody, Nebraska: U.S. Geological Survey Water-Supply Paper 1357, 187 p.

Colby, B. R., and Hubbell, D. W., 1961, Simplified methods for computing total sediment discharge with the modified Einstein procedure: U.S. Geological Survey Water-Supply Paper 1593, 17 p.

Corbett, D. M., and others, 1943, Stream-gaging procedure, a manual describing methods and practices of the Geological Survey: U.S. Geological Survey Water-Supply Paper 888, 245 p.

Goerlitz, D. F., and Brown, Eugene, 1972, Methods for analysis of organic substances in water: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A3, 40 p.

Greeson, P. E., and others, 1977, Methods for collection and analysis of aquatic biological and microbiological samples: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A4, 332 p.

Guy, H. P., 1969, Laboratory theory and methods for sediment analysis: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. C1, 58 p.

_____ 1970, Fluvial sediment concepts: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chap. C1, 55 p.

Guy, H. P., and Norman, V. W., 1970, Field methods for measurement of fluvial sediment: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chap. C2, 59 p.

Kipple, F. P., and others, 1968, Water records of Puerto Rico, 1958-63: San Juan, U.S. Geological Survey, data report, 339 p.

SELECTED REFERENCES--Continued

Langbein, W. B., and Iseri, K. T., 1960, General introduction and hydrologic definitions: U.S. Geological Survey Water-Supply Paper 1541-A, 29 p.

Porterfield, George, 1972, Computations of fluvial-sediment discharge: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chap. C3, 66 p.

Quiñones, Ferdinand, and others, 1978, Water resources data for Puerto Rico, 1975-76, San Juan, U.S. Geological Survey, data report, 366 p.

Rickher, J. G., and others, 1970a, Water records of Puerto Rico, 1964-67, Volume 1 - North and northeast slopes: San Juan, U.S. Geological Survey, data report, v. 1, 265 p.

_____ 1970b, Water records of Puerto Rico, 1964-67, Volume 2 - South and west slopes: San Juan, U.S. Geological Survey, data report, v. 2, 303 p.

U.S. Inter-Agency Committee on Water Resources, Subcommittee on Sedimentation, a study of methods used in measurement and analysis of sediment loads in streams. Published by the St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minnesota.

_____ 1941, Methods of analyzing sediment samples: Report no. 4.

_____ 1953, Accuracy of sediment size analyses made by the bottom-withdrawal-tube method: Report no. 10.

_____ 1957, The development and calibration of visual accumulation tube: Report no. 11.

_____ 1957, Some fundamentals of particle size analysis: Report no. 12.

_____ 1959, Federal Inter-agency sedimentation instruments and reports: Report AA.

_____ 1961, The single stage sampler for suspended sediment: Report no. 13.

_____ 1963, Determinations of fluvial sediment discharge: Report no. 14.

Ward, P. E., and Truxes, L. S., 1964, Water wells in Puerto Rico: Commonwealth of Puerto Rico Water-Resources Bulletin 3, 248 p.

Surface

and

Quality-of-Water Records

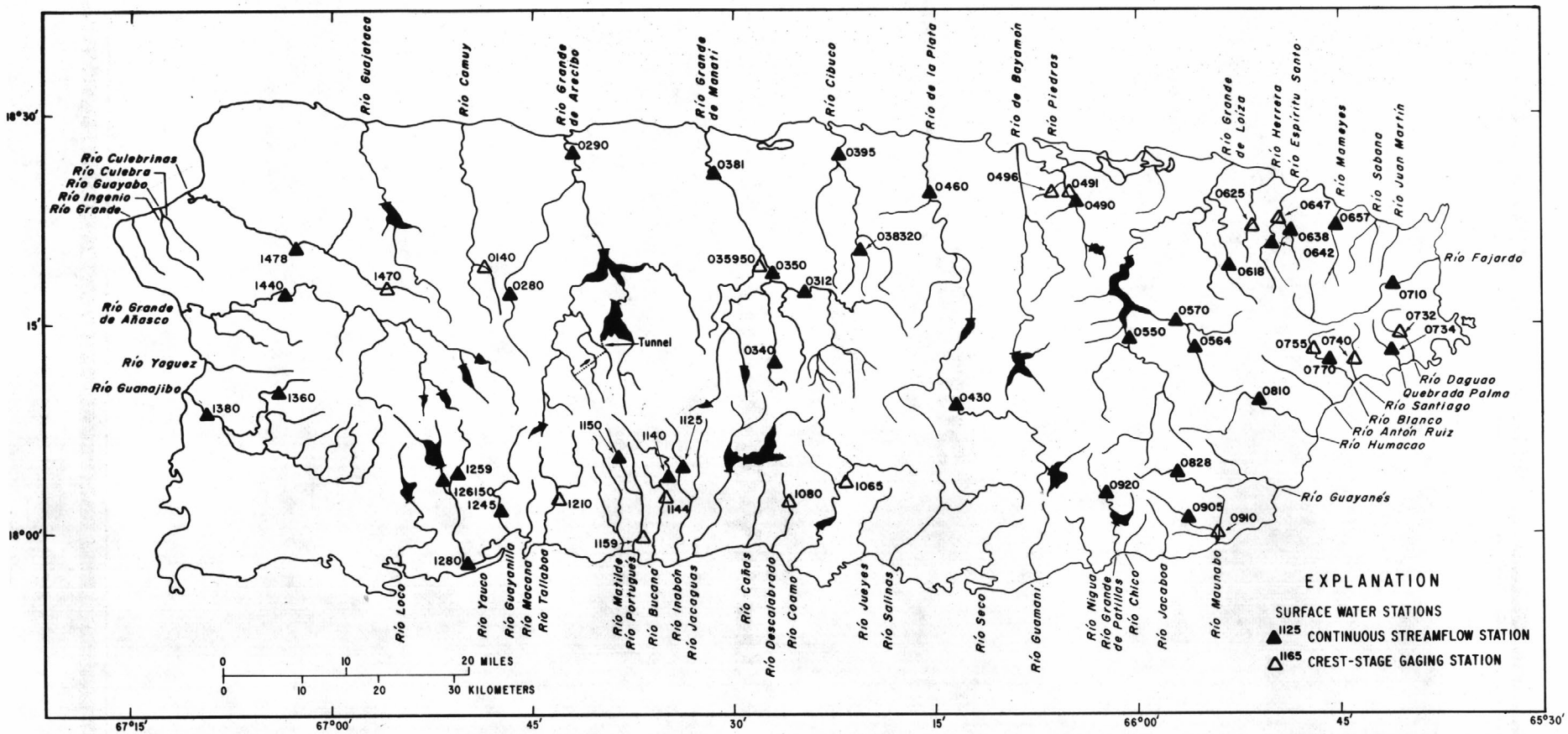

Figure 2.--Location of surface-water stations.

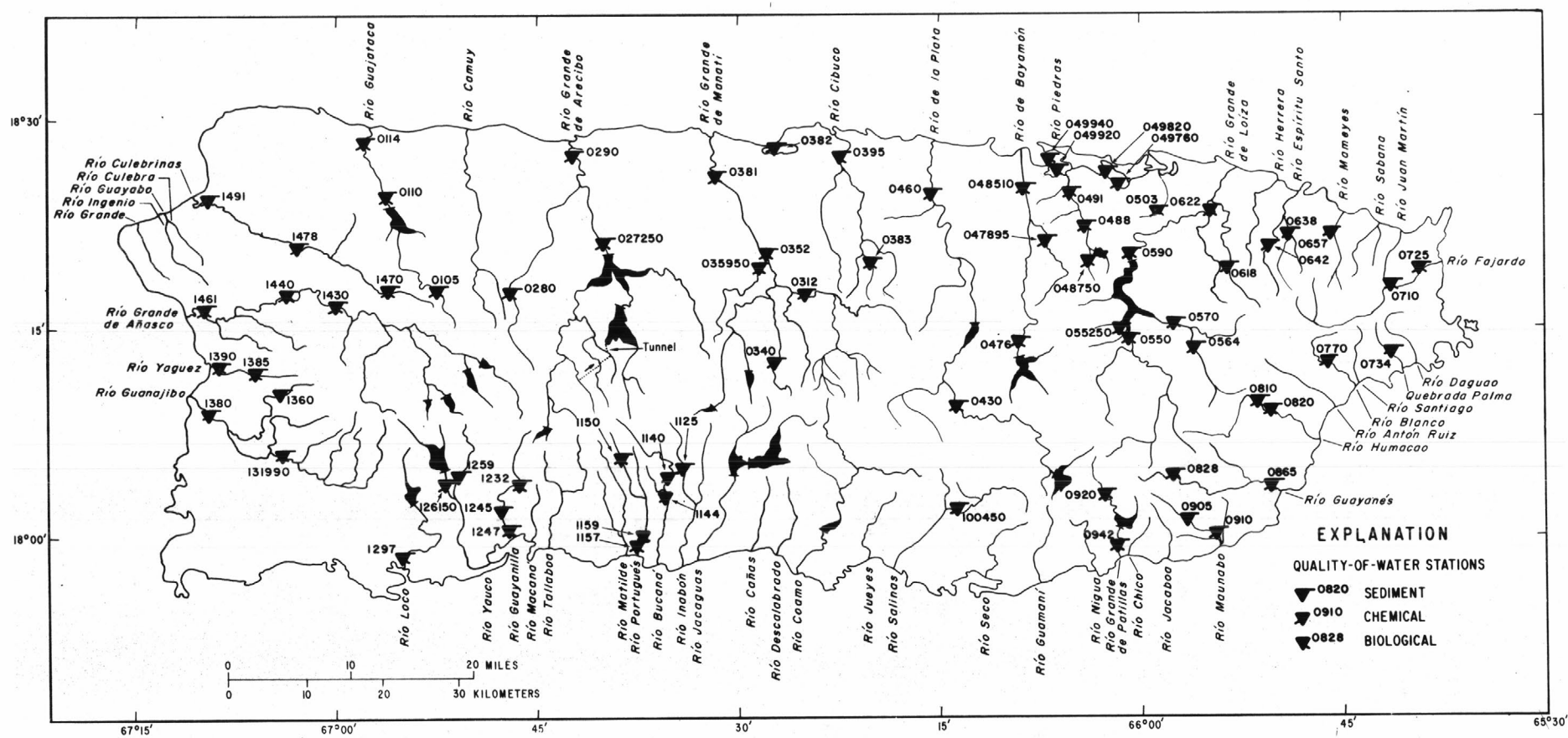

Figure 3.--Location of water-quality stations.

SURFACE-WATER AND WATER-QUALITY STATIONS

RIO GUAJATACA BASIN

50010500 RIO GUAJATACA AT LARES, PR

LOCATION.--Lat 18°18'01", long 66°52'24", at bridge on Highway 111 (km 32.9), 0.1 mi (0.2 km) upstream from Quebrada Anón, and 0.4 mi (0.6 km) northeast of Lares.

DRAINAGE AREA.--3.16 mi^2 (8.2 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1958 to May 1971, January 1974 to current year.
SEDIMENT RECORDS: June 1964 to October 1967, June to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
22...	1245	7.0	220	8.0	24.0	7.7	7.1	45000	29000	5900	27
DEC											
08...	0815	3.3	183	7.7	18.0	6.6	1.4	9300	770	2300	30
FEB											
04...	0825	1.4	234	7.2	19.0	6.2	2.0	23000	970	1900	--
04...	1500	--	220	8.1	25.0	9.8	--	--	--	--	--
APR											
22...	0855	.60	270	7.2	23.0	3.6	4.3	260000	21000	10200	33
JUN											
09...	0920	E.30	268	7.3	24.0	3.0	1.6	78000	8200	3100	29
AUG											
16...	1525	E.50	265	7.6	28.0	6.6	3.4	260000	160000	23000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
22...	5.3	12	2.2	110	0	90	1.8	5.3	8.8	29	1.4
DEC											
08...	5.7	13	2.0	119	0	98	3.8	5.4	10	33	1.2
FEB											
04...	--	--	--	156	0	128	16	--	--	--	.32
04...	--	--	--	--	--	--	--	--	--	--	--
APR											
22...	6.8	15	3.2	156	0	128	16	14	12	26	.39
JUN											
09...	6.6	14	2.2	152	0	125	--	13	11	27	.18
AUG											
16...	--	12	2.6	118	0	97	4.7	14	11	23	.61

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
22...	.02	.12	1.1	1.2	2.6	12	.05	.09	--	--	--
DEC											
08...	.01	.06	.13	.19	1.4	6.2	.10	.10	1	0	<10
FEB											
04...	.01	.39	.55	.94	1.3	5.6	.02	.11	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--
APR											
22...	.05	1.0	.40	1.4	1.8	8.1	.07	.11	--	--	--
JUN											
09...	.07	.98	.12	1.1	1.4	6.0	.10	.13	4	1	<10
AUG											
16...	.04	.27	.93	1.2	1.9	8.2	.06	.12	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
22...	--	--	30	--	--	--	--	6.1	3	.06
DEC										
08...	1	8	20	.1	30	0	10	4.8	0	.00
FEB										
04...	--	--	--	--	--	--	--	13	2	.01
04...	--	--	--	--	--	--	--	.8	--	--
APR										
22...	--	--	0	--	--	--	--	6.2	30	.05
JUN										
09...	2	13	37	.0	8	0	20	7.5	27	.02
AUG										
16...	--	--	320	--	--	--	--	6.5	132	--

E Estimated.

50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO GUAJATACA, PR

LOCATION.--Lat 18°24'02", long 66°55'25", off Highway 476 at Lago Guajataca outlet, 3.0 mi (4.8 km) southwest of Segunda Unidad Baldorioty de Castro, and 5.3 mi (8.5 km) south of Quebradillas Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1958 to May 1964, January 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 07...	1010	40	270	7.2	26.0	2.3	2.0	210	100	31	49
DEC 07...	1000	45	240	7.5	26.0	4.3	1.0	31	0	0	46
FEB 18...	0900	45	248	7.8	24.0	6.7	2.3	28	5	20	43
APR 05...	1000	55	258	7.8	26.5	7.4	.8	4	0	2	35
JUN 14...	1415	50	290	7.6	28.0	6.2	1.6	32	7	10	45
AUG 16...	1230	48	305	8.0	29.0	7.2	3.1	30	0	12	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 07...	3.1	5.9	1.6	164	0	135	17	8.7	8.8	6.5	.03
DEC 07...	3.0	5.1	1.6	152	0	125	7.7	11	8.2	6.3	.21
FEB 18...	3.0	5.6	1.8	150	0	123	3.8	9.3	8.1	6.4	.10
APR 05...	3.0	5.7	1.9	150	0	123	3.8	8.8	8.7	6.1	.00
JUN 14...	3.8	6.4	1.7	156	0	128	6.3	11	9.8	6.5	.12
AUG 16...	--	6.8	1.7	162	0	133	2.6	13	10	6.4	.20

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 07...	.01	.38	.30	.68	.72	3.2	.02	.03	--	--	--
DEC 07...	.00	.02	.21	.23	.44	1.9	.00	.01	1	0	<10
FEB 18...	.00	.02	.26	.28	.38	1.7	.00	.01	--	--	--
APR 05...	.00	.01	.27	.28	.28	1.2	.00	.01	--	--	--
JUN 14...	.01	.23	.32	.55	.68	3.0	.00	.01	3	0	10
AUG 16...	.01	.09	.32	.41	.62	2.7	.00	.01	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 07...	--	--	24	--	--	--	--	3.8	4	.43
DEC 07...	0	4	20	.1	2	0	5	4.1	7	.85
FEB 18...	--	--	20	--	--	--	--	3.0	14	1.7
APR 05...	--	--	20	--	--	--	--	--	2	.30
JUN 14...	2	17	19	.0	6	0	10	7.9	2	.27
AUG 16...	--	--	20	--	--	--	--	6.2	2	.26

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR

LOCATION.--Lat 18°28'31", long 66°57'46", at ford, 1.7 mi (2.7 km) upstream from bridge on Highway 2, 2.1 mi (3.4 km) from the Océano Atlántico, 6.6 mi (10.6 km) downstream from Lago Guajataca, and 1.6 mi (2.6 km) west of Quebradillas.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1969 to current year.
SEDIMENT RECORDS: October 1969, January 1970, August 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 07...	1140	126	268	8.2	25.5	7.7	1.9	5400	590	2700	50
DEC 07...	1115	8.7	323	7.7	25.0	10.7	.8	400	120	122	63
FEB 11...	1350	13	430	7.5	24.0	10.2	.3	7500	34	73	61
APR 05...	1115	10	385	7.4	25.0	8.2	.6	15000	12	87	54
JUN 14...	1545	21	318	8.0	27.0	12.6	.7	13000	10	230	49
AUG 16...	1035	10	372	7.4	26.5	6.4	1.8	20000	1000	320	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 07...	3.2	5.9	1.6	172	0	141	1.7	8.7	9.2	6.2	.27
DEC 07...	6.5	13	1.4	217	0	178	6.9	9.7	23	5.6	1.2
FEB 11...	7.0	13	1.3	217	0	178	11	8.0	23	6.4	1.3
APR 05...	7.2	13	1.4	226	0	185	14	6.8	22	5.7	1.2
JUN 14...	4.4	8.5	1.3	172	0	141	2.8	10	14	6.0	.58
AUG 16...	--	20	1.7	212	0	174	--	12	36	6.3	1.1

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 07...	.01	.04	.21	.25	.53	2.3	.02	.03	--	--	--
DEC 07...	.01	.01	.20	.21	1.4	6.2	.00	.00	1	0	<10
FEB 11...	.00	.00	.12	.12	1.4	6.3	.00	.00	--	--	--
APR 05...	.00	.01	.01	.02	1.2	5.4	.00	.00	--	--	--
JUN 14...	.00	.05	.52	.57	1.2	5.1	.00	.00	2	0	10
AUG 16...	.01	.01	.59	.60	1.7	7.5	.00	.01	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 07...	--	--	20	--	--	--	--	3.4	22	7.5
DEC 07...	0	17	0	.1	3	0	10	5.0	18	.42
FEB 11...	--	--	10	--	--	--	--	2.4	18	.63
APR 05...	--	--	10	--	--	--	--	--	20	.54
JUN 14...	2	16	0	.0	5	0	20	8.1	1	.06
AUG 16...	--	--	10	--	--	--	--	7.0	24	.65

50027250 RIO GRANDE DE ARECIBO BELOW LAGO DOS BOCAS NEAR FLORIDA, PR

LOCATION.--Lat 18°20'50", long 66°40'02", at pedestrian bridge, 0.7 mi (1.1 km) north of Lago Dos Bocas and 6.6 mi (10.6 km) west of Florida Plaza.

DRAINAGE AREA.--169 mi^2 (436 km^2) {does not include 6.03 mi^2 (15.6 km^2) above Lago Garzas}.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1970 to February 1971, January 1974 to current year.
SEDIMENT RECORDS: March 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 23...	0930	E15	170	7.3	25.0	9.0	.7	1200	150	100	24
DEC 08...	1250	E250	183	7.3	24.0	4.6	1.6	1000	120	50	20
FEB 04...	1225	13	240	7.8	24.0	8.2	1.2	2400	56	200	20
APR 22...	1400	E300	205	7.1	25.5	3.6	1.1	6800	310	520	19
JUN 09...	1340	15	220	7.8	29.5	8.3	.9	3100	400	100	19
AUG 15...	1555	11	210	7.3	29.0	6.3	1.3	2400	290	220	17

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 23...	5.0	8.6	2.1	78	0	64	6.3	9.9	8.2	17	.71
DEC 08...	5.8	10	2.1	92	0	75	7.4	14	9.7	20	.67
FEB 04...	6.2	11	2.1	88	0	72	2.2	14	11	19	.35
APR 22...	6.4	11	2.3	92	0	75	12	13	11	19	.02
JUN 09...	6.5	11	2.0	90	0	74	2.3	13	12	18	.07
AUG 15...	5.9	11	2.1	88	0	72	7.1	13	12	18	.15

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 23...	.02	.04	.19	.23	.96	4.3	.04	.05	--	--	--
DEC 08...	.01	.04	.20	.24	.92	4.1	.01	.02	--	0	<10
FEB 04...	.00	.02	.11	.13	.48	2.1	.02	.03	--	--	--
APR 22...	.01	.19	.15	.34	.37	1.6	.01	.03	--	--	--
JUN 09...	.01	.08	.23	.31	.39	1.7	.01	.03	2	1	<10
AUG 15...	.03	.11	.24	.35	.53	2.3	.01	.02	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 23...	--	--	40	--	--	--	--	8.4	45	1.8
DEC 08...	3	8	60	--	0	--	5	5.5	32	22
FEB 04...	--	--	10	--	--	--	--	--	2	.07
APR 22...	--	--	0	--	--	--	--	1.8	18	15
JUN 09...	1	7	15	.0	5	0	20	7.1	2	.08
AUG 15...	--	--	40	--	--	--	--	6.2	1	.03

E Estimated.

50028000 RIO TANAMA NEAR UTUADO, PR

LOCATION.--Lat 18°18'02", long 66°46'58", on downstream side of left abutment of bridge on Highway 111, 1.2 mi (1.9 km) upstream from natural tunnel, 1.5 mi (2.4 km) northeast of Angeles, and 5.8 mi (9.3 km) northwest of Utuado.

DRAINAGE AREA.--18.4 mi^2 (47.7 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1944 to June 1958 (daily stage and two to four measurements per month by Puerto Rico Water Resources Authority), November 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 941.30 ft (286.908 m) above mean sea level (USGS BM 65-Y-1934). Prior to Nov. 17, 1966, staff gage at same site and datum. Crest-stage gage installed Feb. 6, 1962.

REMARKS.--Records good.

AVERAGE DISCHARGE.--17 years (1961-77) 48.8 ft^3/s (1.32 m^3/s), 36.02 in/yr (915 mm/yr), 35,360 acre-ft/yr (43.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,950 ft^3/s (253 m^3/s) May 17, 1963, gage height, 13.29 ft (4.051 m) floodmark, from rating curve extended above 500 ft^3/s (14.2 m^3/s) on basis of slope-area measurement of peak flow at gage height 13.29 ft (4.051 m); minimum, 6.6 ft^3/s (0.187 m^3/s) June 12, 1977, gage height, 0.12 ft (0.037 m).

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 3,000 ft^3/s (85.0 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 15	1545	5,070	144	9.77	2.978	Oct. 29	1545	*7,510	213	*12.09	3.685

Minimum discharge, 6.6 ft^3/s (0.187 m^3/s) June 12, gage height, 0.12 ft (0.037 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	82	38	23	18	12	10	8.4	9.0	25	68	36
2	57	66	36	22	17	12	10	10	8.7	22	46	33
3	55	68	31	22	18	12	9.5	7.8	8.9	16	25	102
4	51	61	38	23	18	12	8.7	14	8.6	14	20	70
5	64	57	33	22	18	12	8.4	20	8.4	33	29	48
6	91	54	30	21	17	12	9.0	14	10	36	40	48
7	55	51	29	21	17	11	8.4	18	9.0	20	28	43
8	61	55	29	20	18	11	12	12	8.4	18	20	40
9	48	49	30	20	17	11	34	11	7.9	16	32	37
10	43	46	31	20	16	11	18	10	8.1	85	95	34
11	55	45	29	20	17	10	13	9.0	8.1	45	46	33
12	49	43	28	20	18	10	12	9.0	8.4	51	28	42
13	52	42	28	19	16	10	10	8.7	8.1	41	26	130
14	49	52	27	19	16	9.5	9.4	8.1	32	29	33	61
15	413	45	28	25	15	9.5	9.5	9.5	19	23	42	76
16	82	41	27	19	15	11	9.8	12	18	18	26	63
17	57	40	26	18	16	12	10	12	12	18	25	50
18	51	40	25	18	16	16	10	12	10	16	46	45
19	49	39	25	18	15	14	12	9.0	10	14	33	49
20	47	40	25	18	16	10	41	8.7	8.7	20	25	51
21	44	38	25	51	15	10	25	8.7	8.4	16	47	43
22	42	36	25	32	14	9.5	15	10	8.4	14	96	39
23	41	36	24	50	14	8.7	17	43	8.4	13	55	38
24	42	35	24	43	14	8.7	13	22	14	13	38	37
25	39	46	24	23	14	8.4	11	14	40	12	35	61
26	94	36	23	20	13	8.4	9.5	13	96	19	108	52
27	158	33	22	19	13	19	9.0	12	42	37	214	108
28	64	32	31	18	13	20	10	10	24	40	89	60
29	451	32	25	18	------	12	9.0	10	17	28	59	53
30	142	32	23	18	------	10	8.7	9.5	15	16	46	63
31	99	------	24	18	------	11	------	9.5	------	25	39	------
TOTAL	2,712	1,372	863	718	444	353.7	391.9	384.9	494.5	793	1,559	1,645
MEAN	87.5	45.7	27.8	23.2	15.9	11.4	13.1	12.4	16.5	25.6	50.3	54.8
MAX	451	82	38	51	18	20	41	43	96	85	214	130
MIN	39	32	22	18	13	8.4	8.4	7.8	7.9	12	20	33
CFSM	4.76	2.48	1.51	1.26	.86	.62	.71	.67	.90	1.39	2.73	2.98
IN.	5.48	2.77	1.74	1.45	.90	.72	.79	.78	1.00	1.60	3.15	3.33
AC-FT	5,380	2,720	1,710	1,420	881	702	777	763	981	1,570	3,090	3,260

CAL YR 1976 TOTAL 13,826.0 MEAN 37.8 MAX 480 MIN 12 CFSM 2.05 IN 27.95 AC-FT 27,420
WTR YR 1977 TOTAL 11,731.0 MEAN 32.1 MAX 451 MIN 7.8 CFSM 1.74 IN 23.72 AC-FT 23,270

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to current year.
SEDIMENT RECORDS: August 1960 to November 1967 (partial-record station), January 1968 to current year (daily-record station).

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean 20,400 mg/L November 27, 1968; minimum daily mean 0 mg/L on February 8, 22, 1972.
SEDIMENT DISCHARGE: Maximum daily, 110,000 tons (100,000 tonnes) November 27, 1968, minimum daily, 0 ton (0 tonne) on February 8, 22, 1972.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean 1,080 mg/L October 15, 1976; minimum daily mean 1.0 mg/L several days during year.
SEDIMENT DISCHARGE: Maximum daily, 3,650 tons (3,310 tonnes) October 15, 1976; minimum daily, 0.02 ton (0.02 tonne) several days during March 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
23...	0650	41	138	7.4	22.0	10.4	.3	3200	400	2500	19
DEC											
08...	1020	30	132	8.2	19.0	9.0	1.5	4800	640	550	15
FEB											
04...	1015	17	214	8.3	19.5	10.6	1.3	7200	1100	370	15
APR											
22...	1050	13	134	7.5	22.5	9.2	1.4	77000	3300	4700	11
JUN											
09...	1045	6.9	182	8.1	27.0	8.9	1.8	29000	960	750	15
AUG											
15...	1210	28	140	8.0	26.0	8.6	1.5	40000	10000	14000	11

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
23...	5.4	7.8	1.7	64	0	52	4.1	12	6.9	24	.70
DEC											
08...	5.6	8.0	1.6	66	0	54	.7	14	7.2	24	.62
FEB											
04...	5.8	8.3	1.7	67	0	55	.5	14	7.0	22	.49
APR											
22...	4.6	7.1	2.3	50	0	41	2.5	13	7.3	19	1.3
JUN											
09...	6.1	8.7	1.7	74	0	61	.9	19	7.2	22	.12
AUG											
15...	5.1	7.3	1.9	58	0	48	.9	9.4	7.3	23	.52

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)
OCT											
23...	.00	.01	.06	.07	.77	3.4	.01	.01	--	--	--
DEC											
08...	.00	.01	.15	.16	.78	3.5	.01	.02	0	0	<10
FEB											
04...	.00	.01	.11	.12	.61	2.7	.01	.02	--	--	--
APR											
22...	.03	.06	.29	.35	1.7	7.3	.04	.06	--	--	--
JUN											
09...	.00	.01	.15	.16	.28	1.2	.00	.01	2	1	<10
AUG											
15...	.03	.07	.22	.29	.84	3.7	.05	.07	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT										
23...	--	--	20	--	--	--	--	4.4	2	.22
DEC										
08...	5	16	5	.1	0	0	2	4.6	7	.57
FEB										
04...	--	--	10	--	--	--	--	5.0	3	.14
APR										
22...	--	--	0	--	--	--	--	3.7	62	2.2
JUN										
09...	5	12	30	.0	8	0	30	6.4	9	.17
AUG										
15...	--	--	70	--	--	--	--	6.4	--	--

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
OCT											
29...	1530	11	16	26	38	46	72	84	93	98	99
29...	1550	11	20	32	42	53	81	92	97	99	99
29...	1620	10	17	24	32	33	71	84	95	98	99
AUG											
22...	1720	5	10	17	29	48	79	94	99	99	99
22...	1750	16	27	38	55	78	90	97	99	99	99
26...	0600	14	25	39	55	74	92	97	99	99	99

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	67	470	114	82	35	7.8	38	8	.82
2	57	252	45	66	10	1.8	36	4	.39
3	55	123	23	68	28	6.3	31	.6	.50
4	51	74	11	61	24	5.6	38	119	13
5	64	248	52	57	35	5.4	33	10	.89
6	91	295	149	54	30	4.4	30	10	.81
7	55	100	14	51	30	4.1	29	7	.55
8	61	116	22	55	87	15	29	7	.55
9	48	59	7.1	49	8	1.1	30	9	.73
10	43	47	5.4	46	8	.99	31	5	.41
11	55	161	25	45	8	.97	29	5	.39
12	49	68	9.0	43	5	.58	28	5	.38
13	52	108	17	42	4	.45	28	5	.38
14	49	80	12	52	97	24	27	4	.29
15	413	1080	3650	45	85	10	28	4	.30
16	82	136	28	41	44	4.9	27	3	.21
17	57	30	4.6	40	10	1.1	26	3	.21
18	51	18	2.8	40	10	1.1	25	3	.20
19	49	9	1.1	39	5	.53	25	3	.20
20	47	8	1.0	40	5	.54	25	3	.20
21	44	6	.71	38	5	.51	25	3	.20
22	42	6	.68	36	5	.49	25	3	.20
23	41	6	.66	36	5	.49	24	4	.26
24	42	8	.91	35	5	.47	24	3	.19
25	39	5	.53	46	60	46	24	3	.19
26	94	495	269	36	10	.97	23	6	.39
27	158	633	960	33	9	.80	22	3	.18
28	64	136	25	32	5	.43	31	6	.50
29	451	962	4560	32	5	.43	25	6	.40
30	142	850	460	32	10	.86	23	5	.31
31	99	151	41	---	---	---	24	3	.19
TOTAL	2712	---	10511.49	1372	---	148.11	863	---	24.42

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	23	3	.19	18	3	.15	12	23	.74
2	22	3	.18	17	3	.14	12	5	.16
3	22	4	.24	18	5	.24	12	1	.03
4	23	3	.19	18	3	.15	12	1	.03
5	22	3	.19	18	39	1.9	12	1	.03
6	21	3	.17	17	5	.23	12	2	.06
7	21	3	.17	17	20	.92	11	1	.03
8	20	3	.16	18	20	.97	11	1	.03
9	20	3	.16	17	26	1.2	11	2	.06
10	20	2	.11	16	36	1.6	11	2	.06
11	20	3	.16	17	24	1.1	10	2	.05
12	20	12	.65	18	16	.78	10	1	.03
13	19	10	.51	16	29	1.2	10	2	.05
14	19	5	.26	16	10	.43	9.5	2	.05
15	25	4	.27	15	3	.12	9.5	2	.05
16	19	3	.15	15	4	.16	11	1	.03
17	18	1	.05	16	5	.22	12	1	.03
18	18	2	.10	16	1	.04	16	21	1.2
19	18	23	1.1	15	2	.08	14	8	.22
20	18	29	1.4	16	2	.08	10	2	.05
21	51	169	28	15	2	.08	10	17	.50
22	32	41	3.5	14	1	.04	9.5	1	.03
23	50	158	34	14	2	.08	8.7	1	.02
24	43	124	20	14	2	.08	8.7	1	.02
25	23	20	1.2	14	3	.11	8.4	1	.02
26	20	26	1.4	13	1	.04	8.4	1	.02
27	19	24	1.2	13	8	.28	19	63	4.3
28	18	4	.19	13	1	.03	20	28	1.6
29	18	5	.24	---	---	---	12	5	.16
30	18	32	1.6	---	---	---	10	5	.15
31	18	3	.15	---	---	---	11	5	.12
TOTAL	718	---	97.89	444	---	12.45	353.7	---	9.93

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	10	5	.14	8.4	6	.14	9.0	47	1.1
2	10	5	.14	10	100	2.7	8.7	7	.16
3	9.5	5	.13	7.8	34	.72	8.9	7	.17
4	8.7	5	.12	14	49	1.8	8.6	7	.16
5	8.4	5	.11	20	54	3.4	8.4	7	.16
6	9.0	29	.70	14	37	1.4	10	7	.19
7	8.4	65	1.5	18	38	1.8	9.0	7	.17
8	12	98	2.6	12	34	.92	8.4	7	.16
9	34	125	13	11	31	.92	7.9	7	.15
10	18	62	3.0	10	10	.27	8.1	7	.15
11	13	20	.70	9.0	8	.19	8.1	11	.24
12	12	33	1.1	9.0	33	.80	8.4	55	1.2
13	10	35	.94	8.7	9	.21	8.1	22	.48
14	9.4	7	.18	8.1	9	.20	32	147	26
15	9.5	4	.10	9.5	9	.24	19	174	8.9
16	9.8	7	.18	12	30	.97	18	91	4.4
17	10	5	.14	12	48	1.6	12	55	1.8
18	10	33	.89	12	47	1.5	10	51	1.4
19	12	6	.19	9.0	55	1.3	10	17	.46
20	41	320	88	8.7	59	1.4	8.7	10	.23
21	25	221	17	8.7	42	.99	8.4	20	.45
22	15	50	2.0	10	40	1.1	8.4	14	.32
23	17	51	2.3	43	166	18	8.4	11	.25
24	13	43	1.5	22	22	3.0	14	21	.79
25	11	51	1.5	14	40	1.5	40	232	82
26	9.5	25	.64	13	31	1.0	96	563	326
27	9.0	36	.87	12	11	.36	42	136	15
28	10	20	.54	10	11	.30	24	82	5.3
29	9.0	9	.22	10	7	.19	17	52	2.4
30	8.7	16	.38	9.5	45	1.2	15	49	2.0
31	---	---	---	9.5	35	.90	---	---	---
TOTAL	391.9	---	140.81	384.9	---	51.02	494.5	---	482.19

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	25	78	9.0	68	349	100	36	20	1.9
2	22	140	8.3	46	200	22	33	12	1.1
3	16	95	4.1	25	81	5.5	102	403	400
4	14	58	2.2	20	53	2.9	70	263	50
5	33	118	14	29	109	10	48	32	4.1
6	36	163	16	40	211	26	48	54	7.2
7	20	70	3.8	28	149	11	43	43	1.2
8	18	99	4.8	20	40	2.2	40	10	1.1
9	16	22	.95	32	72	8.6	37	10	1.0
10	85	744	840	95	291	305	34	7	.64
11	45	260	29	46	83	10	33	9	.80
12	51	189	26	28	93	7.0	42	42	15
13	41	181	20	26	23	1.6	130	669	649
14	29	50	3.9	33	70	7.2	61	165	31
15	23	42	2.6	42	154	17	76	239	69
16	18	51	2.5	26	69	4.8	63	147	28
17	18	24	1.2	25	54	4.4	50	190	26
18	16	31	1.3	46	102	21	45	100	12
19	14	21	.79	33	92	6.6	49	108	16
20	20	54	2.0	25	23	1.6	51	84	14
21	16	47	2.0	47	154	31	43	83	9.6
22	14	42	1.6	96	541	500	39	77	8.1
23	13	17	.60	55	242	36	38	44	4.5
24	13	17	.60	38	61	6.2	37	40	4.0
25	12	10	.32	35	27	2.6	61	149	42
26	19	54	5.4	108	503	510	52	117	16
27	37	223	24	214	711	1160	108	381	335
28	40	164	25	89	194	47	60	68	11
29	28	120	9.0	59	64	10	53	100	22
30	16	130	5.6	46	43	5.3	63	238	58
31	25	105	8.5	39	19	2.0		---	---
TOTAL	793	---	1075.06	1559	---	2884.5	1645	---	1839.24

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR

LOCATION.--Lat 18°27'20", long 66°42'10", at bridge on unimproved road, about 1,200 ft (366 m) upstream from Central Cambalache, near Highway 2, 8.3 mi (13.4 km) downstream from Dos Bocas Reservoir, 1.5 mi (2.4 km) downstream from Río Tanamá, and 1.6 mi (2.6 km) southeast of Arecibo.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to January 1975 (monthly measurements only), February 1965 to April 1969 (occasional measurements only), May 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.73 ft (1.137 m) above mean sea level.

REMARKS.--Records fair except those for periods of no gage-height record, May 26 to June 14, and above 6,000 ft^3/s (170 m^3/s), which are poor. Flow regulated at Lago Dos Bocas dam, about 12 mi (19 km) upstream.

AVERAGE DISCHARGE.--8 years (1970-77) 460 ft^3/s (13.027 m^3/s), 333,300 acre-ft/yr (411 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft^3/s (671 m^3/s) Sept. 16, 1975, gage height, 13.52 ft (4.121 m) from rating curve extended above 6,000 ft^3/s (170 m^3/s) on the basis of logarithmic extension and revised during the 1977 water year; minimum, 50 ft^3/s (1.416 m^3/s) Feb. 26, 1974, gage height, 4.25 ft (1.295 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations above mean sea level of major floods at valley cross sections along Expressway PR-22 about 1.0 mi (1.6 km) above gage site are as follows: August 8, 1899, 195,000 ft^3/s (5,522 m^3/s), gage height, 24.4 ft (7.44 m); September 13, 1928, 105,000 ft^3/s (2,974 m^3/s), gage height, 21.6 ft (6.58 m); October 13, 1954, 76,000 ft^3/s (2,150 m^3/s), gage height, 19.1 ft (5.82 m); and November 26, 1968, 21,000 ft /s (595 m^3/s), gage height, 16.6 ft (5.06 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 3,430 ft^3/s (97.1 m^3/s) December 13, gage height, 9.74 ft (2.969 m), no peak above base of 4,350 ft^3/s (123 m^3/s); minimum daily, 63 ft^3/s (1.784 m^3/s) July 1, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	820	1,210	296	146	191	121	143	97	210	63	149	390
2	335	335	196	380	130	112	168	142	170	99	137	154
3	173	489	171	239	132	90	99	174	140	87	88	121
4	525	711	177	211	129	120	114	232	130	90	72	184
5	696	858	196	263	130	130	149	232	120	68	137	108
6	676	666	116	173	131	159	129	117	120	121	447	180
7	822	430	323	315	132	178	194	83	160	85	240	137
8	846	480	566	319	129	142	172	120	130	127	214	130
9	546	795	1,020	205	111	178	100	69	100	172	212	138
10	365	678	747	236	105	185	258	67	95	90	212	182
11	587	708	795	183	124	270	152	489	90	441	322	438
12	953	364	833	142	132	129	93	628	88	333	313	250
13	565	527	1,480	154	126	128	146	328	200	244	142	256
14	683	411	1,650	164	212	158	119	126	81	411	95	810
15	1,370	434	1,070	135	166	123	122	88	104	201	109	360
16	1,660	509	1,170	112	228	110	238	106	80	100	252	990
17	779	271	1,030	129	222	205	192	164	117	102	176	984
18	778	405	1,140	170	360	200	384	232	88	444	194	471
19	651	410	931	238	244	133	158	122	76	135	314	363
20	678	629	1,800	350	110	118	156	252	77	125	198	308
21	420	227	1,020	246	221	100	571	186	306	294	126	429
22	416	158	181	227	300	92	288	131	381	357	252	298
23	239	264	317	212	318	133	318	100	238	164	774	228
24	158	492	324	895	180	89	272	182	125	88	525	214
25	170	200	240	490	210	139	136	129	86	82	188	192
26	526	210	109	320	320	120	254	170	146	63	204	471
27	1,350	179	226	288	184	147	290	140	226	132	266	298
28	1,060	270	164	478	118	244	268	120	102	244	260	462
29	427	260	242	252	------	125	230	120	113	502	610	244
30	553	473	291	240	------	76	109	420	82	162	684	280
31	2,070	------	284	152	------	113	------	260	------	240	468	------
TOTAL	21,897	14,103	19,105	8,064	5,095	4,367	6,022	5,826	4,181	5,866	8,380	10,070
MEAN	706	470	616	260	182	141	201	188	139	189	270	336
MAX	2,070	1,210	1,800	895	360	270	571	628	381	502	774	990
MIN	158	158	109	112	105	76	93	67	76	63	72	108
AC-FT	43,430	27,970	37,890	15,990	10,110	8,660	11,940	11,560	8,290	11,640	16,620	19,970

CAL YR 1976 TOTAL 144,526 MEAN 395 MAX 2,070 MIN 90 AC-FT 286,700
WTR YR 1977 TOTAL 112,976 MEAN 310 MAX 2,070 MIN 63 AC-FT 224,100

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1963 to March 1966, January 1969 to current year.
SEDIMENT RECORDS: January to June 1963, October 1969, October 1970, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
23...	1115	162	230	7.6	23.0	8.8	6.0	2000	650	540	29
DEC											
08...	1415	E450	224	8.1	24.0	9.7	2.3	900	300	70	33
FEB											
18...	1030	144	215	8.1	23.5	8.8	1.0	1000	180	210	28
APR											
21...	0900	217	228	7.5	25.0	6.9	1.4	22000	1600	2800	30
JUN											
14...	0900	89	263	7.6	27.0	8.0	.9	5500	450	340	--
AUG											
12...	0850	152	215	7.6	26.5	6.9	2.8	26000	6100	4000	25

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
23...	4.4	7.8	1.7	112	0	92	4.5	9.8	8.4	15	.69
DEC											
08...	5.2	8.5	1.7	127	0	104	1.6	13	9.4	16	.69
FEB											
18...	6.2	10	1.9	117	0	96	1.5	13	11	16	.31
APR											
21...	5.4	9.2	2.0	119	0	98	6.0	11	9.8	15	.30
JUN											
14...	--	--	--	133	0	109	5.3	--	--	--	--
AUG											
12...	5.6	8.9	2.0	104	0	85	4.2	11	10	5.7	.49

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
23...	.01	.03	.17	.20	.90	4.0	.04	.05	--	--	--
DEC											
08...	.01	.03	.20	.23	.93	4.1	.04	.06	0	2	<10
FEB											
18...	.01	.01	.18	.19	.51	2.3	.01	.02	--	--	--
APR											
21...	.01	.01	.31	.32	.63	2.8	.03	.05	--	--	--
JUN											
14...	--	--	--	--	--	--	--	--	--	--	--
AUG											
12...	.02	.06	.31	.37	.88	3.9	.03	.04	--	--	--

E Estimated.

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
23...	--	--	90	--	--	--	--	4.4	42	18
DEC										
08...	6	35	6	.1	7	0	10	4.2	38	46
FEB										
18...	--	--	10	--	--	--	--	2.7	3	1.2
APR										
21...	--	--	0	--	--	--	--	1.2	9	5.3
JUN										
14...	--	--	--	--	--	--	--	--	3	.72
AUG										
12...	--	--	90	--	--	--	--	6.7	63	26

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN										
14...	0900	.0	0	.0	.0	.0	.0	.0	.0	.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN										
14...	.0	.0	.0	.0	.0	0	.0	0	0	0

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR

LOCATION.--Lat 18°17'45", long 66°24'47", on left bank, 0.1 mi (0.2 km) downstream from Quebrada Perchas, 1.0 mi (1.6 km) upstream from confluence with Río Sana Muerto, and 2.2 mi (3.5 km) south of Morovis.

DRAINAGE AREA.--55.2 mi^2 (143.0 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 440 ft (134.1 m), from topographic map. Feb. 2, 1966 to Apr. 27, 1967, staff gage read twice daily.

REMARKS.--Records good except those for period of no gage-height record, Oct. 14-18, which are poor.

AVERAGE DISCHARGE.--12 years (1966-77), 104 ft^3/s (2.945 m^3/s), 25.58 in/yr (650 mm/yr), 73,350 acre-ft/yr (90.4 hm^3); median of yearly mean discharges, 80 ft^3/s (2.266 m^3/s), 58,000 acre-ft/yr (72 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft^3/s (991 m^3/s) Oct. 9, 1970, gage height, 20.3 ft (6.19 m), from floodmarks, from rating curve extended above 200 ft^3/s (5.66 m^3/s) on basis of computations of flow over broad-crested weir and indirect measurement of peak flow at 13.5 ft (4.11 m), 16.0 ft (4.88 m) and 20.3 ft (6.19 m); minimum daily 13 ft^3/s (0.368 m^3/s) Aug. 26, 1974.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 1,920 ft^3/s (54.4 m^3/s) October 30, gage height, 3.72 ft (1.134 m), no peak above base of 3,500 ft^3/s (99.1 m^3/s); minimum, 14 ft^3/s (0.396 m^3/s) July 9, gage height, 0.34 ft (0.104 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	175	80	35	36	26	27	23	20	18	17	22
2	82	111	82	35	35	26	25	24	19	18	18	20
3	47	97	220	34	40	27	26	22	18	17	21	19
4	38	85	127	35	36	27	25	22	17	16	32	18
5	53	76	65	34	34	27	24	22	19	16	31	20
6	36	71	58	33	33	27	26	21	18	16	33	27
7	116	68	49	32	32	27	28	22	17	16	26	61
8	465	64	44	32	37	27	27	22	17	16	24	31
9	312	55	48	32	34	26	25	21	16	15	85	25
10	121	55	54	32	32	25	24	20	16	20	103	22
11	100	54	50	32	36	25	31	19	16	32	72	22
12	270	50	46	32	34	25	25	20	16	21	103	29
13	375	52	44	31	31	25	24	20	16	20	72	27
14	170	49	42	32	30	27	23	19	16	21	78	27
15	134	49	42	48	30	27	22	18	16	18	49	24
16	199	47	43	39	31	28	22	18	18	17	33	22
17	110	50	42	33	30	28	22	20	19	21	51	20
18	96	43	40	32	29	26	21	19	17	22	143	20
19	81	42	38	34	29	28	24	18	16	18	47	19
20	76	40	37	37	29	25	26	17	16	16	29	20
21	62	41	37	489	29	25	29	18	15	16	58	21
22	59	41	37	151	28	25	32	23	15	16	187	23
23	52	40	36	133	29	24	62	43	16	16	89	25
24	69	40	36	99	28	24	38	44	17	15	53	27
25	56	39	38	64	28	24	27	27	17	16	41	23
26	95	39	36	49	27	24	25	26	17	16	32	34
27	103	42	35	43	27	34	23	24	17	27	27	26
28	56	51	48	40	27	51	23	47	17	22	25	23
29	280	41	43	39	------	30	23	28	16	20	23	20
30	667	43	36	37	------	28	25	23	16	18	31	32
31	510	------	36	35	------	28	------	21	------	17	24	------
TOTAL	5,197	1,750	1,669	1,863	881	846	804	731	506	573	1,657	749
MEAN	168	58.3	53.8	60.1	31.5	27.3	26.8	23.6	16.9	18.5	53.5	25.0
MAX	667	175	220	489	40	51	62	47	20	32	187	61
MIN	36	39	35	31	27	24	21	17	15	15	17	18
CFSM	3.04	1.06	.97	1.09	.57	.49	.49	.43	.31	.34	.97	.45
IN.	3.50	1.18	1.12	1.26	.59	.57	.54	.49	.34	.39	1.12	.50
AC-FT	10,310	3,470	3,310	3,700	1,750	1,680	1,590	1,450	1,000	1,140	3,290	1,490

CAL YR 1976 TOTAL 26,848 MEAN 73.4 MAX 818 MIN 21 CFSM 1.33 IN 18.09 AC-FT 53,250
WTR YR 1977 TOTAL 17,226 MEAN 47.2 MAX 667 MIN 15 CFSM .86 IN 11.61 AC-FT 34,170

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1968 to December 1975 (discontinued).
SEDIMENT RECORDS: November 1966, April 1968 to January 1969, September 1971, April to December 1975, October 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 08...	1115	170	25.0	287	132

50034000 RIO BAUTA NEAR OROCOVIS, PR

LOCATION.--Lat 18°14'10", long 66°27'18", on left bank, at bridge on Highway 157 (km 12.1), and 4.2 mi (6.8 km) west of Orocovis.

DRAINAGE AREA.--16.7 mi2 (43.3 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to April 1966 (annual low-flow measurements only), February to September 1969 (occasional measurements only), October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 772.82 ft (235.556 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--7 years (1971-77), 30.6 ft^3/s (0.867 m^3/s), 24.88 in/yr (632 mm/yr), 22,170 acre-ft/yr (27.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,800 ft^3/s (504 m^3/s) Oct. 9, 1970, gage height, 21.9 ft (6.68 m), from floodmark, from rating curve extended above 100 ft^3/s (2.83 m^3/s) on basis of step-backwater analysis by U.S. Bureau of Reclamation; minimum, 2.8 ft^3/s (0.079 m^3/s) July 23, 1977, gage height, 6.31 ft (1.923 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 634 ft^3/s (18.0 m^3/s), October 30, gage height, 10.81 ft (3.295 m), no peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum, 2.8 ft^3/s (0.079 m^3/s) July 23, gage height, 6.31 ft (1.923 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	54	16	8.0	7.3	5.0	5.4	5.2	6.0	4.0	3.3	4.5
2	26	36	13	8.2	7.3	5.0	5.2	5.1	5.2	4.0	3.7	3.5
3	14	28	16	7.7	8.0	5.2	5.2	5.0	5.0	4.0	4.2	4.1
4	20	23	12	7.7	7.3	5.0	5.2	4.7	4.7	3.6	4.0	6.8
5	30	20	11	7.5	6.9	5.0	5.2	4.5	4.3	3.6	5.4	5.6
6	20	18	11	7.3	6.7	5.0	5.2	9.6	3.8	3.6	5.8	8.1
7	21	18	9.8	7.1	6.9	5.2	5.2	7.7	3.6	3.6	6.3	12
8	37	16	9.8	7.1	7.3	5.4	5.2	5.0	3.6	3.6	7.8	5.9
9	37	22	11	7.1	7.1	5.2	7.5	4.5	3.6	3.6	7.1	4.0
10	34	27	11	6.9	6.4	5.0	8.9	4.3	3.6	14	6.1	3.4
11	111	21	10	7.3	7.2	4.7	9.6	4.1	3.8	27	9.2	18
12	132	18	9.3	7.3	6.4	4.7	6.0	4.1	3.8	16	8.7	55
13	164	16	9.2	6.7	6.0	4.7	5.4	4.0	3.8	7.6	6.3	44
14	122	16	8.9	6.7	5.8	4.9	4.9	4.0	4.0	6.3	5.6	16
15	163	14	8.6	8.9	5.8	5.0	5.2	4.1	4.0	5.2	4.0	12
16	109	14	8.6	7.1	5.8	6.0	5.2	4.5	4.3	4.2	3.3	7.5
17	48	14	9.1	6.4	5.8	5.0	5.0	5.0	5.4	7.6	4.5	4.8
18	30	12	8.6	7.5	6.0	8.5	6.4	4.7	4.5	5.6	6.8	6.2
19	22	12	8.4	7.5	6.0	5.8	6.4	4.1	4.1	4.5	9.3	8.9
20	18	12	8.0	7.7	5.8	6.0	8.0	3.8	4.0	3.8	4.7	5.4
21	15	11	8.0	34	5.4	5.8	8.6	4.0	4.0	3.3	7.9	4.7
22	14	11	7.7	20	5.6	5.6	7.1	4.7	4.0	3.2	24	5.0
23	14	11	7.7	28	5.6	5.2	11	32	4.0	3.0	11	15
24	13	11	7.5	24	5.6	5.0	7.7	16	4.1	3.3	7.4	30
25	12	10	7.5	13	5.6	5.0	6.0	20	3.8	3.5	6.1	20
26	108	10	7.5	10	5.4	5.0	5.4	21	3.8	4.0	5.2	24
27	75	11	7.3	8.9	5.2	8.4	5.1	48	3.6	5.4	7.6	38
28	34	10	11	8.4	5.0	9.3	5.2	36	3.6	4.2	6.3	17
29	41	10	9.1	8.0	------	6.0	5.3	14	3.3	4.8	6.1	62
30	187	10	8.2	7.5	------	5.6	5.2	9.8	3.8	3.7	7.0	54
31	124	------	8.0	7.3	------	5.4	------	7.5	------	3.3	6.0	------
TOTAL	1,830	516	298.8	316.8	175.2	172.6	186.9	311.0	123.1	177.1	210.7	505.4
MEAN	59.0	17.2	9.64	10.2	6.26	5.57	6.23	10.0	4.10	5.71	6.80	16.8
MAX	187	54	16	34	8.0	9.3	11	48	6.0	27	24	62
MIN	12	10	7.3	6.4	5.0	4.7	4.9	3.8	3.3	3.0	3.3	3.4
CFSM	3.53	1.03	.58	.61	.37	.33	.37	.60	.25	.34	.41	1.01
IN.	4.08	1.15	.67	.71	.39	.38	.42	.69	.27	.39	.47	1.13
AC-FT	3,630	1,020	593	628	348	342	371	617	244	351	418	1,000

CAL YR 1976 TOTAL 6,451.5 MEAN 17.6 MAX 220 MIN 4.3 CFSM 1.05 IN 14.37 AC-FT 12,800
WTR YR 1977 TOTAL 4,823.6 MEAN 13.2 MAX 187 MIN 3.0 CFSM .79 IN 10.74 AC-FT 9,570

50034000 RIO BAUTA NEAR OROCOVIS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1958 to April 1966, and February 1969 to current year.
SEDIMENT RECORDS: April to October 1969, March 1971 to September 1972, March to October 1975, June 15, 1976, May, June, and September 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC												
13...	1235	9.6	200	8.5	21.5	8.1	20	7.7	31	2.2	13	49
MAR												
21...	1520	4.4	205	8.4	25.0	7.6	21	8.7	12	2.0	7.5	11
MAY												
23...	1245	E64	--	--	22.5	--	--	--	--	--	--	--
JUN												
03...	1355	5.1	225	8.9	28.0	7.3	19	7.9	11	4.1	9.2	12
SEP												
16...	1325	E8.2	210	8.6	27.5	8.2	--	--	11	1.5	9.4	13

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC												
13...	25	--	--	--	--	7	--	--	--	--	--	--
MAR												
21...	26	--	--	--	--	50	--	--	--	--	--	--
MAY												
23...	--	--	--	--	--	--	--	--	--	--	368	64
JUN												
03...	26	0	10	3	3	30	.0	7	0	110	27	.37
SEP												
16...	26	--	--	--	--	10	--	--	--	--	54	1.2

E Estimated.

50035000 RIO GRANDE DE MANATI AT CIALES, PR

LOCATION.--Lat 18°19'26", long 67°27'36", on left bank, 1,600 ft (488 m) upstream from crossing of power line, 0.8 mi (1.29 km) downstream from Quebrada Saliente, 1.1 mi (1.77 km) upstream from Quebrada Cojo Valés, and 1.2 mi (1.93 km) southeast of Ciales.

DRAINAGE AREA.--128 mi^2 (332 km^2), excludes 6 mi^2 (15.5 km^2) upstream from Lagos El Guineo and de Matrullas.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1946 to September 1953, May 1956 to December 1957 (unpublished, available in files of Caribbean District Office and in the National Water Data Storage and Retrieval System, Washington, D.C.); February 1959 to September 1960 (monthly discharge measurements only); October 1960 to current year.
Equivalent record from January 1971 to December 1972 published as 50035200 Río Grande de Manatí at Highway 145 at Ciales at site 1.6 mi (2.57 km) downstream, drainage area 132 mi^2 (342 km^2).

GAGE.--Water-stage recorder. Prior to Apr. 1, 1962, staff gage, read twice daily, at site 100 ft (30.5 m) upstream at same datum. Altitude of gage is 150 ft (45.7 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--17 years (1961-77), 247 ft^3/s (6.995 m^3/s), 26.20 in/yr (665 mm/yr), 179,000 acre-ft/yr (221 hm^3/yr); median of yearly mean discharges, 222 ft^3/s (6.29 m^3/s), 161,000 acre-ft/yr (199 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125,000 ft^3/s (3,540 m^3/s) Oct. 9, 1970, gage height, 24.0 ft (7.32 m), from floodmark, from rating curve extended above 3,000 ft^3/s (85.0 m^3/s) on basis of slope-area measurements of peak flow at gage heights 13.2 ft (4.02 m), 15.0 ft (4.57 m), 19.0 ft (5.79 m), and 24.0 ft (7.32 m) (datum then in use); minimum daily, 24 ft^3/s (0.680 m^3/s) July 13-15, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights of major floods, pointed out by local residents are as follows: August 1899, 50 ft (15.2 m), September 1928, 36 ft (11.0 m), and September 1932, 34 ft (10.4 m) at site 1.6 mi (2.57 km) upstream.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 7,000 ft^3/s (198 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 14	1545	*11,300	320	*7.28	2.219	Oct. 30	1800	10,900	309	7.13	2.173

Minimum daily discharge, 25 ft^3/s (0.708 m^3/s) July 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	744	425	162	78	80	58	58	62	48	33	37	41
2	335	284	184	75	80	58	56	63	45	33	39	35
3	159	303	482	68	91	58	54	57	43	32	47	29
4	211	245	312	68	85	58	53	57	41	32	82	34
5	331	192	156	66	80	58	53	60	39	32	93	42
6	246	165	130	66	78	58	111	57	38	31	99	60
7	403	156	115	64	75	57	121	80	37	31	75	126
8	1,320	148	102	64	80	57	80	68	36	31	81	77
9	863	548	102	57	80	57	60	62	35	31	98	53
10	304	276	110	55	73	57	52	60	34	51	209	39
11	340	200	108	60	73	56	144	55	34	220	140	46
12	720	159	95	60	73	56	100	53	33	162	195	172
13	1,040	140	90	55	71	56	78	51	33	86	176	210
14	2,850	128	88	55	68	56	64	51	33	64	157	160
15	1,340	130	88	98	64	56	60	51	33	43	121	100
16	964	118	92	92	60	56	56	57	66	33	83	70
17	391	120	92	70	64	56	55	62	52	33	66	54
18	268	118	85	62	64	56	54	71	46	53	239	50
19	200	110	82	68	62	130	54	57	42	39	116	48
20	171	110	80	85	61	98	184	55	39	31	74	47
21	148	108	78	1,050	60	80	192	51	37	26	97	46
22	142	105	78	347	60	72	102	66	35	29	300	47
23	138	100	78	294	59	66	145	148	34	29	158	80
24	142	98	75	311	59	60	112	177	33	25	103	170
25	132	95	75	159	58	56	77	112	70	26	82	110
26	375	98	73	130	58	54	62	125	45	29	66	90
27	423	98	71	108	58	105	57	95	40	75	95	80
28	180	112	92	98	58	158	58	159	36	53	123	74
29	1,100	100	100	92	------	95	60	95	35	45	63	72
30	3,030	98	85	88	------	70	63	62	34	35	66	70
31	1,680	------	88	82	------	62	------	51	------	31	51	------
TOTAL	20,690	5,087	3,648	4,125	1,932	2,130	2,475	2,330	1,206	1,504	3,431	2,332
MEAN	667	170	118	133	69.0	68.7	82.5	75.2	40.2	48.5	111	77.7
MAX	3,030	548	482	1,050	91	158	192	177	70	220	300	210
MIN	132	95	71	55	58	54	52	51	33	25	37	29
CFSM	5.21	1.33	.92	1.04	.54	.54	.64	.59	.31	.38	.87	.61
IN.	6.01	1.48	1.06	1.20	.56	.62	.72	.68	.35	.44	1.00	.68
AC-FT	41,040	10,090	7,240	8,180	3,830	4,220	4,910	4,620	2,390	2,980	6,810	4,630

CAL YR 1976 TOTAL 70,567 MEAN 193 MAX 3,030 MIN 43 CFSM 1.51 IN 20.51 AC-FT 140,000
WTR YR 1977 TOTAL 50,890 MEAN 139 MAX 3,030 MIN 25 CFSM 1.09 IN 14.79 AC-FT 100,900

NOTE.--No gage-height record Feb. 20 to Apr. 20, and June 1 to July 10.

50035200 RIO GRANDE DE MANATI AT HIGHWAY 145 AT CIALES, PR

LOCATION.--Lat 18°20'05", long 66°27'49", near upstream side bridge on Highway 145, and about 0.3 mi (0.5 km) east of Ciales.

DRAINAGE AREA.--132 mi^2 (342 km^2) [excludes the 6 mi^2 (15.5 km^2) upstream from Lago El Guineo and Lago de Matrullas, flow from which is diverted to Río Jacaguas].

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1970 to current year.
SEDIMENT RECORDS: July 1971 to September 1972, June to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL, PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 26...	1355	120	230	7.9	25.0	8.7	1.7	300000	57000	5900	25
DEC 20...	1250	79	233	8.3	23.5	9.6	3.6	800000	61000	9500	28
FEB 22...	1250	55	240	8.6	25.5	9.6	5.0	44000	3600	3300	22
APR 26...	1430	58	254	8.4	28.0	8.5	1.0	63000	9500	980	22
JUN 20...	1340	32	280	8.8	32.0	8.9	2.1	520000	77000	16000	22
AUG 10...	1415	125	235	7.6	27.5	7.2	2.8	400000	67000	7800	21

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 26...	10	22	2.4	112	0	92	2.3	12	30	25	.48
DEC 20...	11	13	2.1	126	0	103	1.0	9.9	14	21	.39
FEB 22...	8.7	14	2.1	103	12	104	.5	10	15	23	.20
APR 26...	8.7	13	2.5	113	2	96	.7	11	16	25	.29
JUN 20...	10	15	1.5	110	8	104	.3	9.5	15	27	.26
AUG 10...	9.0	12	2.8	106	0	87	4.3	9.3	15	25	--

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 26...	.01	.09	.19	.28	.77	3.4	.08	.09	--	--	--
DEC 20...	.01	.24	.28	.52	.92	4.1	.13	.16	1	0	<10
FEB 22...	.01	.39	.52	.91	1.1	5.0	.12	.23	--	--	--
APR 26...	.01	.06	.22	.28	.58	2.6	.11	.13	--	--	--
JUN 20...	.01	.05	.86	.91	1.2	5.2	.07	.17	3	0	<10
AUG 10...	--	--	--		--	--	--	--	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 26...	--	--	60	--	--	--	--	2.0	11	3.6
DEC 20...	3	7	0	.2	2	0	7	3.0	39	8.3
FEB 22...	--	--	10	--	--	--	--	4.4	12	1.8
APR 26...	--	--	0	--	--	--	--	6.4	29	4.5
JUN 20...	8	11	30	.0	10	0	20	7.6	4	.35
AUG 10...	--	--	110	--	--	--	--	--	96	32

50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR

LOCATION.--Lat 18°20'18", long 66°28'28", 100 ft (30.5 m) upstream from bridge on Highway 649, 0.7 mi (1.1 km) upstream from mouth, and about 0.4 mi (0.6 km) west of Ciales.

DRAINAGE AREA.--17.0 mi^2 (44.0 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: July 1969 to April 1971, March 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 26...	1140	21	196	8.3	25.0	8.8	1.4	3200	900	310	28
DEC 20...	1115	13	203	8.3	20.0	10.9	2.0	5600	1300	280	33
FEB 22...	1130	7.8	208	8.2	21.5	11.0	1.0	14000	1900	270	30
APR 26...	1230	6.3	218	8.2	26.0	9.0	1.1	55000	7500	6000	22
JUN 20...	1210	3.4	217	8.1	30.0	9.5	.7	28000	6200	1700	23
AUG 10...	1245	11	265	8.0	27.5	7.7	4.3	500000	44000	36000	30

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 26...	6.4	11	1.9	111	0	91	.9	5.6	11	28	.89
DEC 20...	8.2	12	1.9	126	0	103	1.0	5.9	12	29	1.1
FEB 22...	7.1	12	1.9	130	0	107	1.3	6.2	12	26	.70
APR 26...	6.5	11	2.0	109	0	89	1.1	8.2	13	27	.65
JUN 20...	6.6	12	1.9	130	0	107	1.7	7.0	13	28	.04
AUG 10...	6.1	12	4.6	110	0	90	1.8	14	16	17	1.3

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 26...	.01	.02	.14	.16	1.1	4.7	--	.07	--	--	--
DEC 20...	.01	.00	.16	.16	1.3	5.6	.16	.17	1	0	<10
FEB 22...	.00	.01	.21	.22	.92	4.1	.10	.11	--	--	--
APR 26...	.00	.02	.24	.26	.91	4.0	.12	.16	--	--	--
JUN 20...	.00	.20	.53	.73	.77	3.4	.14	.18	3	0	10
AUG 10...	.08	.77	1.2	2.0	3.4	15	.41	.55	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 26...	--	--	20	--	--	--	--	10	3	.17
DEC 20...	2	3	10	.1	3	1	10	4.0	4	.14
FEB 22...	--	--	10	--	--	--	--	8.6	7	.15
APR 26...	--	--	0	--	--	--	--	7.2	31	.53
JUN 20...	5	7	40	.0	6	0	10	7.8	57	.52
AUG 10...	--	--	180	--	--	--	--	7.9	156	4.6

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR

LOCATION.--Lat 18°25'52", long 66°31'37", at bridge on Highway 2, and 2.3 mi (3.7 km) west of Manatí.

DRAINAGE AREA.--197 mi^2 (510 km^2), approximately, of which about 38 mi^2 (98 km^2) is partly or entirely noncontributing, excludes 6.0 mi^2 (15.5 km^2) upstream from Lago El Guineo and Lago de Matrullas.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1963-68 (annual maximum discharge only), February 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 14 ft (4.3 m), from topographic map. Prior to 1968 crest-stage gage at datum 3.57 ft (1.088 m) lower.

REMARKS.--Records good except those for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--7 years (1971-77), 333 ft^3/s (9.431 m^3/s), 22.95 in/yr (583 mm/yr), 241,300 acre-ft/yr (298 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 119,000 ft^3/s (3,370 m^3/s) Oct. 9, 1970, gage height, 33.30 ft (10.150 m) from rating curve extended above 15,000 ft^3/s (425 m^3/s) on basis of slope-area measurement of peak flow; minimum, 50 ft /s (1.416 m^3/s) Sept. 4, 1977, gage height, 9.47 ft (2.886 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights to gage datum of major floods, pointed out by local residents, are as follows: Sept. 13, 1928, 36.6 ft (11.16 m), Sept. 27, 1932, 36.3 ft (11.06 m), and Aug. 4, 1945, 34.3 ft (10.45 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 6,960 ft^3/s (197 m^3/s) Oct. 15, gage height, 25.97 ft (7.916 m), no peak above base of 9,000 ft^3/s (255 m^3/s); minimum, 50 ft^3/s (1.416 m^3/s) Sept. 4, gage height, 9.47 ft (2.886 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,060	807	154	131	123	87	79	80	88	89	82	72
2	564	504	270	125	122	87	80	82	83	90	84	58
3	280	462	286	123	127	87	79	78	76	89	93	54
4	249	604	662	118	126	88	78	76	74	90	102	50
5	431	434	262	116	118	87	78	81	74	89	170	57
6	418	320	209	115	114	87	79	78	71	115	178	71
7	284	289	182	112	113	86	90	110	70	117	166	146
8	1,200	265	168	112	114	84	86	92	70	104	144	182
9	1,500	535	166	112	113	84	80	84	70	97	149	104
10	497	807	174	110	109	83	79	80	69	97	368	80
11	378	369	180	110	108	80	89	78	65	214	164	98
12	813	294	157	110	109	79	97	72	67	215	144	374
13	1,050	264	148	109	106	82	82	70	69	127	398	685
14	1,990	234	142	109	105	83	78	70	69	107	270	811
15	2,930	223	144	114	102	84	78	71	70	87	226	114
16	1,400	210	139	129	104	86	76	78	74	76	123	142
17	680	202	138	115	102	112	83	86	78	69	79	101
18	462	198	137	108	97	114	82	100	83	76	278	79
19	353	182	134	109	97	100	98	80	87	81	232	72
20	295	178	132	111	96	98	155	81	79	67	104	71
21	259	170	131	972	95	87	160	82	76	66	83	60
22	244	165	128	584	93	82	84	77	75	62	471	58
23	230	162	126	352	92	79	120	96	79	67	367	67
24	229	163	122	592	92	74	86	257	108	70	208	117
25	220	158	122	283	91	72	100	175	93	66	141	127
26	181	157	121	206	91	71	80	197	92	68	117	96
27	680	154	118	176	89	76	72	153	94	80	126	218
28	294	160	119	156	88	119	76	180	89	127	208	796
29	580	152	149	144	------	114	78	165	86	108	134	200
30	2,540	148	141	137	------	91	82	119	83	108	114	604
31	3,060	------	139	128	------	87	------	97	------	93	96	------
TOTAL	25,351	8,970	5,400	6,028	2,936	2,730	2,664	3,225	2,361	3,011	5,619	5,764
MEAN	818	299	174	194	105	88.1	88.8	104	78.7	97.1	181	192
MAX	3,060	807	662	972	127	119	160	257	108	215	471	811
MIN	181	148	118	108	88	71	72	70	65	62	79	50
CFSM	4.15	1.52	.88	.98	.53	.45	.45	.53	.40	.49	.92	.97
IN.	4.79	1.69	1.02	1.14	.55	.52	.50	.61	.45	.57	1.06	1.09
AC-FT	50,280	17,790	10,710	11,960	5,820	5,410	5,280	6,400	4,680	5,970	11,150	11,430

CAL YR 1976 TOTAL 98,439 MEAN 269 MAX 3,060 MIN 88 CFSM 1.37 IN 18.59 AC-FT 195,300
WTR YR 1977 TOTAL 74,059 MEAN 203 MAX 3,060 MIN 50 CFSM 1.03 IN 13.98 AC-FT 146,900

NOTE.--No gage-height record Apr. 16 to May 19.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: October 1969 to current year.
BIOLOGICAL ANALYSES: January 1974 to current year.
PESTICIDES ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: May and October 1969, October 1970, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	HARDNESS (CA,MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT												
05...	1015	512	208	7.7	26.0	6.2	2.6	32000	7300	5500	--	10
NOV												
11...	1000	379	200	7.5	23.0	7.6	--	89000	56000	13000	--	--
DEC												
03...	1210	180	225	7.7	26.0	8.0	2.2	24000	21000	8400	110	11
JAN												
12...	1150	104	262	8.0	25.0	10.8	--	50000	4600	1700	--	--
FEB												
01...	1310	125	273	7.6	28.0	7.8	.9	39000	21000	2300	--	14
MAR												
02...	1140	81	285	7.9	26.0	8.2	--	48000	23000	5300	140	13
APR												
07...	0850	90	273	7.4	25.0	7.6	1.9	150000	12000	11000	--	12
MAY												
03...	1040	78	300	7.7	27.5	7.9	--	18000	9800	670	--	--
JUN												
07...	0955	58	300	7.6	28.0	6.7	1.7	28000	16000	2800	--	11
JUL												
12...	0920	235	292	7.4	27.5	5.2	--	8900	3900	3200	130	13
AUG												
10...	0855	E360	283	7.7	27.0	5.3	4.0	120000	12000	4500	--	--
SEP												
12...	0955	440	305	7.5	27.0	6.1	--	450000	23000	36000	130	12

DATE	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT												
05...	--	1.2	100	0	82	3.2	10	12	19	--	--	--
NOV												
11...	--	--	108	0	89	5.5	--	--	--	--	--	--
DEC												
03...	.5	2.0	122	0	100	3.9	9.5	15	20	171	159	--
JAN												
12...	--	--	160	0	131	2.6	--	--	--	--	--	--
FEB												
01...	--	2.2	157	0	129	6.3	11	18	20	--	--	--
MAR												
02...	.5	1.8	162	0	133	3.3	7.3	14	18	180	184	--
APR												
07...	--	2.0	158	0	130	10	7.8	14	16	--	--	.26
MAY												
03...	--	--	154	0	126	4.9	--	--	--	--	--	--
JUN												
07...	--	1.0	156	0	128	6.3	8.0	15	15	--	--	.15
JUL												
12...	.5	2.3	150	0	120	9.6	8.3	14	22	189	180	--
AUG												
10...	--	--	146	0	120	4.7	--	--	--	--	--	--
SEP												
12...	.5	7.0	140	0	110	7.1	14	17	16	182	183	--

E Estimated.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)
OCT											
05...	--	--	--	.62	1.7	7.6	--	.18	--	--	--
NOV											
11...	--	--	--	.57	1.6	7.0	--	.21	--	--	--
DEC											
03...	--	--	--	.55	1.4	6.0	--	.14	1	0	<10
JAN											
12...	--	--	--	.33	1.0	4.5	--	.09	--	--	--
FEB											
01...	--	--	--	.28	1.2	5.2	--	.11	--	--	--
MAR											
02...	--	--	--	.50	.81	3.6	--	.12	1	1	20
APR											
07...	.02	.06	1.5	1.6	1.9	8.3	.13	.17	--	--	--
MAY											
03...	--	--	--	.37	.84	3.7	--	.07	--	--	--
JUN											
07...	.01	.11	.17	.28	.44	1.9	.08	.12	1	0	20
JUL											
12...	--	--	--	1.4	1.8	7.9	--	.12	2	0	<10
AUG											
10...	--	--	--	.66	1.2	5.1	--	.19	--	--	--
SEP											
12...	--	--	--	.87	1.9	8.2	--	.31	1	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT											
05...	--	--	--	10	--	--	--	--	3.8	129	178
NOV											
11...	--	--	--	--	--	--	--	--	--	--	--
DEC											
03...	13	2500	15	90	.1	--	1	20	--	94	46
JAN											
12...	--	--	--	--	--	--	--	--	--	11	3.1
FEB											
01...	--	--	--	10	--	--	--	--	3.6	46	16
MAR											
02...	6	190	18	40	--	--	0	10	7.5	28	6.1
APR											
07...	--	--	--	10	--	--	--	--	4.6	35	8.5
MAY											
03...	--	--	--	--	--	--	--	--	7.8	31	6.5
JUN											
07...	5	--	8	20	.0	6	0	10	8.3	73	11
JUL											
12...	5	110	15	10	.1	--	0	50	6.3	65	41
AUG											
10...	--	--	--	--	--	--	--	--	5.6	39	27
SEP											
12...	--	--	--	--	.0	--	0	--	7.8	57	68

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)
NOV										
11...	1000	ND	--	ND	--	ND	--	ND	--	ND
JAN										
02...	1310	--	--	--	--	--	--	--	--	--
12...	1150	ND	--	ND	--	ND	--	ND	--	ND
MAY										
03...	1040	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
10...	0855	ND	--	ND	--	ND	--	ND	--	ND
SEP										
10...	0855	--	--	--	--	--	--	--	--	--

DATE	DDT IN BOTTOM MATERIAL (UG/KG)	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)
NOV										
11...	--	ND	--	ND	--	ND	--	ND	--	ND
JAN										
02...	--	--	--	--	--	--	--	--	--	--
12...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY										
03...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
10...	--	ND	--	ND	--	ND	--	ND	--	ND
SEP										
10...	--	--	--	--	--	--	--	--	--	--

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)
NOV										
11...	--	ND	--	ND	--	ND	ND	--	ND	--
JAN										
02...	--	--	--	--	--	--	--	--	--	--
12...	--	ND	--	ND	--	ND	ND	--	ND	--
MAY										
03...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
10...	--	ND	--	ND	--	ND	ND	--	ND	--
SEP										
10...	--	--	--	--	--	--	--	--	--	--

DATE	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
NOV										
11...	ND	--	ND	--	ND	--	ND	--	ND	--
JAN										
02...	--	--	--	--	ND	--	ND	--	ND	--
12...	ND	--	ND	--	--	--	--	--	--	--
MAY										
03...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
10...	ND	--	ND	--	--	--	--	--	--	--
SEP										
10...	--	--	--	--	ND	--	ND	--	ND	--

NOTE: ND - LOOKED FOR BUT NOT DETECTED.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 5,76	NOV 11,76	DEC 3,76	JAN 12,77	FEB 1,77	MAR 2,77
TIME	1015	1000	1210	1150	1310	1140
TOTAL CELLS/ML	0	56	65	260	44	1100
DIVERSITY: DIVISION	0.0	0.0	0.9	1.0	0.9	0.0
.CLASS	0.0	0.0	0.9	1.0	0.9	0.0
..ORDER	0.0	0.0	1.4	1.3	0.9	0.1
...FAMILY	0.0	0.9	2.2	1.5	1.4	0.1
....GENUS	0.0	0.9	2.2	1.7	1.4	0.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	*	0
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	10#	15	53#	20	--	-	1100#	98
....MELOSIRA	--	-	--	-	--	-	19	7	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	22	2
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	*	0
....CYMBELLA	--	-	--	-	--	-	6	2	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	4	10	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	20#	31	9	4	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	19#	33	10#	15	16	6	4	10	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	38#	67	--	-	--	-	4	10	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	5	8	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	160#	60	31#	70	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	20#	31	--	-	*	0	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	APR 7,77		MAY 3,77		JUN 7,77		JUL 12,77		AUG 10,77		SEP 12,77	
TIME	0850		1040		0955		0920		0855		0955	
TOTAL CELLS/ML	770		220		79		48		220		270	
DIVERSITY: DIVISION	1.2		1.2		1.0		0.0		1.5		1.4	
.CLASS	1.2		1.2		1.0		0.0		1.5		1.4	
..ORDER	1.6		1.8		1.7		0.0		1.5		1.4	
...FAMILY	1.7		2.0		1.9		0.0		1.5		1.7	
....GENUS	2.1		2.3		1.9		0.0		1.5		1.7	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	4	2	4	5	--	-	--	-	7	3
...SCENEDESMACEAE												
....ACTINASTRUM	31	4	--	-	--	-	--	-	--	-	51#	19
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	130#	17	40#	18	26#	33	--	-	--	-	--	-
....MELOSIRA	180#	24	24	11	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	65	8	56#	25	30#	38	48#	100	--	-	51#	19
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	8	1	12	5	--	-	--	-	--	-	*	0
...NAVICULACEAE												
....NAVICULA	8	1	--	-	4	5	--	-	54#	25	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	*	0	--	-	--	-	--	-	7	3
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	4	2	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	340#	44	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	110#	50	150#	57
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	54#	25	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	--	-	81#	36	15#	19	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR

LOCATION.--Lat 18°27'25", long 66°32'07", at old railroad bridge, 0.5 mi (0.8 km) east of Highway 140, and 0.6 mi (1.0 km) southeast of Barceloneta Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: October 1976 to September 1977.
SEDIMENT RECORDS: October 1976 to September 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 to SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
26...	1310	170	9500	7.5	26.0	6.8	1.7	6600	1700	170	100
DEC											
20...	1230t	E120	1650	7.7	24.5	3.2	9.5	17000	1800	300	--
20...	1300b	E120	36000	7.4	26.0	.6	2.9	7200	1400	630	--
FEB											
23...	1100t	E98	23000	7.3	26.5	.0	4.9	39000	860	490	--
23...	1115b	E98	1080	7.4	27.0	1.2	7.4	100000	1700	850	--
APR											
29...	1100t	E78	660	7.2	28.0	.0	7.6	240000	1500	1800	39
29...	1115b	E78	780	7.1	27.5	.0	11	93000	540	750	36
JUN											
21...	1045t	E60	1000	7.1	29.5	6.4	5.2	20000	250	500	43
21...	1100b	E60	1000	7.1	28.5	7.8	5.6	20000	230	530	41
AUG											
19...	1200t	E250	775	7.4	28.0	4.5	3.8	34000	280	510	--
19...	1215b	E250	950	7.1	28.0	5.0	3.0	40000	250	860	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
26...	260	2100	80	150	0	123	7.6	520	3700	18	.65
DEC											
20...	--	--	--	--	--	--	--	--	--	--	.72
20...	--	--	--	--	--	--	--	--	--	--	.06
FEB											
23...	--	--	--	--	--	--	--	--	--	--	.46
23...	--	--	--	185	0	152	15	--	--	--	--
23...	--	--	--	179	0	147	11	--	--	--	.01
APR											
29...	12	60	3.7	170	0	139	17	37	91	18	.07
29...	13	75	4.3	170	0	139	22	40	120	18	.07
JUN											
21...	16	110	4.6	172	0	141	22	42	180	14	.03
21...	15	110	4.5	170	0	139	22	41	180	14	.00
AUG											
19...	--	20	3.1	140	0	115	8.9	15	29	19	.57
19...	--	8.8	1.6	140	0	115	18	10	6.3	26	.55

NOTE.--t-top, at 0.5 m depth
b-bottom, at 2.0 m depth
E-Estimated.

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN. (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)
OCT											
26...	.04	.84	.56	1.4	2.1	9.3	.13	.16	--	--	--
DEC											
20...	.06	1.5	1.3	2.8	3.6	16	.14	.19	--	0	<10
20...	.01	1.8	.30	2.1	2.2	9.6	.20	.28	--	0	20
FEB											
23...	.06	2.8	.60	3.4	3.9	17	.13	.19	--	--	--
23...	--	--	--	--	--	--	--	--	2	0	30
23...	.01	.23	.20	.43	.45	2.0	.10	.10	1	0	20
APR											
29...	.10	2.0	1.2	3.2	3.4	15	.23	.30	--	--	--
29...	.12	2.0	1.4	3.4	3.6	16	.22	.34	--	--	--
JUN											
21...	.00	2.3	.70	3.0	3.0	13	.26	.34	3	0	<10
21...	.00	2.3	.70	3.0	3.0	13	.25	.36	2	0	<10
AUG											
19...	.04	.45	.85	1.3	1.9	8.5	.16	.19	--	--	--
19...	.04	.44	.54	.98	1.6	7.0	.19	.23	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT										
26...	--	--	31	--	--	--	--	1.8	3	1.4
DEC										
20...	8	8	--	--	5	--	20	9.2	--	--
20...	2	7	--	--	0	--	20	12	--	--
FEB										
23...	--	--	--	--	--	--	--	3.8	--	--
23...	3	13	--	.1	3	0	0	--	8	2.1
23...	7	5	--	.0	5	0	10	2.0	6	1.6
APR										
29...	--	--	60	--	--	--	--	5.4	60	13
29...	--	--	50	--	--	--	--	5.1	75	16
JUN										
21...	6	15	50	.2	5	0	10	6.4	0	.00
21...	5	14	50	.0	8	0	10	5.9	1	.16
AUG										
19...	--	--	20	--	--	--	--	6.4	--	--
19...	--	--	--	--	--	--	--	6.7	1	.67

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO AUGUST 1977

DATE	APR 29,77	AUG 19,77
TIME	1100	1215
TOTAL CELLS/ML	4600	2500
DIVERSITY: DIVISION	0.1	0.8
.CLASS	0.1	0.8
..ORDER	0.1	1.0
...FAMILY	0.1	1.8
....GENUS	0.5	1.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHRYSOPHYTA				
.BACILLARIOPHYCEAE				
..CENTRALES				
...COSCINODISCACEAE				
....CYCLOTELLA	*	0	--	-
....MELOSIRA	--	-	330	13
..PENNALES				
...ACHNANTHACEAE				
....COCCONEIS	*	0	*	0
...FRAGILARIACEAE				
....FRAGILARIA	--	-	190	8
....SYNEDRA	--	-	*	0
...GOMPHONEMATACEAE				
....GOMPHONEMA	*	0	--	-
...NITZSCHIACEAE				
....NITZSCHIA	*	0	--	-
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOMONADACEAE				
....CRYPTOMONAS	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..HORMOGONALES				
...NOSTOCACEAE				
....ANABAENA	--	-	910#	36
...OSCILLATORIACEAE				
....LYNGBYA	260	6	--	-
....OSCILLATORIA	4200#	93	1100#	42
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....EUGLENA	*	0	--	-
....TRACHELOMONAS	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)				
.DESMOKONTAE				
..DESMOMONADALES				
...PROROCENTRACEAE				
....EXUVIAELLA	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038200 LAGUNA TORTUGUERO OUTLET NEAR VEGA BAJA, PR

LOCATION.--Lat 18°28'29", long 66°26'50", at bridge on Highway 686, 4.2 mi (6.8 km) northeast of Manatí, and 4.4 mi (7.1 km) northwest of Vega Baja.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1964 to April 1966, April 1969 to April 1971, March 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
13...	1220	--	287	7.2	20.5	6.8	--	--	--	--	16
27...	1150	--	28000	8.2	29.0	11.0	1.4	470	190	160	320
DEC											
15...	1220	20	2060	8.2	25.0	9.5	1.2	88	17	34	74
20...	1520	--	338	7.7	23.0	9.2	--	--	--	--	47
FEB											
18...	1345	18	2050	8.1	27.5	10.2	1.5	49	8	3	42
APR											
06...	1420	15	2200	8.1	28.5	8.6	1.6	82	49	45	63
JUN											
09...	1550	11	2400	8.0	33.0	8.8	2.0	170	38	16	68
AUG											
09...	1235	16	2550	8.0	32.0	7.0	1.1	120	40	19	76

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
13...	6.5	15	2.4	--	--	--	--	7.2	16	28	.42
27...	910	5900	300	142	0	116	1.4	1900	14000	2.4	.11
DEC											
15...	44	340	8.8	134	0	110	1.4	87	690	8.1	.45
20...	18	19	2.6	--	--	--	--	17	26	29	--
FEB											
18...	12	300	9.0	135	0	111	1.7	77	600	7.4	.59
APR											
06...	38	330	10	124	0	102	1.6	69	620	6.6	.39
JUN											
09...	41	340	11	124	0	102	2.0	79	620	7.1	.39
AUG											
09...	45	380	13	164	0	135	2.6	83	720	11	.33

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
13...	.04	.26	.58	.84	1.3	5.8	.15	.29	--	--	--
27...	.01	.20	.07	.27	.39	1.7	.03	.05	--	--	--
DEC											
15...	.01	.26	1.1	1.4	1.9	8.2	.01	.01	0	0	<10
20...	--	--	--	--	--	--	--	--	--	--	--
FEB											
18...	.01	.16	1.0	1.2	1.8	8.0	.00	.00	--	--	--
APR											
06...	.01	.19	1.3	1.5	1.9	8.4	.00	.00	--	--	--
JUN											
09...	.01	.32	.98	1.3	1.7	7.5	.00	.01	2	0	10
AUG											
09...	.01	1.1	.80	1.9	2.2	9.9	.00	.02	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
13...	--	--	330	--	--	--	--	6.2	--	--
27...	--	--	40	--	--	--	--	.6	7	--
DEC										
15...	1	2	2	.1	0	0	4	6.2	1	.05
20...	--	--	0	--	--	--	--	--	--	--
FEB										
18...	--	--	20	--	--	--	--	6.7	1	.05
APR										
06...	--	--	10	--	--	--	--	--	3	.12
JUN										
09...	1	6	0	.0	9	0	20	6.3	2	.06
AUG										
09...	--	--	0	--	--	--	--	5.3	0	.00

50038300 RIO COROZAL AT COROZAL, PR

LOCATION.--Lat 18°20'39", long 66°19'16", at bridge on Highway 159, and 0.3 mi (0.5 km) northwest of Corozal.

DRAINAGE AREA.--9.12 mi^2 (23.6 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March and September 1958, March 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 26...	1540	17	320	7.6	28.0	6.0	4.8	290000	95000	32000	45
DEC 20...	1525	3.9	338	7.7	23.0	9.2	2.3	30000	1000	180	--
FEB 22...	1515	2.4	382	8.0	26.0	11.7	1.9	3500	450	140	45
APR 26...	1610	1.7	452	7.6	30.0	7.9	.8	5000	730	840	41
JUN 21...	1450	.59	610	7.7	30.0	7.3	1.2	30000	260	230	65
AUG 12...	1510	17	375	7.4	28.0	7.2	3.4	190000	46000	27000	35

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 26...	15	16	3.0	175	0	144	7.0	18	23	27	.68
DEC 20...	--	--	--	194	0	159	6.2	--	--	--	.75
FEB 22...	15	19	2.4	210	0	172	3.4	17	27	29	.48
APR 26...	14	21	2.9	214	0	176	8.6	19	31	30	.50
JUN 21...	15	23	2.6	278	0	228	8.9	12	33	36	.34
AUG 12...	15	18	4.0	148	0	121	9.4	31	28	25	.68

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 26...	.05	.14	.52	.66	1.4	6.2	.12	.27	--	--	--
DEC 20...	.04	.06	.26	.32	1.1	4.9	.12	.13	1	0	<10
FEB 22...	.01	.03	.24	.27	.76	3.4	.10	.17	--	--	--
APR 26...	.03	.08	.36	.44	.97	4.3	.12	.13	--	--	--
JUN 21...	.01	.04	.39	.43	.78	3.5	.09	.13	3	0	<10
AUG 12...	.05	.18	.92	1.1	1.8	8.1	.09	.14	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 26...	--	--	23	--	--	--	--	7.0	--	--
DEC 20...	2	11	--	.1	1	0	5	3.8	49	.52
FEB 22...	--	--	30	--	--	--	--	4.1	1	.01
APR 26...	--	--	10	--	--	--	--	6.2	48	.22
JUN 21...	2	14	90	.0	9	0	0	7.1	2	.00
AUG 12...	--	--	440	--	--	--	--	7.2	115	5.3

50038320 RIO CIBUCO BELOW COROZAL, PR

LOCATION.--Lat 18°21'13", long 66°20'07", on right bank, 150 ft (46 m) downstream from Río Corozal, and 1.4 mi (2.3 km) northwest of Corozal.

DRAINAGE AREA.--15.1 mi^2 (39.1 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 195 ft (59.4 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 2-11, Feb. 24-25, Aug. 21-26, which are poor.

AVERAGE DISCHARGE.--8 years (1970-77), 28.1 ft^3/s (0.796 m^3/s), 25.27 in/yr (642 mm/yr), 20,360 acre-ft/yr (25.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft^3/s (346 m^3/s) May 8, 1970, gage height, 18.9 ft (5.76 m), from floodmark, from rating curve extended above 90 ft^3/s (2.55 m^3/s) on basis of float and slope-area measurements of peak flow; minimum daily discharge, 1.3 ft^3/s (0.037 m^3/s) July 24-26, 1977.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 14	1600	4,340	123	12.82	3.908	Aug. 8	1630	*4,890	138	*13.39	4.081
Oct. 29	1615	3,930	111	12.37	3.770						

Minimum daily discharge, 1.3 ft^3/s (0.037 m^3/s) July 24-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	62	28	7.0	14	4.5	4.7	3.7	2.3	3.5	4.6	7.6
2	7.5	43	18	7.0	15	4.3	4.7	4.9	2.2	2.8	3.7	6.6
3	5.4	35	13	7.1	16	4.1	4.6	3.2	2.3	3.6	5.9	6.1
4	5.5	40	20	7.0	16	4.0	4.7	2.9	2.1	3.6	42	5.6
5	6.1	28	17	6.6	15	4.2	3.9	2.8	2.0	3.2	24	6.0
6	10	22	13	6.4	14	4.7	3.6	2.7	1.9	1.7	13	8.0
7	29	19	11	7.0	13	4.9	4.4	2.8	1.8	1.8	8.8	19
8	103	17	10	6.2	11	3.9	4.0	2.6	1.9	1.6	310	9.6
9	34	15	11	6.1	12	4.7	4.1	2.7	1.9	1.6	86	8.6
10	13	14	17	6.1	8.8	4.9	4.2	2.8	1.8	1.7	34	7.7
11	13	13	13	6.3	7.9	4.7	4.1	2.6	1.6	5.0	30	5.8
12	15	12	10	6.1	7.6	4.5	4.4	2.4	1.6	2.7	18	12
13	10	11	9.6	6.3	6.9	4.3	4.2	2.4	1.6	2.6	67	34
14	353	10	9.8	6.4	6.6	4.2	3.8	2.3	1.7	2.9	81	10
15	67	11	10	10	6.4	4.2	3.8	2.1	1.8	2.2	47	10
16	46	10	9.3	6.9	6.4	4.3	3.8	2.4	2.4	1.8	21	7.0
17	29	11	8.6	6.2	6.5	4.4	3.4	2.4	1.9	7.6	99	7.0
18	28	9.9	8.2	6.1	6.4	4.0	3.5	2.4	1.7	4.8	82	6.7
19	28	9.7	8.0	5.9	6.4	3.9	4.5	2.2	1.6	2.0	26	6.5
20	30	9.2	7.8	11	6.1	4.5	9.3	2.0	1.7	1.7	18	6.7
21	31	8.7	7.7	67	5.6	4.8	7.1	2.5	1.7	1.5	126	7.2
22	34	8.7	7.5	200	5.4	5.0	16	3.0	1.7	1.4	93	7.8
23	34	8.3	7.5	81	5.9	5.2	23	9.6	4.8	1.4	47	16
24	34	8.5	7.4	30	5.2	5.0	5.2	5.7	3.1	1.3	29	9.6
25	31	8.3	7.3	15	5.0	4.9	3.8	3.7	2.1	1.3	22	6.9
26	30	8.5	7.1	12	5.9	4.9	3.1	3.4	2.9	1.3	18	6.6
27	30	9.5	6.8	11	5.4	9.3	3.0	4.6	2.7	3.9	14	6.4
28	29	11	13	12	4.9	6.5	2.8	4.2	3.6	2.8	12	6.2
29	317	9.6	8.8	13	------	4.2	3.5	2.8	3.8	6.1	10	5.7
30	171	12	7.6	14	------	4.6	3.2	2.8	3.6	7.9	9.4	6.9
31	86	------	7.3	13	------	4.9	------	2.6	------	3.4	8.5	------
TOTAL	1,682.5	494.9	340.3	605.7	245.3	146.5	158.4	99.2	67.8	90.7	1,409.9	269.8
MEAN	54.3	16.5	11.0	19.5	8.76	4.73	5.28	3.20	2.26	2.93	45.5	8.99
MAX	353	62	28	200	16	9.3	23	9.6	4.8	7.9	310	34
MIN	5.4	8.3	6.8	5.9	4.9	3.9	2.8	2.0	1.6	1.3	3.7	5.6
CFSM	3.60	1.09	.73	1.29	.58	.31	.35	.21	.15	.19	3.01	.60
IN.	4.14	1.22	.84	1.49	.60	.36	.39	.24	.17	.22	3.47	.66
AC-FT	3,340	982	675	1,200	487	291	314	197	134	180	2,800	535

CAL YR 1976 TOTAL 6,602.4 MEAN 18.0 MAX 353 MIN 3.3 CFSM 1.19 IN 16.27 AC-FT 13,100

WTR YR 1977 TOTAL 5,611.0 MEAN 15.4 MAX 353 MIN 1.3 CFSM 1.02 IN 13.82 AC-FT 11,130

50039500 RIO CIBUCO AT VEGA BAJA, PR

LOCATION.--Lat 18°26'53", long 66°22'29", at bridge on Highway 2, 0.7 mi (1.1 km) downstream from Río Indio, and 0.8 mi (1.3 km) east of Vega Baja.

DRAINAGE AREA.--90 mi^2 (233 km^2), approximately, of which about 24 mi^2 (62 km^2) is partly or entirely noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.79 ft (2.374 m) above mean sea level.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,740 ft^3/s (191 m^3/s) Apr. 20, 1973, gage height, 17.78 ft (5.42 m), from rating curve extended above 3,600 ft^3/s (102 m^3/s) on the basis of float measurements; minimum, 6.1 ft^3/s (0.173 m^3/s) July 24-25, 1977, gage height, 5.04 ft (1.536 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharge elevations above mean sea level of major floods, pointed out by local residents, are as follows: Apr. 8, 1915, 18.0 ft (5.49 m), and Dec. 11, 1965, 28,000 ft^3/s (793 m^3/s), gage height, 26.21 ft (7.989 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 2,050 ft^3/s (58.1 m^3/s) Oct. 30, gage height, 13.46 ft (4.103 m), no peak above base of 3,200 ft^3/s (90.6 m^3/s); minimum, 6.1 ft^3/s (0.173 m^3/s) July 24-25, gage height, 5.04 ft (1.536 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	267	192	57	29	39	29	25	21	17	10	28	32
2	83	135	107	30	37	29	26	46	14	17	34	28
3	41	120	65	30	46	30	25	34	14	15	33	26
4	28	155	98	31	43	30	26	21	14	13	42	23
5	29	125	82	30	38	32	26	19	14	12	135	24
6	23	95	65	31	35	30	31	17	14	10	125	32
7	38	84	53	30	34	30	36	15	13	10	57	80
8	200	77	47	29	35	30	38	16	11	9.0	125	40
9	198	67	45	28	39	30	34	14	11	9.0	615	32
10	89	60	57	28	32	29	31	14	11	9.0	227	28
11	58	56	76	28	32	28	32	14	10	8.7	102	24
12	65	53	54	29	30	27	31	12	10	22	88	49
13	71	57	46	28	31	27	35	11	9.3	24	100	121
14	391	51	43	31	30	28	31	12	10	17	245	150
15	542	50	44	41	29	30	29	11	10	20	251	65
16	167	50	44	45	30	31	28	16	14	14	107	46
17	110	49	40	33	30	41	28	16	16	15	89	36
18	65	48	38	29	30	52	28	21	14	27	405	32
19	71	43	37	30	30	21	27	18	12	34	134	30
20	54	42	35	29	33	17	29	17	11	16	85	28
21	66	39	33	397	29	14	58	14	10	11	455	33
22	55	38	33	426	27	14	44	20	10	9.3	554	33
23	60	39	34	309	24	15	126	29	20	8.3	216	65
24	60	38	33	263	26	14	76	68	18	7.4	128	104
25	63	39	33	106	32	14	37	48	15	7.5	100	51
26	50	38	32	77	31	13	24	37	14	8.0	75	38
27	51	40	31	62	30	19	21	61	14	8.3	57	34
28	46	52	36	52	30	55	18	51	13	21	52	30
29	367	50	40	49	------	38	18	33	11	23	44	27
30	1,050	48	35	43	------	26	21	23	10	28	41	23
31	558	------	32	40	------	22	------	18	------	38	36	------
TOTAL	5,016	2,030	1,505	2,443	912	845	1,039	767	384.3	481.5	4,785	1,364
MEAN	162	67.7	48.5	78.8	32.6	27.3	34.6	24.7	12.8	15.5	154	45.5
MAX	1,050	192	107	426	46	55	126	68	20	38	615	150
MIN	23	38	31	28	24	13	18	11	9.3	7.4	28	23
CFSM	1.80	.75	.54	.88	.36	.30	.38	.27	.14	.17	1.71	.51
IN.	2.07	.84	.62	1.01	.38	.35	.43	.32	.16	.20	1.98	.56
AC-FT	9,950	4,030	2,990	4,850	1,810	1,680	2,060	1,520	762	955	9,490	2,710

CAL YR 1976 TOTAL 29,262.0 MEAN 80.0 MAX 1,050 MIN 17 CFSM .89 IN 12.09 AC-FT 58,040

WTR YR 1977 TOTAL 21,571.8 MEAN 59.1 MAX 1,050 MIN 7.4 CFSM .66 IN 8.92 AC-FT 42,790

50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: November 1972 to current year.
SEDIMENT RECORDS: December 1962, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
07...	0915	--	--	--	26.5	--	--	--	--	--	--
27...	1000	63	303	7.7	26.0	7.4	1.1	180000	13000	1500	50
DEC											
15...	1345	42	350	7.6	23.0	9.2	.9	59000	3700	1000	51
FEB											
18...	1520	28	374	7.7	25.0	7.2	1.8	74000	20000	520	39
APR											
26...	0825	26	370	7.4	25.5	3.0	1.1	24000	400	330	44
JUN											
15...	1400	11	460	7.6	28.5	2.6	2.2	45000	130	680	58
AUG											
11...	1455	110	370	7.4	28.0	4.9	3.8	140000	3300	2500	46

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
07...	--	--	--	--	--	--	--	--	--	--	--
27...	10	15	3.4	172	0	141	5.5	16	20	22	1.2
DEC											
15...	9.4	17	3.2	196	0	161	7.9	16	25	19	1.3
FEB											
18...	12	20	3.2	203	0	167	6.5	14	29	18	1.2
APR											
26...	8.8	18	3.9	182	0	149	12	20	27	19	1.1
JUN											
15...	10	19	3.0	245	0	201	9.8	11	27	14	.37
AUG											
11...	8.8	14	4.6	158	0	130	10	27	23	18	1.7

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
07...	--	--	--	--	--	--	--	--	--	--	--
27...	.04	.09	.28	.37	1.6	7.0	.16	.17	--	--	--
DEC											
15...	.06	.08	.33	.41	1.8	8.0	.25	.27	1	0	<10
FEB											
18...	.05	.17	.37	.54	1.7	7.7	.21	.28	--	--	--
APR											
26...	.06	.21	.28	.49	1.7	7.5	.32	.33	--	--	--
JUN											
15...	.08	.92	.38	1.3	1.8	7.7	.54	.57	4	2	<10
AUG											
11...	.09	.20	.79	.99	2.8	12	.13	.17	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
07...	--	--	--	--	--	--	--	--	209	--
27...	--	--	50	--	--	--	--	3.6	48	8.2
DEC										
15...	3	2	30	.1	0	0	5	6.2	55	6.2
FEB										
18...	--	--	20	--	--	--	--	12	43	3.3
APR										
26...	--	--	0	--	--	--	--	7.8	4	.28
JUN										
15...	5	24	40	.0	10	0	30	7.4	1	.03
AUG										
11...	--	--	150	--	--	--	--	7.2	72	21

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR

LOCATION.--Lat 18°09'37", long 66°13'44", on left bank, 55 ft (16.8 m) upstream from bridge on Highway 173, 100 ft (30 m) upstream from Quebrada Honda, 0.4 mi (0.6 km) northeast from Proyecto La Plata, and 2.6 mi (4.2 km) upstream from Río Usabón.

DRAINAGE AREA.--54.8 mi^2 (141.9 km^2), excludes 8.2 mi^2 (21.2 km^2) upstream from Carite Reservoir, the flow of which is diverted to Río Guamaní.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1958 (occasional measurements only), February 1959 to March 1960 (monthly measurements only), April 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259.1 m), from topographic map. Prior to Mar. 29, 1961, wire-weight gage read twice daily at same site and datum.

REMARKS.--Records good. Minor daily regulation by small hydroelectric plant; reservoir has no significant storage. All flow into Lago Carite, usable storage, 9,500 acre-ft (11.7 hm^3), diverted to Río Guamaní basin, except spillage during large floods.

AVERAGE DISCHARGE.--17 years (1961-77), 114 ft^3/s (3.228 m^3/s), 28.25 in/yr (718 mm/yr), 82,590 acre-ft/yr (102 hm^3/yr); median of yearly mean discharges, 87.7 ft^3/s (2.48 m^3/s), 63,500 acre-ft/yr (78 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,600 ft^3/s (1,688 m^3/s) Aug. 27, 1961, gage height, 32.21 ft (9.81 m), from rating curve extended above 7,000 ft^3/s (198 m^3/s) on basis of slope-area measurement; minimum daily, 2.6 ft^3/s (0.074 m^3/s) July 25, 1974.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 3,280 ft^3/s (92.9 m^3/s) Sept. 6, gage height, 10.15 ft (3.094 m), no peak above base of 4,000 ft^3/s (113 m^3/s); minimum, 2.7 ft^3/s (0.076 m^3/s) July 7-8, gage height, 5.78 ft (1.762 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	83	32	19	11	5.8	5.0	4.1	6.8	3.8	3.7	54
2	18	45	30	17	12	5.2	5.6	3.8	5.6	3.8	3.7	32
3	24	36	22	15	14	4.8	5.6	3.5	5.0	4.1	5.2	21
4	19	29	29	15	17	5.0	5.0	3.8	4.8	4.4	55	14
5	13	24	102	18	15	4.4	4.8	3.8	5.2	4.6	43	12
6	12	34	190	17	14	4.4	5.6	3.5	6.6	3.6	58	445
7	12	36	120	16	13	4.6	6.0	3.5	6.2	3.0	31	446
8	29	23	45	17	13	4.6	5.4	3.5	5.2	2.8	12	67
9	38	22	59	17	13	5.4	4.1	3.5	4.8	3.0	7.2	28
10	93	61	116	16	12	5.0	4.0	3.4	4.1	3.0	4.6	19
11	320	89	93	15	12	4.6	4.0	3.4	4.1	3.2	4.1	15
12	940	42	61	16	14	5.4	4.2	3.4	4.2	3.5	4.0	13
13	611	38	39	15	11	4.6	4.6	3.4	4.6	3.8	3.8	10
14	220	38	31	16	9.6	4.1	5.2	3.5	4.4	9.3	7.1	8.9
15	87	34	30	21	9.8	4.2	5.6	3.6	3.6	9.3	13	11
16	272	32	46	28	9.8	5.0	4.4	3.4	3.6	7.9	8.0	13
17	62	36	32	19	9.8	4.6	3.6	3.4	4.0	8.6	5.3	8.9
18	40	24	29	17	8.4	4.1	3.0	3.4	4.4	7.3	5.3	8.4
19	31	20	26	15	7.0	4.0	3.5	3.4	4.0	6.4	4.4	9.6
20	27	19	23	17	6.7	4.0	4.0	3.4	4.2	6.6	4.2	11
21	28	17	22	34	5.9	4.2	4.6	3.2	4.1	6.2	17	821
22	22	17	20	28	5.4	4.2	6.2	3.5	3.5	4.2	524	512
23	21	16	18	17	6.2	4.3	35	100	3.0	3.6	91	739
24	20	15	18	24	6.6	4.1	30	112	3.0	3.4	53	466
25	18	17	18	20	6.8	3.8	7.3	15	3.0	3.0	188	105
26	17	19	17	11	7.3	4.4	5.0	7.7	2.8	3.2	61	50
27	18	24	16	11	6.8	5.0	4.4	22	4.0	3.5	39	44
28	16	24	17	14	5.8	7.7	4.4	172	14	7.4	41	35
29	20	20	28	17	------	5.6	4.2	56	10	10	39	26
30	415	22	20	15	------	4.8	4.1	22	5.2	12	167	16
31	676	------	18	12	------	4.4	------	9.3	------	5.8	162	------
TOTAL	4,159	956	1,367	549	282.9	146.3	198.4	593.4	148.0	164.3	1,664.6	4,060.8
MEAN	134	31.9	44.1	17.7	10.1	4.72	6.61	19.1	4.93	5.30	53.7	135
MAX	940	89	190	34	17	7.7	35	172	14	12	524	821
MIN	12	15	16	11	5.4	3.8	3.0	3.2	2.8	2.8	3.7	8.4
CFSM	2.45	.58	.80	.32	.18	.09	.12	.35	.09	.10	.98	2.46
IN.	2.82	.65	.93	.37	.19	.10	.13	.40	.10	.11	1.13	2.76
AC-FT	8,250	1,900	2,710	1,090	561	290	394	1,180	294	326	3,300	8,050

CAL YR 1976 TOTAL 14,598.2 MEAN 39.9 MAX 940 MIN 8.8 CFSM .73 IN 9.91 AC-FT 28,960

WTR YR 1977 TOTAL 14,289.7 MEAN 39.1 MAX 940 MIN 2.8 CFSM .71 IN 9.70 AC-FT 28,340

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1958 to August 1972, May and October 1973, February 1974 to current year.
SEDIMENT RECORDS: November 1959 to December 1963, March 1968 to May 1969, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
15...	0930	71	260	7.6	25.0	6.4	2.0	31000	7800	760	29
DEC											
08...	0920	42	--	--	24.5	--	--	--	--	--	--
13...	1150	36	242	8.1	23.0	8.4	1.1	5200	800	140	23
JAN											
04...	1600	16	--	--	24.0	--	--	--	--	--	--
FEB											
16...	1210	13	350	8.4	22.0	11.2	1.0	6300	430	2600	35
APR											
18...	1355	2.7	650	8.5	29.5	10.0	1.4	6700	80	370	42
JUN											
17...	1150	3.5	490	8.6	.2	12.2	1.3	28000	400	430	36
AUG											
11...	1415	4.2	342	8.1	26.0	9.6	.6	18000	330	120	28

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
15...	9.8	20	2.5	110	0	90	4.4	17	21	22	1.2
DEC											
08...	--	--	--	--	--	--	--	--	--	--	--
13...	9.2	21	2.6	123	0	101	1.6	12	20	22	1.1
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
FEB											
16...	14	33	1.7	192	3	162	1.3	16	30	22	1.5
APR											
18...	18	47	1.8	248	6	213	1.3	22	51	18	.02
JUN											
17...	15	42	3.9	205	9	183	.9	18	45	23	.04
AUG											
11...	12	32	2.5	189	0	155	2.4	16	28	26	.07

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
15...	.06	.06	.54	.60	1.9	8.4	.32	.33	--	--	--
DEC											
08...	--	--	--	--	--	--	--	--	--	--	--
13...	.01	.01	.46	.47	1.6	7.0	.38	.38	1	0	<10
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
FEB											
16...	.01	.01	.41	.42	1.9	8.5	.65	.65	--	--	--
APR											
18...	.01	.00	.53	.53	.56	2.5	.70	.72	--	--	--
JUN											
17...	.00	.00	.38	.38	.42	1.9	1.1	1.1	3	0	10
AUG											
11...	.00	.02	.51	.53	.60	2.7	.74	.75	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
15...	--	--	50	--	--	--	--	6.2	49	9.4
DEC										
08...	--	--	--	--	--	--	--	--	56	6.4
13...	4	5	8	.1	2	0	10	6.5	44	4.3
JAN										
04...	--	--	--	--	--	--	--	--	4	.17
FEB										
16...	--	--	10	--	--	--	--	8.0	1	.04
APR										
18...	--	--	0	--	--	--	--	8.7	1	.01
JUN										
17...	3	13	10	.4	4	0	0	6.4	0	.00
AUG										
11...	--	--	10	--	--	--	--	7.4	2	.02

50046000 RIO DE LA PLATA AT TOA ALTA, PR

LOCATION.--Lat 18°23'50", long 66°15'17", on left bank, at upstream side of bridge on Highway 165, 800 ft (244 m) downstream from Río Lajas, and 0.6 mi (1.0 km) northwest of Toa Alta, 10 mi (16 km) downstream from Puerto Rico Aqueduct and Sewer Authority reservoir.

DRAINAGE AREA.--200 mi^2 (518 km^2), excludes 8.2 mi^2 (21.2 km^2) upstream from Lago Carite, flow from which is diverted to Río Guamaní.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1959 (measurement only), January 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 8.55 ft (2.606 m) above mean sea level (levels by Puerto Rico Department of Public Works). Prior to Feb. 25, 1960, wire-weight gage at same site and datum.

REMARKS.--Records fair except those for periods of no gage-height record, which are poor. Regulation at all stages by Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage.

AVERAGE DISCHARGE.--17 years (1961-77), 279 ft^3/s (7.901 m^3/s), 18.94 in/yr (481 mm/yr), 202,100 acre-ft/yr (249 hm^3/yr); median of yearly mean discharges, 266 ft^3/s (7.53 m^3/s), 193,000 acre-ft/yr (238 hm /yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,500 ft^3/s (2,704 m^3/s) Sept. 6, 1960, gage height, 36.35 ft (11.079 m), from floodmark, from rating curve extended above 12,000 ft^3/s (340 m^3/s) on basis of contracted-opening measurement of peak flow; minimum, 3.1 ft^3/s (0.088 m^3/s) Mar. 12, 1974, gage height, 6.51 ft (1.984 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations to gage datum of major floods, as pointed out by local residents are as follows: Sept. 13, 1928, 120,000 ft^3/s (3,400 m^3/s), gage height, 37.4 ft (11.4 m); June 16, 1943, 82,000 ft^3/s (2,322 m^3/s), gage height, 34.4 ft (10.48 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, unknown, Aug. 21, gage height, unknown; no peak above base of 6,000 ft^3/s (170 m^3/s); minimum, 5.8 ft^3/s (0.164 m^3/s) June 12-14, 20-22, gage height, 5.57 ft (1.698 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	600	43	23	23	12	11	13	10	60	30	24
2	75	60	102	19	21	11	11	18	9.5	32	56	21
3	61	38	85	16	24	11	10	13	8.9	26	39	20
4	54	29	98	14	22	12	10	11	8.5	22	27	19
5	52	23	115	13	20	22	10	9.9	8.2	20	34	19
6	56	21	97	12	19	16	11	9.3	7.8	18	52	30
7	64	28	52	12	17	13	12	8.9	7.6	17	30	60
8	78	33	42	11	24	12	13	8.6	7.4	16	27	200
9	95	23	33	11	21	11	14	8.4	7.2	16	35	70
10	117	20	29	11	18	10	10	8.3	7.1	16	43	50
11	30	45	25	11	16	15	9.6	8.2	7.0	15	64	43
12	60	80	23	12	16	20	9.5	8.2	6.9	17	100	38
13	84	37	21	18	15	22	14	8.1	6.8	61	150	60
14	170	32	19	17	15	28	10	8.0	6.8	45	250	100
15	230	29	18	31	15	26	9.8	9.1	6.8	38	100	160
16	150	27	18	26	14	22	9.6	11	9.1	14	80	42
17	74	30	17	21	14	42	9.6	13	30	21	64	37
18	45	32	17	24	14	71	9.3	20	13	39	55	26
19	32	20	16	38	14	30	10	13	11	12	45	21
20	27	18	16	54	16	24	24	11	9.8	8.4	43	22
21	23	16	15	108	19	21	34	10	9.4	8.6	600	27
22	20	15	15	79	17	19	19	12	8.9	17	120	25
23	19	14	15	120	15	17	88	18	8.6	9.3	80	32
24	17	14	14	250	14	15	29	34	8.4	6.7	65	36
25	16	13	14	71	14	15	14	17	8.2	8.2	43	40
26	15	13	14	60	13	14	11	11	8.0	6.7	38	30
27	15	24	14	48	12	13	9.7	9.6	40	10	40	60
28	17	27	17	35	12	12	9.2	24	20	28	60	200
29	40	28	60	31	------	12	9.5	16	13	43	78	50
30	80	34	40	28	------	11	11	12	28	12	33	120
31	400	------	31	24	------	11	------	11	------	10	27	------
TOTAL	2,306	1,423	1,135	1,248	474	590	461.8	392.6	341.9	672.9	2,508	1,682
MEAN	74.4	47.4	36.6	40.3	16.9	19.0	15.4	12.7	11.4	21.7	80.9	56.1
MAX	400	600	115	250	24	71	88	34	40	61	600	200
MIN	15	13	14	11	12	10	9.2	8.0	6.8	6.7	27	19
CFSM	.37	.24	.18	.20	.08	.10	.08	.06	.06	.11	.40	.28
IN.	.43	.26	.21	.23	.09	.11	.09	.07	.06	.13	.47	.31
AC-FT	4,570	2,820	2,250	2,480	940	1,170	916	779	678	1,330	4,970	3,340

CAL YR 1976 TOTAL 25,345.4 MEAN 69.2 MAX 600 MIN 3.4 CFSM .35 IN 4.71 AC-FT 50,270

WTR YR 1977 TOTAL 13,235.2 MEAN 36.3 MAX 600 MIN 6.7 CFSM .18 IN 2.46 AC-FT 26,250

NOTE.--No gage-height record Oct. 1 to Jan 12, Mar 19 to Apr. 4, July 7-13, Aug. 8 to Sept. 16, Sept. 22-30.

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1958 to current year.
BIOLOGICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: September 1960 to January 1970, February to September 1973, current year.

•WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	HARDNESS (CA+MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT												
05...	1330	52	472	7.4	30.0	4.1	1.4	5500	1100	150	--	24
NOV												
11...	1415	48	347	7.4	29.0	3.9	--	810	100	41	--	--
22...	1130	--	364	7.2	27.0	5.0	--	--	--	--	--	--
DEC												
03...	1510	87	325	7.5	28.0	4.2	1.9	16000	2100	550	140	22
14...	0945	--	400	7.4	26.0	5.4	--	--	--	--	--	--
JAN												
12...	1700	12	455	7.5	25.0	10.0	--	7000	170	990	--	--
FEB												
01...	1545	24	450	7.3	29.0	6.4	.9	20000	880	53	--	26
02...	1545	22	--	--	25.0	--	--	--	--	--	--	--
MAR												
02...	1605	11	750	7.5	25.0	6.8	--	5000	480	70	270	37
APR												
07...	1335	11	695	7.2	25.5	6.2	2.9	6500	160	120	--	32
MAY												
03...	1540	10	690	7.2	27.0	7.6	--	19000	130	77	--	--
JUN												
07...	1330	7.6	790	7.0	27.0	3.5	1.5	18000	240	33	--	40
JUL												
13...	1010	62	375	7.0	26.0	.9	--	920000	89000	125000	150	26
AUG												
09...	0925	46	355	7.2	26.0	2.2	3.4	250000	20000	36000	--	--
SEP												
12...	1600	38	700	7.2	29.0	1.6	--	40000	2000	650	--	--

DATE	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT												
05...	--	2.8	192	0	157	12	15	33	18	--	--	--
NOV												
11...	--	--	173	0	142	11	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	34	--	211	--	.28
DEC												
03...	.8	3.1	148	0	121	7.5	18	33	16	232	214	--
14...	--	--	--	--	--	--	--	--	--	--	--	.24
JAN												
12...	--	--	240	0	197	12	--	--	--	--	--	--
FEB												
01...	--	2.5	233	0	191	19	16	50	19	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
02...	1.0	.4	272	0	223	14	16	77	19	407	382	--
APR												
07...	--	.9	262	0	215	26	16	68	19	--	--	.01
MAY												
03...	--	--	258	0	212	26	--	--	--	--	--	--
JUN												
07...	--	1.9	292	0	239	47	11	96	23	--	--	.00
JUL												
13...	.9	6.8	140	0	110	22	20	46	13	277	234	--
AUG												
09...	--	--	132	0	108	13	--	--	--	--	--	--
SEP												
12...	--	--	208	0	171	21	--	--	--	--	--	--

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
05...	--	--	--	.29	.46	2.0	--	.09	--	--	--
NOV											
11...	--	--	--	.54	.83	3.7	--	.08	--	--	--
22...	.03	.22	.35	.57	.88	3.9	.08	.09	--	--	--
DEC											
03...	--	--	--	.74	1.1	5.0	--	.13	2	0	<10
14...	.02	.09	.33	.42	.68	3.0	.07	.08	--	--	--
JAN											
12...	--	--	--	.26	.55	2.4	--	.06	--	--	--
FEB											
01...	--	--	--	.40	.78	3.5	--	.08	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
MAR											
02...	--	--	--	.24	.25	1.1	--	.00	2	0	30
APR											
07...	.00	.01	.29	.30	.31	1.4	.04	.06	--	--	--
MAY											
03...	--	--	--	.30	.31	1.4	--	.12	--	--	--
JUN											
07...	.00	.37	.24	.61	.61	2.7	.09	.13	1	0	10
JUL											
13...	--	--	--	1.7	1.7	7.7	--	.47	--	0	20
AUG											
09...	--	--	--	1.8	2.5	11	--	.22	--	--	--
SEP											
12...	--	--	--	.52	.59	2.6	--	.13	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT											
05...	--	--	--	10	--	--	--	--	5.1	41	5.8
NOV											
11...	--	--	--	--	--	--	--	--	--	51	6.6
22...	--	--	--	--	--	--	--	--	--	--	--
DEC											
03...	5	300	10	100	.2	--	0	10	--	47	11
14...	--	--	--	--	--	--	--	--	--	--	--
JAN											
12...	--	--	--	--	--	--	--	--	--	19	.62
FEB											
01...	--	--	--	10	--	--	--	--	3.2	--	--
02...	--	--	--	--	--	--	--	--	--	49	2.9
MAR											
02...	4	100	21	40	--	--	0	30	7.3	16	.48
APR											
07...	--	--	--	20	--	--	--	--	4.1	50	1.5
MAY											
03...	--	--	--	--	--	--	--	--	8.3	1	.03
JUN											
07...	1	--	5	55	.0	3	0	10	7.5	97	2.0
JUL											
13...	6	3200	6	160	--	--	--	20	9.2	121	20
AUG											
09...	--	--	--	--	--	--	--	--	6.5	189	23
SEP											
12...	--	--	--	--	--	--	--	--	8.5	48	4.9

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)
NOV									
22...	1130	.0	0	.0	.0	.0	.0	.0	.0

DATE	ETHION IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)
NOV								
22...	.0	.0	.0	.0	.0	.0	0	.0

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE / TIME	OCT 5,76 1330		NOV 11,76 1415		DEC 3,76 1510		JAN 12,77 1700		FEB 1,77 1545		MAR 2,77 1605	
TOTAL CELLS/ML	1900		590		230		56		50		45	
DIVERSITY: DIVISION	0.2		0.9		1.8		1.6		0.4		1.1	
.CLASS	0.2		0.9		1.8		1.6		0.4		1.1	
..ORDER	0.2		1.0		2.0		1.8		1.2		1.1	
...FAMILY	0.9		1.2		2.3		2.1		1.6		2.3	
....GENUS	0.9		1.2		2.3		2.1		2.1		2.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...MICRACTINIACEAE												
....MICRACTINIUM	1500#	79	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	12	2	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	14	6	--	-	--	-	--	-
....OOCYSTIS	*	0	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	320#	17	450#	75	--	-	15#	26	--	-	--	-
..TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	--	-	--	-	61#	27	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	12	2	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	20	1	--	-	--	-	5	9	17#	33	--	-
....MELOSIRA	*	0	--	-	--	-	--	-	13#	27	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	5	9	10#	20	19#	43
...CYMBELLACEAE												
....EPITHEMIA	--	-	12	2	--	-	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	--	-	2	4	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	68#	30	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	3	7
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	3	1	--	-	7	13	3	7
...NAVICULACEAE												
....NAVICULA	--	-	--	-	3	1	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	12	2	3	1	5	9	--	-	6	14
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	40	2	--	-	10	4	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	99#	17	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....OSCILLATORIA	--	-	--	-	65#	28	24#	43	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	3	7	6	14
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	--	-	--	-	--	-	--	-	--	-	6	14

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	APR 7,77		MAY 3,77		JUN 7,77		JUL 13,77		AUG 9,77		SEP 12,77	
TIME	1335		1540		1330		1010		0925		1600	
TOTAL CELLS/ML	150		350		1300		41000		710		530	
DIVERSITY: DIVISION	0.6		0.6		0.7		0.0		0.0		1.4	
.CLASS	0.6		0.6		0.7		0.0		0.0		1.4	
..ORDER	0.6		0.6		1.3		0.0		0.0		1.6	
...FAMILY	0.7		1.3		1.4		0.0		0.0		1.7	
....GENUS	0.7		1.3		1.4		0.0		0.0		1.7	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...MICRACTINIACEAE												
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	710#	100	32	6
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	860#	68	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	120#	23
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	4	3	21	6	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	4	3	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	18	1	--	-	--	-	8	2
...NAVICULACEAE												
....NAVICULA	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	4	3	7	2	220#	17	--	-	--	-	32	6
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-		-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	320#	61
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	63#	18	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....OSCILLATORIA	140#	90	240#	71	130	10	41000#	100	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	3	1	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	16	3
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	4	3	7	2	36	3	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR

LOCATION.--Lat 18°14'39", long 66°08'39", at bridge on Highway 156, and 2.9 mi (4.7 km) west of Aguas Buenas.

DRAINAGE AREA.--18.5 mi^2 (47.9 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to April 1965, June 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 15...	1200	36	204	7.8	25.0	7.1	2.4	54000	27000	7500	21
DEC 13...	1350	13	238	8.3	26.5	8.6	1.8	3500	290	50	26
FEB 16...	1415	8.3	238	8.3	22.0	10.0	.7	5100	350	1400	23
APR 18...	1645	19	220	7.9	25.5	8.4	.7	11000	100	280	14
JUN 17...	1410	7.4	270	8.2	27.0	9.1	.7	38000	280	550	20
AUG 11...	1720	19	250	7.6	23.0	6.6	.0	41000	5100	12000	19

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 15...	9.2	11	2.9	80	0	66	2.0	15	16	24	1.1
DEC 13...	12	14	3.3	133	0	109	1.1	9.4	17	28	1.1
FEB 16...	12	15	2.9	134	0	110	1.1	8.3	17	29	.75
APR 18...	8.2	17	3.1	102	0	84	2.1	4.6	18	20	.38
JUN 17...	11	18	3.7	127	0	104	1.3	7.1	19	26	.75
AUG 11...	11	16	4.6	126	0	103	5.1	7.6	18	27	.76

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 15...	.04	.08	.54	.62	1.7	7.6	.10	.12	--	--	--
DEC 13...	.00	.00	.21	.21	1.3	5.8	--	.07	1	0	<10
FEB 16...	.00	.00	.28	.28	1.0	4.6	.06	.06	--	--	--
APR 18...	.01	.00	.32	.32	.71	3.1	.06	.10	--	--	--
JUN 17...	.01	.00	.37	.37	1.1	5.0	.08	.11	3	0	<10
AUG 11...	.09	.35	.55	.90	1.8	7.7	.22	.23	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 15...	--	--	17	--	--	--	--	4.8	72	7.0
DEC 13...	2	6	7	.1	0	0	6	6.3	35	1.2
FEB 16...	--	--	0	--	--	--	--	9.2	1	.02
APR 18...	--	--	10	--	--	--	--	8.1	2	.10
JUN 17...	4	6	20	.1	7	0	0	--	1	.02
AUG 11...	--	--	80	--	--	--	--	6.8	47	2.4

50047895 RIO GUAYNABO AT HIGHWAY 836 NEAR GUAYNABO, PR

LOCATION.--Lat 18°20'05", long 66°06'10", at bridge on Highway 836, 0.45 mi (0.72 km) west of Highway 20, and 1.7 mi (2.7 km) south of Guaynabo Plaza.

DRAINAGE AREA.--8.71 mi^2 (22.6 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: August 1974 to current year.
SEDIMENT RECORDS: August 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 14...	1300	7.5	350	8.1	29.0	6.1	3.3	190000	42000	9100	41
DEC 13...	1540	6.9	315	8.0	24.5	7.2	4.0	540000	28000	3600	--
FEB 16...	1605	5.0	320	7.8	24.5	6.9	3.8	770000	30000	7000	31
APR 25...	1030	4.5	312	7.6	24.0	8.1	2.0	170000	25000	4000	36
JUN 17...	1620	2.4	372	8.0	31.0	6.0	1.2	70000	7000	4100	30
AUG 08...	1145	5.9	315	7.9	27.0	7.0	2.6	280000	31000	20000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 14...	12	23	4.6	162	0	133	2.1	10	31	31	.55
DEC 13...	--	--	--	162	0	133	2.6	--	--	--	.55
FEB 16...	11	24	3.9	160	0	131	4.1	11	32	29	.42
APR 25...	12	24	3.3	151	0	124	6.1	23	29	24	.48
JUN 17...	10	24	3.9	152	0	125	2.4	13	32	32	.27
AUG 08...	--	20	4.3	142	0	116	2.9	12	27	29	.59

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 14...	.07	.50	.50	1.0	1.6	7.2	.10	.13	--	--	--
DEC 13...	.06	.27	.50	.77	1.4	6.1	.06	.09	1	0	<10
FEB 16...	.08	.30	.38	.68	1.2	5.2	.08	.10	--	--	--
APR 25...	.03	.14	.33	.47	.98	4.3	.10	.12	--	--	--
JUN 17...	.01	.01	.46	.47	.75	3.3	.11	.13	2	0	10
AUG 08...	.06	.11	.40	.51	1.2	5.1	.09	.13	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 14...	--	--	120	--	--	--	--	4.6	98	2.0
DEC 13...	7	11	--	.3	8	0	10	7.2	61	1.1
FEB 16...	--	--	20	--	--	--	--	7.9	41	.55
APR 25...	--	--	20	--	--	--	--	9.1	30	.36
JUN 17...	4	3	50	.1	7	0	0	7.5	2	.01
AUG 08...	--	--	0	--	--	--	--	6.9	73	1.2

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR

LOCATION.--Lat 18°25'01", long 66°09'26", 0.8 mi (1.3 km) north of Highway 167, and 1.1 mi (1.8 km) north of Bayamón Plaza.

DRAINAGE AREA.--71.9 mi^2 (186 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1974 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
15...	1415	E250	285	7.3	27.0	4.0	3.3	480000	56000	20000	28
DEC											
15...	1530	42	385	7.5	25.0	5.4	5.0	350000	74000	1100	41
FEB											
07...	1430	27	367	7.4	26.0	8.0	3.7	34000	3700	500	41
APR											
25...	1255	4.8	402	7.4	28.0	5.1	3.8	52000	6400	300	30
JUN											
07...	1550	3.5	600	7.9	34.0	10.0	8.8	140000	7000	240	42
AUG											
08...	1315	29	415	7.3	29.0	3.8	3.9	120000	7400	1000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
15...	10	14	3.2	103	0	84	8.3	13	16	19	--
DEC											
15...	13	24	3.5	212	0	174	11	17	29	28	.51
FEB											
07...	14	25	3.4	196	0	161	12	19	29	27	.59
APR											
25...	11	21	3.6	182	0	149	12	12	30	28	.32
JUN											
07...	15	31	2.7	229	0	188	4.6	18	32	29	.00
AUG											
08...	--	20	2.5	190	0	156	15	14	17	17	.53

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
15...	.21	1.3	.90	2.2	2.9	13	.34	.51	3	0	10
FEB											
07...	.27	.73	.37	1.1	2.0	8.7	.42	.47	--	--	--
APR											
25...	.13	1.1	.70	1.8	2.3	10	.21	.33	--	--	--
JUN											
07...	.00	.14	.96	1.1	1.1	4.9	.13	.32	2	0	20
AUG											
08...	.12	.47	.53	1.0	1.7	7.3	.20	.27	--	--	--

E Estimated.

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 19.7

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 15...	--	--	300	--	--	--	--	--	247	167
DEC 15...	28	13	130	.1	3	0	30	5.7	179	20
FEB 07...	--	--	20	--	--	--	--	4.6	40	2.9
APR 25...	--	--	10	--	--	--	--	8.2	66	.86
JUN 07...	3	13	100	.0	3	0	10	9.2	75	.71
AUG 08...	--	--	10	--	--	--	--	7.3	59	4.6

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 07...	1550	.0	0	.0	.5	.0	.0	.0	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 07...	.0	.0	.0	.0	.0	0	.0	0	0	0

RIO PIEDRAS BASIN

50048750 QUEBRADA LAS CURIAS TRIBUTARY NEAR RIO PIEDRAS, PR

LOCATION.--Lat 18°20'19", long 66°03'33", at bridge on unnumbered road, 0.3 mi (0.5 km) from Highway 176, and 4.8 mi (7.7 km) south of Río Piedras.

DRAINAGE AREA.--1.65 mi^2 (4.27 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: August 1972 to current year.
SEDIMENT RECORDS: August 1972, December 1973, October and December 1974. February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
08...	1300	2.1	293	7.7	27.0	9.0	2.3	160000	41000	26000	26
NOV											
30...	1130	1.3	650	7.6	26.0	11.4	1.1	16000	13000	3600	35
DEC											
13...	1540	--	--	--	--	--	--	--	--	--	34
FEB											
14...	1325	.94	334	8.3	25.0	9.0	1.1	1600	900	410	33
APR											
13...	1425	.75	368	8.1	27.5	7.7	.5	13000	1300	900	32
MAY											
31...	1435	.89	392	7.6	30.0	7.3	.4	19000	4000	3400	30
AUG											
05...	1100	E1.0	380	7.8	27.0	8.7	1.2	180000	42000	8800	32

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
08...	14	19	2.2	132	0	108	4.2	17	22	26	1.2
NOV											
30...	14	20	1.6	162	0	133	6.5	17	25	34	1.4
DEC											
13...	11	--	--	--	--	--	--	--	--	--	--
FEB											
14...	14	21	1.7	174	0	143	1.4	17	26	34	.69
APR											
13...	14	21	1.7	170	0	139	2.2	17	28	34	.82
MAY											
31...	15	23	2.2	159	0	130	6.4	26	28	30	.88
AUG											
05...	14	23	1.6	178	0	146	4.5	16	26	32	.57

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
08...	.06	.09	.59	.68	2.0	8.8	.11	.09	--	--	--
NOV											
30...	.01	.01	.26	.27	1.7	7.4	.08	.10	--	0	10
DEC											
13...	--	--	--	--	--	--	--	--	--	--	--
FEB											
14...	.08	.71	1.2	1.9	2.7	12	.51	.85	1	--	--
APR											
13...	.03	.00	.69	.69	1.5	6.8	.09	.13	--	--	--
MAY											
31...	.01	.00	.08	.08	.97	4.3	.03	.04	0	0	20
AUG											
05...	.01	.04	.19	.23	.81	3.6	.05	.07	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
08...	--	--	20	--	--	--	--	5.1	360	2.0
NOV										
30...	4	10	2	--	5	--	10	5.8	55	.19
DEC										
13...	--	--	--	--	--	--	--	--	--	--
FEB										
14...	--	--	10	.0	--	0	--	8.1	2	.01
APR										
13...	--	--	10	--	--	--	--	1.4	157	.32
MAY										
31...	4	6	40	.0	5	0	90	7.5	41	.10
AUG										
05...	--	--	40	--	--	--	--	8.3	104	.28

E Estimated.

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR

LOCATION.--Lat 18°22'15", long 66°03'40", at bridge on unnumbered road, 0.5 mi (0.8 km) west of Highway 176, and 2.5 mi (4.0 km) southwest of Río Piedras (unnumbered road is Winston Churchill Avenue in the El Señorial Housing area).

DRAINAGE AREA.--8.07 mi^2 (20.9 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: August 1972 to current year.
SEDIMENT RECORDS: October 1971, December 1972, November to December 1973, June to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 08...	1400	19	260	7.6	27.0	6.7	4.9	750000	100000	43000	24
NOV 30...	1245	8.4	312	7.8	26.5	5.0	3.3	46000	13000	5100	33
FEB 14...	1200	5.5	325	7.5	24.5	6.9	8.8	750000	430000	26000	32
APR 13...	1245	5.7	367	7.6	26.0	6.1	13	780000	87000	27000	30
MAY 31...	1310	4.0	390	7.7	31.0	6.6	1.7	50000	40000	1800	--
AUG 05...	0945	6.0	--	8.9	26.0	8.0	8.9	3500000	310000	270000	110

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 08...	9.2	20	3.0	112	0	92	4.5	14	21	23	.56
NOV 30...	10	22	2.5	155	0	127	3.9	14	24	28	.77
FEB 14...	11	26	3.0	174	0	143	8.8	17	28	32	1.1
APR 13...	12	27	3.1	176	0	144	7.1	17	29	31	.51
MAY 31...	--	--	--	162	0	133	5.2	--	--	--	.71
AUG 05...	25	20	2.5	106	14	110	.3	14	20	24	.30

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 08...	.11	.22	.78	1.0	1.7	7.4	.22	.25	--	--	--
NOV 30...	.04	.09	.57	.66	1.5	6.5	.11	.22	--	2	<10
FEB 14...	.00	.00	.20	.20	1.3	5.8	.00	.05	1	--	--
APR 13...	.07	.95	1.5	2.4	3.0	13	.55	.71	--	--	--
MAY 31...	.05	.13	.28	.41	1.2	5.2	.13	.15	--	--	--
AUG 05...	.06	.51	.79	1.3	1.7	7.3	.26	.31	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 08...	--	--	40	--	--	--	--	9.2	492	25
NOV 30...	15	29	20	--	1	--	20	5.1	99	2.2
FEB 14...	--	--	20	.0	--	0	--	8.2	26	.39
APR 13...	--	--	10	--	--	--	--	3.8	61	.94
MAY 31...	--	--	--	--	--	--	--	7.8	90	.97
AUG 05...	--	--	2200	--	--	--	--	10	1120	18

50049000 RIO PIEDRAS AT RIO PIEDRAS, PR

LOCATION.--Lat 18°23'48", long 66°03'24", on left bank, at bridge on Highway 1, 0.3 mi (0.5 km) southwest of the plaza in Río Piedras, and 0.4 mi (0.6 km) downstream from diversion for water supply.

DRAINAGE AREA.--12.5 mi^2 (32.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 (maximum discharge measurement only), 1959-64 (annual low-flow measurements only), July 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15.2 m), from topographic map.

REMARKS.--Records good for peak flows only; those for periods of low flow and of no gage-height record, Nov. 2-4, Nov. 30 to Dec. 5, January 25 to Feb. 13, are poor. Diversion about 0.5 mi (0.8 km) upstream from gage, records for which are not available.

AVERAGE DISCHARGE.--6 years (1972-77), 21.7 ft^3/s (0.615 m^3/s), 23.57 in/yr (599 mm/yr), 15,720 acre-ft/yr (19.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 8,720 ft^3/s (247 m^3/s) Dec. 11, 1975, gage height, 21.02 ft (6.47 m), from rating curve extended about 30 ft^3/s (0.85 m^3/s) on basis of step-backwater analysis; minimum daily, 0.26 ft^3/s (0.007 m^3/s) May 19, 1977.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 2,800 ft^3/s (79.3 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 5	1445	3,540	100	14.52	4.426	Jan. 21	0015	4,520	128	15.91	4.849
Oct. 14	1730	*5,030	142	*16.55	5.044	May 27	1315	3,220	91.2	13.99	4.264
Oct. 31	1445	4,100	116	15.34	4.676						

Minimum daily discharge, 0.26 ft^3/s (0.007 m^3/s), May 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	90	19	3.6	6.0	2.0	1.4	4.4	2.8	8.0	2.4	7.0
2	7.5	72	15	4.0	4.0	2.4	1.4	20	2.6	3.0	7.3	8.5
3	8.2	31	13	7.4	5.0	3.1	1.7	1.2	2.8	1.9	5.4	196
4	3.9	18	17	3.8	5.0	4.4	1.8	.80	10	2.4	3.1	38
5	460	12	14	4.0	4.0	3.3	4.0	1.0	7.3	2.4	39	71
6	86	22	13	3.2	4.0	1.2	21	4.2	3.0	3.3	6.6	239
7	151	16	11	3.2	4.0	1.8	4.2	1.6	2.0	3.7	1.2	29
8	99	14	10	3.2	6.0	1.6	7.0	.95	3.5	3.7	1.2	18
9	70	13	17	6.5	7.0	2.2	5.0	.80	2.0	3.3	3.0	15
10	106	13	17	6.8	6.0	3.1	172	.49	1.6	27	1.8	23
11	113	10	14	6.0	6.0	2.2	11	1.4	1.2	33	13	60
12	74	14	12	4.0	5.0	3.1	5.4	3.7	2.2	42	2.4	366
13	58	10	8.4	4.6	4.0	3.3	3.3	1.7	1.6	19	4.7	67
14	514	12	6.8	10	5.0	2.4	3.5	1.2	1.6	14	31	53
15	120	12	11	16	4.2	2.0	2.8	4.7	3.3	14	22	177
16	78	10	6.2	9.0	4.0	2.0	.42	7.0	7.3	11	1.2	37
17	70	16	5.4	7.6	4.2	4.7	.43	108	1.6	42	26	26
18	62	8.8	6.5	3.6	4.0	2.6	.41	4.4	.35	8.5	11	24
19	59	8.1	5.4	3.0	5.7	3.3	.40	.26	.50	5.0	.50	17
20	70	8.4	5.1	106	5.4	1.7	23	.35	.65	2.4	.95	12
21	59	7.4	5.7	372	3.3	1.7	12	2.2	7.0	2.0	64	28
22	67	7.4	4.8	58	3.0	2.0	19	3.0	3.3	2.2	10	23
23	61	8.1	5.1	29	3.3	2.4	47	141	4.0	2.2	11	27
24	113	12	4.8	23	3.3	7.0	6.6	17	5.7	50	6.6	17
25	61	8.1	4.0	14	4.0	6.3	2.4	12	2.0	12	2.6	16
26	74	9.7	4.6	9.0	3.5	13	7.0	5.0	8.5	7.6	6.6	14
27	55	16	5.1	7.0	2.0	184	1.6	164	7.3	45	150	18
28	73	14	26	4.0	2.2	16	.95	42	4.0	8.5	19	9.0
29	179	13	10	4.0	------	4.0	5.7	18	3.7	5.7	56	7.2
30	681	17	4.6	8.0	------	1.2	.80	14	12	1.8	31	9.4
31	124	------	4.8	5.0	------	.95	------	6.3	------	1.8	12	------
TOTAL	3,771.6	523.0	306.3	748.5	123.1	290.95	373.21	592.65	115.40	388.4	552.55	1,652.1
MEAN	122	17.4	9.88	24.1	4.40	9.39	12.4	19.1	3.85	12.5	17.8	55.1
MAX	681	90	26	372	7.0	184	172	164	12	50	150	366
MIN	3.9	7.4	4.0	3.0	2.0	.95	.40	.26	.35	1.8	.50	7.0
CFSM	9.76	1.39	.79	1.93	.35	.75	.99	1.53	.31	1.00	1.42	4.41
IN.	11.22	1.56	.91	2.23	.37	.87	1.11	1.76	.34	1.16	1.64	4.92
AC-FT	7,480	1,040	608	1,480	244	577	740	1,180	229	770	1,100	3,280

CAL YR 1976 TOTAL 6,593.95 MEAN 18.0 MAX 681 MIN .73 CFSM 1.44 IN 19.62 AC-FT 13,080

WTR YR 1977 TOTAL 9,437.76 MEAN 25.9 MAX 681 MIN .26 CFSM 2.07 IN 28.09 AC-FT 18,720

50049100 RIO PIEDRAS AT HATO REY, PR

LOCATION.--Lat 18°24'34", long 66°04'10", at bridge on Avenida Piñero at Las Américas Expressway, and 0.8 mi (1.3 km) southwest of Hato Rey.

DRAINAGE AREA.--15.4 mi^2 (39.9 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1971 to current year.
SEDIMENT RECORDS: October 1970, October 1971, August and December 1972, November 1973, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 14...	1420	18	440	8.0	30.0	6.2	10	290000	120000	3000	46
NOV 30...	1400	21	302	7.8	27.0	7.0	17	1200000	270000	34000	33
FEB 07...	1540	8.7	420	8.6	27.0	10.4	13	730000	400000	62000	41
APR 13...	0745	5.8	412	7.3	24.0	4.0	4.2	640000	57000	6700	41
JUN 03...	1430	6.4	580	8.2	30.5	7.7	13	2700000	450000	100000	--
AUG 05...	1500	42	265	7.6	29.0	6.3	19	5700000	370000	170000	31

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 14...	16	25	3.7	196	0	161	3.1	19	29	24	.66
NOV 30...	7.7	22	3.2	151	0	124	3.8	15	22	20	.60
FEB 07...	12	37	4.4	186	14	176	.9	22	36	28	.69
APR 13...	12	30	4.3	204	0	167	16	23	37	27	.34
JUN 03...	--	44	6.0	228	0	187	2.3	32	43	25	.23
AUG 05...	12	18	3.0	114	0	94	4.6	11	19	15	.28

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 14...	.11	.68	.82	1.5	2.3	10	.17	.63	--	--	--
NOV 30...	.08	.57	.93	1.5	2.2	9.7	.28	.40	--	0	<10
FEB 07...	.15	1.4	.80	2.2	3.0	13	.91	1.0	3	--	--
APR 13...	.04	1.3	.80	2.1	2.5	11	.52	.58	--	--	--
JUN 03...	.04	2.7	1.5	4.2	4.5	20	1.4	1.5	2	0	20
AUG 05...	.05	.53	.87	1.4	1.7	7.7	.31	.57	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 14...	--	--	91	--	--	--	--	9.4	618	30
NOV 30...	20	34	2	--	5	--	30	6.3	147	8.3
FEB 07...	--	--	0	.1	--	0	--	8.1	45	1.1
APR 13...	--	--	20	--	--	--	--	4.0	41	.64
JUN 03...	10	7	20	.4	5	0	20	6.5	59	1.0
AUG 05...	--	--	540	--	--	--	--	--	347	39

50049760 SAN JOSE LAGOON NO. 1 AT SAN JUAN, PR

LOCATION.--Lat 18°25'03", long 66°00'53", 0.4 mi (0.6 km) west of Quebrada San Antón, and 0.6 mi (1.0 km) southwest of mouth of Canal Suárez.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: November 1974 to current year.
BIOLOGICAL ANALYSES: February 1975 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT												
27...	1415t	7000	10.0	30.0	7.8	37	<10000	900	<100	180	480	3800
27...	1425b	5500	8.9	29.0	.0	4.8	11000	1800	1600	190	240	5300
DEC												
10...	1300t	44500	7.5	25.0	.0	9.6	<10000	<1000	--	350	1000	7600
10...	1330b	27500	9.1	26.0	2.8	<1.0	<1000	<100	--	--	--	--
FEB												
24...	1230t	28700	7.4	29.0	.0	60	5200	920	1900	--	--	--
24...	1245b	24000	7.7	29.5	.0	63	--	--	--	--	--	--
APR												
28...	1225t	37000	8.2	28.5	.0	18	30000	5200	7300	--	--	--
28...	1235b	28700	8.2	29.5	2.8	6.0	1000	<100	<100	--	--	--
JUN												
22...	1340t	29500	9.2	30.0	9.2	7.5	30000	200	80	--	--	--
22...	1405b	36800	8.4	30.0	.0	14	30000	1500	990	--	--	--
AUG												
23...	1500t	3000	8.4	29.0	7.4	20	1200	130	31	--	--	--
23...	1505b	3000	8.4	29.0	8.6	10	250	57	2	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT											
27...	150	940	7400	4.4	.00	.00	.25	2.0	2.2	2.2	9.7
27...	200	1200	9500	4.4	.00	.01	.65	1.8	2.4	2.4	11
DEC											
10...	380	1700	15000	8.5	.02	.00	13	4.0	17	17	75
10...	--	--	--	--	.01	.00	--	--	3.1	3.1	14
FEB											
24...	--	--	--	--	.02	.00	.28	2.7	3.0	3.0	13
24...	--	--	--	--	.03	.01	.38	.20	.58	.62	2.7
APR											
28...	--	--	--	--	.00	.01	2.2	1.3	3.5	3.5	16
28...	--	--	--	--	.03	.01	.56	2.0	2.6	2.6	12
JUN											
22...	--	--	--	--	.00	.00	.47	1.9	2.4	2.4	11
22...	--	--	--	--	.00	.00	1.4	.90	2.3	2.3	10
AUG											
23...	--	--	--	--	.00	.01	.22	1.6	1.8	1.8	8.0
23...	--	--	--	--	.00	.01	.12	2.2	2.3	2.3	10

DATE	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)
OCT											
27...	.48	.60	--	--	--	--	320	--	--	3.5	8
27...	.61	.72	--	--	--	--	750	--	--	1.5	7
DEC											
10...	--	2.1	0	10	1	3	400	3	20	10	--
10...	.51	--	0	10	4	16	--	9	20	12	--
FEB											
24...	.49	.71	--	--	--	--	--	--	--	13	7
24...	.10	.10	--	--	--	--	--	--	--	3.8	5
APR											
28...	.85	.89	--	--	--	--	--	--	--	4.1	5
28...	.68	.82	--	--	--	--	--	--	--	4.1	12
JUN											
22...	.63	.76	--	--	--	--	--	--	--	6.7	9
22...	.52	.60	--	--	--	--	--	--	--	7.3	2
AUG											
23...	.61	.86	--	--	--	--	--	--	--	9.2	12
23...	.60	.83	--	--	--	--	--	--	--	--	14

NOTE.--t-top, at 0.5 m depth
b-bottom, at 5.0 m depth.

50049760 SAN JOSE LAGOON NO. 1 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO AUGUST 1977

DATE	OCT 27,76	DEC 10,76	FEB 24,77	APR 28,77	JUN 22,77	AUG 23,77
TIME	1415	1330	1245	1235	1340	1505
TOTAL CELLS/ML	32000	40000	21000	21000	52000	1300000
DIVERSITY: DIVISION	1.0	0.9	1.0	0.6	1.3	0.2
.CLASS	1.0	0.9	1.0	0.6	1.3	0.2
..ORDER	1.3	1.0	1.2	1.0	1.6	0.2
...FAMILY	1.3	1.0	1.2	1.0	1.6	0.2
....GENUS	1.3	1.1	1.2	1.1	1.8	1.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	160	1	--	-	--	-
....OOCYSTIS	--	-	--	-	560	3	1300	6	450	1	*	0
..ULOTRICHALES												
...ULOTRICHACEAE												
....BINUCLEARIA	--	-	--	-	--	-	--	-	2200	4	--	-
....GEMINELLA	--	-	--	-	--	-	18000#	82	--	-	--	-
....ULOTHRIX	--	-	--	-	--	-	--	-	--	-	27000	2
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..PENNALES												
...NAVICULACEAE												
....ENTOMONEIS	--	-	--	-	--	-	--	-	*	0	--	-
..CENTRALES												
...CHAETOCERACEAE												
....CHAETOCEROS	230	1	950	2	--	-	550	3	--	-	--	-
...COSCINODISCACEAE												
....COSCINODISCUS	--	-	*	0	370	2	--	-	300	1	*	0
....CYCLOTELLA	--	-	--	-	--	-	1200	6	--	-	--	-
....STEPHANODISCUS	--	-	510	1	--	-	--	-	300	1	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	120	1	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	*	0	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	320	2	*	0	*	0	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...OSCILLATORIACEAE												
....PHORMIDIUM	--	-	--	-	280	1	--	-	--	-	--	-
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	5600#	18	1900	5	16000#	76	--	-	2400	5	300000#	23
..HORMOGONALES												
...OSCILLATORIACEAE												
....OSCILLATORIA	4500	14	4400	11	--	-	--	-	4700	9	--	-
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	9600#	19	970000#	74
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	21000#	67	--	-	3600#	17	390	2	32000#	61	--	-
....PROROCENTRUM	--	-	32000#	80	--	-	--	-	--	-	*	0
.DINOPHYCEAE												
..PERIDINIALES												
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	*	0	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50049820 SAN JOSE LAGOON NO. 2 AT SAN JUAN, PR

LOCATION.--Lat 18°25'50", long 66°02'12", 0.2 mi (0.3 km) east of Caño de Martín Peña, and 650 ft (200 m) south of Isla Guachinango.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1974 to current year.
BIOLOGICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT												
27...	1330 t	23000	9.8	30.0	6.0	16	160000	18000	6900	140	400	3300
DEC												
10...	1200 t	23000	8.8	23.0	3.6	15	280000	42000	--	--	--	--
FEB												
24...	1320 t	17500	9.0	29.5	8.7	12	26000	8000	580	--	--	--
APR												
28...	1305 t	28000	8.5	30.5	7.3	16	13000	1700	<10	--	--	--
JUN												
22...	1450 t	24000	9.0	30.0	12.0	48	210000	28000	5800	--	--	--
AUG												
23...	1430 t	23500	8.4	30.0	7.8	29	25000	2300	1900	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT											
27...	130	760	6200	4.9	.01	.01	.54	3.4	3.9	3.9	17
DEC											
10...	--	--	--	--	.00	.01	.22	3.7	3.9	3.9	17
FEB											
24...	--	--	--	--	.03	.01	2.8	1.3	4.1	4.1	18
APR											
28...	--	--	--	--	.01	.01	.61	3.2	3.8	3.8	17
JUN											
22...	--	--	--	--	.00	.01	1.4	2.8	4.2	4.2	19
AUG											
23...	--	--	--	--	.00	.01	.18	2.5	2.7	2.7	12

DATE	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)
OCT											
27...	.63	.89	--	--	--	--	150	--	--	1.8	40
DEC											
10...	.33	.67	0	10	18	63	--	6	70	1'5	92
FEB											
24...	.96	1.0	--	--	--	--	--	--	--	4.4	42
APR											
28...	.72	1.1	--	--	--	--	--	--	--	7.0	75
JUN											
22...	.94	1.1	--	--	--	--	--	--	--	7.2	26
AUG											
23...	.47	.92	--	--	--	--	--	--	--	7.1	49

NOTE.--t-top, at 0.5 m depth

50049820 SAN JOSE LAGOON NO. 2 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO AUGUST 1977

DATE	OCT 27,76		DEC 10,76		FEB 24,77		APR 28,77		JUN 22,77		AUG 23,77	
TIME	1330		1200		1320		1305		1450		1430	
TOTAL CELLS/ML	120000		140000		46000		44000		280		2000000	
DIVERSITY: DIVISION	0.9		0.8		1.3		1.6		1.0		0.1	
.CLASS	0.9		0.8		1.3		1.6		1.0		0.1	
..ORDER	0.9		0.8		1.6		2.4		1.5		0.1	
...FAMILY	0.9		0.8		1.6		2.4		1.5		0.1	
....GENUS	0.9		0.8		1.6		2.5		1.6		0.4	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	*	0	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	*	0	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	3300	7	2	1	*	0
..ULOTRICHALES												
...ULOTRICHACEAE												
....BINUCLEARIA	--	-	--	-	--	-	--	-	3	1	--	-
....ULOTHRIX	--	-	--	-	--	-	13000#	30	--	-	16000	1
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	--	-	--	-	--	-	--	-	*	0
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...CHAETOCERACEAE												
....CHAETOCEROS	--	-	--	-	--	-	470	1	--	-	*	0
...COSCINODISCACEAE												
....COSCINODISCUS	--	-	*	0	3200	7	*	0	*	0	*	0
....CYCLOTELLA	--	-	--	-	--	-	6500	15	2	1	--	-
....SKELETONEMA	--	-	--	-	--	-	*	0	--	-	--	-
..PENNALES												
...NAVICULACEAE												
....NAVICULA	--	-	--	-	--	-	--	-	*	0	--	-
....PLEUROSIGMA	--	-	--	-	--	-	--	-	*	0	--	-
...NITZSCHIACEAE												
....NITZSCHIA	*	0	--	-	930	2	1100	3	*	0	*	0
CYANOPHYTA(BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS												
.....A.INCERTA	--	-	110000#	77	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....PHORMIDIUM	--	-	--	-	4300	9	--	-	--	-	--	-
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	9900#	21	*	0	4	1	100000	5
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	470	1	--	-	--	-
....OSCILLATORIA	80000#	69	--	-	--	-	9100#	20	180#	62	--	-
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....GOMPHOSPHAERIA	--	-	--	-	--	-	9300#	21	31	11	1900000#	93
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	36000#	31	--	-	28000#	60	560	1	63#	22	--	-
....PROROCENTRUM	--	-	31000#	22	--	-	--	-	--	-	*	0
.DINOPHYCEAE												
..PERIDINIALES												
...GONYAULACACEAE												
....GONYAULAX	--	-	--	-	--	-	*	0	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50049920 SAN JUAN BAY NO. 5 AT SAN JUAN, PR

LOCATION.--Lat 18°26'37", long 66°05'16", 0.4 mi (0.6 km) west of Puente de la Constitución, and 0.5 mi (0.8 km) south from U.S. Naval Reservation.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1974 to current year.
BIOLOGICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT 27...	1030t	34000	8.5	29.0	1.4	3.2	250000	86000	8000	410	1300	11000
DEC 07...	1005t	--	--	28.0	--	2.7	62000	9400	--	--	--	--
FEB 24...	1025t	38000	8.1	29.0	4.3	3.8	510000	47000	5600	--	--	--
APR 28...	1030t	43000	8.1	27.0	4.3	7.2	330000	41000	8300	--	--	--
JUN 22...	1130t	44200	8.3	28.5	6.2	3.3	10000	2100	780	--	--	--
AUG 23...	1240t	39800	8.0	29.0	5.2	8.2	130000	17000	1030	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT 27...	390	2400	19000	.3	.00	.01	.80	.50	1.3	1.3	5.8
DEC 07...	--	--	--	--	--	--	--	--	--	--	--
FEB 24...	--	--	--	--	.01	.01	1.5	.00	1.5	1.5	6.7
APR 28...	--	--	--	--	.03	.02	.59	.61	1.2	1.3	5.5
JUN 22...	--	--	--	--	.00	.01	.41	.34	.75	.76	3.4
AUG 23...	--	--	--	--	.02	.01	.52	.33	.85	.88	3.9

DATE	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)
OCT 27...	.26	.32	--	--	--	--	90	--	--	1.6	13
DEC 07...	--	--	0	20	3	21	--	0	20	--	2
FEB 24...	.25	.29	--	--	--	--	--	--	--	2.8	4
APR 28...	.26	.32	--	--	--	--	--	--	--	7.0	13
JUN 22...	.10	.13	--	--	--	--	--	--	--	7.0	8
AUG 23...	.13	.21	--	--	--	--	--	--	--	6.9	5

NOTE.--t-top, at 0.5 m depth

50049920 SAN JUAN BAY NO. 5 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO AUGUST 1977

DATE	FEB 24,77		APR 28,77		JUN 22,77		AUG 23,77	
TIME	1025		1030		1130		1240	
TOTAL CELLS/ML	7200		25000		1200		6600	
DIVERSITY: DIVISION	0.0		0.0		1.0		1.2	
.CLASS	0.0		0.0		1.0		1.2	
..ORDER	0.4		0.1		1.1		1.7	
...FAMILY	0.7		0.1		1.4		1.8	
....GENUS	0.9		1.4		1.5		2.1	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	45	1
...OOCYSTACEAE								
....OOCYSTIS	--	-	*	0	--	-	36	1
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	180	3
..ZYGNEMATALES								
...DESMIDIACEAE								
....COSMARIUM	--	-	--	-	--	-	*	0
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...BIDDULPHIACEAE								
....STREPTOTHECA	460	6	*	0	170	14	--	-
...CHAETOCERACEAE								
....CHAETOCEROS	*	0	*	0	14	1	--	-
...COSCINODISCACEAE								
....CYCLOTELLA	--	-	15000#	61	12	1	230	4
....MELOSIRA	46	1	--	-	--	-	3100#	47
....SKELETONEMA	6100#	85	4400#	18	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	130	2
....THALASSIOSIRA	46	1	5000#	20	40	3	--	-
..PENNALES								
...FRAGILARIACEAE								
....ASTERIONELLA	440	6	*	0	35	3	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	*	0	--	-
....PINNULARIA	--	-	--	-	*	0	--	-
...NITZSCHIACEAE								
....NITZSCHIA	*	0	*	0	26	2	120	2
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	--	-	--	-	--	-	1000#	16
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	870#	73	1700#	26
PYRRHOPHYTA (FIRE ALGAE)								
.DESMOKONTAE								
..DESMOMONADALES								
...PROROCENTRACEAE								
....EXUVIAELLA	*	0	--	-	26	2	--	-
....PROROCENTRUM	*	0	*	0	--	-	--	-
.DINOPHYCEAE								
..PERIDINIALES								
...CERATIACEAE								
....CERATIUM	--	-	*	0	--	-	--	-
...GONYAULACACEAE								
....GONYAULAX	--	-	*	0	--	-	--	-
...PERIDINIACEAE								
....PERIDINIUM	--	-	*	0	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50049940 SAN JUAN BAY NO. 3 AT SAN JUAN, PR

LOCATION.--Lat 18°27'09", long 66°06'36", 0.3 mi (0.5 km) northeast of Punta Cataño, and 0.6 mi (1.0 km) southwest of Isla Grande Airport.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1974 to current year.
BIOLOGICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT												
27...	0940t	45000	7.9	28.0	.0	2.7	97000	21000	1100	410	1300	11000
27...	0945b	45000	8.5	27.0	.0	--	21000	6200	1300	440	1300	12000
DEC												
07...	1100t	33500	8.1	28.0	5.2	2.3	<1000	<100	--	--	--	--
07...	1140b	--	--	28.5	--	3.4	6000	2400	--	--	--	--
FEB												
24...	0915t	38000	8.2	26.5	6.7	3.7	16000	1900	320	--	--	--
24...	0930b	36500	8.3	27.0	6.6	4.0	5700	510	210	--	--	--
APR												
28...	0935t	41800	8.2	26.5	7.2	3.1	5800	1600	490	--	--	--
28...	0945b	41000	8.2	27.0	7.9	3.6	1500	530	240	--	--	--
JUN												
22...	0955t	42500	8.2	28.0	6.2	3.0	21000	5000	520	--	--	--
22...	1015b	43000	8.2	28.0	6.2	2.5	8000	800	270	--	--	--
AUG												
23...	1140t	42100	8.0	28.5	7.6	3.1	18000	4500	260	--	--	--
23...	1150b	41800	8.0	29.0	7.8	4.0	16000	6300	350	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT											
27...	390	2600	19000	.4	.00	.01	.64	.36	1.0	1.0	4.5
27...	390	2500	20000	.4	.00	.01	.39	.12	.51	.52	2.3
DEC											
07...	--	--	--	--	.03	.01	.30	.12	.42	.46	2.0
07...	--	--	--	--	--	--	--	--	--	--	--
FEB											
24...	--	--	--	--	.01	.00	3.8	.10	3.9	3.9	17
24...	--	--	--	--	.00	.01	.21	.07	.28	.29	1.3
APR											
28...	--	--	--	--	.01	.00	.20	.63	.83	.84	3.7
28...	--	--	--	--	.04	.01	.33	.27	.60	.65	2.9
JUN											
22...	--	--	--	--	.00	.01	.34	.18	.52	.53	2.3
22...	--	--	--	--	.00	.01	.37	.00	.32	.33	1.5
AUG											
23...	--	--	--	--	.02	.01	.39	.00	.39	.23	1.0
23...	--	--	--	--	.02	.01	.45	.02	.47	.50	2.2

DATE	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)
OCT											
27...	.24	.29	--	--	--	--	70	--	--	.8	4
27...	.13	.16	--	--	--	--	70	--	--	.5	2
DEC											
07...	--	.07	0	20	5	11	--	1	30	6.1	13
07...	--	--	0	20	3	10	--	0	20	--	2
FEB											
24...	.89	.89	--	--	--	--	--	--	--	6.4	7
24...	.12	.13	--	--	--	--	--	--	--	5.4	5
APR											
28...	.06	.13	--	--	--	--	--	--	--	6.2	10
28...	.16	.19	--	--	--	--	--	--	--	3.6	20
JUN											
22...	.10	.12	--	--	--	--	--	--	--	7.1	13
22...	.09	.10	--	--	--	--	--	--	--	6.8	11
AUG											
23...	.06	.09	--	--	--	--	--	--	--	7.0	5
23...	.08	.13	--	--	--	--	--	--	--	7.5	1

NOTE.--t-top, at 0.5 m depth
b-bottom, at 2.0 m depth

50049940 SAN JUAN BAY NO. 3 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO AUGUST 1977

DATE	FEB 24,77	APR 28,77	JUN 22,77	AUG 23,77
TIME	0930	0945	0955	1150
TOTAL CELLS/ML	4600	8000	170	2600
DIVERSITY: DIVISION	0.0	0.2	1.0	0.0
.CLASS	0.0	0.2	1.1	0.0
..ORDER	0.4	0.5	1.5	0.8
...FAMILY	1.0	0.7	1.7	0.9
....GENUS	1.1	1.5	1.9	0.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	*	0
...SCENEDESMACEAE								
....SCENEDESMUS	--	-	75	1	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...BIDDULPHIACEAE								
....STREPTOTHECA	540	12	75	1	110#	63	--	-
...CHAETOCERACEAE								
....CHAETOCEROS	--	-	*	0	7	4	--	-
...COSCINODISCACEAE								
....CYCLOTELLA	*	0	930	12	--	-	--	-
....MELOSIRA	34	1	--	-	--	-	2000#	75
....SKELETONEMA	3600#	79	5800#	72	--	-	--	-
....THALASSIOSIRA	--	-	490	6	--	-	--	-
...RHIZOSOLENIACEAE								
....RHIZOSOLENIA	*	0	--	-	--	-	--	-
..PENNALES								
...FRAGILARIACEAE								
....ASTERIONELLA	360	8	470	6	--	-	590#	23
...NITZSCHIACEAE								
....NITZSCHIA	*	0	56	1	14	8	42	2
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	14	8	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DESMOKONTAE								
..DESMOMONADALES								
...PROROCENTRACEAE								
....EXUVIAELLA	--	-	75	1	18	10	--	-
....PROROCENTRUM	--	-	--	-	7	4	--	-
.DINOPHYCEAE								
..PERIDINIALES								
...CERATIACEAE								
....CERATIUM	--	-	--	-	4	2	*	0
...GONYAULACACEAE								
....GONYAULAX	--	-	*	0	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50050300 QUEBRADA BLASINA NEAR CAROLINA, PR

LOCATION.--Lat 18°27'41", long 65°05'15", at bridge on Highway 3, 1.4 mi (2.3 km) south of Valle Arriba Heights, and 1.2 mi (1.9 km) west-southwest of Carolina.

DRAINAGE AREA.--2.96 mi^2 (7.67 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September and December 1973, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
08...	0815	12	350	7.4	26.5	4.4	14	660000	230000	28000	40
DEC											
02...	0900	7.3	342	7.4	25.0	3.6	16	830000	310000	18000	40
FEB											
08...	0800	6.2	450	7.4	23.0	1.9	12	2200000	180000	37000	49
APR											
15...	0820	4.6	650	7.3	25.0	.0	23	7200000	310000	1900000	53
JUN											
03...	0820	7.1	680	7.3	26.5	1.6	16	5700000	430000	2100000	54
AUG											
05...	1300	6.4	680	6.9	29.0	.3	24	35000000	3100000	3100000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
08...	6.8	28	5.8	157	0	129	10	24	30	17	.76
DEC											
02...	7.1	30	6.4	190	0	156	12	23	33	20	.44
FEB											
08...	8.8	40	5.8	238	0	195	15	18	53	28	.07
APR											
15...	9.7	48	7.5	268	0	220	21	19	61	30	.00
JUN											
03...	8.8	44	6.2	240	0	197	19	36	59	25	.01
AUG											
05...	--	42	6.8	166	0	136	33	17	71	20	.00

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
08...	.24	1.3	1.4	2.7	3.7	16	--	.60	--	--	--
DEC											
02...	.12	3.3	1.2	4.5	5.1	22	.83	1.0	2	0	<10
FEB											
08...	.04	6.1	1.8	7.9	8.0	35	2.4	2.4	--	--	--
APR											
15...	.01	5.4	2.1	7.5	7.5	33	1.5	2.0	--	--	--
JUN											
03...	.02	7.1	.60	7.7	7.7	34	1.5	1.7	3	0	<10
AUG											
05...	.01	6.8	1.7	8.5	8.5	38	1.8	2.0	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
08...	--	--	60	--	--	--	--	18	200	6.5
DEC										
02...	10	20	180	.3	3	0	20	6.8	103	2.0
FEB										
08...	--	--	20	--	--	--	--	6.1	63	1.1
APR										
15...	--	--	1100	--	--	--	--	8.3	53	.66
JUN										
03...	5	11	570	.2	6	0	20	7.1	71	1.4
AUG										
05...	--	--	360	--	--	--	--	8.4	86	1.5

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR

LOCATION.--Lat 18°14'35", long 66°00'35", on right bank, at bridge on Highway 189 (previously Highway 30), 1.2 mi (1.9 km) downstream from Río Turabo, and 1.8 mi (2.9 km) east of the plaza de Caguas.

DRAINAGE AREA.--89.8 mi^2 (232.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1959 (low-flow measurement only), February to November 1959 (monthly measurements only), December 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 143.28 ft (43.672 m) above mean sea level (datum of 1941).

REMARKS.--Records fair.

AVERAGE DISCHARGE.--17 years (1971-77), 195 ft^3/s (5.522 m^3/s), 29.49 in/yr (749 mm/yr), 141,300 acre-ft/yr (174 hm^3/yr); median of yearly mean discharges, 163 ft^3/s (4.62 m^3/s), 118,000 acre-ft/yr (145 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft^3/s (2,025 m^3/s) Sept. 6, 1960, gage height, 31.17 ft (9.501 m), from rating curve extended above 6,000 ft^3/s (170 m^3/s) on basis of slope-area measurement; minimum daily discharge, 10 ft^3/s (0.283 m^3/s) Apr. 5, 10, 29, 1968.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 29,800 ft^3/s (844 m^3/s) Sept. 6, gage height, 21.37 ft (6.514 m); no other peak above base of 8,000 ft^3/s (227 m^3/s); minimum discharge, 16 ft^3/s (0.453 m^3/s) May 13-14, gage height, 3.99 ft (1.216 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	131	189	81	71	40	28	25	80	37	52	214
2	157	120	171	80	64	39	29	29	72	37	156	172
3	137	108	250	78	58	39	27	38	69	36	172	116
4	98	100	310	77	56	37	25	28	64	36	246	99
5	87	98	332	81	61	36	24	23	59	35	178	186
6	93	122	387	79	54	49	35	23	52	35	186	3,370
7	176	105	230	75	51	47	64	23	47	40	100	516
8	258	89	171	74	55	57	55	21	44	33	77	242
9	663	84	244	72	57	46	41	20	42	29	64	197
10	314	386	238	69	52	90	43	21	40	28	110	158
11	1,140	177	192	71	84	57	42	20	40	27	118	135
12	597	168	165	68	58	43	36	18	37	27	78	119
13	508	167	140	67	54	37	49	17	54	34	72	115
14	1,220	128	151	65	49	34	62	19	40	80	121	142
15	501	124	182	94	45	37	86	21	38	190	102	190
16	340	122	163	80	48	36	54	21	116	68	75	131
17	225	142	139	67	46	36	39	37	160	120	72	106
18	188	114	125	64	44	65	31	53	55	70	75	147
19	164	104	124	65	41	53	31	37	42	54	90	159
20	162	101	114	68	43	38	34	27	37	44	67	112
21	153	103	109	85	43	37	113	29	34	38	410	1,150
22	134	114	105	68	44	42	74	28	32	36	221	405
23	133	96	103	65	50	34	189	1,560	29	34	88	1,280
24	174	85	100	77	51	30	93	272	29	32	231	415
25	160	109	99	64	73	27	54	162	29	36	240	239
26	119	119	94	59	58	25	48	185	27	59	195	189
27	112	121	89	63	49	37	40	602	117	85	107	182
28	145	122	96	90	44	48	42	340	100	140	110	166
29	183	113	97	103	------	35	30	175	47	202	570	160
30	160	100	88	79	------	29	27	123	38	94	1,360	150
31	231	------	84	63	------	29	------	97	------	64	404	------
TOTAL	8,825	3,772	5,081	2,291	1,503	1,289	1,545	4,094	1,670	1,880	6,147	10,962
MEAN	285	126	164	73.9	53.7	41.6	51.5	132	55.7	60.6	198	365
MAX	1,220	386	387	103	84	90	189	1,560	160	202	1,360	3,370
MIN	87	84	84	59	41	25	24	17	27	27	52	99
CFSM	3.17	1.40	1.83	.82	.60	.46	.57	1.47	.62	.67	2.20	4.06
IN.	3.66	1.56	2.10	.95	.62	.53	.64	1.70	.69	.78	2.55	4.54
AC-FT	17,500	7,480	10,080	4,540	2,980	2,560	3,060	8,120	3,310	3,730	12,190	21,740

CAL YR 1976 TOTAL 54,227 MEAN 148 MAX 1,220 MIN 49 CFSM 1.65 IN 22.46 AC-FT 107,600

WTR YR 1977 TOTAL 49,059 MEAN 134 MAX 3,370 MIN 17 CFSM 1.49 IN 20.32 AC-FT 97,310

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1959 to current year.
SEDIMENT RECORDS: November 1959 to January 1967, July 1968, March 1969, November 1973 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 14...	0930	295	137	7.5	25.0	6.4	1.6	71000	22000	4100	12
DEC 01...	0915	105	195	7.4	24.5	6.7	1.9	780000	155000	13100	21
FEB 15...	1400	42	220	7.2	25.0	6.8	1.8	61000	17000	1500	16
APR 11...	1015	42	250	7.2	28.0	6.2	1.1	24000	2600	230	16
JUN 16...	1440	64	268	7.7	29.0	7.6	2.1	65000	9300	3900	16
AUG 05...	0900	143	152	7.4	24.0	7.8	3.2	>4000000	65000	16000	11

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 14...	4.6	12	2.3	52	0	43	2.6	8.1	12	22	.49
DEC 01...	6.2	18	1.9	87	0	71	5.5	14	17	28	.67
FEB 15...	7.0	23	1.8	88	0	72	8.9	14	20	36	.65
APR 11...	6.6	23	2.0	94	0	77	9.5	15	22	32	.55
JUN 16...	7.4	24	2.4	94	0	77	3.0	15	22	32	.54
AUG 05...	5.9	15	2.8	60	0	49	3.8	9.6	16	24	.44

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 14...	.04	.10	.47	.57	1.1	4.9	.10	.15	--	--	--
DEC 01...	.05	.24	.48	.72	1.4	6.4	.16	.29	--	0	<10
FEB 15...	.04	.14	.31	.45	1.1	5.0	.17	.27	1	--	--
APR 11...	.02	.10	.38	.48	1.1	4.6	.23	.26	--	--	--
JUN 16...	.07	.14	.43	.57	1.2	5.2	.20	.22	2	0	<10
AUG 05...	.06	.16	.47	.63	1.1	5.0	.16	.22	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 14...	--	--	160	--	--	--	--	5.6	108	86
DEC 01...	22	24	10	--	0	--	50	9.0	250	71
FEB 15...	--	--	40	.0	--	0	--	7.8	189	21
APR 11...	--	--	80	--	--	--	--	3.2	35	4.0
JUN 16...	8	13	400	.4	4	0	10	11	135	23
AUG 05...	--	--	500	--	--	--	--	9.4	169	65

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 16...	1440	.0	77	.0	.0	.0	.0	.0	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 16...	.0	.0	.0	.0	.0	0	.0	0	0	0

50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR

LOCATION.--Lat 18°15'11", long 66°01'26", at Highway 30 bridge, and 0.8 mi (1.3 km) east of Caguas.

DRAINAGE AREA.--14.1 mi^2 (36.5 km^2).

PERIOD OF RECORD.
CHEMICAL ANALYSES: September 1972 to current year.
SEDIMENT RECORDS: March 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 14...	1140	23	458	7.3	28.0	1.4	28	15000000	1100000	88000	42
DEC 01...	1400	134	234	7.4	26.5	1.2	245	3000000	720000	270000	20
FEB 16...	0920	7.8	590	7.3	25.0	1.0	42	42000000	3700000	600000	47
APR 15...	1435	5.1	680	7.5	29.5	6.4	7.0	270000	88000	5000	53
JUN 17...	0830	9.0	345	7.3	27.5	4.0	7.2	1800000	300000	550000	30
AUG 05...	1345	19	472	7.2	29.5	1.1	28	32000000	3700000	350000	31

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 14...	15	33	4.9	181	0	148	15	39	41	33	.71
DEC 01...	5.5	23	3.9	80	0	66	5.1	21	28	14	.83
FEB 16...	16	48	5.3	228	0	187	18	51	56	37	.00
APR 15...	14	38	4.6	188	0	154	9.5	81	45	33	.23
JUN 17...	8.0	24	3.7	116	0	95	9.3	40	24	17	.29
AUG 05...	12	45	7.8	178	0	146	18	37	57	32	.02

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 14...	.26	2.0	1.3	3.3	4.3	19	1.1	1.6	--	--	--
DEC 01...	.10	.58	3.2	3.8	4.7	21	.63	1.7	--	2	20
FEB 16...	.00	7.7	2.3	10	10	44	1.9	2.4	2	--	--
APR 15...	.05	2.8	1.4	4.2	4.5	20	.90	1.1	--	--	--
JUN 17...	.07	.85	.85	1.7	2.1	9.1	.43	.52	2	0	10
AUG 05...	.04	2.6	1.7	4.3	4.4	19	1.8	2.2	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 14...	--	--	110	--	--	--	--	4.6	67	4.2
DEC 01...	48	300	290	--	6	--	190	7.2	284	103
FEB 16...	--	--	480	.0	--	0	--	8.7	41	.86
APR 15...	--	--	10	--	--	--	--	7.5	47	.65
JUN 17...	8	28	550	.2	6	0	20	9.8	82	2.0
AUG 05...	--	--	280	--	--	--	--	7.4	84	4.3

50056400 RIO VALENCIANO NEAR JUNCOS, PR

LOCATION.--Lat 18°12'58", long 65°55'34", on left bank at Highway 919, 2,700 ft (823 m) upstream from Quebrada Don Victor and 1.0 mi (1.6 km) south of Juncos.

DRAINAGE AREA.--16.4 mi^2 (42.5 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 320 ft (97.5 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--6 years (1971-77), 41.5 ft^3/s (1.175 m^3/s), 34.36 in/yr (873 mm/yr), 30,070 acre-ft/yr (37.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft^3/s (411 m^3/s) Aug. 15, 1973, gage height, 16.0 ft (4.877 m), from floodmark, from rating curve extended above 100 ft^3/s (2.83 m^3/s) on basis of slope-area measurement of peak flow; minimum, 2.3 ft^3/s (0.065 m^3/s) July 10, 1977, gage height, 0.29 ft (0.088 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges (no stages were recorded) of major floods are as follows: Sept. 6, 1960, 37,100 ft^3/s (1,051 m^3/s); October 9, 1970, 18,200 ft^3/s (515 m^3/s).

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 3,400 ft^3/s (96.3 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Aug. 29	1945	*7,220	204	*11.10	3.383	Sept. 6	1500	4,670	132	8.97	2.734

Minimum discharge, 2.3 ft^3/s (0.065 m^3/s) July 10, gage height, 0.29 ft (0.088 m).

REVISIONS.--Revised maximum discharge for period of record for water year 1973 and, revised peak discharges above base in cubic feet per second for water years 1975-76. These figures supersede those published in the report for 1975-76.

Aug. 15, 1973	14,500	Dec. 9, 1974	3,490
Nov. 2, 1974	3,780	Sept. 16, 1975	14,400
Nov. 12	7,100	Sept. 11, 1976	1,970

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	20	19	16	13	6.4	6.6	4.3	11	5.3	7.9	53
2	31	18	22	15	11	5.6	6.6	3.9	11	6.0	123	37
3	44	17	190	14	11	5.8	5.3	4.0	10	5.3	60	28
4	22	20	89	14	11	5.6	5.1	3.4	11	4.1	76	22
5	21	17	75	14	11	5.6	4.1	3.2	7.4	3.0	38	44
6	26	34	69	14	10	6.6	7.8	3.2	6.1	5.8	51	633
7	28	18	37	13	10	7.8	10	3.0	5.6	4.3	21	114
8	55	16	33	13	11	11	11	3.0	5.3	4.0	18	57
9	160	15	34	13	11	7.8	6.6	3.2	4.8	2.7	14	49
10	63	146	36	12	10	9.9	8.4	3.2	4.4	2.3	13	44
11	242	40	29	12	16	6.6	9.6	3.4	4.1	2.5	13	44
12	164	29	24	12	11	6.1	6.6	3.2	3.9	3.2	11	35
13	86	31	22	11	11	5.6	7.4	3.0	8.4	4.1	13	37
14	129	22	29	12	10	5.6	11	3.2	4.7	13	12	51
15	130	20	31	20	10	6.9	17	3.2	4.5	79	17	59
16	65	24	26	14	10	10	8.1	5.8	9.8	12	9.8	29
17	44	22	23	13	9.2	7.4	7.8	21	10	27	11	34
18	37	19	25	12	8.1	8.5	5.6	5.0	4.8	15	9.6	42
19	32	18	21	12	8.4	8.1	5.3	16	4.2	6.9	8.1	30
20	31	17	19	12	8.8	6.6	5.6	11	3.5	5.3	7.1	23
21	28	17	18	12	8.4	7.1	15	14	3.2	4.4	216	69
22	26	16	17	13	9.2	8.1	8.8	32	3.0	3.7	54	89
23	25	16	17	13	8.4	7.1	13	181	2.5	3.5	22	293
24	25	15	17	13	8.8	6.6	7.8	40	3.0	3.5	30	77
25	24	22	16	12	9.6	5.6	5.8	46	2.5	4.2	139	47
26	21	31	15	11	8.1	5.6	5.8	35	3.0	6.0	41	37
27	21	19	15	11	7.1	6.6	4.8	255	20	13	159	34
28	36	17	16	15	6.6	8.1	4.3	57	7.3	91	60	31
29	25	18	16	14	------	6.1	4.3	31	4.0	74	889	25
30	24	16	15	13	------	6.4	4.3	22	3.4	18	638	22
31	29	------	15	11	------	6.4	------	15	------	10	96	------
TOTAL	1,733	750	1,030	406	277.7	217.2	229.4	837.2	186.4	442.1	2,877.5	2,189
MEAN	55.9	25.0	33.2	13.1	9.92	7.01	7.65	27.0	6.21	14.3	92.8	73.0
MAX	242	146	190	20	16	11	17	255	20	91	889	633
MIN	21	15	15	11	6.6	5.6	4.1	3.0	2.5	2.3	7.1	22
CFSM	3.41	1.52	2.02	.80	.60	.43	.47	1.65	.38	.87	5.66	4.45
IN.	3.93	1.70	2.34	.92	.63	.49	.52	1.90	.42	1.00	6.53	4.97
AC-FT	3,440	1,490	2,040	805	551	431	455	1,660	370	877	5,710	4,340

CAL YR 1976 TOTAL 10,607.8 MEAN 29.0 MAX 640 MIN 7.5 CFSM 1.77 IN 24.06 AC-FT 21,040

WTR YR 1977 TOTAL 11,175.5 MEAN 30.6 MAX 889 MIN 2.3 CFSM 1.87 IN 25.35 AC-FT 22,170

50056400 RIO VALENCIANO NEAR JUNCOS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: March 1971 to October 1973. January 1974 to current year.
SEDIMENT RECORDS: November 1974. January to November 1975, December 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
NOV									
16...	1530	25	--	--	29.0	--	--	--	--
DEC									
07...	1340	31	250	7.6	25.5	8.2	15	5.1	20
MAR									
08...	1245	9.0	280	7.6	26.5	10.4	14	6.0	23
JUL									
06...	0950	10	314	7.9	25.5	7.6	17	6.2	26

DATE	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL MANGANESE (MN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV							
16...	--	--	--	--	--	95	6.4
DEC							
07...	3.7	11	19	30	10	55	37
MAR							
08...	3.0	12	22	34	100	--	--
JUL							
06...	5.6	11	26	36	30	--	--

50057000 RIO GURABO AT GURABO, PR

LOCATION.--Lat 18°15'30", long 65°58'05", on left bank, at bridge on Highway 181, 0.3 mi (0.5 km) east of Gurabo, and 4.5 mi (7.6 km) upstream from Río Grande de Loíza.

DRAINAGE AREA.--60.2 mi^2 (155.9 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1958 (occasional low-flow measurements only), January to September 1959 (monthly measurements only), October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 136.58 ft (41.630 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--18 years (1960-77), 124 ft^3/s (3.512 m^3/s), 27.97 in/yr (710 mm/yr), 89,840 acre-ft/yr (111 hm^3/yr); median of yearly mean discharges, 126 ft^3/s (3.568 m^3/s), 91,300 acre-ft/yr (113 hm^3/yr). The medians published in the 1975-76 report were in error; the correct figures are 16 years, 130 ft^3/s (3.68 m^3/s) 94,200 acre-ft/yr (116 hm^3/s); 17 years, 127 ft^3/s (3.60 m^3/s), 92,010 acre-ft/yr (113 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,600 ft^3/s (2,113 m^3/s) Sept. 6, 1960, gage height, 27.7 ft (8.44 m), from floodmark, from rating curve extended above 8,000 ft^3/s (227 m^3/s) on basis of slope-area measurement at gage height 21.6 ft (6.58 m), contracted opening, culvert and flow over road measurement at gage height 23.76 ft (7.242 m), and estimate of peak flow based on slope-area measurements of Río Gurabo and Río Valenciano, 7.0 mi (11.3 km) upstream, adjusted for channel storage and flow from intervening area; minimum, 4.5 ft^3/s (0.127 m^3/s) Feb. 21, 25, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate elevation to gage datum of the Aug. 4, 1945 flood, as pointed out by local residents, 26.6 ft (8.11 m).

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 3,000 ft^3/s (85.0 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 14	1615	3,050	86.4	9.87	3.008	Sept. 6	1730	*5,170	146	*12.17	3.709

Minimum daily discharge, 10 ft^3/s (0.283 m^3/s) July 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	73	48	29	28	19	15	23	55	15	32	218
2	56	120	63	29	29	19	15	24	51	26	76	152
3	110	64	219	28	28	17	15	23	50	15	96	96
4	76	56	206	28	28	14	12	23	44	20	114	72
5	146	54	237	30	28	13	13	26	43	17	78	67
6	539	81	143	31	26	15	18	25	40	15	117	1,260
7	152	77	85	31	25	16	21	22	36	16	74	679
8	372	56	62	29	27	22	25	18	30	20	38	187
9	605	51	67	29	28	37	23	12	28	10	29	123
10	320	216	131	29	26	29	24	16	28	12	25	104
11	610	51	88	29	29	31	23	18	28	15	23	93
12	588	171	63	28	30	24	21	16	25	21	26	116
13	276	89	54	26	27	21	21	15	25	15	26	140
14	754	81	56	28	26	17	21	16	32	13	40	104
15	527	68	62	36	25	24	30	13	26	79	22	337
16	317	54	64	40	25	25	38	11	27	76	26	124
17	161	65	54	30	23	24	26	35	32	37	25	74
18	117	56	48	28	22	24	21	127	26	109	50	75
19	102	50	50	28	22	20	16	59	22	35	45	106
20	92	46	46	28	20	24	13	38	21	25	25	67
21	85	43	42	28	19	24	33	51	16	23	44	158
22	78	42	39	28	17	25	48	76	20	22	313	241
23	76	41	36	28	20	21	67	770	20	17	83	738
24	78	39	36	22	23	18	45	230	14	17	77	333
25	78	39	35	28	22	17	27	142	17	18	330	144
26	63	47	36	25	21	13	25	119	15	28	162	103
27	62	50	36	25	20	15	25	634	11	46	143	101
28	95	43	36	25	18	14	25	409	29	96	339	89
29	85	39	39	30	------	21	26	213	23	144	432	75
30	80	40	34	28	------	19	24	110	18	90	2,960	65
31	108	------	31	26	------	16	------	68	------	53	420	------
TOTAL	6,950	2,002	2,246	887	682	638	756	3,382	852	1,145	6,290	6,241
MEAN	224	66.7	72.5	28.6	24.4	20.6	25.2	109	28.4	36.9	203	208
MAX	754	216	237	40	30	37	67	770	55	144	2,960	1,260
MIN	56	39	31	22	17	13	12	11	11	10	22	65
CFSM	3.72	1.11	1.20	.48	.41	.34	.42	1.81	.47	.61	3.37	3.46
IN.	4.29	1.24	1.39	.55	.42	.39	.47	2.09	.53	.71	3.89	3.86
AC-FT	13,790	3,970	4,450	1,760	1,350	1,270	1,500	6,710	1,690	2,270	12,480	12,380

CAL YR 1976 TOTAL 28,529 MEAN 77.9 MAX 1,210 MIN 18 CFSM 1.29 IN 17.63 AC-FT 56,590

WTR YR 1977 TOTAL 32,071 MEAN 87.9 MAX 2,960 MIN 10 CFSM 1.46 IN 19.82 AC-FT 63,610

50057000 RIO GURABO AT GURABO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to current year.
SEDIMENT RECORDS: November 1959 to December 1966, March 1969, October 1970, November 1973 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
13...	1430	235	203	7.1	27.0	4.8	2.7	32000	10000	2100	16
DEC											
01...	1130	44	310	7.6	26.5	3.2	1.9	26000	6300	900	26
FEB											
15...	1210	28	280	7.5	25.0	5.7	2.7	4000	1300	420	23
APR											
11...	1335	23	312	7.3	29.0	6.2	3.6	2300	150	90	18
JUN											
16...	1210	28	340	7.5	30.0	5.8	3.4	15000	1200	2600	20
AUG											
05...	1145	81	254	7.1	24.5	5.2	3.5	130000	6400	4700	22

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
13...	7.3	16	1.8	78	0	64	9.9	12	17	22	.62
DEC											
01...	11	26	4.0	144	0	118	5.8	14	9.7	32	1.5
FEB											
15...	11	25	4.0	124	0	102	6.3	15	26	31	1.5
APR											
11...	9.1	26	3.9	118	0	97	9.5	15	27	30	.90
JUN											
16...	13	26	4.4	126	0	103	6.4	18	30	32	.85
AUG											
05...	24	19	4.9	82	0	67	10	12	22	23	.89

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
13...	.08	.19	.91	1.1	1.8	8.0	.20	.32	--	--	--
DEC											
01...	.12	.41	.79	1.2	2.8	12	.22	.32	--	0	<10
FEB											
15...	.14	.21	.56	.77	2.4	11	.24	.33	1	--	--
APR											
11...	.20	.10	.80	.90	2.0	8.9	.25	.30	--	--	--
JUN											
16...	.15	.41	.79	1.2	2.2	9.7	.27	.51	3	0	10
AUG											
05...	.21	.38	2.8	3.2	4.3	19	.30	.89	--	--	--

50057000 RIO GURABO AT GURABO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 13...	--	--	320	--	--	--	--	9.5	170	108
DEC 01...	10	13	20	--	1	--	20	7.1	97	12
FEB 15...	--	--	360	.0	--	0	--	8.2	81	6.1
APR 11...	--	--	480	--	--	--	--	4.0	62	3.9
JUN 16...	28	8	920	.1	14	0	20	12	317	24
AUG 05...	--	--	450	--	--	--	--	9.2	1190	260

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 16...	1210	.0	2	.0	.0	.0	.0	.0	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 16...	.0	.0	.0	.0	.0	0	.0	0	0	0

50059000 LAGO LOIZA AT DAMSITE, PR

LOCATION.--Lat 18°19'49", long 66°01'00", at pumphouse at damsite, and 1.9 mi (3.1 km) south of Trujillo Alto Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: October 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
08...	1130	124	248	7.1	26.0	1.0	2.3	590	230	66	17
DEC											
01...	1545	124	252	7.2	25.0	1.8	2.7	80	22	37	20
FEB											
14...	1440	124	270	6.9	28.0	.5	3.0	140	40	19	21
APR											
15...	1310	124	370	7.1	27.5	1.2	5.2	410	90	18	23
JUN											
03...	1210	124	280	6.8	28.0	.0	6.0	12000	300	630	--
AUG											
08...	1000	124	400	6.8	28.5	2.2	4.0	17000	250	220	19

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
08...	7.3	23	4.2	88	0	72	11	14	30	23	.13
DEC											
01...	7.7	20	3.5	104	0	85	10	15	20	27	.62
FEB											
14...	8.2	24	3.4	114	0	94	23	17	24	28	.65
APR											
15...	9.8	30	3.5	131	0	107	17	18	33	28	.52
JUN											
03...	--	20	4.5	86	0	71	22	19	23	20	.11
AUG											
08...	7.5	24	4.4	106	0	87	27	16	27	22	.16

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
08...	.02	.38	.49	.87	1.0	4.5	.26	.30	--	--	--
DEC											
01...	.00	.07	.52	.59	1.2	5.4	.21	.25	--	0	<10
FEB											
14...	.03	.09	.59	.68	1.4	6.0	.24	.28	2	--	--
APR											
15...	.00	.18	.92	1.1	1.6	7.2	.20	.27	--	--	--
JUN											
03...	.04	.25	.65	.90	1.1	4.6	.24	.30	2	0	10
AUG											
08...	.04	.23	.72	.95	1.2	5.1	.36	.41	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
08...	--	--	20	--	--	--	--	3.8	32	11
DEC										
01...	6	16	0	--	6	--	20	7.5	42	14
FEB										
14...	--	--	40	.0	--	0	--	7.1	20	6.7
APR										
15...	--	--	10	--	--	--	--	6.9	3	1.0
JUN										
03...	47	10	30	.0	5	0	20	7.3	49	16
AUG										
08...	--	--	20	--	--	--	--	7.5	42	14

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR

LOCATION.--Lat 18°19'08", long 65°53'21", at center pier on downstream side of bridge, on paved secondary road, 0.4 mi (0.6 km) northeast of junction of Highways 185 and 186, 1.5 mi (2.4 km) south of Campo Rico, and 4.4 mi (7.1 km) south of Loíza.

DRAINAGE AREA.--9.84 mi^2 (25.48 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 225 ft (68.6 m), from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record, July 17 to Aug. 4, which are poor.

AVERAGE DISCHARGE.--10 years (1968-77), 26.5 ft^3/s (0.750 m^3/s), 36.57 in/yr (929 mm/yr), 19,200 acre-ft/yr (23.7 hm^3/yr); median of yearly mean discharges, 21 ft^3/s (0.59 m^3/s), 15,200 acre-ft/yr (19 hm^3/yr). The average discharges published in the 1975-76 report were in error; the correct figures are 8 years, 29.3 ft^3/s (0.830 m^3/s), 40.44 in/yr (1,027 mm/yr); 9 years, 28.2 ft^3/s (0.799 m^3/s), 38.92 in/yr (989 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft^3/s (300 m^3/s) Nov. 9, 1969 and Oct. 9, 1970, gage height, 12.0 ft (3.658 m), from floodmarks, from rating curve extended above 350 ft^3/s (9.91 m^3/s) on basis of slope-area measurements of peak flow; minimum daily discharge, 0.80 ft^3/s (0.023 m^3/s) July 24, 1977.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 258 ft^3/s (7.307 m^3/s) Aug. 24, gage height, 2.79 ft (0.850 m), no peak above base of 2,500 ft^3/s (70.8 m^3/s); minimum daily discharge, 0.80 ft^3/s (0.023 m^3/s) July 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	19	15	8.0	5.3	2.7	2.5	3.3	6.4	3.3	2.5	16
2	14	18	13	7.7	5.9	3.0	2.6	3.9	5.7	2.3	2.4	16
3	13	14	11	7.7	5.3	3.2	2.4	3.0	5.5	2.1	2.4	11
4	24	14	11	7.8	4.9	3.2	2.7	2.9	4.9	1.7	29	9.6
5	41	14	19	7.8	5.1	3.9	2.9	2.7	4.8	1.7	38	8.7
6	28	16	13	7.5	5.1	3.3	3.8	2.6	4.4	1.6	23	43
7	39	14	8.8	7.3	4.9	3.3	3.4	2.4	3.8	1.8	11	40
8	70	11	8.6	7.1	5.1	3.9	3.8	2.4	3.5	1.8	7.6	20
9	64	9.7	18	6.8	4.4	3.5	2.8	2.4	3.2	1.8	5.6	15
10	38	20	37	6.8	4.7	4.4	2.4	2.3	3.2	1.6	5.2	13
11	63	12	18	6.6	4.6	4.2	2.4	2.3	3.0	1.7	5.6	14
12	55	8.6	10	6.5	4.1	3.5	2.6	2.3	3.1	1.7	5.2	18
13	31	10	9.6	6.3	4.0	3.2	2.6	2.2	3.1	2.6	16	13
14	44	11	9.1	6.7	3.6	3.2	2.5	2.1	2.9	4.7	32	14
15	55	11	9.1	9.8	3.6	3.6	5.7	2.1	2.5	13	13	26
16	34	10	11	8.5	3.6	3.8	4.2	4.1	3.0	5.4	8.0	14
17	25	14	9.1	6.6	3.7	3.5	2.8	11	2.9	3.0	22	10
18	21	9.7	8.6	5.9	3.4	3.3	2.2	19	2.5	5.0	34	11
19	20	9.6	8.3	5.7	3.4	3.2	2.6	6.0	2.3	1.3	14	11
20	20	8.6	7.6	5.6	3.5	3.0	4.3	3.6	2.1	1.0	8.0	9.1
21	18	8.3	7.6	6.9	3.2	2.9	18	13	2.1	.90	26	24
22	19	8.1	7.3	6.0	3.1	3.2	21	13	2.1	.90	31	18
23	18	7.8	7.4	6.1	3.2	2.7	39	52	2.1	.90	19	40
24	43	7.5	7.6	6.3	3.1	2.7	9.9	19	2.1	.80	80	28
25	20	7.5	7.3	5.5	3.3	2.7	5.3	9.7	2.0	25	48	16
26	31	7.9	7.0	5.2	3.3	2.7	3.9	7.1	2.0	10	21	15
27	18	9.0	7.0	5.1	2.9	6.8	3.2	42	4.3	15	14	21
28	19	9.2	34	5.6	2.8	8.0	2.9	48	3.3	4.5	12	14
29	25	8.7	14	6.9	------	3.8	3.9	28	2.3	3.2	23	11
30	32	10	9.7	5.2	------	2.7	3.5	13	2.3	2.9	46	9.8
31	31	------	8.4	5.0	------	2.7	------	8.5	------	2.6	23	------
TOTAL	985	338.2	372.1	206.5	113.1	109.8	171.8	335.9	97.4	125.80	627.5	529.2
MEAN	31.8	11.3	12.0	6.66	4.04	3.54	5.73	10.8	3.25	4.06	20.2	17.6
MAX	70	20	37	9.8	5.9	8.0	39	52	6.4	25	80	43
MIN	12	7.5	7.0	5.0	2.8	2.7	2.2	2.1	2.0	.90	2.4	8.7
CFSM	3.23	1.15	1.22	.68	.41	.36	.58	1.10	.33	.41	2.05	1.79
IN.	3.72	1.28	1.41	.78	.43	.42	.65	1.27	.37	.48	2.37	2.00
AC-FT	1,950	671	738	410	224	218	341	666	193	250	1,240	1,050

CAL YR 1976 TOTAL 5,666.70 MEAN 15.5 MAX 317 MIN 4.2 CFSM 1.58 IN 21.42 AC-FT 11,240

WTR YR 1977 TOTAL 4,012.30 MEAN 11.0 MAX 80 MIN .80 CFSM 1.12 IN 15.17 AC-FT 7,960

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1967 to November 1968 (partial-record station), July and August 1969, March 1970, January and March 1971, January, July and August 1972, January and September 1973 (miscellaneous-record station), April 1974 to current year.
SEDIMENT RECORDS: July 1968, December 1970, March to December 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)
DEC 07...	0930	9.0	150	7.5	20.0	9.2	16	6.2
JUN 02...	1545	6.0	205	8.2	29.0	7.9	13	6.1
SEP 08...	1250	18	148	8.1	27.0	14.6	--	--

DATE	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)
DEC 07...	12	1.1	5.1	13	27	--	--	--	--
JUN 02...	13	1.1	6.3	15	29	0	1	<10	3
SEP 08...	11	1.0	6.7	14	24	--	--	--	--

DATE	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 07...	--	10	--	--	--	--	--	--
JUN 02...	3	40	.0	2	0	80	5	.08
SEP 08...	--	10	--	--	--	--	30	1.5

50062200 RIO GRANDE DE LOIZA AT CENTRAL CANOVANAS, PR

LOCATION.--Lat 18°23'40", long 65°54'49", at bridge on Highway 951, 200 ft (61 m) west of Central Canovanas, 11.2 mi (18.0 km) downstream from Loíza, 2.0 mi (3.2 km) downstream from Río Canóvanas, and about 3.0 mi (4.8 km) east of Carolina.

DRAINAGE AREA.--267 mi^2 (692 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1973 to current year.
SEDIMENT RECORDS: August 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)
OCT											
08...	1000	1200	7.3	28.0	4.2	3.7	330000	32000	27000	25	22
DEC											
02...	1055	1940	7.7	25.5	8.0	2.5	31000	13000	2400	38	49
FEB											
08...	0930	2700	7.8	26.0	9.0	4.9	450000	83000	990	45	65
APR											
15...	1020	2800	7.4	27.5	4.5	3.2	530000	25000	900	44	59
JUN											
03...	1000	4690	7.4	29.0	5.2	2.6	60000	7300	2600	--	--
AUG											
04...	1415	5800	7.4	31.0	12.0	3.1	650000	98000	1400	54	130

DATE	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT										
08...	160	10	89	0	73	7.1	50	270	19	.59
DEC										
02...	340	17	130	0	107	4.2	93	620	27	.67
FEB										
08...	520	22	148	0	121	3.8	140	870	20	.76
APR										
15...	460	23	163	0	134	10	120	790	20	.28
JUN										
03...	850	38	123	0	101	7.8	230	1500	18	.77
AUG										
04...	1100	44	120	0	98	7.6	240	1900	22	.06

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)
OCT										
08...	.11	.39	1.3	1.7	2.4	11	.29	.29	--	--
DEC										
02...	.03	.16	.94	1.1	1.8	8.0	.21	.25	1	0
FEB										
08...	.10	.43	.77	1.2	2.1	9.1	.37	.45	--	--
APR										
15...	.06	.42	.88	1.3	1.6	7.3	.43	.49	--	--
JUN										
03...	.07	.30	.70	1.0	1.8	8.1	.18	.25	2	0
AUG										
04...	.01	.29	.45	.74	.81	3.6	.35	.39	--	--

50062200 RIO GRANDE DE LOIZA AT CENTRAL CANOVANAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)
OCT 08...	--	--	--	30	--	--	--	--	7.4	168
DEC 02...	10	5	14	5	.1	2	0	30	6.5	24
FEB 08...	--	--	--	20	--	--	--	--	5.9	3
APR 15...	--	--	--	20	--	--	--	--	8.1	2
JUN 03...	10	4	6	40	.0	5	0	30	6.8	9
AUG 04...	--	--	--	600	--	--	--	--	8.5	9

DATE	TIME	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DIAZINON (UG/L)	TOTAL DIELDRIN (UG/L)	TOTAL ENDRIN (UG/L)
JUN 03...	1000	.00	4.0	.00	.00	.00	.00	.00	.00

DATE	TOTAL ETHION (UG/L)	TOTAL HEPTACHLOR (UG/L)	TOTAL LINDANE (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	TOTAL TOXAPHENE (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
JUN 03...	.00	.00	.00	.0	.00	0	.00	.00	.00

RIO ESPIRITU SANTO BASIN

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR

LOCATION.--Lat 18°21'37", long 65°48'49", at left abutment, on downstream side of bridge on Highway 966, 0.1 mi (0.2 km) upstream from Quebrada Jiménez, and 1.9 mi (3.1 km) southeast of Río Grande.

DRAINAGE AREA.--8.62 mi^2 (22.33 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to April 1963 (annual low flow and occasional measurements only), August 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12.2 m), from topographic map.

REMARKS.--Records good.

AVERAGE DISCHARGE.--11 years (1967-77), 52.9 ft^3/s (1.498 m^3/s), 83.34 in/yr (2,117 mm/yr), 38,330 acre-ft/yr (47.3 hm^3/yr); median of yearly mean discharges, 52 ft^3/s (1.47 m^3/s), 37,700 acre-ft/yr (46.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft^3/s (289 m^3/s) Oct. 21, 1972, gage height, 12.88 ft (3.926 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s) on basis of slope-area measurement of peak flow; minimum, 4.0 ft^3/s (0.113 m^3/s) July 3, 4, 5, 1975, gage height 2.43 ft (0.741 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 3,400 ft^3/s (96.3 m^3/s) May 17, gage height 8.87 ft (2.704 m), no other peak above base of 2,200 ft^3/s (62.3 m^3/s); minimum discharge, 4.6 ft^3/s (0.130 m^3/s) Mar. 26, gage height, 2.48 ft (0.756 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	32	73	15	20	5.5	5.4	25	17	20	28	46
2	43	28	41	15	14	5.5	6.2	44	23	11	143	38
3	28	28	40	14	23	5.5	5.6	15	25	9.4	108	27
4	25	24	44	14	17	7.3	5.6	12	17	8.3	148	24
5	28	23	122	14	16	26	5.4	11	21	7.9	206	24
6	29	60	44	13	12	11	46	10	13	12	119	322
7	192	31	25	12	12	20	48	9.8	12	17	45	61
8	172	24	24	12	29	20	26	9.4	11	15	38	35
9	157	21	122	15	17	34	15	8.9	9.9	11	51	39
10	52	43	78	17	15	43	10	8.4	9.4	8.5	39	29
11	224	26	39	20	12	12	8.3	8.4	8.8	9.3	37	48
12	97	24	27	18	11	7.9	11	8.3	8.4	8.8	49	56
13	42	30	19	16	13	6.7	32	8.0	8.1	51	235	37
14	41	22	22	17	10	6.2	36	7.6	10	40	77	161
15	56	64	59	90	9.6	9.0	48	7.5	13	171	49	74
16	42	92	32	28	9.2	8.0	20	6.8	67	24	25	31
17	29	85	24	15	8.9	8.5	11	263	26	97	72	23
18	27	28	21	13	8.3	7.1	8.5	83	14	29	95	49
19	39	20	22	14	8.3	10	39	20	9.5	14	34	34
20	58	21	19	12	9.0	6.5	24	14	8.5	10	25	37
21	34	19	20	18	8.2	6.1	81	23	8.0	8.7	57	165
22	48	18	18	17	11	6.8	356	40	7.4	7.8	49	69
23	51	17	21	24	16	5.9	404	338	8.0	7.2	153	47
24	141	17	18	20	11	5.4	51	42	8.6	7.0	521	34
25	35	18	16	13	15	5.0	24	29	7.3	11	101	22
26	27	32	15	12	9.9	5.7	18	35	8.8	34	72	35
27	26	113	15	12	6.7	52	15	283	45	119	36	30
28	118	76	174	21	5.9	36	13	63	17	43	30	23
29	101	75	40	24	------	9.9	20	34	9.3	31	229	20
30	104	67	21	16	------	6.6	15	26	8.5	26	173	18
31	63	------	17	13	------	5.4	------	20	------	18	64	------
TOTAL	2,151	1,178	1,272	574	358.0	404.5	1,408.0	1,513.1	459.5	886.9	3,108	1,658
MEAN	69.4	39.3	41.0	18.5	12.8	13.0	46.9	48.8	15.3	28.6	100	55.3
MAX	224	113	174	90	29	52	404	338	67	171	521	322
MIN	22	17	15	12	5.9	5.0	5.4	6.8	7.3	7.0	25	18
CFSM	8.05	4.56	4.76	2.15	1.48	1.51	5.44	5.66	1.77	3.32	11.6	6.42
IN.	9.28	5.08	5.49	2.48	1.54	1.75	6.08	6.53	1.98	3.83	13.41	7.16
AC-FT	4,270	2,340	2,520	1,140	710	802	2,790	3,000	911	1,760	6,160	3,290

CAL YR 1976 TOTAL 14,604.6 MEAN 39.9 MAX 374 MIN 8.0 CFSM 4.63 IN 63.03 AC-FT 28,970

WTR YR 1977 TOTAL 14,971.0 MEAN 41.0 MAX 521 MIN 5.0 CFSM 4.76 IN 64.61 AC-FT 29,690

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to current year.
SEDIMENT RECORDS: March 1968 to March 1969. March to June 1976, June and September 1977,

WATER-QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC 07...	1500	23	95	7.6	23.5	8.3	5.6	3.0	7.1	.4	2.6	9.1
JUN 02...	1130	18	95	8.0	26.0	8.0	5.2	3.1	7.9	.5	2.4	10
SEP 07...	1630	44	80	7.6	26.5	7.9	--	--	7.0	.4	2.6	9.0

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 07...	16	--	--	--	--	4	--	--	--	--	--	--
JUN 02...	18	0	<10	2	6	20	.0	3	0	20	0	.00
SEP 07...	14	--	--	--	--	0	--	--	--	--	5	.59

RIO ESPIRTU SANTO BASIN

50064200 RIO GRANDE NEAR EL VERDE, PR

LOCATION.--Lat 18°20'43", long 65°50'30", on left bank, at bedrock outcrop, 400 ft (122 m) upstream from bridge on Highway 960, 500 ft (152 m) southwest of junction of Highways 956 and 960, 1.1 mi (1.8 km) west of El Verde, and 2.7 mi (4.3 km) south of Río Grande.

DRAINAGE AREA.--7.31 mi^2 (18.93 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1967 to December 1970. January 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 125 ft (38.1 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 19 to Nov. 11, April 13 to May 11, which are poor.

AVERAGE DISCHARGE.--8 years (1968-70, 1973-77), 47.8 ft^3/s (1.354 m^3/s), 88.80 in/yr (2,256 mm/yr), 34,630 acre-ft/yr (42.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft^3/s (493 m^3/s), Sept. 16, 1975, gage height, 15.5 ft (4.72 m), but may have been exceeded by flood of Dec. 9, 1975, from rating curve extended above 100 ft /s (2.83 m^3/s) on basis of slope-area measurement of peak flow; minimum, 1.6 ft^3/s (0.045 m^3/s) Mar. 1,3, 1977, gage height, 1.50 ft (0.457 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 4,730 ft^3/s (134 m^3/s) May 17, gage height, 9.53 ft (2.905 m), no other peak above base of 3,000 ft^3/s (85.0 m^3/s); minimum discharge, 1.6 ft^3/s (0.045 m^3/s) Mar. 1, 3, gage height, 1.50 ft (0.457 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	22	42	13	11	2.8	3.1	9.0	14	22	14	71
2	17	20	26	13	9.1	2.7	3.0	20	15	12	70	43
3	17	16	19	12	9.4	2.6	3.0	8.0	15	9.0	78	24
4	69	14	21	12	8.9	5.0	3.0	6.0	13	7.8	136	22
5	25	12	70	11	9.1	5.1	2.6	5.5	12	5.5	226	24
6	26	40	26	9.8	7.6	4.0	14	5.0	10	5.9	103	311
7	223	20	18	9.3	6.6	4.5	12	4.4	9.4	11	35	59
8	130	16	20	9.0	8.1	8.3	13	4.5	9.0	11	27	34
9	90	14	81	8.5	7.9	4.7	7.1	4.3	8.6	6.8	36	30
10	32	27	58	8.2	7.4	9.6	4.8	4.5	7.8	4.9	28	26
11	238	18	20	8.5	7.5	5.0	4.0	5.3	7.1	4.8	24	34
12	64	16	17	8.4	6.0	3.8	4.0	3.5	7.1	4.5	29	38
13	28	18	15	7.8	6.0	3.1	5.2	3.3	6.7	11	202	30
14	99	16	21	8.3	5.2	2.8	6.3	3.1	6.3	29	77	82
15	60	24	36	24	5.0	3.1	30	2.9	7.4	100	36	59
16	30	25	23	13	4.4	3.1	14	4.2	14	17	23	23
17	24	37	17	9.5	4.1	3.1	6.0	305	14	128	138	20
18	21	19	15	8.5	3.5	3.6	5.0	62	9.0	26	82	22
19	27	15	12	8.5	3.4	3.1	8.0	12	7.1	13	31	24
20	36	14	13	8.0	3.5	3.0	25	7.5	6.3	9.4	22	20
21	24	13	13	11	3.3	3.0	37	19	6.3	7.8	87	120
22	30	13	12	10	3.5	3.0	110	24	5.5	7.1	43	39
23	40	12	12	10	4.1	3.0	180	256	5.3	5.9	89	52
24	80	12	12	9.0	3.5	3.1	30	26	6.3	5.9	313	34
25	24	11	11	7.7	4.1	2.6	12	24	6.3	7.1	87	21
26	18	13	9.8	7.1	4.1	2.6	9.0	23	6.3	23	40	22
27	17	25	10	7.1	3.3	10	7.6	313	34	92	29	28
28	74	24	118	10	2.9	17	6.6	107	15	54	24	20
29	60	24	23	13	------	5.3	9.4	34	8.6	52	81	18
30	50	30	16	8.8	------	3.5	8.0	21	8.2	20	118	17
31	40	------	14	8.0	------	3.3	------	16	------	14	76	------
TOTAL	1,727	580	820.8	312.0	162.5	139.4	582.7	1,343.0	300.6	727.4	2,404	1,367
MEAN	55.7	19.3	26.5	10.1	5.80	4.50	19.4	43.3	10.0	23.5	77.5	45.6
MAX	238	40	118	24	11	17	180	313	34	128	313	311
MIN	14	11	9.8	7.1	2.9	2.6	2.6	2.9	5.3	4.5	14	17
CFSM	7.62	2.64	3.63	1.38	.79	.62	2.65	5.92	1.37	3.21	10.6	6.24
IN.	8.79	2.95	4.18	1.59	.83	.71	2.97	6.83	1.53	3.70	12.23	6.96
AC-FT	3,430	1,150	1,630	619	322	277	1,160	2,660	596	1,440	4,770	2,710

CAL YR 1976 TOTAL 10,106.4 MEAN 27.6 MAX 259 MIN 4.3 CFSM 3.78 IN 51.43 AC-FT 20,050

WTR YR 1977 TOTAL 10,466.4 MEAN 28.7 MAX 313 MIN 2.6 CFSM 3.93 IN 53.26 AC-FT 20,760

50064200 RIO GRANDE NEAR EL VERDE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January to November 1963, March 1969 to current year.
SEDIMENT RECORDS: January to December 1975, September 1976, June 1977.

REMARKS.--Station changed partial to semi-annual record after August 1969.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC												
08...	1100	15	105	8.6	21.5	9.1	11	4.1	8.4	.5	2.5	9.6
JUN												
01...	1645	13	110	8.1	21.0	9.4	6.2	3.7	8.8	.6	2.5	11
SEP												
08...	0910	35	100	8.0	25.0	8.8	--	--	7.8	.5	1.7	10

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC												
08...	22	--	--	--	--	10	--	--	--	--	--	--
JUN												
01...	21	0	10	2	7	20	.0	6	0	90	1	.04
SEP												
08...	21	--	--	--	--	0	--	--	--	--	2	.19

RIO MAMEYES BASIN

50065700 RIO MAMEYES AT HIGHWAY 191 AT MAMEYES, PR

LOCATION.--Lat 18°22'03", long 65°46'14", on left bank, 0.3 mi (0.5 km) upstream from Quebrada Anón, 0.3 mi (0.5 km) downstream from Quebrada Tabonuco, and 0.3 mi (0.5 km) south of Mameyes.

DRAINAGE AREA.--11.8 mi^2 (30.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 26 ft (7.9 m), from topographic map. Before January 1, 1974 at datum 0.88 ft (0.268 m) higher.

REMARKS.--Records good except those for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--11 years (1967-77), 67.6 ft^3/s (1.914 m^3/s), 77.80 in/yr (1,976 mm/yr), 48,980 acre-ft/yr (60.4 hm^3/yr); median of yearly mean discharges, 70 ft^3/s (1.98 m^3/s), 50,700 acre-ft/yr (62 hm^3/yr). The average discharges and the median published in the 1975-76 report were in error; the correct figures are 9 years, 69.1 ft^3/s (1.957 m^3/s), 79.52 in/yr (2,020 mm/yr); 10 years, 69.2 ft^3/s (1.960 m^3/s), 79.64 in/yr (2,023 mm/yr); median of yearly mean discharges, 70 ft^3/s (1.98 m^3/s), 50,700 acre-ft/yr (62 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,200 ft^3/s (742 m^3/s) Oct. 24, 1974, gage height, 14.79 ft (4.508 m), from rating curve extended above 200 ft^3/s (5.66 m^3/s) on basis of slope-area measurement of peak flow; minimum, 5.0 ft^3/s (0.142 m^3/s) Apr. 28, 1975, gage height, 0.82 ft (0.250 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 2,810 ft^3/s (79.6 m^3/s), Aug. 29, gage height, 10.96 ft (3.341 m), no peak above base of 5,300 ft^3/s (150 m^3/s); minimum, 7.6 ft^3/s (0.215 m^3/s) July 24, gage height, 3.69 ft (1.125 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	46	95	25	33	15	14	32	19	22	23	82
2	42	45	79	24	21	14	14	66	29	15	124	54
3	34	40	50	23	33	15	14	16	28	13	81	41
4	66	35	56	23	25	15	13	27	19	12	170	37
5	52	35	165	24	22	28	13	20	30	11	152	34
6	47	110	56	22	19	16	32	19	25	10	136	297
7	204	42	47	21	20	26	73	16	21	15	52	71
8	151	35	41	21	42	24	34	16	19	25	37	51
9	196	32	135	20	25	54	19	15	18	12	54	43
10	63	75	94	20	22	43	16	14	17	11	40	36
11	309	44	53	24	20	18	14	13	16	10	40	54
12	132	39	43	20	19	16	13	13	16	12	34	59
13	65	36	37	19	20	16	44	14	15	44	201	35
14	100	42	39	20	20	16	52	13	23	47	86	162
15	89	76	56	90	19	22	76	13	20	213	61	81
16	58	118	39	28	18	20	24	16	69	26	30	36
17	45	111	34	21	17	27	17	101	19	88	68	28
18	47	33	31	22	17	66	14	56	18	32	76	55
19	45	24	32	22	17	27	58	19	15	15	31	50
20	67	24	29	20	17	18	30	44	14	12	26	56
21	42	23	30	25	17	17	120	52	14	11	50	135
22	61	21	28	27	17	18	300	87	13	9.5	47	97
23	54	20	32	34	20	15	400	395	15	8.6	151	99
24	110	20	28	27	20	15	78	88	14	8.0	522	51
25	42	21	26	20	25	13	30	44	12	12	185	35
26	38	40	24	18	18	14	21	245	14	24	131	42
27	35	150	23	21	16	84	16	353	56	64	57	38
28	145	100	173	40	15	46	13	108	15	20	43	36
29	129	98	51	36	------	17	24	49	14	19	278	24
30	105	87	31	24	------	15	15	35	13	18	275	20
31	77	------	27	20	------	14	------	24	------	13	158	------
TOTAL	2,693	1,622	1,684	801	594	764	1,601	2,023	630	852.1	3,419	1,939
MEAN	86.9	54.1	54.3	25.8	21.2	24.6	53.4	65.3	21.0	27.5	110	64.6
MAX	309	150	173	90	42	84	400	395	69	213	522	297
MIN	34	20	23	18	15	13	13	13	12	8.0	23	20
CFSM	7.36	4.58	4.60	2.19	1.80	2.08	4.53	5.53	1.78	2.33	9.32	5.47
IN.	8.49	5.11	5.31	2.53	1.87	2.41	5.05	6.38	1.99	2.69	10.78	6.11
AC-FT	5,340	3,220	3,340	1,590	1,180	1,520	3,180	4,010	1,250	1,690	6,780	3,840

CAL YR 1976 TOTAL 21,035.0 MEAN 57.5 MAX 376 MIN 16 CFSM 4.87 IN 66.31 AC-FT 41,720

WTR YR 1977 TOTAL 18,622.1 MEAN 51.0 MAX 522 MIN 8.0 CFSM 4.32 IN 58.71 AC-FT 36,940

NOTE.--No gage-height record Apr. 7 to May 12.

50065700 RIO MAMEYES AT HIGHWAY 191 AT MAMEYES, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1966 to current year.
SEDIMENT RECORDS: October 1973. January to December 1975, June 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC												
09...	1250	48	125	7.3	28.0	9.2	13	2.5	7.6	.8	3.8	9.1
MAR												
22...	1625	17	165	8.1	29.0	7.6	13	3.2	10	1.7	4.4	11
JUN												
02...	0735	31	130	7.3	24.0	8.4	12	2.8	9.0	1.0	4.1	11
SEP												
07...	1440	71	120	7.9	27.0	8.0	--	--	7.5	1.0	2.9	9.6

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC												
09...	18	--	--	--	--	0	--	--	--	--	--	--
MAR												
22...	24	--	--	--	--	40	--	--	--	--	--	--
JUN												
02...	21	0	10	2	15	20	.0	6	0	50	0	.00
SEP												
07...	17	--	--	--	--	0	--	--	--	--	4	.77

RIO FAJARDO BASIN

50071000 RIO FAJARDO NEAR FAJARDO, PR

LOCATION.--Lat 18°17'56", long 65°41'42", on left bank, off Highway 796, 0.1 mi (0.2 km) upstream from Highway 977 bridge, 0.3 mi (0.5 km) downstream from Quebrada Peñón, 1.1 mi (1.8 km) northeast of Colonia Paraíso, and 3.3 mi (5.3 km) southwest of Fajardo.

DRAINAGE AREA.--14.9 mi^2 (38.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1960-61 (occasional low- and peak-flow measurements only), March 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 137.60 ft (41.940 m) above mean sea level. Due to flood damage, gage datum has changes as follows: Mar. 24, 1961 to May 5, 1969, 138.95 ft (42.352 m); May 6, 1969 to Mar. 16, 1972, 135.05 ft (41.163 m); Mar. 17, 1972 to Dec. 31, 1973, 138.60 ft (42.245 m).

REMARKS.--Records good.

AVERAGE DISCHARGE.--16 years (1962-77), 61.9 ft^3/s (1.753 m^3/s), 56.42 in/yr (1,433 mm/yr), 44,850 acre-ft/yr (55.3 hm^3/yr); median of yearly mean discharges, 64 ft^3/s (1.81 m^3/s), 46,400 acre-ft/yr (57 hm^3/yr). The medians published in the 1975-76 report were in error; the correct figures are, 14 years, 64 ft^3/s (1.81 m^3/s), 46,400 acre-ft/yr (57 hm^3/yr); 15 years, 66 ft^3/s (1.87 m^3/s), 47,800 acre-ft/yr (59 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft^3/s (555 m^3/s), Oct. 24, 1974, gage height, 13.62 ft (4.151 m), from rating curve extended above 100 ft^3/s (2.83 m^3/s) on basis of step-backwater analyses and slope-area measurements of peak discharges; minimum, 1.5 ft^3/s (0.042 m^3/s) Apr. 3, May 13-14, 1977, gage height 1.57 ft (0.479 m).

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 2,300 ft^3/s (65.1 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 13	1115	2,420	68.5	5.13	1.564	July 15	0645	*4,670	132	*6.73	2.051
May 23	0730	2,750	77.9	5.39	1.643						

Minimum discharge, 1.5 ft^3/s (0.042 m^3/s) Apr. 3, May 13-14, gage height, 1.57 ft (0.479 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	30	53	12	21	2.9	2.9	19	21	44	9.3	60
2	34	27	37	12	12	3.2	3.2	35	24	10	19	45
3	34	23	70	11	15	2.7	2.7	9.1	25	6.6	39	37
4	74	22	48	11	17	4.0	4.0	21	17	6.2	119	33
5	63	22	160	12	13	4.5	4.5	8.8	17	5.0	91	34
6	39	56	50	11	10	9.3	9.3	6.4	13	45	111	340
7	90	31	30	10	8.9	15	15	4.9	11	22	32	119
8	130	27	39	8.9	8.5	18	18	4.1	10	44	25	51
9	164	26	112	8.9	4.2	16	16	3.7	8.9	12	29	49
10	63	182	112	8.2	6.2	8.8	8.8	3.4	8.1	8.2	28	38
11	380	48	41	9.6	5.8	8.5	5.1	3.3	7.9	7.0	34	49
12	146	27	33	10	5.4	4.2	5.1	3.3	7.9	7.4	22	63
13	223	31	26	8.9	8.2	6.2	6.1	3.1	7.0	24	81	45
14	75	23	30	8.9	6.9	5.8	25	2.3	9.7	41	50	158
15	61	90	59	90	53	5.4	37	3.7	8.9	419	49	68
16	53	59	36	18	17	8.2	11	3.4	44	41	23	43
17	42	30	31	12	8.2	6.9	5.3	131	14	151	83	35
18	39	23	23	13	5.0	53	3.5	57	9.9	53	57	69
19	31	23	23	13	7.6	17	29	9.7	6.9	25	27	48
20	37	22	22	10	5.0	8.2	29	52	6.9	22	27	55
21	34	22	19	10	5.0	5.0	28	46	7.5	15	49	73
22	55	22	19	26	3.9	7.6	193	39	7.3	12	43	83
23	44	19	19	17	3.5	5.0	312	370	6.2	10	106	108
24	41	18	18	11	19	5.0	39	57	5.4	8.3	330	54
25	30	17	15	9.6	29	3.9	18	37	5.3	9.1	159	39
26	26	20	14	8.9	7.5	3.5	12	120	5.9	8.7	98	36
27	30	72	13	10	4.5	19	9.0	423	34	47	50	38
28	88	37	133	30	2.9	29	7.1	96	16	30	38	111
29	94	44	33	29	------	7.5	8.7	50	7.9	22	235	39
30	79	30	18	16	------	4.5	8.4	39	17	12	270	29
31	42	------	14	12	------	2.9	------	27	------	9.1	105	------
TOTAL	2,404	1,123	1,350	477.9	313.2	300.7	875.7	1,688.2	390.6	1,176.6	2,438.3	2,049
MEAN	77.5	37.4	43.5	15.4	11.2	9.70	29.2	54.5	13.0	38.0	78.7	68.3
MAX	380	182	160	90	53	53	312	423	44	419	330	340
MIN	26	17	13	8.2	2.9	2.7	2.7	2.3	5.3	5.0	9.3	29
CFSM	5.20	2.51	2.92	1.03	.75	.65	1.96	3.66	.87	2.55	5.28	4.58
IN.	6.00	2.80	3.37	1.19	.78	.75	2.19	4.21	.98	2.94	6.09	5.12
AC-FT	4,770	2,230	2,680	948	621	596	1,740	3,350	775	2,330	4,840	4,060

CAL YR 1976 TOTAL 18,499.6 MEAN 50.5 MAX 816 MIN 7.2 CFSM 3.39 IN 46.19 AC-FT 36,690

WTR YR 1977 TOTAL 14,587.2 MEAN 40.0 MAX 423 MIN 2.3 CFSM 2.68 IN 36.42 AC-FT 28,930

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1961 to current year.
SEDIMENT RECORDS: October 1960 to November 1963, November 1968, March 1969, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
12...	1330	159	84	7.7	27.0	7.2	2.0	21000	4700	3200	12
DEC											
02...	1515	38	103	8.2	27.0	8.4	1.4	20000	1100	11000	6.2
FEB											
08...	1400	28	140	8.1	27.5	7.6	1.6	11000	5600	1700	8.1
APR											
12...	1115	4.4	138	7.3	27.0	9.2	.9	330	10	100	6.8
JUN											
10...	1345	8.1	134	7.5	31.0	8.8	.6	3800	100	160	6.0
AUG											
03...	0920	12	112	7.6	27.0	8.6	1.3	15000	320	3100	4.4

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
12...	3.0	8.0	1.4	30	0	25	1.0	4.2	8.4	17	.21
DEC											
02...	2.9	9.7	1.2	38	0	31	.4	4.1	11	19	.15
FEB											
08...	3.8	13	1.7	51	0	42	.6	3.9	14	24	.16
APR											
12...	3.5	12	1.4	48	0	39	3.8	5.2	15	24	.10
JUN											
10...	3.5	11	1.2	42	0	34	2.1	4.0	13	22	.08
AUG											
03...	2.6	10	1.2	36	0	30	1.4	3.9	12	20	.10

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
12...	.06	.08	.67	.75	1.0	4.5	.08	.11	--	--	--
DEC											
02...	.00	.01	.21	.22	.37	1.6	.03	.04	0	0	<10
FEB											
08...	.00	.01	.16	.17	.33	1.5	.01	.01	--	--	--
APR											
12...	.00	.03	.26	.29	.39	1.7	.00	.02	--	--	--
JUN											
10...	.00	.01	.15	.16	.24	1.1	.01	.03	1	0	20
AUG											
03...	.00	.00	.34	.34	.44	1.9	.00	.01	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
12...	--	--	40	--	--	--	--	4.9	133	57
DEC										
02...	6	12	20	.1	0	0	20	6.5	17	1.7
FEB										
08...	--	--	10	--	--	--	--	6.4	18	1.4
APR										
12...	--	--	10	--	--	--	--	1.0	16	.19
JUN										
10...	2	14	10	.0	4	0	10	5.9	0	.00
AUG										
03...	--	--	0	--	--	--	--	5.8	0	.00

RIO FAJARDO BASIN

50072500 RIO FAJARDO BELOW FAJARDO, PR

LOCATION.--Lat 18°19'34", long 65°38'42", 1.2 mi (1.9 km) southwest of Playa de Fajardo, and 0.5 mi (0.8 km) east of Fajardo Plaza.

DRAINAGE AREA.--23.4 mi^2 (60.6 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1974 to current year.
SEDIMENT RECORDS: April 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 12...	1040	E216	102	7.4	26.0	7.0	2.3	46000	10000	9100	7.2
DEC 02...	1225	47	127	7.5	26.0	8.5	.9	7900	3600	420	8.8
FEB 08...	1215	17	218	7.4	27.0	4.6	4.8	380000	29000	4800	16
APR 12...	0920	7.4	420	6.6	32.5	2.5	515	31000000	4000000	1400000	27
JUN 10...	1100	10	390	6.4	33.5	5.1	1000	44000000	2600000	520000	24
AUG 03...	1155	18	178	7.3	28.0	7.0	2.9	160000	53000	7500	9.1

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 12...	2.9	9.4	1.7	32	0	26	2.0	6.0	11	16	.42
DEC 02...	3.5	14	1.5	42	0	34	2.1	5.7	22	19	.16
FEB 08...	5.6	20	2.1	68	0	56	4.3	6.8	35	21	.02
APR 12...	9.1	25	21	77	0	63	31	2.9	55	25	.01
JUN 10...	11	23	25	72	0	59	46	17	43	26	.00
AUG 03...	4.4	15	2.0	54	0	44	4.3	5.3	22	22	.04

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 12...	.07	.13	.44	.57	1.1	4.7	.10	.13	--	--	--
DEC 02...	.01	.02	.20	.22	.39	1.7	.04	.06	0	0	<10
FEB 08...	.02	.03	.40	.43	.47	2.1	.05	.14	--	--	--
APR 12...	.00	.00	4.1	4.1	4.1	18	.48	1.1	--	--	--
JUN 10...	.02	.00	4.3	4.3	4.3	19	.90	1.7	1	0	20
AUG 03...	.01	.09	.23	.32	.37	1.6	.03	.20	--	--	--

E Estimated.

50072500 RIO FAJARDO BELOW FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 12...	--	--	40	--	--	--	--	4.6	132	77
DEC 02...	12	4	20	.2	8	0	10	7.3	34	4.3
FEB 08...	--	--	0	--	--	--	--	8.7	197	9.0
APR 12...	--	--	1600	--	--	--	--	120	209	4.2
JUN 10...	160	36	1400	.2	20	0	80	82	595	16
AUG 03...	--	--	70	--	--	--	--	7.4	54	2.6

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 10...	1100	.0	0	.0	.0	.0	.0	36	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 10...	.0	.0	.0	.0	.0	0	.0	0	0	0

50073400 QUEBRADA PALMA AT DAGUAO, PR

LOCATION.--Lat 18°13'16", long 65°41'30", at bridge on Highway 3, 0.8 mi (1.3 km) southwest of Daguao, and 1.7 (2.7 km) upstream from mouth.

DRAINAGE AREA.--4.48 mi^2 (12.54 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1965-71 (annual maximum discharges only), September 1972 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 15 ft (4.6 m), from topographic map. Prior to 1972 nonrecording gage at datum 1.79 ft (0.55 m) lower.

REMARKS.--Records fair, and poor below 1 ft^3/s (0.028 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft^3/s (87.79 m^3/s) May 21, 1969, gage height, 15.1 ft (4.60 m), from floodmark, from rating curve extended above 150 ft^3/s (4.2 m^3/s) on basis of a slope-area determination at a peak stage of 15.1 ft (4.6 m); minimum, 0.20 ft^3/s (0.006 m^3/s) June 28, 1977, gage height, 4.90 ft (1.494 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 2,070 ft^3/s (58.62 m^3/s) Oct. 13, gage height 12.49 ft (3.807 m), peak above base of 2,000 ft^3/s (56.64 m^3/s); minimum discharge, 0.20 ft^3/s (0.006 m^3/s) June 28, gage height, 4.90 ft (1.494 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	3.9	2.8	1.2	1.3	.72	.29	.72	1.3	.78	.67	5.8
2	2.6	3.2	2.6	1.1	1.2	.78	.29	.66	1.5	.60	.78	3.3
3	2.0	2.9	6.0	.93	1.3	.78	.36	.53	1.0	.42	1.7	2.2
4	2.8	11	4.5	.93	1.3	.78	.42	.48	.78	.36	3.9	1.9
5	1.9	3.1	11	1.1	1.2	.78	.36	.48	.72	.29	1.3	1.7
6	1.7	10	3.7	1.1	1.2	.90	.66	.26	.60	.32	.90	170
7	16	4.6	2.9	1.0	1.3	1.3	.72	.23	.48	.84	.90	18
8	7.5	3.4	5.0	.92	2.0	1.3	.60	.26	.42	.48	1.0	4.9
9	85	3.9	4.1	.89	1.7	1.1	.54	.28	.36	.27	1.2	1.9
10	9.9	116	3.0	.94	1.3	1.2	.66	.30	.36	.25	1.6	3.2
11	104	8.8	2.3	1.4	1.2	1.2	.60	.36	.36	.25	2.2	11
12	36	6.8	1.8	1.5	1.0	1.2	.54	.42	.42	.60	.90	29
13	140	8.5	1.7	1.4	.90	1.2	.60	.36	.42	.60	.90	4.2
14	9.4	4.3	2.3	1.7	.90	1.7	.72	.48	.42	.78	.78	23
15	5.8	3.8	2.1	4.0	1.0	1.7	1.3	.42	.42	17	1.6	14
16	4.7	7.2	2.4	1.5	.90	2.9	1.3	.48	.66	.36	.66	2.7
17	4.2	4.6	2.5	1.2	.84	1.3	.90	2.5	.66	.84	2.5	1.7
18	3.7	5.4	1.9	1.0	.84	.26	.72	3.1	.54	.54	2.7	11
19	3.3	3.5	2.0	1.2	.78	.29	.60	.42	.48	.26	.84	4.6
20	5.4	3.1	1.7	1.2	.78	.25	.54	.30	.54	.25	.66	6.4
21	4.0	2.8	2.1	1.5	.66	.25	.90	.90	.36	.23	8.8	13
22	3.6	2.7	1.7	1.3	.60	.27	.84	1.7	.30	.22	5.2	12
23	3.0	2.5	1.8	1.0	.66	.25	1.9	22	.29	.22	1.2	26
24	21	2.4	1.7	1.0	.60	.23	.60	3.3	.29	.24	44	5.3
25	3.4	2.3	1.7	.84	.72	.23	.60	1.3	.26	.24	29	2.1
26	2.9	2.5	2.1	.72	.78	.22	.48	1.7	.28	.24	4.6	1.4
27	3.5	2.4	2.2	1.0	.78	.26	.54	27	.54	.25	2.7	1.1
28	96	2.0	7.0	1.5	.72	.42	.54	6.2	.28	.28	2.2	31
29	7.6	2.5	1.9	1.2	------	.28	.54	2.7	.48	.48	27	1.7
30	6.9	2.8	1.3	.72	------	.26	.60	1.9	.29	.36	46	.84
31	7.3	------	1.1	.92	------	.26	------	1.3	------	.29	19	------
TOTAL	609.2	242.9	90.9	37.91	28.46	24.57	20.26	83.04	15.81	29.14	217.39	414.94
MEAN	19.7	8.10	2.93	1.22	1.02	.79	.68	2.68	.53	.94	7.01	13.8
MAX	140	116	11	4.0	2.0	2.9	1.9	27	1.5	17	46	170
MIN	1.7	2.0	1.1	.72	.60	.22	.29	.23	.26	.22	.66	.84
CFSM	4.07	1.67	.61	.25	.21	.16	.14	.55	.11	.19	1.45	2.85
IN.	4.68	1.87	.70	.29	.22	.19	.16	.64	.12	.22	1.67	3.19
AC-FT	1,210	482	180	75	56	49	40	165	31	58	431	823

CAL YR 1976 TOTAL 2,124.08 MEAN 5.80 MAX 203 MIN .90 CFSM 1.20 IN 16.33 AC-FT 4,210

WTR YR 1977 TOTAL 1,814.52 MEAN 4.97 MAX 170 MIN .22 CFSM 1.03 IN 13.95 AC-FT 3,600

50073400 QUEBRADA PALMA AT DAGUAO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1972 to September 1977 (discontinued).
SEDIMENT RECORDS: September 1973. January 1975 to September 1977 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT												
04...	1815	2.3	240	8.2	25.0	7.8	17	10	27	10	15	30
NOV												
15...	1140	3.8	310	6.8	28.0	5.7	15	9.1	24	6.6	14	25
15...	1340	3.8	--	--	28.0	--	--	--	--	--	--	--
DEC												
07...	1000	2.9	280	7.1	26.5	5.6	13	8.5	24	8.6	--	--
JAN												
11...	1415	1.3	320	7.7	25.0	7.0	19	14	30	18	15	39
FEB												
08...	1415	2.0	350	7.1	25.0	--	16	11	31	6.8	15	32
MAR												
09...	1245	3.7	400	7.0	25.0	8.8	15	12	34	8.5	15	35
APR												
05...	1515	1.9	400	7.1	25.0	5.8	16	12	33	10	16	37
MAY												
03...	1615	4.3	410	8.0	25.5	6.0	15	12	38	6.8	17	40
JUN												
01...	1615	0.54	365	7.2	27.5	7.8	15	12	31	10	22	39
JUL												
06...	1445	0.66	576	7.3	27.5	6.9	23	16	44	25	13	52
AUG												
01...	1330	0.42	95	7.9	28.0	7.6	6.9	2.6	10	1.3	3.1	10

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT												
04...	34	--	--	--	--	100	--	--	--	--	--	--
NOV												
15...	31	--	--	--	--	60	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	58	.60
DEC												
07...	--	--	--	--	--	20	--	--	--	--	58	.45
JAN												
11...	38	--	--	--	--	90	--	--	--	--	--	--
FEB												
08...	39	--	--	--	--	0	--	--	--	--	--	--
MAR												
09...	40	--	--	--	--	170	--	--	--	--	--	--
APR												
05...	40	--	--	--	--	30	--	--	--	--	--	--
MAY												
03...	41	--	--	--	--	0	--	--	--	--	--	--
JUN												
01...	37	1	10	6	6	580	.0	5	0	20	--	--
JUL												
06...	46	--	--	--	--	210	--	--	--	--	--	--
AUG												
01...	23	--	--	--	--	30	--	--	--	--	--	--

RIO BLANCO BASIN

50077000 RIO BLANCO AT RIO BLANCO, PR

LOCATION.--Lat 18°13'09", long 65°46'57", at bridge on Highway 31, and 0.4 mi (0.6 km) east of Río Blanco.

DRAINAGE AREA.--17.6 mi^2 (45.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1959-66 (annual low-flow measurements only; station known as "near Naguabo"), September 1972 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15.2 m), from topographic map.

REMARKS.--Records fair except those below 10 ft^3/s (0.28 m^3/s) and periods of no gage-height record, which are poor. Discharges are regulated at the Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft^3/s (402 m^3/s) Sept. 5, 1973, gage height, 21.85 ft (6.660 m), from rating curve extended above 250 ft^3/s (7.08 m^3/s) on basis of step-backwater analysis; minimum daily, 0.20 ft^3/s (0.006 m^3/s) Aug. 23, 25, 26, 1974.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 6,930 ft^3/s (196 m^3/s) May 17, gage height, 18.93 ft (5.700 m), no other peak above base of 6,000 ft^3/s (170 m^3/s); minimum daily discharge, 0.30 ft /s (0.008 m /s) May 13-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	21	109	16	7.8	1.8	5.0	4.0	28	25	32	60
2	49	28	49	15	3.8	1.6	4.0	17	34	6.6	60	35
3	48	46	104	18	4.9	1.8	3.0	4.0	27	7.0	110	25
4	170	25	66	13	5.0	1.6	3.0	4.0	23	5.1	200	22
5	96	47	126	14	1.5	1.2	2.0	.40	28	4.0	290	20
6	67	22	44	12	1.7	1.6	1.0	.40	22	6.0	60	900
7	472	28	36	17	1.9	1.9	19	.40	21	13	50	400
8	200	40	47	11	3.2	4.5	21	.40	18	18	56	120
9	461	100	163	13	4.4	4.8	15	.40	16	3.2	80	40
10	68	220	128	16	2.1	20	15	.40	13	2.2	100	60
11	820	66	40	6.0	2.0	2.9	14	.40	15	2.7	180	110
12	139	42	36	17	1.8	3.3	15	.40	13	2.4	66	230
13	67	39	28	4.5	3.0	4.1	14	.30	14	19	54	60
14	57	22	39	8.0	2.5	5.4	31	.30	11	33	47	180
15	176	18	95	66	1.8	5.0	63	.30	9.9	323	98	60
16	56	110	30	13	1.3	5.6	19	.95	32	39	45	34
17	46	60	22	14	1.1	5.8	12	977	11	240	90	23
18	45	47	18	8.4	1.2	8.0	11	30	9.6	53	200	120
19	47	46	15	9.4	.90	8.6	11	11	7.7	31	56	40
20	51	38	22	5.5	1.0	8.0	33	18	8.4	24	38	60
21	42	38	16	6.3	.87	8.3	244	37	7.8	20	330	110
22	64	39	15	11	2.1	8.8	500	32	6.9	19	80	96
23	45	38	16	7.9	3.1	9.8	543	865	6.5	18	120	220
24	96	35	12	12	15	8.0	38	54	6.4	18	430	60
25	41	34	12	3.8	3.9	9.0	23	46	5.3	21	260	45
26	38	42	11	4.6	1.9	8.0	17	64	6.0	23	180	37
27	37	49	16	4.7	2.0	10	10	460	29	20	130	33
28	93	39	67	14	2.0	27	5.3	121	17	30	110	64
29	160	45	26	9.7	------	8.0	4.4	64	5.6	40	150	28
30	48	51	22	6.9	------	7.0	4.5	46	13	31	500	20
31	54	------	12	7.0	------	6.0	------	36	------	26	110	------
TOTAL	3,906	1,475	1,442	384.7	83.77	207.4	1,700.2	2,895.05	465.1	1,123.2	4,312	3,312
MEAN	126	49.2	46.5	12.4	2.99	6.69	56.7	93.4	15.5	36.2	139	110
MAX	820	220	163	66	15	27	543	977	34	323	500	900
MIN	37	18	11	3.8	.87	1.2	1.0	.30	5.3	2.2	32	20
CFSM	7.16	2.80	2.64	.70	.17	.38	3.22	5.31	.88	2.06	7.90	6.25
IN.	8.26	3.12	3.05	.81	.18	.44	3.59	6.12	.98	2.37	9.11	7.00
AC-FT	7,750	2,930	2,860	763	166	411	3,370	5,740	923	2,230	8,550	6,570

CAL YR 1976 TOTAL 18,917.10 MEAN 51.7 MAX 820 MIN 3.4 CFSM 2.94 IN 39.98 AC-FT 37,520

WTR YR 1977 TOTAL 21,306.42 MEAN 58.4 MAX 977 MIN .30 CFSM 3.32 IN 45.03 AC-FT 42,260

NOTE.--No gage-height record Aug. 1 to Sept. 30.

50077000 RIO BLANCO AT RIO BLANCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: October 1958 to April 1966, September 1972 to September 1977 (discontinued).
SEDIMENT RECORDS: September 1973. January to December 1975, October 1976 to September 1977 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT												
04...	1450	360	100	7.0	25.0	8.3	7.6	2.1	8.2	1.0	3.4	8.4
NOV												
15...	1630	18	--	--	27.0	--	--	--	--	--	--	--
15...	1640	21	310	8.8	27.0	8.7	16	8.9	23	7.2	14	25
DEC												
07...	0830	34	--	--	25.0	--	11	4.1	11	1.6	4.9	12
JAN												
10...	1610	17	--	8.2	25.0	8.6	7.8	2.9	8.9	1.6	2.8	10
FEB												
08...	1230	1.0	196	6.9	26.5	--	15	5.6	13	1.6	4.2	16
MAR												
08...	1545	4.5	100	7.6	25.0	9.2	5.5	2.0	8.6	1.0	3.1	10
APR												
05...	1155	0.85	289	6.9	27.0	--	19	8.3	18	4.0	7.5	26
MAY												
03...	1400	1.5	185	6.9	29.0	--	11	4.4	15	1.6	5.3	16
JUN												
01...	1350	36	125	7.9	27.0	7.7	9.2	3.2	11	1.4	4.4	13
JUL												
06...	1245	5.0	188	7.6	31.0	8.2	13	5.6	15	2.6	5.6	18
AUG												
01...	1515	22	435	7.3	28.0	4.6	17	14	36	13	12	41

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT												
04...	20	--	--	--	--	20	--	--	--	--	--	--
NOV												
15...	--	--	--	--	--	--	--	--	--	--	32	1.6
15...	30	--	--	--	--	0	--	--	--	--	--	--
DEC												
07...	19	--	--	--	--	0	--	--	--	--	32	2.9
JAN												
10...	24	--	--	--	--	20	--	--	--	--	--	--
FEB												
08...	26	--	--	--	--	10	--	--	--	--	--	--
MAR												
08...	21	--	--	--	--	80	--	--	--	--	--	--
APR												
05...	29	--	--	--	--	90	--	--	--	--	--	--
MAY												
03...	23	--	--	--	--	10	--	--	--	--	--	--
JUN												
01...	23	1	10	2	0	50	.0	3	0	20	--	--
JUL												
06...	27	--	--	--	--	20	--	--	--	--	--	--
AUG												
01...	44	--	--	--	--	1000	--	--	--	--	--	--

RIO HUMACAO BASIN

50081000 RIO HUMACAO AT LAS PIEDRAS, PR

LOCATION.--Lat 18°10'27", long 65°52'11", on left bank about 60 ft (18.3 m) off bridge on Highway 921 (km 1.1), 0.6 mi (1.0 km) southeast of junction with Highway 30, 0.8 (1.3 km) downstream from Quebrada Blanca and 0.8 mi (1.3 km) south of Las Piedras.

DRAINAGE AREA.--6.65 mi^2 (17.22 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1958 to December 1967 (monthly discharge measurements), July 1974 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 260 ft (79.2 m), from topographic map.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft^3/s (283 m^3/s) Dec. 10, 1975, gage height, 13.02 ft (3.968 m); minimum daily, 2.2 ft^3/s (0.062 m^3/s) July 16, 1974.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 1,000 ft^3/s (28.3 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	2400	1,930	54.7	7.70	2.347	Sept. 6	1445	*2,100	59.5	*7.83	2.387
Aug. 29	2030	1,850	52.4	7.56	2.304						

Minimum daily discharge, 3.8 ft^3/s (0.108 m^3/s) Apr. 19, June 18, 22-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	22	56	16	13	9.2	5.7	5.0	7.9	6.9	9.9	31
2	33	21	44	15	12	9.6	5.6	4.8	7.9	4.8	41	26
3	28	20	162	14	12	9.6	4.2	4.5	7.6	6.2	55	19
4	22	23	41	14	12	9.2	4.8	5.0	7.9	4.8	50	18
5	22	20	51	15	12	9.2	4.5	5.5	6.9	4.7	27	27
6	24	28	35	15	11	9.6	6.6	5.3	6.3	6.6	17	295
7	26	20	23	14	10	10	6.4	5.3	5.9	5.8	12	42
8	75	20	20	14	12	11	5.2	5.4	5.8	4.9	9.2	22
9	141	19	31	13	12	9.6	5.5	5.5	5.4	4.1	8.5	23
10	46	134	23	12	11	10	10	5.4	5.4	3.9	12	20
11	136	29	22	14	21	10	8.2	5.4	4.9	4.0	14	18
12	79	26	20	14	11	9.9	5.8	5.6	5.8	4.2	14	16
13	48	23	18	14	9.9	9.9	5.8	5.4	6.9	5.3	16	23
14	93	22	21	15	9.6	9.6	5.2	5.1	5.1	15	20	27
15	45	20	29	19	9.3	11	5.2	4.5	5.7	33	16	36
16	32	20	20	16	9.2	11	5.5	6.2	7.7	8.1	12	22
17	27	19	18	16	8.9	11	4.2	20	4.4	29	16	20
18	25	18	18	16	8.8	9.9	4.5	9.2	3.8	8.5	13	50
19	24	18	18	14	9.2	10	3.8	4.9	4.4	5.8	12	37
20	24	18	17	13	9.9	9.6	4.2	4.2	4.0	5.2	12	29
21	23	18	17	12	9.2	9.6	10	7.5	3.9	4.8	44	69
22	22	17	16	13	10	9.2	8.2	11	3.8	4.2	22	58
23	22	16	15	15	9.9	8.8	12	63	3.8	6.4	16	84
24	21	16	15	13	12	8.5	6.4	24	4.1	5.0	31	44
25	20	22	15	13	14	8.2	5.2	24	4.0	7.0	48	35
26	20	21	14	12	11	7.6	5.0	13	6.0	7.6	34	30
27	21	18	14	11	9.9	8.2	5.0	61	15	9.9	20	27
28	37	18	14	16	8.8	8.2	4.5	20	7.0	34	16	31
29	41	21	15	16	------	6.7	4.8	13	5.1	16	184	26
30	25	17	14	12	------	6.5	4.5	10	4.8	7.3	170	27
31	26	------	14	12	------	6.0	------	8.5	------	6.1	43	------
TOTAL	1,258	724	850	438	308.6	286.4	176.5	377.2	177.2	279.1	1,014.6	1,232
MEAN	40.6	24.1	27.4	14.1	11.0	9.24	5.88	12.2	5.91	9.00	32.7	41.1
MAX	141	134	162	19	21	11	12	63	15	34	194	295
MIN	20	16	14	11	8.8	6.0	3.8	4.2	3.8	3.9	8.5	16
CFSM	6.11	3.62	4.12	2.12	1.65	1.39	.88	1.83	.89	1.35	4.92	6.18
IN.	7.04	4.05	4.75	2.45	1.73	1.60	.99	2.11	.99	1.56	5.68	6.89
AC-FT	2,500	1,440	1,690	869	612	568	350	748	351	554	2,010	2,440

CAL YR 1976 TOTAL 7,631.5 MEAN 20.9 MAX 182 MIN 9.2 CFSM 3.14 IN 42.69 AC-FT 15,140

WTR YR 1977 TOTAL 7,121.6 MEAN 19.5 MAX 295 MIN 3.8 CFSM 2.93 IN 39.84 AC-FT 14,130

5008100 RIO HUMACAO AT LAS PIEDRAS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-
CHEMICAL ANALYSES: January 1959 to March 1969, July 1971 to May 1973, April 1974 to September 1977 (discontinued).
SEDIMENT RECORDS: April to June 1968, August 1974 to September 1977 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	HARDNESS (CA,MG) (MG/L)	TOTAL CALCIUM (CA) (MG/L)
OCT 12...	1640	58	108	7.5	27.0	7.0	1.4	54000	14000	20000	--	8.3
DEC 16...	0815	19	203	7.9	21.0	8.0	.7	65000	4000	6700	41	10
FEB 15...	0900	9.8	152	7.7	21.5	8.7	.7	7700	880	2700	--	12
APR 12...	1445	6.9	178	8.1	28.5	8.1	.5	3600	430	620	--	10
JUN 16...	0915	7.8	175	7.9	26.5	8.2	1.0	18000	1100	1800	--	10
AUG 09...	1010	9.7	170	7.9	24.0	8.9	.5	17000	1200	2100	--	10

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)
OCT 12...	2.7	12	--	2.3	42	0	34	2.1	5.3	10	26	--
DEC 16...	3.8	15	1.0	3.7	63	0	52	1.3	6.4	14	37	124
FEB 15...	3.4	14	--	1.5	70	0	57	2.2	6.3	14	42	--
APR 12...	3.6	18	--	1.9	72	0	59	.9	6.8	15	42	--
JUN 16...	4.2	18	--	1.5	72	0	59	1.5	5.5	15	41	--
AUG 09...	4.0	18	--	1.7	79	0	65	1.6	5.4	15	40	--

DATE	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)
OCT 12...	--	.38	.04	.06	.63	.69	1.1	4.9	.08	.13	--	--
DEC 16...	121	.59	.01	.01	.25	.26	.86	3.8	.04	.06	1	0
FEB 15...	--	.54	.00	.01	.09	.10	.64	2.8	.04	.05	--	--
APR 12...	--	.33	.00	.01	.57	.58	.91	4.0	.03	.04	--	--
JUN 16...	--	.24	.01	.01	.19	.20	.45	2.0	.04	.06	2	0
AUG 09...	--	.34	.01	.03	.16	.19	.54	2.4	.03	.06	--	--

DATE	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 12...	--	--	--	--	270	--	--	--	--	7.1	233	36
DEC 16...	<10	7	660	0	30	.0	7	0	10	3.4	48	2.5
FEB 15...	--	--	--	--	20	--	--	--	--	6.1	31	.82
APR 12...	--	--	--	--	30	--	--	--	--	1.0	0	.01
JUN 16...	<10	3	--	16	70	.0	5	0	30	8.1	38	.80
AUG 09...	--	--	--	--	10	--	--	--	--	7.1	72	1.9

RIO HUMACAO BASIN

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR

LOCATION.--Lat 18°08'49", long 65°49'37", at bridge on Highway 3, 300 ft (91 m) downstream from Quebrada Mariana, and 0.4 mi (0.6 km) south of Humacao.

DRAINAGE AREA.--17.3 mi^2 (44.8 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to April 1966, February 1969 to current year.
SEDIMENT RECORDS: August 1963, August 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 13...	1220	122	287	7.2	26.5	6.8	57	470000	230000	26000	--
DEC 16...	1000	46	210	7.3	23.0	10.0	9.0	1100000	440000	55000	--
FEB 09...	0915	18	232	7.3	23.0	7.9	1.9	44000	7200	2500	19
APR 14...	0830	16	185	7.4	26.0	7.0	7.2	2400000	300000	75000	22
JUN 13...	1630	13	267	7.2	30.5	5.4	7.5	1100000	370000	22000	18
AUG 09...	1225	16	245	7.2	28.0	5.2	4.6	830000	510000	23000	18

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 13...	--	--	--	75	0	62	7.6	--	--	--	--
DEC 16...	--	--	--	90	0	74	7.2	--	--	--	.53
FEB 09...	6.4	24	1.9	98	0	80	7.9	10	26	39	.76
APR 14...	6.0	25	2.6	110	0	90	7.0	12	28	38	.73
JUN 13...	6.6	28	2.2	97	0	80	9.8	11	34	37	.54
AUG 09...	6.9	24	2.4	101	0	83	10	13	26	35	.50

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 13...	--	--	--	--	--	--	--	--	--	--	--
DEC 16...	.01	.94	.46	1.4	1.9	8.6	.19	.25	0	0	<10
FEB 09...	.03	.04	.33	.37	1.2	5.1	.13	.17	--	--	--
APR 14...	.03	2.2	1.3	3.5	4.3	19	.34	.53	--	--	--
JUN 13...	.04	.49	.71	1.2	1.8	7.9	.20	.31	1	0	10
AUG 09...	.06	.39	.59	.98	1.5	6.8	.11	.23	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 13...	--	--	--	--	--	--	--	--	238	78
DEC 16...	15	3	--	.1	0	0	10	9.8	73	9.1
FEB 09...	--	--	0	--	--	--	--	8.0	80	3.9
APR 14...	--	--	10	--	--	--	--	8.7	65	2.8
JUN 13...	31	16	280	.0	5	0	30	6.5	139	4.9
AUG 09...	--	--	300	--	--	--	--	6.7	89	3.8

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR

LOCATION.--Lat 18°04'53", long 65°57'33", on left bank, downstream from ford, 1,000 ft (305 m) south of Highway 182, 4.5 mi (7.2 km) west of Colonia Laura, and 5.8 mi (9.3 km) west-northwest of Yabucoa.

DRAINAGE AREA.--4.69 mi^2 (12.15 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 920 ft (280 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 12-13, Dec. 19 to Jan 12, Mar. 2-11, May 22 to June 13, June 27 to July 7, July 29 to Aug. 10, Sept. 5-15, which are poor.

AVERAGE DISCHARGE.--8 years (1970-77), 28.1 ft^3/s (0.796 m^3/s), 81.36 in/yr (2,066 mm/yr), 20,360 acre-ft/yr (25.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,960 ft^3/s (197 m^3/s) Oct. 23, 1974, gage height, 13.4 ft (4.08 m), from flood-marks, from rating curve extended above 40 ft^3/s (1.13 m^3/s) on basis of slope-area measurements of peak flow; minimum daily, 2.4 ft^3/s (0.068 m^3/s) June 9, 1974.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 1.930 ft^3/s (54.7 m^3/s) Sept. 6, gage height, 13.33 ft (4.063 m), no other peak above base of 1,800 ft^3/s (51.0 m^3/s); minimum discharge, 4.4 ft^3/s (0.125 m^3/s) May 14-15, gage height, 5.13 ft (1.564 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	9.6	22	12	9.2	6.1	5.2	6.4	11	8.2	11	22
2	24	8.2	15	11	7.4	7.0	5.2	6.6	10	7.4	46	18
3	38	7.4	41	10	7.4	7.0	5.4	6.1	9.0	7.2	20	16
4	17	7.2	22	10	7.8	6.6	5.4	5.6	8.4	7.0	24	14
5	14	7.0	34	11	8.0	6.6	5.4	5.8	8.1	7.4	15	21
6	20	21	68	11	7.6	7.0	8.0	5.6	8.4	9.6	12	289
7	21	8.3	20	10	7.4	7.3	7.6	5.6	7.5	8.2	11	41
8	27	7.4	16	10	7.8	8.1	7.8	5.4	6.8	7.3	10	20
9	86	7.1	44	9.6	8.0	7.0	10	5.2	6.2	6.7	9.4	16
10	74	33	29	8.9	11	7.3	11	5.0	6.0	6.5	9.0	15
11	34	21	19	10	11	7.2	9.1	5.0	5.8	6.4	8.8	14
12	85	34	16	8.8	10	6.4	8.5	5.0	5.6	6.6	9.8	14
13	97	25	14	7.9	9.1	6.0	8.7	5.0	5.8	14	17	18
14	31	17	15	8.3	8.2	6.0	10	5.0	6.6	31	16	21
15	23	18	30	12	8.0	6.0	12	4.5	8.3	39	16	28
16	20	26	20	9.8	8.0	6.0	8.9	4.8	14	11	11	17
17	18	21	19	9.1	8.0	5.8	7.1	8.8	10	26	12	15
18	17	15	15	9.0	7.8	5.8	6.6	6.6	8.2	13	31	33
19	16	14	14	8.9	7.5	6.4	6.4	6.0	7.7	11	16	18
20	16	13	13	8.9	7.8	5.6	8.0	6.1	7.2	9.6	11	27
21	15	14	13	8.8	7.8	5.8	17	11	6.9	9.0	44	198
22	15	17	12	8.5	8.8	6.0	16	15	7.0	8.9	26	129
23	14	14	11	8.7	7.8	5.4	39	208	7.0	8.6	18	109
24	21	12	11	8.9	17	5.6	11	19	7.6	9.3	73	37
25	17	12	11	8.3	13	5.2	8.4	12	6.9	15	40	28
26	14	24	10	8.9	8.3	5.2	7.5	9.7	8.4	13	57	27
27	13	26	10	10	7.1	5.4	9.1	51	12	34	20	25
28	24	18	10	18	7.2	5.6	7.5	90	9.1	40	16	30
29	17	16	11	12	------	5.2	6.8	20	8.4	24	71	21
30	28	14	10	8.7	------	5.2	6.5	15	8.0	16	156	19
31	16	------	15	7.4	------	5.2	------	13	------	13	31	------
TOTAL	885	487.2	610	304.4	244.0	191.0	285.1	577.8	241.9	433.9	868.0	1,300
MEAN	28.5	16.2	19.7	9.82	8.71	6.16	9.50	18.6	8.06	14.0	28.0	43.3
MAX	97	34	68	18	17	8.1	39	208	14	40	156	289
MIN	13	7.0	10	7.4	7.1	5.2	5.2	4.5	5.6	6.4	8.8	14
CFSM	6.08	3.45	4.20	2.09	1.86	1.31	2.03	3.97	1.72	2.99	5.97	9.23
IN.	7.02	3.86	4.84	2.41	1.94	1.51	2.26	4.58	1.92	3.44	6.88	10.31
AC-FT	1,760	966	1,210	604	484	379	566	1,150	480	861	1,720	2,580

CAL YR 1976 TOTAL 8,027.3 MEAN 21.9 MAX 500 MIN 7.0 CFSM 4.67 IN 63.67 AC-FT 15,920

WTR YR 1977 TOTAL 6,428.3 MEAN 17.6 MAX 289 MIN 4.5 CFSM 3.75 IN 50.99 AC-FT 12,750

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1969 to current year.
SEDIMENT RECORDS: February 1969, July 1973, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
13...	1015	E1000	50	6.7	25.0	7.6	6.3	180000	44000	55000	9.9
13...	1020	E1000	--	--	25.0	--	--	--	--	--	--
13...	1030	E1000	--	--	25.0	--	--	--	--	--	--
DEC											
09...	1120	37	150	7.6	22.0	8.7	1.4	73000	38000	17000	10
FEB											
09...	1310	8.0	132	7.7	22.5	8.8	2.0	7000	900	670	10
APR											
14...	1330	8.4	160	7.5	25.0	8.3	1.6	8000	2100	1900	8.9
JUN											
13...	1400	6.7	152	7.7	28.0	8.2	1.6	2600	560	500	8.7
AUG											
12...	1000	9.5	150	7.7	22.5	8.6	1.2	24000	1800	3500	9.3

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
13...	5.2	3.5	1.5	12	0	10	3.8	3.3	3.7	8.8	.00
13...	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
09...	2.9	9.7	2.0	47	0	39	1.9	3.3	10	25	.25
FEB											
09...	3.6	14	1.2	68	0	56	2.2	3.3	12	37	.12
APR											
14...	3.5	13	1.5	65	0	53	3.3	2.6	11	34	.05
JUN											
13...	4.1	14	1.2	70	0	57	2.2	3.4	11	38	.06
AUG											
12...	3.8	12	.9	73	0	60	2.3	2.9	10	38	.11

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
13...	.14	.28	2.4	2.7	2.8	13	.27	.50	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
09...	.00	.08	.68	.76	1.0	4.5	.07	.10	2	0	<10
FEB											
09...	.00	.01	.19	.20	.32	1.4	.02	.03	--	--	--
APR											
14...	.01	.03	.31	.34	.40	1.8	.05	.04	--	--	--
JUN											
13...	.00	.03	.14	.17	.23	1.0	.01	.02	3	0	10
AUG											
12...	.00	.01	.37	.38	.49	2.2	.01	.03	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
13...	--	--	1200	--	--	--	--	35	2540	6900
13...	--	--	--	--	--	--	--	--	2430	6600
13...	--	--	--	--	--	--	--	--	2530	6800
DEC										
09...	15	13	3	.1	1	0	20	8.1	201	20
FEB										
09...	--	--	0	--	--	--	--	7.5	22	.48
APR										
14...	--	--	10	--	--	--	--	9.0	43	.94
JUN										
13...	3	13	30	.0	12	0	20	7.2	25	.45
AUG										
12...	--	--	10	--	--	--	--	6.5	8	.21

E Estimated.

SOUTHEASTERN RIVERS BASIN

RIO GUAYANES BASIN

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR

LOCATION.--Lat 18°03'45", long 65°49'42", at old railroad crossing, 0.2 mi (0.3 km) from mouth, 0.4 mi (0.6 km) west of Playa de Guayanés, and 3.5 mi (5.6 km) northeast of Yabucoa Plaza.

DRAINAGE AREA.--34.0 mi^2 (88.1 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 18...	1140	133	165	7.1	26.5	7.8	.8	8100	3300	530	16
DEC 09...	0920	166	140	7.7	23.0	7.9	1.2	210000	28000	23000	9.2
FEB 09...	1050	25	185	7.7	26.0	9.1	7.7	21000	5200	1800	12
APR 14...	1050	15	258	8.0	29.0	8.9	2.9	280000	27000	110	12
JUN 13...	1115	33	200	7.4	28.0	8.6	1.2	6000	2000	670	12
AUG 09...	1515	37	160	7.6	29.5	6.9	.4	16000	1500	2200	9.4

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 18...	4.2	15	1.7	68	0	56	8.6	4.9	13	34	.44
DEC 09...	3.2	14	1.7	58	0	48	1.9	4.7	13	32	.49
FEB 09...	5.0	17	2.6	80	0	66	2.6	4.9	15	38	.00
APR 14...	4.1	17	2.7	83	0	68	1.3	3.8	16	37	.01
JUN 13...	4.9	19	2.0	82	0	67	5.2	5.5	17	38	.19
AUG 09...	4.7	14	1.5	66	0	54	2.7	5.1	13	32	.31

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 18...	.01	.03	.30	.33	.78	3.5	.05	.07	--	--	--
DEC 09...	.00	.04	.43	.47	.96	4.3	.07	.12	0	0	<10
FEB 09...	.00	.00	.28	.28	.28	1.2	.01	.04	--	--	--
APR 14...	.00	.07	.40	.47	.48	2.1	.09	.13	--	--	--
JUN 13...	.01	.03	.36	.39	.59	2.6	.04	.06	1	1	10
AUG 09...	.02	.06	.55	.61	.94	4.2	.08	.21	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 18...	--	--	100	--	--	--	--	3.6	72	26
DEC 09...	10	5	0	.1	5	0	10	8.3	133	60
FEB 09...	--	--	20	--	--	--	--	8.5	26	1.8
APR 14...	--	--	10	--	--	--	--	7.2	29	1.2
JUN 13...	3	26	130	.0	5	0	10	5.9	34	3.0
AUG 09...	--	--	350	--	--	--	--	7.1	174	17

RIO MAUNABO BASIN

50090500 RIO MAUNABO AT LIZAS, PR

LOCATION.--Lat 18°01'38", long 65°56'24", on right bank, off Highway 759 at Lizas, about 3.0 mi (4.8 km) northwest of Maunabo.

DRAINAGE AREA.--5.38 mi^2 (13.93 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 230 ft (70.1 m), from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record, Oct. 1-15, Mar. 11 to Apr. 6, June 8-23, which are poor.

AVERAGE DISCHARGE.--6 years (1972-77), 16.1 ft^3/s (0.456 m^3/s), 40.64 in/yr (1,032 mm/yr), 11,660 acre-ft/yr (14.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft^3/s (159 m^3/s) Sept. 16, 1975, gage height, 14.64 ft (4.462 m), from rating curve extended above 50 ft^3/s (1.42 m^3/s) on basis of slope-area measurement of peak flow; minimum daily, 2.2 ft^3/s (0.062 m^3/s) July 16, Aug. 7, 13, 1974.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 320 ft^3/s (9.06 m^3/s) Sept. 6, gage height, 6.57 ft (2.003 m), no peak above base of 400 ft^3/s (11.3 m^3/s); minimum daily, 2.9 ft^3/s (0.082 m^3/s) July 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	11	28	12	8.7	6.0	4.7	5.2	6.6	8.3	3.2	22
2	23	8.8	20	11	7.8	5.9	4.7	5.9	6.3	4.6	5.5	16
3	30	8.3	31	11	7.4	6.0	4.9	3.9	5.9	3.6	6.9	9.1
4	16	8.7	32	10	7.8	6.2	4.9	4.3	9.5	3.0	8.5	6.6
5	14	10	42	11	9.7	7.7	5.2	3.6	14	2.9	19	5.8
6	16	28	36	10	9.4	7.0	7.9	3.3	12	6.8	13	44
7	19	13	23	9.6	9.6	8.8	3.6	3.1	5.1	5.0	6.9	21
8	22	11	20	9.6	12	8.1	3.8	3.1	4.3	4.1	5.6	13
9	70	10	29	9.4	4.8	7.6	4.0	3.1	4.1	3.5	4.8	11
10	52	35	22	8.7	7.4	8.7	5.3	3.0	4.0	3.2	5.2	9.8
11	30	22	19	8.6	7.9	7.4	5.1	3.0	4.1	3.4	4.2	11
12	50	19	17	7.7	6.2	5.8	4.4	3.0	4.2	4.1	3.8	11
13	90	21	17	7.9	6.3	6.3	3.6	3.1	4.0	8.4	5.0	9.2
14	28	17	17	8.0	5.7	4.6	6.8	4.0	3.9	9.2	5.7	22
15	19	16	21	12	6.0	4.8	7.2	3.6	3.6	13	5.6	17
16	16	19	22	10	5.9	4.3	4.6	3.6	7.1	6.9	4.2	13
17	14	24	20	8.7	5.5	4.6	3.6	6.2	8.6	18	5.4	10
18	13	17	17	8.3	5.3	6.2	3.3	4.7	5.7	6.9	20	22
19	12	15	16	8.3	5.5	6.6	3.1	3.4	4.5	4.7	14	12
20	12	15	15	10	5.6	5.1	4.0	3.0	4.0	4.2	12	11
21	12	15	14	8.7	6.6	5.2	12	9.3	3.7	4.1	24	63
22	13	17	13	8.3	7.7	5.6	9.4	6.8	3.4	3.7	34	65
23	12	16	13	9.9	6.9	4.9	20	56	5.3	3.4	24	48
24	12	14	13	8.4	11	5.1	6.4	20	5.4	5.7	21	29
25	16	16	12	8.0	7.8	4.7	4.5	19	4.5	10	22	20
26	22	41	12	7.6	6.7	4.7	3.9	24	5.6	5.3	23	17
27	21	21	11	9.6	6.2	4.9	7.1	28	18	11	23	16
28	27	21	11	14	6.0	5.0	4.3	16	6.3	10	12	21
29	20	19	11	9.6	------	4.7	3.8	10	4.1	6.0	18	13
30	21	18	11	8.3	------	4.7	3.6	8.2	4.7	4.1	55	12
31	16	------	12	8.7	------	4.8	------	7.5	------	3.4	27	------
TOTAL	757	526.8	597	292.9	203.4	182.0	169.7	280.9	182.5	190.5	441.5	600.5
MEAN	24.4	17.6	19.3	9.45	7.26	5.87	5.66	9.06	6.08	6.15	14.2	20.0
MAX	90	41	42	14	12	8.8	20	56	18	18	55	65
MIN	12	8.3	11	7.6	4.8	4.3	3.1	3.0	3.4	2.9	3.2	5.8
CFSM	4.54	3.27	3.59	1.76	1.35	1.09	1.05	1.68	1.13	1.14	2.64	3.72
IN.	5.23	3.64	4.13	2.03	1.41	1.26	1.17	1.94	1.26	1.32	3.05	4.15
AC-FT	1,500	1,040	1,180	581	403	361	337	557	362	378	876	1,190

CAL YR 1976 TOTAL 5,350.3 MEAN 14.6 MAX 131 MIN 4.0 CFSM 2.71 IN 36.99 AC-FT 10,610

WTR YR 1977 TOTAL 4,424.7 MEAN 12.1 MAX 90 MIN 2.9 CFSM 2.25 IN 30.59 AC-FT 8,780

50090500 RIO MAUNABO AT LIZAS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1971 to August 1972 (partial-record station), May and September 1973 (miscellaneous-record station), January and March 1974.
SEDIMENT RECORDS: November and December 1975, December 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 06...	1600	36	26.0	127	12

SOUTHEASTERN RIVERS BASIN

RIO MAUNABO BASIN

50091000 RIO MAUNABO AT MAUNABO, PR

LOCATION.--Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo, and 1.3 mi (2.1 km) upstream from mouth.

DRAINAGE AREA.--12.4 mi^2 (32.1 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to April 1966, February 1975 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 18...	1615	26	233	7.4	30.0	6.6	.9	7200	1700	250	18
DEC 09...	1400	42	220	7.7	26.0	8.2	.7	35000	13000	11000	5.7
FEB 02...	1340	4.8	310	7.3	24.0	9.2	7.5	25000	3800	2000	21
APR 14...	1545	10	302	7.4	28.0	6.3	1.4	26000	11000	1800	15
JUN 06...	1500	6.1	278	7.8	33.0	7.9	4.6	36000	20000	1200	--
AUG 12...	1400	7.1	195	7.7	31.0	7.1	5.4	13000	3000	1900	29

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 18...	6.9	19	1.2	93	0	76	5.9	9.4	18	37	.29
DEC 09...	5.9	18	1.2	84	0	69	2.7	8.7	18	33	.41
FEB 02...	9.2	24	1.5	118	0	97	9.5	16	28	38	.19
APR 14...	7.2	20	1.2	94	0	77	6.0	9.9	19	33	.00
JUN 06...	--	21	1.3	100	0	82	2.5	9.4	21	95	.04
AUG 12...	27	19	.9	94	0	77	3.0	7.1	19	38	.04

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 18...	.00	.01	.18	.19	.48	2.1	.03	.05	--	--	--
DEC 09...	.00	.07	.27	.34	.75	3.3	.00	.26	4	0	<10
FEB 02...	.01	.01	.22	.23	.43	1.9	.03	.20	--	--	--
APR 14...	.07	.11	.53	.64	.71	3.1	.13	.65	--	--	--
JUN 06...	.02	.04	.28	.32	.38	1.7	.04	.11	8	0	20
AUG 12...	.04	.09	1.1	1.2	1.3	5.7	.08	.44	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 18...	--	--	30	--	--	--	--	6.8	105	7.4
DEC 09...	88	13	20	.0	5	0	50	11	--	--
FEB 02...	--	--	10	--	--	--	--	8.2	270	3.5
APR 14...	--	--	40	--	--	--	--	14	1020	28
JUN 06...	73	9	20	.0	10	0	30	12	252	4.2
AUG 12...	--	--	3900	--	--	--	--	7.0	1020	20

RIO GRANDE DE PATILLAS BASIN

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR

LOCATION.--Lat 18°02'04", long 66°01'58", on left bank, at foot bridge upstream from Lago Patillas, 1.2 mi (1.9 km) northwest of Patillas Dam and 2.2 mi (3.5 km) northwest of Patillas.

DRAINAGE AREA.--18.3 mi^2 (47.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to October 1965 (annnual low-flow and occasional measurements only), January 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 235 ft (71.6 m),from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--11 years (1967-77), 54.2 ft^3/s (1.535 m^3/s)., 40.22 in/yr (1,022 mm/yr), 39,270 acre-ft/yr, (48.4 hm^3/yr); median of yearly mean discharges, 43 ft^3/s (1.22 m^3/s), 31,150 acre-ft/yr (38 hm^3/yr). The median published in the 1975-76 report was in error; the correct figure is 53 ft^3/s (1.50 m^3/s),38,400 acre-ft/yr (47 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft^3/s (419 m^3/s) Sept. 16, 1975, gage height, 12.45 ft (3.795 m), from rating table extended above 250 ft^3/s (7.08 m^3/s) on basis of slope-area measurements of peak flow; minimum, 4.6 ft^3/s (0.130 m^3/s) May 13-16, 1968, gage height, 3.55 ft (1.082 m).

EXTREMES FOR WATER YEARS 1977.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 11	1845	2,710	76.7	7.70	2.347	Sept. 6	1400	*4,590	130	*9.15	2.789
May 23	0545	2,890	81.8	7.84	2.390	Sept. 21	0600	4,020	114	8.51	2.594

Minimum discharge, 7.5 ft^3/s (0.212 m^3/s) June 3, gage height, 4.13 ft (1.259 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	15	43	23	21	11	9.4	12	9.5	14	32	65
2	34	13	28	23	17	10	9.3	14	8.5	12	60	48
3	32	18	56	23	18	10	9.2	12	8.0	11	102	39
4	36	25	44	24	19	13	9.6	11	8.2	10	97	34
5	39	24	125	36	19	20	12	10	9.0	8.5	138	30
6	41	30	158	31	17	20	19	9.5	14	10	139	503
7	43	15	59	28	15	19	18	9.0	11	9.5	66	155
8	149	12	40	25	16	20	17	13	11	9.0	50	78
9	199	13	77	23	17	16	14	15	13	8.8	41	60
10	96	82	64	22	18	70	16	16	14	8.6	36	50
11	596	75	50	21	24	23	14	13	13	11	32	43
12	320	54	44	20	18	19	13	11	11	24	32	40
13	269	51	38	20	16	17	17	10	10	45	42	36
14	82	34	37	19	15	20	24	13	11	53	52	57
15	74	30	44	26	14	16	38	10	12	79	46	44
16	45	37	41	21	18	14	28	10	25	45	39	37
17	23	34	40	20	16	13	20	22	25	54	32	34
18	14	25	32	21	15	12	17	17	16	40	55	42
19	10	21	28	24	14	12	16	10	14	31	51	38
20	8.5	19	30	20	14	13	17	10	13	27	34	31
21	9.0	17	28	21	13	15	30	13	12	25	225	810
22	17	16	26	19	15	19	50	23	11	23	143	779
23	14	15	25	21	14	14	67	208	10	21	62	821
24	13	13	24	21	21	12	24	10	9.8	22	181	431
25	10	16	24	21	16	11	20	9.0	9.6	29	105	148
26	9.5	27	24	20	14	10	18	20	9.4	35	202	103
27	13	30	23	32	13	9.4	16	118	50	64	69	76
28	22	26	25	22	12	13	15	29	29	76	48	62
29	27	19	25	37	------	11	14	14	23	87	103	52
30	46	15	26	20	------	10	13	11	18	46	424	46
31	30	------	23	19	------	9.5	------	10	------	35	117	------
TOTAL	2,357.0	821	1,351	723	459	501.9	604.5	712.5	438.0	973.4	2,855	4,792
MEAN	76.0	27.4	43.6	23.3	16.4	16.2	20.2	23.0	14.6	31.4	92.1	160
MAX	596	82	158	37	24	70	67	208	50	87	424	821
MIN	8.5	12	23	19	12	9.4	9.2	9.0	8.0	8.5	32	30
CFSM	4.15	1.50	2.38	1.27	.90	.89	1.10	1.26	.80	1.72	5.03	8.74
IN.	4.79	1.67	2.75	1.47	.93	1.02	1.23	1.45	.89	1.98	5.80	9.74
AC-FT	4,680	1,630	2,680	1,430	910	996	1,200	1,410	869	1,930	5,660	9,500

CAL YR 1976 TOTAL 18,491.0 MEAN 50.5 MAX 596 MIN 8.5 CFSM 2.76 IN 37.59 AC-FT 36,680

WTR YR 1977 TOTAL 16,588.3 MEAN 45.4 MAX 821 MIN 8.0 CFSM 2.48 IN 33.72 AC-FT 32,900

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: March 1960 to current year.
BIOLOGICAL ANALYSES: November 1974 to current year.
PESTICIDES: May 1976 to current year.
SEDIMENT RECORDS: March 1968 to October 1970, July 1973, August 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	HARDNESS (CA,MG) (MG/L)	TOTAL CALCIUM (CA) (MG/L)
OCT												
04...	1205	38	146	7.7	27.0	7.5	.3	4600	2700	320	--	16
NOV												
08...	1135	26	147	7.8	23.0	8.0	--	1200	590	220	--	--
DEC												
06...	1315	364	80	7.5	25.0	8.8	2.2	20000	1100	680	29	--
JAN												
11...	1415	21	152	8.3	26.5	9.6	--	20000	800	400	--	--
FEB												
02...	0955	21	144	7.8	24.0	8.4	1.1	5400	800	420	--	12
MAR												
01...	1255	12	165	8.1	24.5	8.8	--	7000	200	730	55	--
APR												
04...	1205	10	180	8.2	27.0	8.6	.2	600	360	220	--	12
MAY												
02...	1500	14	183	8.2	31.0	9.8	--	7800	530	200	--	--
JUN												
06...	1050	14	168	7.8	27.0	8.8	8.6	30000	1300	750	--	10
14...	0900	--	263	7.6	27.0	8.0	--	--	--	--	--	35
JUL												
11...	1300	11	183	8.0	29.0	8.8	--	1200	560	520	56	--
AUG												
02...	1120	41	125	7.4	24.0	8.5	1.4	55000	24000	18000	--	--
SEP												
12...	1050	38	148	8.0	23.0	9.3	--	23000	16000	3200	--	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)
OCT												
04...	4.8	13	--	.5	60	0	49	1.9	9.2	11	24	--
NOV												
08...	--	--	--	--	57	0	47	1.4	--	--	--	--
DEC												
06...	--	8.1	.7	.8	29	0	24	1.5	5.2	9.3	14	66
JAN												
11...	--	--	--	--	68	0	56	.5	--	--	--	--
FEB												
02...	6.6	14	--	.6	67	0	55	1.7	11	11	25	--
MAR												
01...	--	15	.9	.5	65	0	53	.8	11	12	25	122
APR												
04...	7.4	17	--	.7	74	0	61	.7	13	12	22	--
MAY												
02...	--	--	--	--	67	0	55	.7	--	--	--	--
JUN												
06...	5.1	15	--	.7	64	0	52	1.6	10	14	23	--
14...	6.2	9.2	--	1.3	--	--	--	--	9.1	11	13	--
JUL												
11...	--	14	.8	.6	63	0	52	1.0	11	13	23	124
AUG												
02...	--	--	--	--	56	0	46	3.6	--	--	--	--
SEP												
12...	--	--	--	--	61	0	50	1.0	--	--	--	--

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)
OCT 04...	--	--	--	--	--	.09	.27	1.2	--	.01	--	--
NOV 08...	--	--	--	--	--	.08	.24	1.1	--	.02	--	--
DEC 06...	65	--	--	--	--	1.0	1.2	5.4	--	.10	1	1
JAN 11...	--	--	--	--	--	.08	.20	.89	--	.04	--	--
FEB 02...	--	--	--	--	--	.15	.31	1.4	--	.02	--	--
MAR 01...	114	--	--	--	--	.17	.20	.89	--	.02	0	0
APR 04...	--	--	--	--	--	.18	.23	1.0	--	.03	--	--
MAY 02...	--	--	--	--	--	.33	.37	1.6	--	.03	--	--
JUN 06...	--	.06	.00	.00	.08	.08	.14	.62	.00	.01	0	0
14...	--	--	--	--	--	--	--	--	--	--	3	0
JUL 11...	111	--	--	--	--	.18	.27	1.2	--	.01	--	0
AUG 02...	--	.05	.01	.01	.21	.22	.28	1.2	.01	.04	--	--
SEP 12...	--	--	--	--	--	.12	.30	1.3	--	.01	0	--

DATE	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT 04...	--	--	--	--	10	--	--	--	--	5.0	0	.00
NOV 08...	--	--	--	--	--	--	--	--	--	--	2	.14
DEC 06...	10	9	3900	13	280	.2	--	0	10	4.9	208	204
JAN 11...	--	--	--	--	--	--	--	--	--	--	3	.17
FEB 02...	--	--	--	--	0	--	--	--	--	2.2	1	.06
MAR 01...	20	4	80	10	10	--	--	0	10	8.4	2	.06
APR 04...	--	--	--	--	0	--	--	--	--	--	3	.08
MAY 02...	--	--	--	--	--	--	--	--	--	5.7	2	.08
JUN 06...	10	2	--	3	20	.0	3	0	40	5.8	0	.00
14...	10	2	--	13	30	.0	3	0	20	--	--	--
JUL 11...	<10	0	500	7	10	--	--	--	0	6.3	0	.00
AUG 02...	--	--	--	--	--	--	--	--	--	6.7	32	3.5
SEP 12...	--	--	--	--	--	.0	--	0	--	7.6	8	.82

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)
NOV 08...	1135	ND	ND	ND	ND	ND	ND	ND	.0	ND
MAR 01...	1255	ND	--	ND	--	ND	--	ND	--	ND
MAY 02...	1500	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEP 12...	1050	ND	--	ND	--	ND	--	ND	--	ND

DATE	DDT IN BOTTOM MATERIAL (UG/KG)	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 01...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEP 12...	--	--	--	ND	--	ND	--	--	--	ND

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 01...	--	ND	--	ND	--	ND	ND	--	ND	--
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEP 12...	--	ND	--	--	--	ND	--	--	--	--

DATE	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 01...	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEP 12...	ND	--	--	--	ND	--	ND	--	ND	--

ND--Looked for but not detected.

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 4,76	NOV 8,76	DEC 6,76	JAN 11,77	FEB 2,77	MAR 1,77
TIME	1205	1135	1315	1415	0955	1255
TOTAL CELLS/ML	71	37	620	110	29	37
DIVERSITY: DIVISION	0.4	0.0	0.9	0.6	0.5	1.4
.CLASS	0.4	0.0	0.9	0.6	0.5	1.4
..ORDER	0.8	0.0	1.2	1.2	1.2	1.4
...FAMILY	2.1	1.8	3.0	2.4	2.1	1.6
....GENUS	2.3	1.8	3.0	2.6	2.7	1.6

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	6	8	--	-	--	-	3	3	--	-	4	11
....SELENASTRUM	--	-	--	-	--	-	--	-	*	0	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	6	8	--	-	--	-	3	3	3	11	--	-
....MELOSIRA	--	-	--	-	--	-	12	10	3	11	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	11	2	3	3	--	-	--	-
....COCCONEIS	24#	33	6#	17	33	5	40#	36	--	-	4	11
...CYMBELLACEAE												
....AMPHORA	6	8	--	-	33	5	--	-	--	-	--	-
....CYMBELLA	6	8	--	-	*	0	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	11	2	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	*	0	--	-	7#	22	--	-
....SYNEDRA	--	-	--	-	120#	20	12	10	7#	22	2	6
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	6#	17	11	2	6	5	3	11	--	-
...NAVICULACEAE												
....NAVICULA	24#	33	19#	50	78	13	23#	21	3	11	--	-
...NITZSCHIACEAE												
....DENTICULA	--	-	6#	17	*	0	--	-	--	-	--	-
....NITZSCHIA	--	-	*	0	100#	16	--	-	--	-	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	22	4	--	-	--	-	--	-
.XANTHOPHYCEAE												
..HETEROCOCCALES												
...CHLOROTHECIACEAE												
....OPHIOCYTIUM	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	89	14	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	12	10	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	110#	18	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	25#	67
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	3	11	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	2	6
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	APR 4,77	MAY 2,77	JUN 6,77	JUL 11,77	AUG 2,77	SEP 12,77
TIME	1205	1500	1050	1300	1120	1050
TOTAL CELLS/ML	60	42	32	54	150	6
DIVERSITY: DIVISION	0.0	0.6	0.0	0.4	0.3	0.0
.CLASS	0.0	0.6	0.0	0.4	0.6	0.0
..ORDER	0.0	0.6	0.0	0.4	0.6	0.0
...FAMILY	1.1	1.4	1.9	0.9	2.0	0.0
....GENUS	1.1	1.4	1.9	0.9	2.0	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	6#	100
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	8	6	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	47#	79	29#	69	11#	36	45#	82	57#	39	--	-
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	3	8	--	-	--	-	57#	39	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	3	5	3	8	9#	27	--	-	8	6	--	-
...NAVICULACEAE												
....NAVICULA	6	11	--	-	6#	18	5	9	8	6	--	-
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	3	5	--	-	6#	18	--	-	--	-	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
.XANTHOPHYCEAE												
..HETEROCOCCALES												
...CHLOROTHECIACEAE												
....OPHIOCYTIUM	--	-	--	-	--	-	--	-	8	6	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	*	0	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....EXUVIAELLA	--	-	6#	15	--	-	5	9	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50094200 RIO GRANDE DE PATILLAS AT PATILLAS, PR

LOCATION.--Lat 18°00'15", long 66°01'27", at bridge on Highway 3, 0.7 mi (1.1 km) west of Patillas, and 1.9 mi (3.1 km) upstream from mouth.

DRAINAGE AREA.--27.9 mi^2 (72.3 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1960 to May 1964, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
04...	1435	3.4	283	7.9	30.5	10.4	1.4	1600	590	150	23
DEC											
06...	1615	403	138	7.6	27.0	7.9	2.0	4400	1200	630	10
FEB											
02...	1200	4.0	253	7.5	24.0	9.5	2.1	3700	1500	1600	20
APR											
04...	1515	2.3	290	7.8	30.5	10.6	.4	15000	250	230	19
JUN											
06...	1345	E.50	400	8.1	31.5	10.4	3.3	16000	340	200	28
AUG											
02...	1315	E.25	438	7.5	27.0	7.9	2.0	36000	2500	2900	34

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
04...	8.6	24	.7	116	0	95	2.3	18	18	23	.53
DEC											
06...	4.5	13	1.0	60	0	49	2.4	7.7	12	23	.05
FEB											
02...	8.6	23	.8	114	0	94	5.8	19	18	24	.48
APR											
04...	8.9	23	1.0	112	0	92	2.8	21	23	23	.49
JUN											
06...	12	31	.6	152	0	125	1.9	32	25	24	.72
AUG											
02...	15	36	.9	202	0	166	10	42	30	25	1.1

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
04...	.01	.01	.22	.23	.77	3.4	.05	.05	--	--	--
DEC											
06...	.01	.09	.53	.62	.68	3.0	.01	.04	1	0	<10
FEB											
02...	.00	.01	.08	.09	.57	2.5	.01	.01	--	--	--
APR											
04...	.00	.01	.15	.16	.65	2.9	.00	.01	--	--	--
JUN											
06...	.01	.01	.06	.07	.80	3.5	.01	.02	0	1	<10
AUG											
02...	.01	.01	.23	.24	1.3	5.9	.00	.10	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
04...	--	--	10	--	--	--	--	2.2	9	.08
DEC										
06...	6	12	10	.2	0	0	20	4.2	--	--
FEB										
02...	--	--	0	--	--	--	--	1.8	27	.29
APR										
04...	--	--	10	--	--	--	--	--	0	.00
JUN										
06...	2	5	20	.0	13	1	20	5.9	0	.00
AUG										
02...	--	--	0	--	--	--	--	5.1	0	.00

E Estimated.

SOUTH COAST RIVERS BASIN

RIO SALINAS BASIN

50100450 RIO MAJADA AT LA PLENA, PR

LOCATION.--Lat 18°02'41", long 66°12'27", on right bank, upstream side of concrete-dip section on Highway 712, and about 0.3 mi (0.5 km) southwest of La Plena.

DRAINAGE AREA.--16.7 mi^2 (43.3 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January and May 1973, October 1974 to current year.
SEDIMENT RECORDS: June to August 1976, current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT												
06...	0950	1.0	590	9.1	24.5	8.6	56	19	22	1.0	80	23
NOV												
17...	1150	2.9	--	--	27.0	--	--	--	--	--	--	--
17...	1205	--	540	8.0	26.0	8.8	52	17	28	1.0	76	26
DEC												
08...	1130	2.9	480	7.6	25.0	8.0	56	21	30	1.2	110	26
JAN												
11...	1550	.49	--	8.4	27.0	7.9	59	20	80	3.8	97	110
APR												
13...	0940	.08	330	7.5	21.5	8.0	53	22	35	1.9	130	32
MAY												
23...	1440	9.3	--	--	--	--	--	--	34	4.1	170	35
JUN												
08...	1000	E.15	717	8.1	28.0	7.8	61	24	37	2.4	130	46
SEP												
12...	1815	.41	640	7.7	27.0	5.8	--	--	36	2.6	110	35

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT												
06...	23	--	--	--	--	10	--	--	--	--	--	--
NOV												
17...	--	--	--	--	--	--	--	--	--	--	5	.04
17...	24	--	--	--	--	0	--	--	--	--	--	--
DEC												
08...	24	--	--	--	--	0	--	--	--	--	4	.03
JAN												
11...	22	--	--	--	--	10	--	--	--	--	--	--
APR												
13...	26	--	--	--	--	10	--	--	--	--	--	--
MAY												
23...	22	--	--	--	--	20	--	--	--	--	--	--
JUN												
08...	27	0	10	3	3	50	.1	4	0	20	--	--
SEP												
12...	26	--	--	--	--	0	--	--	--	--	--	--

E-Estimated.

RIO INABON BASIN

50112500 RIO INABON AT REAL ABAJO, PR

LOCATION.--Lat 18°05'10", long 66°33'46", at bridge on private road, off Highway 511 at Hacienda La Concordia, 0.4 mi (0.6 km) upstream from diversion canal, 0.5 mi (0.8 km) north of Real Abajo, and 6.1 mi (9.8 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--9.70 mi^2 (25.12 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1962-63 (annual low-flow measurements only), February to June 1964 (monthly measurements only), July 1964 to July 1970 (discontinued), April 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 410 ft (125 m), from topographic map. Prior to April 1971 nonrecording gage and crest-stage gage at different datum.

REMARKS.--Records fair except those for periods of no gage-height record, Oct. 1-13, which are poor.

AVERAGE DISCHARGE.--11 years (1965-69, 1972-77), 18.3 ft^3/s (0.518 m^3/s), 25.62 in/yr (651 mm/yr), 13,260 acre-ft/yr (16.3 hm^3/yr); median of yearly mean discharges, 17 ft^3/s (0.48 m^3/s), 12,300 acre-ft/yr (15 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft^3/s (198 m^3/s) Sept. 16, 1975, gage height, 18.6 ft (5.669 m) from floodmark, from rating curve extended above 30 ft^3/s (0.850 m^3/s) on basis of contracted opening and flow-over-road measurements of peak flow; minimum daily, 0.80 ft^3/s (0.023 m^3/s) July 23, 1977.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 950 ft^3/s (26.9 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 15	1915	*1,100	31.2	*7.82	2.384	Apr. 20	1545	1,000	28.3	7.50	2.280

Minimum daily discharge, 0.80 ft^3/s (0.023 m^3/s) July 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	16	4.5	3.9	3.2	2.0	1.1	4.0	7.9	4.0	16	9.1
2	37	16	4.7	7.8	3.1	2.2	1.1	4.0	4.6	4.0	8.1	8.4
3	58	14	4.5	4.8	3.2	2.3	1.0	3.0	3.2	3.7	8.1	8.4
4	60	13	5.4	4.4	3.1	2.2	1.0	2.5	1.8	8.1	7.7	7.0
5	45	13	4.6	4.5	3.2	2.0	1.0	8.4	3.0	10	6.3	6.6
6	52	13	4.0	4.3	3.0	1.7	1.1	3.2	4.6	13	32	23
7	49	11	4.6	4.1	3.7	1.4	1.1	6.6	4.3	5.1	13	18
8	40	9.5	4.8	4.2	4.2	1.7	1.1	5.4	4.0	3.4	7.7	11
9	36	18	4.8	3.7	3.5	1.6	2.6	3.7	3.5	2.2	5.9	9.5
10	41	16	5.3	3.3	3.4	1.9	11	2.6	3.5	16	22	8.4
11	80	11	5.2	3.4	5.8	2.1	3.7	2.3	3.2	39	18	10
12	130	9.1	5.2	3.2	4.2	1.7	2.7	1.4	2.7	28	14	26
13	179	8.1	5.0	3.1	3.2	1.6	1.7	1.0	2.5	16	14	77
14	84	8.0	5.0	3.4	2.5	1.9	2.2	2.8	3.7	7.0	19	67
15	182	7.9	5.1	5.0	2.6	2.5	5.1	1.3	5.4	4.3	21	31
16	190	8.0	5.4	4.8	3.2	2.2	3.5	2.2	4.8	3.0	16	22
17	81	7.4	5.2	3.4	2.8	2.0	2.4	2.6	3.2	2.2	15	17
18	59	6.7	4.7	7.1	2.5	2.0	1.8	2.4	3.0	2.0	14	14
19	37	5.2	4.4	8.0	2.4	4.6	20	2.2	3.7	1.3	15	13
20	30	4.5	4.0	5.1	2.4	2.2	97	1.8	3.7	1.1	13	11
21	26	4.4	3.9	7.9	2.5	1.7	33	2.8	3.7	1.1	16	16
22	23	4.1	3.7	10	2.7	1.5	13	4.0	3.5	1.1	29	13
23	21	3.1	3.6	7.9	3.0	1.4	8.1	92	3.7	.80	11	27
24	19	2.8	3.4	6.7	2.5	1.4	5.9	26	3.7	.90	7.0	14
25	19	2.9	3.4	5.0	2.5	1.5	5.4	15	3.5	1.4	7.0	14
26	18	3.0	3.4	4.2	2.5	1.4	5.1	11	2.0	1.3	19	15
27	52	2.8	3.6	3.7	2.3	1.3	3.7	8.8	2.0	2.4	50	16
28	24	3.0	4.8	4.2	2.2	1.5	4.3	58	4.6	7.7	27	13
29	18	4.1	4.0	4.3	------	1.4	4.3	29	4.0	9.1	17	8.8
30	24	4.1	3.7	3.7	------	1.3	4.8	17	4.0	5.4	14	9.1
31	21	------	3.4	3.3	------	1.1	------	12	------	19	11	------
TOTAL	1,795	249.7	137.3	152.4	85.4	57.3	249.8	339.0	111.0	223.60	493.8	543.3
MEAN	57.9	8.32	4.43	4.92	3.05	1.85	8.33	10.9	3.70	7.21	15.9	18.1
MAX	190	18	5.4	10	5.8	4.6	97	92	7.9	39	50	77
MIN	18	2.8	3.4	3.1	2.2	1.1	1.0	1.0	1.8	.80	5.9	6.6
CFSM	5.97	.86	.46	.51	.31	.19	.86	1.12	.38	.74	1.64	1.87
IN.	6.88	.96	.53	.58	.33	.22	.96	1.30	.43	.86	1.89	2.08
AC-FT	3,560	495	272	302	169	114	495	672	220	444	979	1,080

CAL YR 1976 TOTAL 4,583.50 MEAN 12.5 MAX 190 MIN 2.2 CFSM 1.29 IN 17.58 AC-FT 9,090

WTR YR 1977 TOTAL 4,437.60 MEAN 12.2 MAX 190 MIN .80 CFSM 1.26 IN 17.02 AC-FT 8,800

50112500 RIO INABON AT REAL ABAJO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1962 to January 1972 (partial-record station), October 1973 (miscellaneous-record station), April 1974 to current year.
SEDIMENT RECORDS: February 1968 to March 1969. March to December 1975. January and June 1976, current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV												
10...	1100	16	--	--	24.0	--	--	--	--	--	--	--
DEC												
13...	1440	5	280	8.1	28.0	7.9	31	5.7	11	1.1	12	8.2
JAN												
05...	1500	4.7	--	--	26.0	--	--	--	--	--	--	--
JUN												
01...	0830	--	187	7.3	21.0	8.8	29	5.1	9.6	1.2	14	9.2

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV												
10...	--	--	--	--	--	--	--	--	--	--	3	.13
DEC												
13...	15	--	--	--	--	9	--	--	--	--	--	--
JAN												
05...	--	--	--	--	--	--	--	--	--	--	2	.03
JUN												
01...	17	0	<10	2	5	20	.0	4	0	30	--	--

RIO BUCANA BASIN

50114000 RIO CERRILLOS NEAR PONCE, PR

LOCATION.--Lat 18°04'22", long 66°34'53", on right bank, 0.2 mi (0.3 km) upstream from ford, 2.3 mi (3.7 km) upstream from Quebrada Ausubo, and 4.6 mi (7.4 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--17.8 mi^2 (46.1 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to April 1964 (monthly measurements only), May 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 253.10 ft (77.145 m) above mean sea level, datum of 1929. Prior to Mar. 22, 1977, gage about 0.15 mi (0.24 km) upstream and datum 9.90 ft (3.018 m) higher.

REMARKS. --Records poor.

AVERAGE DISCHARGE.--13 years (1965-77) 35.6 ft^3/s (1.008 m^3/s), 27.16 in/yr (690 mm/yr), 25,790 acre-ft/yr (31.8 hm^3/yr); median of yearly mean discharges, 30 ft^3/s (0.85 m^3/s), 21,700 acre-ft/yr (27 hm^3/yr). The medians published in the 1975-76 report were in error; the correct figures are 11 years, 37 ft^3/s (1.05 m^3/s), 26,800 acre-ft/yr (33 hm^3/s); 12 years, 33 ft^3/s (0.93 m^3/s), 23,900 acre-ft/yr (29 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft^3/s (634 m^3/s) Sept. 16, 1975, gage height, 11.2 ft (3.41 m), from floodmarks, from rating curve extended above 150 ft^3/s (4.25 m^3/s) on basis of slope-area measurement of peak flow; minimum, 2.2 ft^3/s (0.062 m^3/s) May 28, 1967.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 1,200 ft^3/s (34.0 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 8	1600	1,310	37.1	4.68	1.426	Oct. 15	1600	1,290	36.5	4.66	1.420
Oct. 13	0600	1,700	48.1	5.08	1.548	Sept. 13	1700	*3,770	107	*8.95	2.728

Minimum discharge, 2.92 ft^3/s (0.083 m^3/s) July 4, gage height, 4.80 ft (1.463 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	50	10	8.4	6.8	4.6	4.5	4.7	12	4.7	40	15
2	65	44	8.4	9.2	7.0	5.4	4.0	4.7	11	4.5	26	14
3	60	40	7.8	8.2	6.8	5.2	4.0	4.3	9.8	4.0	17	13
4	124	39	7.4	7.7	6.8	5.0	3.7	4.0	9.3	3.4	14	14
5	117	37	8.1	8.1	6.6	4.8	3.4	10	7.7	29	15	21
6	178	37	6.8	8.7	6.6	4.4	3.7	7.4	7.7	30	38	40
7	147	35	6.5	8.7	6.8	4.5	3.7	8.1	7.7	15	16	21
8	277	33	6.4	8.7	6.8	4.6	4.2	7.0	8.1	12	12	18
9	170	70	6.3	8.7	6.6	4.4	4.7	5.3	9.3	9.8	9.8	20
10	110	44	7.9	8.7	6.6	4.6	13	5.0	9.8	50	37	20
11	162	32	7.9	9.0	7.4	4.5	7.4	4.7	10	87	29	34
12	225	29	7.4	8.4	6.6	4.3	5.7	4.7	9.8	71	28	71
13	400	27	9.7	7.7	6.4	4.2	4.2	4.5	10	47	35	277
14	158	27	9.7	7.4	5.8	4.4	3.7	6.4	47	20	37	217
15	288	24	6.6	8.7	6.2	4.5	5.3	5.7	26	15	35	66
16	239	21	6.6	9.0	6.4	4.5	5.0	5.4	21	12	22	46
17	166	19	7.4	7.7	6.2	4.4	4.8	5.3	17	11	17	36
18	167	17	7.4	8.4	6.0	4.2	4.0	5.7	13	10	17	32
19	114	15	7.0	8.7	5.8	9.0	17	5.7	9.3	9.8	115	30
20	78	13	7.2	9.0	5.8	7.0	48	4.0	8.1	9.3	11	34
21	64	12	7.2	10	5.8	6.5	24	5.7	7.4	9.8	19	36
22	60	12	7.4	12	5.8	6.0	12	8.9	7.4	8.9	52	27
23	55	11	7.2	11	5.8	5.7	9.8	134	7.7	8.4	27	39
24	54	10	7.4	9.5	5.8	5.3	8.4	34	8.4	7.7	18	32
25	94	9.8	7.2	8.4	5.1	5.0	4.0	16	7.7	7.7	17	30
26	52	9.6	7.0	7.9	4.6	4.7	4.2	12	6.7	9.5	38	37
27	92	9.4	7.0	7.9	4.6	5.7	4.2	145	7.4	14	85	45
28	68	9.4	7.7	7.9	4.8	7.0	4.5	78	6.7	51	48	37
29	50	9.2	7.9	8.4	------	5.3	4.2	30	5.3	28	26	30
30	84	9.0	8.4	7.9	------	4.7	4.5	18	5.0	14	21	40
31	74	------	8.7	7.7	------	4.7	------	14	------	36	17	------
TOTAL	4,082	754.4	235.6	267.7	172.3	159.1	233.8	608.2	333.3	649.5	938.8	1,392
MEAN	132	25.1	7.60	8.64	6.15	5.13	7.79	19.6	11.1	21.0	30.3	46.4
MAX	400	70	10	12	7.4	9.0	48	145	47	87	115	277
MIN	50	9.0	6.3	7.4	4.6	4.2	3.4	4.0	5.0	3.4	9.8	13
CFSM	7.42	1.41	.43	.49	.35	.29	.44	1.10	.62	1.18	1.70	2.61
IN.	8.53	1.58	.49	.56	.36	.33	.49	1.27	.70	1.36	1.96	2.91
AC-FT	8,100	1,500	467	531	342	316	464	1,210	661	1,290	1,860	2,760

CAL YR 1976 TOTAL 10,124.5 MEAN 27.7 MAX 400 MIN 5.6 CFSM 1.56 IN 21.16 AC-FT 20,080

WTR YR 1977 TOTAL 9,826.7 MEAN 26.9 MAX 400 MIN 3.4 CFSM 1.51 IN 20.54 AC-FT 19,490

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1964 to November 1972 (partial-record station), October 1973 (miscellaneous-record station), February 1974 to current year.
SEDIMENT RECORDS: February 1968 to March 1969, October 1970, March to August 1973, November 1974. January to November 1975. January and June 1976, current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)
NOV											
10...	1320	36	--	--	26.5	--	--	--	--	--	--
DEC											
09...	1655	64	250	7.6	27.0	7.2	--	--	--	41	8.2
JAN											
05...	1650	8.4	--	--	24.5	--	--	--	--	--	--
MAR											
12...	1450	4.3	430	8.1	27.0	8.0	--	--	--	35	7.5
APR											
20...	1800	E540	--	--	22.5	--	--	--	--	--	--
MAY											
03...	1650	3.8	292	8.5	29.7	8.3	--	--	--	34	8.9
09...	1245	--	298	8.4	30.0	9.1	7300	200	220	--	--
23...	1830	85	--	--	--	--	--	--	--	--	--
JUN											
01...	0930	11	292	8.3	27.4	9.2	3600	730	1800	--	--
JUL											
05...	1105	4.2	309	8.2	27.0	7.9	--	--	--	--	--
AUG											
03...	1200	17	270	8.3	25.6	8.2	31000	1500	870	--	--
SEP											
08...	1040	18	270	8.0	24.0	9.0	15000	2000	1100	--	--

DATE	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)
NOV										
10...	--	--	--	--	--	--	--	--	--	--
DEC										
09...	12	1.2	16	8.4	18	--	--	--	--	--
JAN										
05...	--	--	--	--	--	--	--	--	--	--
MAR										
12...	18	1.4	19	17	21	--	--	--	--	--
APR										
20...	--	--	--	--	--	--	--	--	--	--
MAY										
03...	14	1.3	21	9.5	18	--	--	--	--	--
09...	--	--	--	--	17	.01	.00	.01	.19	.20
23...	9.7	1.7	20	11	17	--	--	--	--	--
JUN										
01...	--	--	--	--	19	.59	.01	.01	.19	.20
JUL										
05...	--	--	--	--	18	.01	.00	.00	.52	.52
AUG										
03...	--	--	--	--	19	.33	.01	.01	.29	.30
SEP										
08...	--	--	--	--	21	.31	.01	.05	.03	.08

DATE	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV										
10...	--	--	--	--	--	--	--	--	11	1.1
DEC										
09...	--	--	--	--	--	--	10	--	1	.17
JAN										
05...	--	--	--	--	--	--	--	--	13	.29
MAR										
12...	--	--	--	--	--	--	20	--	--	--
APR										
20...	--	--	--	--	--	--	--	--	823	2000
MAY										
03...	--	--	--	--	--	--	0	--	--	--
09...	.21	.93	.07	.09	--	170	--	7.8	--	--
23...	--	--	--	--	--	--	50	--	--	--
JUN										
01...	.80	3.5	.02	.04	1	70	--	7.8	--	--
JUL										
05...	.53	2.3	.00	.01	--	270	--	6.3	--	--
AUG										
03...	.64	2.8	.02	.03	--	2300	--	6.7	--	--
SEP										
08...	.40	1.8	.02	.02	--	230	--	7.9	--	--

E Estimated.

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO MAY 1977

DATE	MAY 9,77
TIME	1245
TOTAL CELLS/ML	200
DIVERSITY: DIVISION	2.0
.CLASS	2.0
..ORDER	2.6
...FAMILY	3.4
....GENUS	3.7

ORGANISM	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)		
.CHLOROPHYCEAE		
..CHLOROCOCCALES		
...OOCYSTACEAE		
....ANKISTRODESMUS	4	2
....OOCYSTIS	29	15
...SCENEDESMACEAE		
....CRUCIGENIA	14	7
....SCENEDESMUS	14	7
..TETRASPORALES		
...COCCOMYXACEAE		
....ELAKATOTHRIX	4	2
..ULOTRICHALES		
...ULOTRICHACEAE		
....URONEMA	14	7
..VOLVOCALES		
...CHLAMYDOMONADACEAE		
....CHLAMYDOMONAS	4	2
..ZYGNEMATALES		
...DESMIDIACEAE		
....COSMARIUM	4	2
CHRYSOPHYTA		
.BACILLARIOPHYCEAE		
..PENNALES		
...ACHNANTHACEAE		
....ACHNANTHES	18	9
...CYMBELLACEAE		
....CYMBELLA	4	2
...DIATOMACEAE		
....DIATOMA	*	0
...EUNOTIACEAE		
....EUNOTIA	7	4
...NITZSCHIACEAE		
....NITZSCHIA	7	4
...TABELLARIACEAE		
....TABELLARIA	4	2
CRYPTOPHYTA (CRYPTOMONADS)		
.CRYPTOPHYCEAE		
..CRYPTOMONADALES		
...CRYPTOCHRYSIDACEAE		
....CHROOMONAS	11	5
...CRYPTOMONADACEAE		
....CRYPTOMONAS	21	11
CYANOPHYTA (BLUE-GREEN ALGAE)		
.CYANOPHYCEAE		
..CHROOCOCCALES		
...CHROOCOCCACEAE		
....ANACYSTIS	36#	18
EUGLENOPHYTA (EUGLENOIDS)		
.EUGLENOPHYCEAE		
..EUGLENALES		
...EUGLENACEAE		
....EUGLENA	4	2
PYRRHOPHYTA (FIRE ALGAE)		
.DINOPHYCEAE		
..PERIDINIALES		
...GLENODINIACEAE		
....GLENODINIUM	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

RIO BUCANA BASIN

50114400 RIO BUCANA NEAR PONCE, PR

LOCATION.--Lat 18°02'18", long 66°35'12", on pedestrian bridge at Highway 14, 0.2 mi (0.3 km) northeast of junction of Highways 14 and 139, 0.8 mi (1.3 km) downstream from Río Bayagán, 1.3 mi (2.1 km) downstream from Quebrada Ausubo, and 2.5 mi (4.0 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--25.6 mi^2 (66.3 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to May 1964, October 1970 to current year.
SEDIMENT RECORDS: October 1970, December 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO_4) (MG/L)
DEC 13...	1540	4.9	570	6.8	30.0	8.2	62	11	22	2.0	37
JUN 01...	1755	6.3	382	7.6	28.0	6.6	--	--	19	1.9	36

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SiO_2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 13...	22	19	--	--	--	--	20	--	--	1	.01
JUN 01...	20	22	0	20	5	2	20	17	20	--	--

RIO PORTUGUES BASIN

50115000 RIO PORTUGUES NEAR PONCE, PR

LOCATION.--18°04'45", long 66°38'03", on right abutment of bridge off Highway 503, 0.2 mi (0.3 km) upstream from small unnamed tributary, 4.4 mi (7.1 km) upstream from Río Chiquito, and 4.7 mi (7.6 km) north of Plaza Degetau in Ponce.

DRAINAGE AREA.--8.82 mi^2 (22.84 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1964 (monthly measurements only), July 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 470 ft (143 m), from topographic map. Prior to Dec. 4, 1964, non-recording gage at same site and datum.

REMARKS.--Records fair except those for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--13 years (1965-77), 16.2 ft^3/s (0.459 m^3/s), 24.94 in/yr (633 mm/yr), 11,740 acre-ft/yr (14.5 hm^3/yr); median of yearly mean discharges, 15 ft^3/s (0.42 m^3/s), 10,900 acre-ft/yr (13 hm^3/yr). The medians published in the 1975-76 report were in error; the correct figures are 11 years, 19 ft^3/s (0.54 m^3/s), 13,800 acre-ft/yr (17 hm^3/yr); 12 years, 15 ft^3/s (0.42 m^3/s), 10,900 acre-ft/yr (13 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft^3/s (371 m^3/s) Sept. 16, 1975, gage height, 10.1 ft (3.08 m), from floodmarks, from rating curve extended above 150 ft^3/s (4.25 m^3/s) on basis of slope-area measurement of peak flow; minimum, 1.0 ft^3/s (0.028 m^3/s) May 29, 1973, gage height, 1.65 ft (0.503 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 500 ft^3/s (14.2 m^3/s) July 30, gage height, 4.84 ft (1.475 m), no peak above base of 800 ft^3/s (22.6 m^3/s); minimum, 1.3 ft^3/s (0.037 m^3/s) May 4, gage height, 2.40 ft (0.732 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	25	11	4.8	3.1	2.0	1.9	1.7	3.0	1.9	31	7.0
2	48	21	8.1	5.0	2.9	2.0	1.9	1.6	2.7	2.0	21	5.6
3	101	19	8.1	3.9	2.8	2.0	1.9	1.5	2.3	2.0	11	5.5
4	87	17	8.1	4.1	2.8	2.0	1.9	1.7	2.5	2.0	14	5.8
5	34	15	8.7	4.1	2.7	2.0	1.8	3.3	2.7	51	14	9.0
6	220	15	7.3	4.3	2.7	2.0	2.5	2.7	2.7	16	37	13
7	86	14	7.0	4.3	2.6	2.0	2.3	2.3	2.5	4.9	39	11
8	300	13	7.3	4.3	2.6	2.0	2.1	2.1	2.2	3.1	23	8.4
9	115	11	7.3	3.5	3.0	1.9	1.9	2.0	2.2	2.7	12	5.0
10	80	15	7.3	3.9	3.6	2.5	3.7	1.9	2.2	2.7	16	14
11	110	18	7.0	4.1	3.1	3.7	3.7	2.0	2.3	8.9	15	6.3
12	56	18	6.7	3.9	3.0	2.5	3.3	1.9	2.5	44	36	24
13	37	14	6.5	3.8	2.8	2.0	2.7	1.8	2.1	24	36	45
14	37	11	6.0	3.7	2.5	1.9	2.7	2.1	19	7.3	29	30
15	90	10	5.7	4.7	2.4	1.9	2.9	2.0	11	5.0	19	14
16	35	9.6	6.1	4.4	2.4	2.2	2.9	2.1	7.3	3.9	13	10
17	60	9.0	6.5	3.9	2.3	2.0	2.5	2.4	4.5	3.9	13	8.6
18	31	8.4	6.5	3.6	2.3	1.9	2.3	2.3	3.5	3.3	14	8.1
19	30	8.0	6.0	3.5	2.3	2.2	2.8	2.1	2.7	3.1	14	7.5
20	30	8.9	5.7	4.5	2.2	2.2	7.0	2.0	2.7	2.9	11	7.8
21	31	7.8	5.7	7.5	2.9	2.0	6.2	3.5	2.7	3.3	38	8.1
22	31	8.9	5.5	12	3.5	1.9	5.0	3.7	2.5	2.7	19	7.5
23	33	8.4	5.3	7.8	2.8	1.9	4.8	54	2.9	2.3	10	11
24	50	9.0	5.3	5.0	2.4	1.9	4.3	10	2.5	2.5	8.7	9.2
25	76	11	5.7	3.9	2.3	1.9	3.7	5.0	2.2	2.5	7.8	7.8
26	30	11	5.3	3.3	2.2	1.8	3.0	3.7	2.2	8.7	7.3	7.5
27	39	10	4.5	3.1	2.1	1.8	2.5	41	2.5	13	6.7	8.6
28	34	11	5.0	3.9	2.1	2.3	2.2	19	3.5	41	6.5	7.5
29	35	10	5.0	4.5	------	2.1	2.0	7.5	2.1	18	6.7	7.0
30	54	10	4.8	4.0	------	2.0	1.9	4.8	1.9	46	7.5	7.3
31	30	------	5.5	3.4	------	1.9	------	3.5	------	33	14	------
TOTAL	2,081	377.0	200.5	140.7	74.4	64.4	90.3	197.2	107.6	367.6	550.2	327.1
MEAN	67.1	12.6	6.47	4.54	2.66	2.08	3.01	6.36	3.59	11.9	17.7	10.9
MAX	300	25	11	12	3.6	3.7	7.0	54	19	51	39	45
MIN	30	7.8	4.5	3.1	2.1	1.8	1.8	1.5	1.9	1.9	6.5	5.0
CFSM	7.61	1.43	.73	.51	.30	.24	.34	.72	.41	1.35	2.01	1.24
IN.	8.78	1.59	.85	.59	.31	.27	.38	.83	.45	1.55	2.32	1.38
AC-FT	4,130	748	398	279	148	128	179	391	213	729	1,090	649

CAL YR 1976 TOTAL 5,365.2 MEAN 14.7 MAX 300 MIN 2.3 CFSM 1.67 IN 22.63 AC-FT 10,640

WTR YR 1977 TOTAL 4,578.0 MEAN 12.5 MAX 300 MIN 1.5 CFSM 1.42 IN 19.31 AC-FT 9,080

NOTE.--No gage-height record Jan. 12 to Feb. 26.

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: February 1964 to current year.
SEDIMENT RECORDS: May 1965 to December 1967 (partial-record station), January 1968 to December 1969 (daily-record station), January 1970 to November 1971, May to August 1973 (partial-record station). September 1973 to current year. (Daily record station).

REMARKS.--No samples collected from January to May 29, 1973.

EXTREMES FOR PERIOD OF DAILY RECORDS.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 23,600 mg/L November 12, 1974; minimum daily mean, 0 mg/L several days during years 1975-76.
SEDIMENT DISCHARGE: Maximum daily 106,000 tons (96,000 tonnes) September 16, 1975; minimum daily, 0 ton (0 tonne) several days during 1976.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,500 mg/L, July 30, 1977; minimum daily mean, 0 mg/L several days during 1977.
SEDIMENT DISCHARGE: Maximum daily, 1,700 tons (1,540 tonnes) July 30, 1977; minimum daily, 0 ton (0 tonne) several days during 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
19...	1540	30	230	8.3	25.0	7.6	.7	3800	1900	550	35
DEC											
10...	0700	7.3	248	8.4	19.5	8.5	1.1	15000	370	160	42
FEB											
10...	0745	3.6	287	8.2	20.0	8.6	1.2	57000	350	700	42
APR											
19...	0955	2.1	280	8.3	25.0	9.8	.4	21000	400	600	38
MAY											
03...	1100	1.5	244	8.5	24.5	9.5	--	--	--	--	33
09...	1530	1.9	226	8.6	28.3	10.8	--	25000	700	2300	--
JUN											
01...	1300	3.2	321	8.1	32.0	8.0	1.3	9000	860	2300	40
JUL											
05...	1300	349	296	8.4	26.0	9.0	--	--	--	--	--
AUG											
03...	1410	11	244	8.1	24.0	9.1	1.1	6300	3400	2100	31
SEP											
07...	1515	8.8	230	8.4	27.6	7.4	--	39000	2300	2500	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
19...	6.4	8.5	1.3	136	0	112	1.1	5.3	6.9	20	1.1
DEC											
10...	7.1	9.9	1.2	170	2	143	1.1	6.9	8.5	20	.75
FEB											
10...	8.2	16	1.5	180	0	148	1.8	9.1	17	17	.45
APR											
19...	7.6	13	1.5	178	0	146	1.4	9.0	12	21	.18
MAY											
03...	7.4	12	1.5	--	--	--	--	8.2	9.7	19	--
09...	--	--	--	--	--	--	--	--	--	20	.14
JUN											
01...	8.1	12	1.5	166	0	136	2.1	9.7	11	21	.79
JUL											
05...	--	--	--	--	--	--	--	--	--	18	.15
AUG											
03...	5.6	8.9	1.3	142	0	116	1.8	6.7	8.1	20	.94
SEP											
07...	--	--	--	--	--	--	--	--	--	21	.75

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)
OCT											
19...	.00	.01	.16	.17	1.3	5.6	.03	.03	--	--	--
DEC											
10...	.00	.01	.07	.08	.83	3.7	.04	.05	1	0	<10
FEB											
10...	.00	.01	.18	.19	.64	2.8	.01	.02	--	--	--
APR											
19...	.01	.01	.56	.57	.76	3.4	.01	.01	--	--	--
MAY											
03...	--	--	--	--	--	--	--	--	--	--	--
09...	.00	.01	.41	.42	.56	2.5	.05	.05	--	--	--
JUN											
01...	.01	.01	.26	.27	1.1	4.7	.04	.06	1	1	10
JUL											
05...	.01	.00	.46	.46	.62	2.7	.00	.03	--	--	--
AUG											
03...	.01	.01	.22	.23	1.2	5.2	.02	.04	--	--	--
SEP											
07...	.01	.03	.09	.12	.88	3.9	.03	.05	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT											
19...	--	--	--	20	--	--	--	--	9.2	1	.08
DEC											
10...	2	--	9	0	.0	8	0	10	6.8	0	.00
FEB											
10...	--	--	--	10	--	--	--	--	5.0	32	.31
APR											
19...	--	--	--	10	--	--	--	--	11	2	.01
MAY											
03...	--	--	--	10	--	--	--	--	--	--	--
09...	--	160	--	--	--	--	--	--	8.3	--	--
JUN											
01...	3	--	3	60	.0	3	0	60	4.9	75	.65
JUL											
05...	--	210	--	--	--	--	--	--	7.0	--	--
AUG											
03...	--	110	--	10	--	--	--	--	--	42	1.2
SEP											
07...	--	440	--	--	--	--	--	--	8.3	--	--

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	51	38	5.2	25	21	1.4	11	6	.18
2	48	42	5.4	21	16	.91	8.1	3	.06
3	101	1950	532	19	10	.51	8.1	1	.02
4	87	1360	446	17	9	.41	8.1	1	.02
5	34	432	5.8	15	3	.12	8.7	5	.12
6	220	1190	720	15	3	.12	7.3	2	.04
7	86	893	192	14	4	.15	7.0	2	.04
8	300	2060	1340	13	7	.25	7.3	1	.02
9	115	128	.82	11	5	.15	7.3	1	.02
10	80	80	17	15	7	.28	7.3	2	.04
11	110	60	18	18	3	.15	7.0	5	.09
12	56	129	20	18	4	.19	6.7	0	.00
13	37	202	20	14	3	.11	6.5	8	.14
14	37	60	6.0	11	2	.06	6.0	1	.02
15	90	1220	296	10	5	.15	5.7	4	.06
16	35	51	4.8	9.6	12	.31	6.1	3	.05
17	60	30	4.9	9.0	3	.07	6.5	5	.09
18	31	151	13	8.4	4	.09	6.5	7	.12
19	30	310	25	8.0	3	.06	6.0	5	.08
20	30	10	.81	8.9	5	.12	5.7	1	.02
21	31	15	1.3	7.8	5	.11	5.7	3	.05
22	31	15	1.3	8.9	6	.14	5.5	3	.04
23	33	10	.81	8.4	5	.11	5.3	5	.07
24	50	3	.41	9.0	3	.07	5.3	3	.04
25	76	320	66	11	2	.06	5.7	3	.05
26	30	81	6.6	11	3	.09	5.3	3	.04
27	39	30	3.2	10	1	.03	4.5	3	.04
28	34	38	3.5	11	10	.30	5.0	2	.03
29	35	27	2.6	10	5	.14	5.0	5	.08
30	54	290	42	10	2	.06	4.8	11	.14
31	30	159	13	---	---	---	5.5	2	.03
TOTAL	2081	---	3813.45	377.0	---	6.72	200.5	---	1.84

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	4.8	5	.06	3.1	42	.35	2.0	3	.02
2	5.0	16	.22	2.9	0	.00	2.0	4	.02
3	3.9	4	.04	2.8	47	.36	2.0	33	.18
4	4.1	0	.00	2.8	12	.09	2.0	0	.00
5	4.1	4	.04	2.7	5	.04	2.0	3	.02
6	4.3	15	.17	2.7	3	.02	2.0	4	.02
7	4.3	1	.01	2.6	33	.23	2.0	2	.01
8	4.3	4	.05	2.6	0	.00	2.0	2	.01
9	3.5	14	.13	3.0	1	.01	1.9	45	.23
10	3.9	127	1.3	3.6	26	.25	2.5	10	.07
11	4.1	87	.96	3.1	20	.17	3.7	0	.00
12	3.9	231	2.4	3.0	3	.02	2.5	35	.24
13	3.8	139	1.4	2.8	35	.26	2.0	1	.01
14	3.7	94	.94	2.5	0	.00	1.9	3	.02
15	4.7	0	.00	2.4	13	.08	1.9	2	.01
16	4.4	70	.83	2.4	7	.05	2.2	7	.04
17	3.9	80	.84	2.3	41	.25	2.0	2	.01
18	3.6	46	.44	2.3	20	.12	1.9	1	.01
19	3.5	27	.26	2.3	10	.06	2.2	3	.02
20	4.5	91	1.1	2.2	10	.06	2.2	0	.00
21	7.5	0	.00	2.9	10	.08	2.0	2	.01
22	12	89	2.9	3.5	5	.05	1.9	2	.01
23	7.8	126	2.6	2.8	5	.04	1.9	2	.01
24	5.0	53	.72	2.4	2	.05	1.9	2	.01
25	3.9	15	.16	2.3	3	.02	1.9	4	.02
26	3.3	55	.63	2.2	0	.00	1.8	5	.03
27	3.1	0	.00	2.1	2	.01	1.8	6	.03
28	3.9	61	.64	2.1	1	.01	2.3	5	.03
29	4.5	34	.41	---	---	---	2.1	2	.01
30	4.0	6	.06	---	---	---	2.0	3	.02
31	3.4	9	.08	---	---	---	1.9	4	.02
TOTAL	140.7	---	19.39	74.4	---	2.68	64.4	---	1.14

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	1.9	1	.01	1.7	10	.05	3.0	12	.10
2	1.9	7	.04	1.6	5	.02	2.7	3	.02
3	1.9	1	.01	1.5	7	.03	2.3	3	.02
4	1.9	3	.02	1.7	9	.04	2.5	3	.02
5	1.8	3	.02	3.3	8	.07	2.7	29	.21
6	2.5	22	.15	2.7	2	.01	2.7	1	.01
7	2.4	3	.02	2.3	5	.03	2.5	1	.01
8	2.1	3	.02	2.1	2	.01	2.2	10	.06
9	1.9	33	.17	2.0	3	.02	2.2	4	.02
10	3.7	59	.59	1.9	39	.20	2.2	3	.02
11	3.7	3	.03	2.0	5	.03	2.3	1	.01
12	3.3	4	.04	1.9	1	.01	2.5	1	.01
13	2.7	6	.04	1.8	62	.30	2.1	7	.04
14	2.7	2	.01	2.1	49	.28	19	1100	281
15	2.9	6	.05	2.0	20	.11	11	168	6.7
16	2.9	2	.02	2.1	3	.02	7.3	18	.35
17	2.5	2	.01	2.4	4	.03	4.5	88	1.1
18	2.3	2	.01	2.3	53	.33	3.5	2	.02
19	2.8	10	.19	2.1	2	.01	2.7	2	.01
20	7.0	51	1.8	2.0	2	.01	2.7	56	.40
21	6.2	8	.13	3.5	15	.14	2.7	1	.01
22	5.0	10	.14	3.7	800	239	2.5	1	.01
23	4.8	7	.09	54	790	149	2.9	1	.01
24	4.3	5	.06	10	146	3.9	2.5	1	.01
25	3.7	3	.03	5.0	61	.82	2.2	1	.01
26	3.0	4	.03	3.7	10	3.7	2.2	8	.05
27	2.5	3	.02	41	780	130	2.5	5	.03
28	2.2	9	.05	19	249	15	3.5	83	.78
29	2.0	10	.05	7.5	18	.36	2.1	26	.15
30	1.9	77	.40	4.8	31	.40	1.9	29	.15
31	---	---	---	3.5	78	.74	---	---	---
TOTAL	90.4	---	4.25	197.2	---	544.67	107.6	---	291.34

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	1.9	0	.00	31	540	74	7.0	18	.34
2	2.0	39	.21	21	320	27	5.6	18	.27
3	2.0	7	.04	11	67	2.0	5.5	15	.22
4	2.0	1	.01	14	160	12	5.8	15	.23
5	51	1400	650	14	105	5.3	9.0	35	1.4
6	16	350	25	37	970	350	13	170	11
7	4.9	11	.15	39	146	15	11	32	1.4
8	3.1	17	.14	23	308	19	8.4	38	.86
9	2.7	27	.20	12	82	2.7	5	1020	160
10	2.7	24	.17	16	180	13	14	10	.38
11	8.9	136	9.8	15	90	4.2	6.3	100	6.2
12	44	1330	580	36	740	270	24	475	55
13	24	300	33	36	740	83	45	1240	550
14	7.3	52	1.0	29	747	58	30	1830	148
15	5.0	43	.58	19	37	1.9	14	249	9.4
16	3.9	69	.73	13	30	1.1	10	214	5.8
17	3.9	93	.98	13	15	.52	8.6	451	10
18	3.3	76	.68	14	20	.76	8.1	34	.74
19	3.1	2	.02	14	100	3.8	7.5	34	.69
20	2.9	21	.16	11	92	2.7	7.8	34	.72
21	3.3	4	.04	38	90	9.2	8.1	18	.39
22	2.7	2	.01	19	69	5.3	7.5	18	.36
23	2.3	2	.01	10	5	.14	11	82	2.4
24	2.5	2	.01	8.7	4	.09	9.2	52	1.3
25	2.5	2	.01	7.8	7	.15	7.8	34	.72
26	8.7	600	51	7.3	220	16	7.5	34	.69
27	13	170	14	6.7	1170	370	8.6	34	.79
28	41	940	330	6.5	180	3.2	7.5	34	.69
29	18	280	65	6.7	166	3.0	7.0	18	.34
30	46	2500	1700	7.5	6	.12	7.3	51	1.0
31	33	710	130	14	34	1.3	---	---	---
TOTAL	367.6	---	3592.95	550.2	---	1354.48	327.1	---	971.33

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
OCT											
03...	1715	45	50	82	92	97	99	99	100	100	100
04...	1700	33	57	74	90	92	99	99	100	100	100
08...	1640	15	24	34	46	63	86	94	99	99	99
08...	1725	18	27	42	61	79	87	97	99	99	99
08...	1750	13	21	31	50	72	84	93	97	98	99
MAY											
27...	1210	32	45	62	83	95	98	99	99	99	100
27...	1225	36	43	62	79	95	99	99	99	99	100
27...	1245	38	50	66	80	94	99	99	99	99	100
JUL											
12...	1750	6	9	19	32	53	87	96	98	99	99
12...	1810	19	27	37	49	66	92	97	99	99	99
12...	1830	26	36	46	57	67	94	99	99	99	100
28...	1605	22	33	45	55	65	94	97	99	99	99
30...	1630	8	13	18	23	30	78	95	98	99	99
30...	1650	9	14	20	26	33	79	95	98	99	99
30...	1710	13	21	27	38	48	87	96	99	99	99
30...	1730	10	18	25	35	45	73	92	98	99	99
30...	1750	13	22	30	39	52	83	94	98	98	99
AUG											
12...	1800	16	26	38	51	65	88	98	99	99	100
12...	1820	24	36	49	60	76	92	98	99	99	99
13...	1515	21	38	47	75	83	89	95	99	99	100

SOUTH COAST RIVERS BASIN

RIO PORTUGUES BASIN

50115900 RIO PORTUGUES AT HIGHWAY 14 AT PONCE, PR

LOCATION.--Lat 18°01'09", long 66°36'26", at bridge on Highway 14, 0.6 mi (1.0 km) northeast of Degetau Plaza in Ponce, and 1.7 mi (2.7 km) downstream from Río Chiquito.

DRAINAGE AREA.--18.6 mi^2 (48.2 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: January 1975, December 1976, May 1977.
SEDIMENT RECORDS: December 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)
DEC							
13...	1530	--	--	28.0	--	--	--
13...	1730	430	7.8	28.0	7.0	35	9.9
MAY							
05...	1350	--	--	--	--	27	11

DATE	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL MANGANESE (MN) (UG/L)	SUSPENDED SEDIMENT (MG/L)
DEC							
13...	--	--	--	--	--	--	63
13...	27	2.5	38	31	19	8	--
MAY							
05...	--	--	--	--	--	--	--

RIO PORTUGUES BASIN

50116500 RIO PORTUGUES AT HIGHWAY 2 BY-PASS AT PONCE, PR

LOCATION.--Lat 17°59'52", long 66°36'52", on pier at bridge on Highway 2 by-pass, 1.1 mi (1.8 km) south of Degetau Plaza, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--20.5 mi^2 (53.1 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1964 to February 1966, June 1975 to August 1976, current year.
SEDIMENT RECORDS: June 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
20...	0650	56	280	8.1	23.0	8.2	10	140000	54000	6700	36
DEC											
10...	0925	5.6	540	7.6	22.5	4.6	128	18000000	3300000	380000	49
FEB											
10...	1000	E1.5	945	7.3	27.5	2.8	72	95000000	3100000	950000	88
APR											
19...	1240	E.50	1250	7.4	32.5	.0	212	9800000	2100000	150000	89
JUN											
01...	1615	1.2	950	7.6	33.0	5.4	43	12000000	2000000	113000	48
AUG											
04...	0720	6.2	360	7.5	22.0	6.2	15	1200000	220000	30000	42

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
20...	7.5	12	1.6	133	0	109	1.7	13	12	19	1.3
DEC											
10...	10	38	3.8	246	0	202	9.9	46	44	21	.83
FEB											
10...	17	64	4.4	313	0	257	25	81	80	25	.20
APR											
19...	16	110	35	396	0	325	25	50	100	39	.30
JUN											
01...	10	65	4.0	274	0	225	11	84	77	25	1.6
AUG											
04...	9.0	28	3.1	196	0	161	9.9	33	30	21	.89

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
20...	.02	.06	.33	.39	1.7	7.5	.07	.10	--	--	--
DEC											
10...	.05	6.2	6.8	13	14	61	1.0	1.5	2	0	<10
FEB											
10...	1.6	5.6	3.3	8.9	11	47	1.4	1.8	--	--	--
APR											
19...	1.1	6.8	10	17	18	81	2.3	5.1	--	--	--
JUN											
01...	.12	1.7	1.6	3.3	5.0	22	1.0	1.3	2	0	<10
AUG											
04...	.07	1.0	.80	1.8	2.8	12	.31	.35	--	--	--

50116500 RIO PORTUGUES AT HIGHWAY 2 BY-PASS AT PONCE, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
20...	--	--	130	--	--	--	--	5.6	104	16
DEC										
10...	51	24	40	.8	5	0	50	8.1	106	1.6
FEB										
10...	--	--	40	--	--	--	--	9.3	65	.26
APR										
19...	--	--	30	--	--	--	--	35	63	.08
JUN										
01...	9	10	90	.1	5	0	20	6.3	102	.33
AUG										
04...	--	--	20	--	--	--	--	6.2	82	1.4

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
FEB										
10...	1000	.4	63	9.8	2.1	2.5	.0	3.2	.0	.0
JUN										
01...	1615	.0	1	.7	.4	.2	.0	.3	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB										
10...	.0	.0	.0	.0	.0	0	.0	0	0	0
JUN										
01...	.0	.0	.0	.0	.0	0	.0	0	0	0

RIO GUAYANILLA BASIN

50123200 RIO GUAYANILLA AT BARRIO MACANA, PR

LOCATION.--Lat 18°03'24", long 66°47'03", at bridge on km 0.7 on Highway 378, at Barrio Macaná, 0.4 mi (0.6 km) northwest of junction of Highways 132 and 378, and 2.5 mi (4.0 km) north of Guayanilla Plaza.

DRAINAGE AREA.--14.1 mi^2 (36.5 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to February 1962, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 20...	1130	41	410	8.2	28.0	7.3	.5	16000	4400	2100	45
DEC 10...	1240	10	325	8.9	26.0	12.8	2.1	39000	3500	350	40
FEB 10...	1345	3.8	310	8.6	26.0	9.1	1.1	30000	1300	230	36
APR 19...	1515	2.1	370	8.2	27.5	8.2	1.2	50000	1900	50	44
JUN 02...	0910	2.6	397	8.3	27.0	8.7	1.7	4700	870	1600	--
AUG 04...	1435	5.2	425	8.2	28.0	7.4	1.8	52000	3000	4000	45

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)	ALKALINITY AS $CaCO_3$ (MG/L)	CARBON DIOXIDE (CO_2) (MG/L)	DISSOLVED SULFATE (SO_4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SiO_2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 20...	14	11	1.5	166	0	136	1.7	33	11	18	.99
DEC 10...	13	12	1.7	135	17	139	.3	37	12	17	.25
FEB 10...	13	12	1.3	130	12	127	.6	39	12	11	.03
APR 19...	15	13	1.5	182	0	149	1.8	40	12	18	.10
JUN 02...	--	20	1.6	197	0	162	1.6	44	27	16	.03
AUG 04...	15	13	1.7	182	0	149	1.8	37	15	16	.05

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO_3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 20...	.01	.00	.16	.16	1.2	5.1	.07	.07	--	--	--
DEC 10...	.01	.01	.46	.47	.73	3.2	.03	.04	1	0	<10
FEB 10...	.00	.01	.17	.18	.21	.93	.01	.02	--	--	--
APR 19...	.00	.03	.18	.21	.31	1.4	.03	.03	--	--	--
JUN 02...	.00	.00	.17	.17	.20	.89	.01	.02	3	0	<10
AUG 04...	.01	.02	.23	.25	.31	1.4	.04	.47	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 20...	--	--	40	--	--	--	--	12	70	7.7
DEC 10...	3	16	10	.0	10	0	10	7.1	2	.05
FEB 10...	--	--	0	--	--	--	--	11	6	.06
APR 19...	--	--	0	--	--	--	--	10	42	.24
JUN 02...	2	19	20	.0	5	0	20	7.2	0	.00
AUG 04...	--	--	40	--	--	--	--	9.5	466	6.5

RIO GUAYANILLA BASIN

50124500 RIO GUAYANILLA AT GUAYANILLA, PR

LOCATION.--Lat 18°02'01", long 66°47'57", at bridge on Highway 114 (formerly Highway 2), 1.1 mi (1.8 km) northwest of Guayanilla, and 3.2 mi (5.1 km) upstream from mouth.

DRAINAGE AREA.--20.8 mi^2 (53.9 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: March 1960 to May 1964, and March 1970 to April 1974.
SEDIMENT RECORDS: October 1970 to April 1974, March 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV					
10...	1615	24	29.0	7	.45
DEC					
15...	1145	6.2	28.0	0	.00
JAN					
07...	1445	4.1	25.5	1	.01

RIO GUAYANILLA BASIN

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR

LOCATION.--Lat 18°00'40", long 66°46'49", at railroad bridge, 0.7 mi (1.1 km) from mouth, 0.9 mi (1.4 km) east of Central Rufina and 0.9 mi (1.4 km) southeast of Guayanilla.

DRAINAGE AREA.--22.8 mi^2 (59.1 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: October 1960 to February 1965, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C).	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
20...	0945	50	378	8.0	25.0	7.4	30	900000	240000	20000	50
DEC											
10...	1110	1.5	1550	7.0	26.5	8.3	131	35000000	4400000	600000	100
FEB											
10...	1200	.70	1000	6.9	29.0	4.6	36	500000	30000	<100	100
APR											
19...	1350	1.4	1730	7.6	28.5	.0	43	18000000	970000	108000	89
JUN											
02...	0745	.75	1600	7.6	27.5	.0	121	12000000	3600000	340000	91
AUG											
04...	1215	E.50	1140	7.6	30.5	.0	67	43000000	6900000	1200000	84

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
20...	17	15	2.5	184	0	151	2.9	38	18	18	.96
DEC											
10...	27	180	8.6	262	0	215	42	140	340	29	1.1
FEB											
10...	31	170	9.0	229	0	188	46	140	360	30	2.6
APR											
19...	30	230	11	427	0	350	17	120	350	31	.00
JUN											
02...	26	170	8.7	406	0	333	16	140	270	31	.02
AUG											
04...	23	78	12	502	0	412	20	100	77	28	.01

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
20...	.02	1.7	4.7	6.4	7.4	33	.23	1.1	--	--	--
DEC											
10...	.00	20	14	34	35	160	3.5	4.1	3	0	<10
FEB											
10...	.54	10	6.0	16	19	85	2.1	2.8	--	--	--
APR											
19...	.01	16	1.0	17	17	75	3.6	4.8	--	--	--
JUN											
02...	.01	16	3.0	19	19	84	5.1	5.7	3	0	<10
AUG											
04...	.01	33	9.0	42	42	190	5.9	6.4	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
20...	--	--	180	--	--	--	--	31	254	34
DEC										
10...	32	15	630	.8	17	1	90	8.5	419	1.7
FEB										
10...	--	--	560	--	--	--	--	8.4	221	.42
APR										
19...	--	--	80	--	--	--	--	9.8	182	.69
JUN										
02...	8	11	230	.5	110	0	50	8.1	11	.02
AUG										
04...	--	--	130	--	--	--	--	7.1	9	.01

RIO YAUCO BASIN

50125000 RIO YAUCO NEAR LAGO LUCHETTI DAMSITE, PR

LOCATION.--Lat 18°06'44", long 66°52'39", upstream from high-water line of Lago Luchetti on dirt road 0.8 mi (1.28 km) from Highway 128 (km 15.0), 1.5 mi (2.4 km) northwest of Luchetti Dam, and 5.6 mi (9.0 km) north of Yauco.

DRAINAGE AREA.--8.2 mi^2 (20.8 km^2).

PERIOD OF RECORD.--

CHEMICAL ANALYSES: March and May 1964, April 1966, April 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL MANGANESE (MN) (UG/L)
APR												
07..	1250	270	8.3	23.0	9.2	13	16	1.7	10	19	22	10

SOUTH COAST RIVERS BASIN

RIO YAUCO BASIN

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR

LOCATION.--Lat 18°04'11", long 66°50'47", on right bank of valve house diversion, 0.2 mi (0.3 km) northeast from Highway 372 and junction with local road, 0.4 mi (0.6 km) southeast of Escuela Caimito, 1.8 mi (2.9 km) above confluence with Río Yauco, and 2.2 mi (3.5 km) north of Yauco Plaza.

DRAINAGE AREA.--8.93 mi^2 (23.13 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to September 1977.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 328 ft (100 m), from topographic map.

REMARKS.--Records poor. Approximately 2,800,000 gal (10,600 m^3) diverted below station each month for municipal supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,570 ft^3/s (44.5 m^3/s) Aug. 4, 1977, gage height, 7.84 ft (2.390 m); minimum daily, 0.94 ft^3/s (0.027 m^3/s) Jan. 10, 1977.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 1,570 ft^3/s (44.5 m^3/s) Aug. 4, gage height, 7.84 ft (2.390 m); minimum daily, 0.94 ft^3/s (0.027 m^3/s) Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		4.5	4.2	2.7	1.2	2.2	1.4	2.0	1.8	1.0	8.8	4.4
2		4.0	4.2	3.0	1.5	2.2	1.4	2.7	1.7	1.0	17	4.0
3		4.0	4.2	3.0	1.4	2.3	1.4	1.7	1.6	1.0	11	3.8
4		3.5	6.6	3.1	1.4	2.3	1.5	1.5	1.4	1.0	112	3.8
5		26	5.5	2.9	1.5	2.3	1.6	2.4	1.6	2.9	4.4	3.1
6		13	4.0	2.1	1.6	2.2	1.7	5.3	1.5	2.9	7.4	5.2
7		8.8	3.8	2.1	1.6	2.2	1.8	2.0	1.3	1.9	25	5.0
8		7.7	3.6	1.8	1.7	2.1	1.7	1.7	1.3	2.0	10	4.2
9		6.9	3.8	2.7	2.0	2.1	2.4	1.4	1.3	1.9	5.0	3.7
10		6.6	4.0	.94	2.5	2.1	1.8	1.0	1.3	3.3	5.0	2.1
11		6.3	3.4	1.3	2.8	2.0	2.5	1.0	1.3	17	4.0	2.0
12		5.8	3.4	2.1	2.3	2.0	2.5	1.0	1.3	15	4.0	2.8
13		5.8	4.2	2.2	1.5	2.0	2.0	1.0	1.2	13	4.0	2.0
14		5.5	2.0	2.5	1.4	1.9	2.1	1.1	1.2	5.8	3.0	3.8
15		5.2	3.0	3.2	1.5	1.9	2.2	1.0	1.2	4.0	3.0	3.1
16		5.2	4.5	2.4	1.7	1.8	2.3	2.1	1.2	4.0	3.0	2.6
17		5.2	4.2	2.5	1.6	1.8	2.2	1.0	1.2	10	18	2.8
18		4.8	7.1	2.9	1.7	1.7	2.1	1.1	1.2	4.2	20	2.0
19		4.6	3.0	3.2	1.8	2.4	2.9	1.1	1.2	4.0	5.5	2.0
20		4.4	4.2	3.7	2.0	1.6	6.7	1.1	1.2	5.0	4.4	65
21	8.8	4.4	3.9	4.9	2.3	1.6	2.2	3.1	1.1	3.9	4.8	15
22	5.0	4.4	1.9	5.9	2.6	1.5	2.0	3.9	1.1	2.5	5.5	4.0
23	5.0	4.2	1.8	5.2	2.5	1.5	2.0	17	2.3	3.3	7.2	5.5
24	4.5	4.0	3.1	5.6	2.4	1.5	2.0	3.1	1.4	3.4	6.0	5.8
25	4.5	4.0	3.1	1.4	2.5	1.6	1.9	2.1	1.1	3.4	5.0	3.7
26	4.5	4.0	3.0	1.4	2.4	1.6	1.8	3.8	1.1	4.5	4.2	3.1
27	4.4	4.0	3.1	1.4	2.4	1.8	1.8	4.7	1.1	4.0	16	2.6
28	4.4	3.8	3.1	1.7	2.3	1.7	1.8	7.6	1.0	5.7	11	2.5
29	4.3	3.8	3.1	1.7	------	1.6	1.9	3.2	1.6	3.1	6.9	2.1
30	4.3	3.6	4.4	1.4	------	1.7	1.9	1.9	1.1	4.6	5.5	1.9
31	4.3	------	1.9	1.0	------	1.8	------	1.8	------	7.2	4.8	------
TOTAL		178.0	115.3	82.94	54.1	59.0	63.5	85.4	39.9	146.5	351.4	173.6
MEAN		5.93	3.72	2.68	1.93	1.90	2.12	2.75	1.33	4.73	11.3	5.79
MAX		26	7.1	6.9	2.8	2.4	6.7	17	2.3	17	112	65
MIN		3.5	1.8	.94	1.2	1.5	1.4	1.0	1.0	1.0	3.0	1.9
CFSM		.66	.42	.30	.22	.21	.24	.31	.15	.53	1.27	.65
IN.		.74	.48	.35	.23	.25	.26	.36	.17	.61	1.46	.72
AC-FT		353	229	165	107	117	126	169	79	291	697	344

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: December 1976 to June 1977
SEDIMENT RECORDS: January 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC 16...	1125	3.5	300	7.7	23.5	8.5	45	16	13	1.6	16	14
JAN 07...	1150	2.7	--	--	23.0	--	--	--	--	--	--	--
FEB 23...	0800	2.4	255	8.4	22.0	8.0	24	13	12	1.5	6.0	12
MAR 19...	1440	2.4	240	8.6	26.5	7.8	31	11	12	1.6	11	12
MAY 05...	1350	1.6	275	8.5	25.0	7.8	--	--	13	1.5	9.7	11
JUN 02...	1505	1.7	300	8.4	27.0	8.1	31	12	13	1.6	12	13
JUL 06...	1605	3.7	270	7.7	27.5	7.5	--	--	13	1.7	13	13
AUG 17...	0850	5.7	272	8.2	21.0	8.5	--	--	11	1.6	20	14
SEP 09...	1135	3.5	304	8.5	25.0	9.2	--	--	11	1.6	17	13

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 16...	25	0	<10	1	4	0	--	2	--	10	7	.07
JAN 07...	--	--	--	--	--	--	--	--	--	--	0	.00
FEB 23...	23	--	--	--	--	0	--	--	--	--	--	--
MAR 19...	24	--	--	--	--	80	--	--	--	--	--	--
MAY 05...	22	--	--	--	--	0	--	--	--	--	--	--
JUN 02...	21	1	<10	2	4	20	.0	13	0	120	--	--
JUL 06...	28	--	--	--	--	10	--	--	--	--	--	--
AUG 17...	24	--	--	--	--	10	--	--	--	--	--	--
SEP 09...	21	--	--	--	--	0	--	--	--	--	--	--

RIO YAUCO BASIN

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR

LOCATION.--Lat 18°02'58", long 66°50'30", on right bank off Highway 127, 0.1 mi (0.2 km) downstream from Quebrada de las Quebradas, 0.9 mi (1.4 km) downstream from confluence with Río Duey, and 1.0 mi (1.6 km) northeast of Yauco Plaza.

DRAINAGE AREA.--27.2 mi^2 (70.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1976 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 115 ft (35 m), from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record, July 18 to Aug. 15, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, unknown Aug. 4, 1977, gage height, unknown; minimum daily, 1.6 ft^3/s (0.045 m^3/s) May 20, 1977.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, unknown Aug. 4, gage height, unknown, minimum daily, 1.6 ft^3/s (0.045 m^3/s) May 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			8.2	5.4	5.0	3.6	3.9	2.6	2.2	2.0	20	2.2
2			7.0	5.4	4.5	3.6	3.9	2.8	2.0	1.9	30	2.2
3			6.2	5.0	4.5	3.4	3.4	2.8	2.0	1.8	40	2.2
4			7.4	5.0	4.5	3.1	3.1	2.6	2.0	2.0	200	2.2
5		28	7.4	4.7	4.5	3.6	3.1	2.3	2.0	19	14	2.0
6		14	5.8	4.7	4.5	3.9	2.8	2.8	2.6	14	38	4.6
7		9.0	5.8	5.1	4.5	3.9	2.8	2.8	2.2	3.4	42	4.5
8		8.6	5.8	5.0	4.7	3.9	2.8	2.8	2.0	2.3	24	4.2
9		8.0	5.4	5.0	4.7	3.9	2.8	2.6	2.0	2.2	5.0	3.4
10		7.8	5.8	5.0	4.7	3.6	3.6	2.2	2.2	2.0	11	3.9
11		7.4	5.8	5.0	4.7	3.9	3.4	2.0	2.2	35	9.0	3.6
12		7.0	5.4	5.0	5.0	4.2	3.4	2.0	2.3	29	8.0	3.6
13		7.0	5.4	5.0	5.0	4.2	3.6	2.0	2.2	27	7.0	4.2
14		7.0	5.4	5.4	5.0	4.2	2.8	2.0	2.6	7.0	6.8	4.2
15		7.0	5.4	5.4	4.7	3.9	2.8	2.0	2.3	3.6	6.2	4.2
16		7.4	5.4	5.8	4.5	3.9	5.0	2.2	2.2	36	7.4	3.6
17		8.2	5.4	5.8	4.5	4.2	6.6	1.9	2.0	48	19	4.5
18		7.0	5.4	6.2	4.2	3.9	2.6	2.0	2.2	5.4	24	3.9
19		6.6	5.4	6.2	4.2	6.1	2.3	1.9	2.3	2.6	8.2	9.0
20		6.6	5.4	6.6	3.9	3.9	3.6	1.6	2.2	10	3.6	92
21		6.6	5.0	6.6	3.9	3.6	2.6	1.9	2.0	7.0	3.4	45
22		6.6	5.0	9.0	3.9	3.4	2.3	16	2.5	5.4	5.0	15
23		6.6	5.0	7.4	3.9	3.4	2.3	34	2.0	5.8	26	19
24		6.6	5.0	6.6	3.6	3.6	2.3	8.2	2.0	6.4	6.6	21
25		6.2	5.0	5.8	3.6	3.9	2.3	4.2	2.0	7.2	2.8	12
26		6.2	5.0	5.4	3.6	3.9	2.3	2.8	2.3	8.0	2.3	10
27		6.2	5.0	5.4	3.6	3.9	2.2	2.6	2.0	9.0	39	9.0
28		5.4	5.0	5.4	3.6	3.9	2.2	4.2	2.0	12	16	8.2
29		5.8	5.0	5.0	------	3.9	2.3	2.6	2.0	7.6	5.0	7.0
30		6.2	5.4	5.0	------	4.2	2.6	2.3	1.9	10	3.1	6.6
31		------	5.4	5.0	------	5.1	------	2.3	------	15	2.6	------
TOTAL			175.0	173.3	121.5	121.7	91.7	127.0	64.4	347.6	635.0	317.0
MEAN			5.65	5.59	4.34	3.93	3.06	4.10	2.15	11.2	20.5	10.6
MAX			8.2	9.0	5.0	6.1	6.6	34	2.6	48	200	92
MIN			5.0	4.7	3.6	3.1	2.2	1.6	1.9	1.8	2.3	2.0
CFSM			.21	.21	.16	.14	.11	.15	.08	.41	.75	.39
IN.			.24	.24	.17	.17	.13	.17	.09	.48	.87	.43
AC-FT			347	344	241	241	182	252	128	689	1,260	629

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: December 1976 to June 1977.
SEDIMENT RECORDS: January 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC 14...	1600	5.6	--	--	28.0	--	--	--	--	--	--	--
JAN 07...	1030	2.7	--	--	24.5	--	--	--	--	--	--	--
FEB 23...	1015	3.9	330	8.1	21.7	10.2	--	--	20	1.5	17	20
MAR 19...	1620	4.2	345	8.2	27.5	9.0	--	--	20	1.7	23	20
APR 07...	1515	2.5	335	8.3	23.6	11.6	33	12	20	1.6	24	20
MAY 05...	1155	2.2	353	8.4	26.0	12.8	31	11	22	1.5	26	21
JUN 02...	1715	2.0	388	7.9	28.0	7.8	40	12	23	1.5	29	26
JUL 06...	1815	4.9	360	7.6	28.0	6.2	--	--	20	2.0	25	20
AUG 15...	1535	11	332	8.2	30.0	7.4	--	--	14	1.6	24	16
SEP 09...	1310	3.1	455	8.1	29.5	9.2	--	--	22	1.6	29	23

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 14...	--	--	--	--	--	--	--	--	--	--	0	.00
JAN 07...	--	--	--	--	--	--	--	--	--	--	1	.01
FEB 23...	21	--	--	--	--	0	--	--	--	--	--	--
MAR 19...	23	--	--	--	--	150	--	--	--	--	--	--
APR 07...	21	--	--	--	--	0	--	--	--	--	--	--
MAY 05...	22	--	--	--	--	0	--	--	--	--	--	--
JUN 02...	24	0	10	4	4	60	.0	5	0	40	--	--
JUL 06...	23	--	--	--	--	10	--	--	--	--	--	--
AUG 15...	23	--	--	--	--	20	--	--	--	--	--	--
SEP 09...	24	--	--	--	--	0	--	--	--	--	--	--

SOUTH COAST RIVERS BASIN

RIO YAUCO BASIN

50128000 RIO YAUCO NEAR YAUCO, PR

LOCATION.--Lat 17°59'19", long 66°49'55", on right bank at downstream side of bridge on Highway 335, 0.8 m (1.3 km) northwest of Central San Francisco and 3.4 mi (5.5 km) southeast of junction of Highways 335 and 2, at Yauco.

DRAINAGE AREA.--45.5 mi^2 (117.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 discharge measurement. May 1961 to December 1964. November 1976 to September 1977.

GAGE.--Water-stage recorder. Datum of gage is 19.14 ft (5.834 m) above mean sea level, datum of 1929.

REMARKS.--Records fair. Natural flow of stream is affected by transbasin diversions, storage reservoirs, power development; diversions for irrigation and municipal use, and return flow from irrigated areas.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,290 ft^3/s (93.2 m^3/s) Sept. 27, 1963, gage height, 9.69 ft (2.95 m); no flow many days each year.

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 179 ft^3/s (5.07 m^3/s) Nov. 6, gage height, 3.91 ft (1.192 m); no flow most days during the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
2		---	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00
3		8.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4		6.8	.11	.00	.00	.00	.00	.00	.00	.00	.02	.00
5		4.6	.28	.00	.00	.00	.00	.00	.00	.00	.08	.00
6		35	.28	.00	.00	.00	.00	.00	.00	.00	.00	.00
7		4.0	.23	.00	.00	.00	.00	.00	.00	.00	.01	.00
8		4.8	.08	.00	.00	.00	.00	.00	.00	.00	.09	.00
9		2.4	.24	.00	.00	.00	.00	.00	.00	.00	.00	.00
10		2.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11		1.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12		1.6	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
13		1.2	.00	.00	.00	.00	.00	.00	.00	.05	.05	.00
14		1.3	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00
15		.80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16		1.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17		3.0	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00
18		2.6	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
19		2.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20		2.1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
21		1.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
22		1.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23		1.9	.00	.00	.00	.00	.00	.05	.00	.00	.01	.02
24		1.2	.00	.00	.00	.00	.00	.11	.00	.00	.01	.01
25		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27		.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
28		.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00
29		.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30		.03	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31		---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL		---	1.40	.00	.00	.00	.00	.16	.00	.11	.40	.10
MEAN		---	.045	.000	.000	.000	.000	.005	.000	.004	.013	.003
MAX		---	.28	.00	.00	.00	.00	.11	.00	.06	.09	.06
MIN		---	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM		---	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000
IN.		---	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT		---	2.8	.00	.00	.00	.00	.3	.00	.2	.8	.2

SOUTH COAST RIVERS BASIN

RIO LOCO BASIN

50129700 RIO LOCO AT GUANICA, PR

LOCATION.--Lat 17°58'44", long 66°54'58", 0.6 mi (1.0 km) northwest of Guánica and 1.2 mi (1.9 km) northeast of Ensenada.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1975 to current year.
SEDIMENT RECORD: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 20...	1330	.00	1300	7.8	31.0	3.9	1.3	3000	1100	680	65
DEC 10...	1400	E2.0	1400	7.9	24.5	2.1	1.0	10000	650	420	52
FEB 10...	1510	E3.0	6000	7.8	25.5	6.1	1.9	5000	1600	750	72
APR 20...	0845	.00	18000	7.7	29.0	3.6	1.4	7200	700	430	220
JUN 02...	1045	.00	22300	7.8	30.0	4.0	3.9	2000	210	210	180
AUG 16...	0650	.00	17500	7.7	27.0	3.3	4.3	4200	70	550	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 20...	47	170	6.0	410	0	336	10	110	200	33	.47
DEC 10...	41	180	5.6	334	0	274	6.7	83	230	24	.58
FEB 10...	140	1000	36	354	0	290	9.0	290	1500	21	.28
APR 20...	510	4300	190	306	0	251	9.8	9600	7400	16	.07
JUN 02...	620	5200	200	328	0	269	8.3	1200	9000	15	.05
AUG 16...	--	7600	320	214	0	176	6.8	2000	14000	6.5	.03

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 20...	.02	.06	.77	.83	1.3	5.8	.53	.54	--	--	--
DEC 10...	.01	.05	.55	.60	1.2	5.3	.14	.16	2	0	<10
FEB 10...	.01	.07	.52	.59	.88	3.9	.10	.14	--	--	--
APR 20...	.01	.12	.50	.62	.70	3.1	.15	.16	--	--	--
JUN 02...	.01	.22	1.3	1.5	1.6	6.9	.21	.24	1	0	40
AUG 16...	.02	.21	.58	.79	.84	3.7	.09	.18	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 20...	--	--	70	--	--	--	--	12	16	.00
DEC 10...	5	29	7	.1	7	0	10	6.1	50	.27
FEB 10...	--	--	30	--	--	--	--	7.5	58	.47
APR 20...	--	--	20	--	--	--	--	12	6	.00
JUN 02...	2	14	30	.0	10	0	30	5.9	4	.00
AUG 16...	--	--	40	--	--	--	--	8.2	7	.00

E Estimated.

50131990 RIO GUANAJIBO AT HIGHWAY 119 AT SAN GERMAN, PR

LOCATION.--Lat 18°05'06", long 67°02'02", at bridge on Highway 119 at San Germán, 0.6 mi (1.0 km) northeast of San Germán Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1975 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 20...	1530	43	435	8.2	31.0	9.3	.9	2300	1000	310	25
DEC 14...	0955	12	440	8.3	24.0	9.4	.8	7700	470	310	27
FEB 11...	0835	6.7	580	8.0	23.5	12.0	2.6	650000	106000	37000	27
APR 20...	0905	4.3	590	8.1	28.0	9.3	1.8	290000	4500	1100	23
JUN 02...	1215	3.4	680	8.7	32.5	10.0	1.2	17000	900	330	--
AUG 16...	1715	24	460	8.1	27.5	7.6	.5	6400	1800	320	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 20...	44	12	1.2	262	0	215	2.6	23	16	35	.85
DEC 14...	50	14	2.2	318	0	261	2.6	29	19	36	.54
FEB 11...	50	17	1.6	332	0	272	5.3	28	23	34	.20
APR 20...	47	16	1.5	300	0	246	3.8	26	23	35	.39
JUN 02...	--	17	1.2	268	16	246	1.0	27	23	35	.18
AUG 16...	--	11	1.2	241	0	198	3.1	18	16	34	.62

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 20...	.02	.01	.14	.15	1.0	4.5	.09	.10	--	--	--
DEC 14...	.01	.04	.12	.16	.71	3.1	.08	.09	1	0	<10
FEB 11...	.01	.99	.51	1.5	1.7	7.6	.19	.30	--	--	--
APR 20...	.01	.15	.30	.45	.85	3.8	.09	.12	--	--	--
JUN 02...	.01	.03	.59	.62	.81	3.6	.06	.07	1	0	30
AUG 16...	.02	.04	.16	.20	.84	3.7	.08	.10	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 20...	--	--	60	--	--	--	--	3.0	57	6.6
DEC 14...	3	5	0	.1	8	0	20	6.3	1	.03
FEB 11...	--	--	10	--	--	--	--	8.7	66	1.2
APR 20...	--	--	0	--	--	--	--	15	69	.80
JUN 02...	4	7	20	.0	26	0	10	6.3	71	.65
AUG 16...	--	--	20	--	--	--	--	4.9	57	3.7

50136000 RIO ROSARIO AT ROSARIO, PR

LOCATION.--Lat 18°10'22", long 67°04'31", on left bank above low dam 0.2 mi (0.32 km) below confluence with Quebrada Figueroa, 0.7 mi (1.13 km) northeast of Rosario, and 2.2 mi (3.54 km) below confluence with Quebrada Palma.

DRAINAGE AREA.--17.6 mi^2 (45.6 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF REGORD.--June 1975 to current year. Gage-height records collected from January 1960 to June 1966 in files of Puerto Rico Water Resources Authority.

GAGE.--Water-stage recorder. Altitude of gage is 230 ft (70.1 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,800 ft^3/s (957 m^3/s) Sept. 16, 1975, gage height, 19.6 ft (5.97 m), from floodmarks, from rating curve extended above 60 ft^3/s (1.70 m^3/s) on basis of slope-area measurement of peak flow; minimum daily discharge, 2.4 ft^3/s (0.068 m^3/s) June 18, 21, 1977.

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 580 ft^3/s (16.4 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 28	1715	1,560	44.2	7.19	2.192	Aug. 28	--	*2,910	82.4	*8.90	2.713
July 19	1700	884	25.0	5.81	1.771						

Minimum daily discharge, 2.4 ft^3/s (0.068 m^3/s) June 18, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	29	18	11	8.8	6.0	5.2	4.9	5.2	19	51	68
2	41	29	18	11	8.5	6.1	5.2	5.4	5.0	40	41	58
3	41	28	17	11	8.2	6.2	4.8	5.7	5.4	68	38	50
4	41	65	20	10	8.2	6.2	4.7	5.2	5.0	12	100	52
5	56	32	17	10	8.0	6.2	4.8	5.0	5.2	19	300	45
6	54	31	16	10	7.8	6.0	11	5.0	5.0	51	112	43
7	43	31	15	10	7.9	5.8	15	5.9	4.6	25	130	43
8	43	31	15	10	8.0	5.8	7.7	5.6	4.0	18	220	40
9	42	51	17	10	7.7	5.8	10	5.3	3.4	13	82	37
10	42	34	17	9.7	7.4	5.8	8.2	5.3	3.2	13	130	35
11	42	32	14	9.5	7.7	5.7	7.3	5.0	3.1	33	220	34
12	42	29	14	9.4	7.6	5.7	10	4.8	3.3	53	118	40
13	42	26	14	9.1	7.3	5.8	8.0	4.7	3.3	33	160	75
14	70	41	14	9.3	7.3	5.8	5.7	4.6	3.1	23	280	56
15	79	31	13	10	6.9	5.8	5.4	4.4	3.1	18	100	42
16	56	33	13	9.4	7.0	6.0	4.9	4.8	3.2	89	82	34
17	39	27	13	9.1	7.0	6.0	4.7	4.3	2.8	52	110	45
18	34	24	13	8.8	6.9	8.2	4.6	4.3	2.4	29	310	37
19	31	22	13	8.7	6.7	8.8	4.8	4.7	2.7	79	120	45
20	29	21	13	12	6.7	7.5	15	4.4	3.0	40	105	110
21	31	21	12	16	6.5	6.7	14	4.6	2.4	20	110	180
22	26	20	12	13	6.5	6.9	7.0	4.9	2.5	14	90	64
23	24	20	12	17	6.7	6.2	5.8	21	2.8	13	155	54
24	22	19	12	24	6.5	6.1	4.9	17	6.2	12	120	48
25	32	19	12	12	6.4	5.8	4.8	9.7	7.4	12	86	62
26	29	20	11	11	6.3	5.7	4.9	7.9	6.0	38	130	50
27	30	22	11	10	6.2	5.7	4.8	7.0	12	32	250	40
28	116	22	13	9.6	6.1	6.7	4.7	6.8	7.0	15	350	35
29	88	20	12	9.2	------	5.7	4.9	5.8	5.0	14	160	45
30	63	18	11	8.8	------	5.5	5.4	5.6	7.0	85	110	47
31	41	------	11	8.7	------	5.2	------	5.4	------	69	80	------
TOTAL	1,410	848	433	337.3	202.8	191.4	208.2	195.0	134.3	1,051	4,450	1,614
MEAN	45.5	28.3	14.0	10.9	7.24	6.17	6.94	6.29	4.48	33.9	144	53.8
MAX	116	65	20	24	8.8	8.8	15	21	12	89	350	180
MIN	22	18	11	8.7	6.1	5.2	4.6	4.3	2.4	12	38	34
CFSM	2.59	1.61	.80	.62	.41	.35	.39	.36	.25	1.93	8.18	3.06
IN.	2.98	1.79	.92	.71	.43	.40	.44	.41	.28	2.22	9.41	3.41
AC-FT	2,800	1,680	859	669	402	380	413	387	266	2,080	8,830	3,200

CAL YR 1976 TOTAL 8,604.2 MEAN 23.5 MAX 116 MIN 7.4 CFSM 1.34 IN 18.19 AC-FT 17,070

WTR YR 1977 TOTAL 11,075.0 MEAN 30.3 MAX 350 MIN 2.4 CFSM 1.72 IN 23.41 AC-FT 21,970

NOTE.--No gage-height record June 7 to July 6, and Aug. 3 to Sept. 30.

50136000 RIO ROSARIO AT ROSARIO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.

CHEMICAL ANALYSES: September 1960 to April 1966, August 1975.

SEDIMENT RECORDS: August 1975, April to June 1976, December 1976, January 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC					
14...	1230	14	23.5	2	.08
JAN					
06...	1240	9.9	23.0	7	.19

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°09'29", long 67°08'46", at bridge on Highway 14 (formerly Highway 2), 1.2 mi (1.9 km) west of Hormigueros, and 1.7 mi (2.7 km) downstream from Río Rosario.

DRAINAGE AREA.--120 mi^2 (311 km^2).

WATER-DISCHARGE RECRODS

PERIOD OF RECORD.--Annual low-flow measurements 1959, monthly measurements April 1959 to November 1967, January 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.36 ft (2.243 m) above mean sea level.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 128,000 ft^3/s (3,625 m^3/s), Sept. 16, 1975, gage height, 28.50 ft (8.687 m) from rating curve extended above 100 ft^3/s (2.83 m^3/s) on the basis of contracted-opening measurement of peak flow; minimum, 4.6 ft^3/s (0.130 m^3/s) June 22, 1977, gage height, 5.36 ft (1.633 m).

EXTREMES FOR WATER YEAR 1977.--Maximum discharge, 1,340 ft^3/s (37.9 m^3/s) Oct. 31, gage height, 12.38 ft (3.773 m), no peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum, 4.6 ft^3/s (0.130 m^3/s) June 22, gage height, 5.36 ft (1.633 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	621	111	31	16	12	7.8	11	11	38	119	173
2	88	434	109	31	17	12	7.7	11	10	73	105	146
3	73	351	104	30	17	11	8.3	11	9.5	134	98	128
4	64	451	102	29	16	11	8.7	11	10	25	305	131
5	64	384	108	28	15	11	8.4	11	11	42	745	112
6	188	328	96	28	16	10	8.4	11	10	54	285	111
7	131	226	86	25	15	9.0	18	12	9.5	31	314	111
8	293	189	62	26	15	10	25	11	8.3	19	572	100
9	573	240	71	26	15	9.8	23	11	7.0	14	210	97
10	181	312	72	25	14	9.4	21	9.3	6.6	12	369	91
11	294	175	55	25	14	9.9	20	8.0	6.5	17	568	82
12	279	153	50	24	14	9.8	30	7.5	6.8	79	299	134
13	395	272	47	26	15	10	27	6.8	6.8	40	405	197
14	281	331	46	23	14	11	21	6.6	6.5	22	715	168
15	440	276	45	24	13	11	18	6.5	6.5	17	225	107
16	775	208	43	24	13	11	15	6.8	6.5	67	217	90
17	278	203	42	21	13	12	14	6.8	5.7	172	293	120
18	271	161	41	21	13	12	12	6.6	5.0	34	794	98
19	212	145	40	20	13	14	11	6.1	5.6	43	278	109
20	217	135	39	23	13	14	13	5.4	6.3	148	268	387
21	296	128	37	26	12	13	49	5.4	5.0	32	286	463
22	208	124	36	27	12	12	24	6.5	5.2	18	228	172
23	159	119	35	29	12	11	17	41	5.7	13	393	142
24	142	115	34	33	12	10	14	46	17	11	358	140
25	162	112	34	26	13	9.2	12	25	15	9.0	218	127
26	211	111	34	23	12	9.5	11	19	12	19	335	164
27	283	115	32	20	12	9.9	11	16	24	95	693	118
28	684	149	33	19	12	9.6	9.5	15	14	24	883	107
29	1,260	150	33	18	------	9.1	9.4	14	9.9	15	355	96
30	1,100	115	32	18	------	8.7	10	16	14	72	262	119
31	1,200	------	32	16	------	8.1	------	12	------	270	210	------
TOTAL	10,907	6,833	1,741	765	388	330.0	484.2	392.3	276.9	1,659.0	11,405	4,340
MEAN	352	228	56.2	24.7	13.9	10.6	16.1	12.7	9.23	53.5	368	145
MAX	1,260	621	111	33	17	14	49	46	24	270	883	463
MIN	64	111	32	16	12	8.1	7.7	5.4	5.0	9.0	98	82
CFSM	2.93	1.90	.47	.21	.12	.09	.13	.11	.08	.45	3.07	1.21
IN.	3.38	2.12	.54	.24	.12	.10	.15	.12	.09	.51	3.54	1.35
AC-FT	21,630	13,550	3,450	1,520	770	655	960	778	549	3,290	22,620	8,610

CAL YR 1976 TOTAL 42,047.0 MEAN 115 MAX 1,260 MIN 10 CFSM .96 IN 13.03 AC-FT 83,400

WTR YR 1977 TOTAL 39,521.4 MEAN 108 MAX 1,260 MIN 5.0 CFSM .90 IN 12.25 AC-FT 78,390

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to current year.
SEDIMENT RECORDS: November 1959 to August 1967, March 1968 to January 1969, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 21...	1200	E500	335	7.4	27.0	4.5	7.8	180000	45000	5900	28
DEC 14...	1115	80	398	7.8	23.0	5.8	26	390000	68000	10000	33
JAN 06...	1500	11	--	--	24.5	--	--	--	--	--	--
FEB 11...	1030	15	530	7.7	23.0	4.6	2.6	45000	8300	1800	32
APR 20...	1100	12	698	6.7	27.0	.0	248	7600000	1300000	570000	37
JUN 02...	1355	11	650	8.1	29.0	9.8	20	210000	510	800	--
AUG 16...	1440	205	421	7.4	24.5	5.1	3.0	280000	23000	24000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 21...	27	12	2.8	194	0	159	12	20	13	27	.52
DEC 14...	37	15	2.1	278	0	228	7.0	23	17	30	.59
JAN 06...	--	--	--	--	--	--	--	--	--	--	--
FEB 11...	37	20	2.9	282	0	231	9.0	23	26	32	.99
APR 20...	40	28	8.0	244	0	200	78	9.7	32	39	.00
JUN 02...	--	25	3.0	300	0	246	3.8	29	29	34	.44
AUG 16...	--	13	3.3	197	0	162	13	27	16	28	.57

DATE	DISSOLVED NITRATE (NO3) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)
OCT 21...	--	.03	.15	.95	1.1	1.7	7.3	.20	.28	--	--
DEC 14...	.00	.04	.38	.41	.79	1.4	6.3	.34	.39	1	0
JAN 06...	--	--	--	--	--	--	--	--	--	--	--
FEB 11...	--	.11	1.0	.50	1.5	2.6	12	.72	.76	--	--
APR 20...	--	.03	.00	3.5	3.5	3.5	16	1.6	2.0	--	--
JUN 02...	--	.08	.94	.76	1.7	2.2	9.8	.91	1.1	1	0
AUG 16...	--	.05	.34	.66	1.0	1.6	7.2	.22	.29	--	--

DATE	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 21...	--	--	--	330	--	--	--	--	10	135	182
DEC 14...	10	6	14	30	.1	8	0	9	6.5	11	2.4
JAN 06...	--	--	--	--	--	--	--	--	--	13	.39
FEB 11...	--	--	--	10	--	--	--	--	9.5	44	1.8
APR 20...	--	--	--	530	--	--	--	--	11	61	2.0
JUN 02...	20	3	6	40	.0	18	0	10	6.1	56	1.7
AUG 16...	--	--	--	270	--	--	--	--	6.8	--	--

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 02...	1355	.0	0	.0	.0	.0	.0	.0	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 02...	.0	.0	.0	.0	.0	0	.0	0	0	0

E Estimated.

RIO YAGUEZ BASIN

50138500 RIO YAGUEZ AT PRESADA DE MAYAGUEZ, PR

LOCATION.--Lat 18°12'02", long 67°04'13", 0.7 mi (1.1 km) northeast of Highway 105, and 2.5 mi (4.0 km) north of Rosario.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1975 to current year.
SEDIMENT RECORDS: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
21...	1610	1.3	220	8.0	26.0	7.8	--	--	--	--	32
DEC											
14...	1440	E.40	460	7.9	27.0	9.2	1.4	900	140	170	37
FEB											
17...	1445	E.40	295	8.1	23.0	10.8	.6	4100	80	190	36
APR											
21...	1445	E.30	253	7.7	28.0	8.5	.1	23000	880	820	24
JUN											
08...	1400	E.20	320	7.5	29.0	71.0	1.5	600	160	260	30
AUG											
16...	1120	6.7	291	8.0	22.5	8.6	.6	18000	1000	3400	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
21...	8.5	9.0	2.0	--	--	--	--	7.8	6.4	26	.88
DEC											
14...	11	12	2.2	170	0	139	3.4	14	8.8	27	.91
FEB											
17...	12	25	2.6	167	0	137	2.1	33	29	26	.37
APR											
21...	7.8	15	2.2	123	0	101	3.9	14	9.0	25	.74
JUN											
08...	10	18	2.3	158	0	130	8.0	22	11	26	.15
AUG											
16...	--	9.3	1.8	130	0	107	2.1	6.7	7.4	27	.99

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
21...	.02	.03	.22	.25	1.2	5.1	.05	.05	--	--	--
DEC											
14...	.00	.00	.12	.12	1.0	4.6	.05	.05	0	0	<10
FEB											
17...	.00	.01	.13	.14	.51	2.3	.04	.04	--	--	--
APR											
21...	.00	.02	.09	.11	.85	3.8	.03	.04	--	--	--
JUN											
08...	.00	.01	.10	.11	.26	1.2	.03	.06	2	0	<10
AUG											
16...	.01	.01	.10	.11	1.1	4.9	.02	.04	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
21...	--	--	40	--	--	--	--	5.9	56	.20
DEC										
14...	2	7	0	.1	0	0	10	5.9	12	.01
FEB										
17...	--	--	10	--	--	--	--	.8	1	.00
APR										
21...	--	--	0	--	--	--	--	6.4	1	.00
JUN										
08...	2	7	0	.0	4	0	40	7.9	1	.00
AUG										
16...	--	--	20	--	--	--	--	7.1	33	.60

E Estimated.

RIO YAGUEZ BASIN

50139000 RIO YAGUEZ AT MAYAGUEZ, PR

LOCATION.--Lat 18°12'27", long 67°08'27", at bridge on old Highway 2 (Post Street), 0.3 mi (0.5 km) north of Mayaguez Plaza and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--13.2 mi^2 (34.2 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1959 to April 1966, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

REMARKS.--Water quality samples are collected 0.75 mi (1.2 km) downstream at Highway 102 bridge.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
21...	1445	E20	405	7.3	31.0	.0	28	5600000	860000	65000	30
DEC											
14...	1335	E5.0	3620	8.1	27.0	2.3	133	2500000	460000	41000	53
FEB											
17...	1330	E5.0	7300	7.7	32.0	2.0	94	78000000	940000	410000	80
APR											
21...	1315	E4.0	3040	7.3	32.0	2.0	124	11000000	2700000	100000	46
JUN											
08...	1230	E8.0	800	7.7	32.0	.3	88	24000000	4900000	100000	72
AUG											
16...	0840	26	18000	7.8	21.5	6.0	7.8	43000	6700	6100	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
21...	17	27	3.8	180	0	148	14	11	33	27	.00
DEC											
14...	95	660	30	208	0	171	2.6	180	1200	20	.17
FEB											
17...	64	1700	55	244	0	200	7.8	390	2900	23	.00
APR											
21...	69	460	24	184	0	151	15	73	930	25	.00
JUN											
08...	180	1600	56	246	0	202	7.9	340	1600	24	.00
AUG											
16...	--	7800	360	149	0	122	3.8	2000	17000	6.2	.13

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
21...	.00	.12	1.4	1.5	1.5	6.6	.24	.42	--	--	--
DEC											
14...	.08	1.5	3.0	4.5	4.8	21	.50	.69	1	0	<10
FEB											
17...	.00	3.6	3.0	6.6	6.6	29	.89	1.2	--	--	--
APR											
21...	.01	.09	4.6	4.7	4.7	21	.25	.96	--	--	--
JUN											
08...	.01	2.3	2.9	5.2	5.2	23	.83	1.4	1	0	40
AUG											
16...	.02	.40	.58	.98	1.1	5.0	.08	.20	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT										
21...	--	--	340	--	--	--	--	26	76	4.1
DEC										
14...	8	10	200	.1	2	0	30	6.0	8	.11
FEB										
17...	--	--	330	--	--	--	--	25	6	.08
APR										
21...	--	--	320	--	--	--	--	46	16	.18
JUN										
08...	4	16	230	.0	10	0	20	4.5	4	.09
AUG										
16...	--	--	330	--	--	--	--	7.5	91	6.4

E Estimated.

RIO GRANDE DE AÑASCO BASIN

50143000 RIO GRANDE DE AÑASCO NEAR LARES, PR

LOCATION.--Lat 18°15'28", long 66°55'05", at bridge on Highway 124, 0.7 mi (1.1 km) downstream from confluence of Río Blanco and Río Prieto, and 3.7 mi (6.0 km) southwest of Lares.

DRAINAGE AREA.--26.3 mi^2 (68.1 km^2) {does not include 36.2 mi^2 (93.8 km^2) which contributes only during high floods, and 3.5 mi^2 (9.1 km^2) which contributes only part of its storm runoff}.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1959 to January 1968, February 1970 to current year.
SEDIMENT RECORDS: November 1959 to December 1963, May 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 22...	1410	54	260	8.4	28.0	7.8	.7	800	110	120	34
DEC 08...	0650	32	225	7.9	19.0	8.3	1.2	1300	240	210	33
FEB 04...	0655	17	252	7.7	19.0	8.2	1.0	5600	290	670	32
APR 22...	0710	21	258	7.6	23.0	7.7	.6	25000	2900	4500	29
JUN 09...	0720	7.2	290	7.8	25.0	7.3	1.3	3700	520	340	29
AUG 16...	1415	44	250	8.3	30.0	9.1	2.5	7000	250	600	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 22...	9.6	11	1.6	126	2	107	.8	19	8.3	31	1.1
DEC 08...	9.1	--	--	148	0	121	3.0	--	--	--	.99
FEB 04...	12	13	1.5	145	0	119	4.6	23	9.7	29	.38
APR 22...	8.4	12	2.2	123	0	101	4.9	24	10	26	1.5
JUN 09...	10	15	1.3	142	0	116	3.6	29	8.6	31	.04
AUG 16...	--	11	1.4	120	0	98	1.0	14	8.4	27	.83

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 22...	.01	.01	.08	.09	1.2	5.3	.02	.02	--	--	--
DEC 08...	.00	.01	.14	.15	1.1	5.0	.04	.05	0	0	<10
FEB 04...	.00	.01	.06	.07	.45	2.0	.01	.01	--	--	--
APR 22...	.02	.05	.22	.27	1.8	7.8	.04	.07	--	--	--
JUN 09...	.00	.02	.15	.17	.21	.93	.01	.02	1	0	<10
AUG 16...	.01	.02	.20	.22	1.1	4.7	.03	.04	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 22...	--	--	20	--	--	--	--	6.6	2	.29
DEC 08...	2	8	--	.0	1	0	5	4.0	--	--
FEB 04...	--	--	10	--	--	--	--	5.8	2	.09
APR 22...	--	--	0	--	--	--	--	3.0	54	3.1
JUN 09...	2	8	30	.0	4	0	10	8.2	1	.02
AUG 16...	--	--	10	--	--	--	--	4.1	46	5.5

RIO GRANDE DE AÑASCO BASIN

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR

LOCATION.--Lat 18°17'00", long 67°03'02", on right bank, 400 ft (122 m) upstream from bridge on Highway 108, 0.3 mi (0.5 km) downstream from Quebrada La Zumbadora, 4.4 mi (7.1 km) northwest of Las Marías, 5.4 mi (8.7 km) southwest of San Sebastián.

DRAINAGE AREA.--94.3 mi^2 (244.2 km^2), does not include 36.2 mi^2 (93.8 km^2) which contributes only during high floods, and 3.5 mi^2 (9.1 km^2) which contributes only part of its storm runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1960 (discharge measurement only), March 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 103.72 ft (31.614 m) above mean sea level (Puerto Rico Department of Public Works bench mark).

REMARKS.--Records good. Transbasin diversion to Río Yauco basin for hydroelectric power and irrigation above Lagos Guayo, Yahuecas, and Prieto, combined usable storage 17,300 acre-ft (21.3 hm^3), except spills during large floods. Limited storm runoff is contributed to basin by 3.5 mi^2 (9.1 km^2) above Río Toro Diversion dam. Gaging station was destroyed during the Sept. 16, 1975 flood.

AVERAGE DISCHARGE.--14 years (1964-77), 289 ft^3/s (8.184 m^3/s), 41.62 in/yr (1,057 mm/yr), 209,400 acre-ft/yr (258 hm^3/yr); median of yearly mean discharges, 287 ft^3/s (8.13 m^3/s), 208,000 acre-ft/yr (256 hm^3/yr). The average discharge and the medians published in the 1975-76 report were in error; the correct figures are, 13 years, 293 ft^3/s (8.298 m^3/s), 42.19 in/yr (1,072 mm/yr); 294 ft^3/s (8.33 m^3/s), 213,000 acre-ft/yr (263 hm^3/yr); 287 ft^3/s (8.13 m^3/s), 208,000 acre-ft/yr (256 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 ft^3/s (3,965 m^3/s) Sept. 16, 1975, gage height, 33.9 ft (10.33 m), from rating curve extended above 4,000 ft^3/s (113 m^3/s) on basis of slope-area measurement; minimum, 31 ft^3/s (0.878 m^3/s) Apr. 19, 20, 1965, gage height, 0.88 ft (0.268 m).

EXTREMES FOR WATER YEAR 1977.--Peak discharges above base of 6,000 ft^3/s (170 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 15	1945	8,810	249	9.53	2.905	Oct. 30	1915	6,130	174	7.94	2.420
Oct. 27	1830	6,280	178	8.04	2.451	Sept. 13	2015	*9,300	263	*9.82	2.993

Minimum discharge, 39 ft^3/s (1.10 m^3/s) June 23-24, gage height, 1.32 ft (0.402 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	395	682	188	126	102	58	49	64	53	58	739	167
2	270	515	195	124	102	57	49	76	51	73	357	205
3	270	440	185	120	102	57	47	76	48	83	186	913
4	435	1,010	316	120	103	57	46	72	48	62	139	894
5	748	652	206	120	102	56	46	103	48	96	399	548
6	1,480	425	178	116	100	56	46	130	47	192	262	285
7	780	372	171	116	101	56	74	120	46	124	376	378
8	420	360	168	116	96	56	57	91	43	132	288	253
9	326	907	168	114	91	56	90	78	42	70	289	403
10	270	425	170	114	88	54	108	68	42	612	485	608
11	313	344	162	110	84	53	168	64	42	818	656	498
12	365	364	155	110	84	53	144	62	58	1,180	221	1,340
13	405	356	155	108	83	53	84	61	86	514	276	2,170
14	355	581	150	107	79	53	68	58	56	204	527	1,120
15	1,890	419	150	108	78	53	61	64	84	134	398	525
16	1,130	332	148	108	76	53	60	62	68	96	217	366
17	460	268	146	107	76	53	58	76	56	106	161	429
18	350	244	144	108	73	54	58	96	49	89	220	238
19	340	237	146	105	71	73	155	62	46	75	154	822
20	318	230	142	105	70	68	271	58	45	338	179	714
21	256	227	140	155	70	60	236	70	44	201	190	459
22	236	218	142	158	67	56	96	58	42	134	639	248
23	225	212	136	188	67	54	78	214	41	88	308	206
24	216	209	136	320	65	52	72	204	76	94	174	192
25	345	224	134	138	64	51	66	148	96	75	179	458
26	780	206	132	118	62	51	64	138	294	749	1,110	388
27	1,720	200	130	114	61	51	62	79	195	413	1,010	458
28	1,040	195	136	112	58	57	62	68	155	171	1,410	449
29	1,600	195	136	105	------	56	64	62	76	168	393	244
30	2,300	190	130	100	------	51	66	60	58	218	237	396
31	1,380	------	130	103	------	49	------	56	------	611	192	------
TOTAL	21,418	11,239	4,925	3,873	2,275	1,717	2,605	2,698	2,135	7,978	12,371	16,374
MEAN	691	375	159	125	81.3	55.4	86.8	87.0	71.2	257	399	546
MAX	2,300	1,010	316	320	103	73	271	214	294	1,180	1,410	2,170
MIN	216	190	130	100	58	49	46	56	41	58	139	167
CFSM	7.33	3.98	1.69	1.33	.86	.59	.92	.92	.76	2.73	4.23	5.79
IN.	8.45	4.43	1.94	1.53	.90	.68	1.03	1.06	.84	3.15	4.88	6.46
AC-FT	42,480	22,290	9,770	7,680	4,510	3,410	5,170	5,350	4,230	15,820	24,540	32,480

CAL YR 1976 TOTAL 100,777 MEAN 275 MAX 2,300 MIN 55 CFSM 2.92 IN 39.76 AC-FT 199,900

WTR YR 1977 TOTAL 89,608 MEAN 246 MAX 2,300 MIN 41 CFSM 2.61 IN 35.35 AC-FT 177,700

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: January 1963 to current year.
BIOLOGICAL ANALYSES: October 1974 to current year.
PESTICIDES: May 1976 to current year.
SEDIMENT RECORDS: August 1963 to September 1969, November 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	HARDNESS (CA,MG) (MG/L)	TOTAL CALCIUM (CA) (MG/L)
OCT 06...	1435	394	140	7.6	25.5	7.6	1.6	140000	27000	33000	--	20
NOV 09...	1445	353	195	8.1	26.0	7.8	--	7200	2500	390	--	--
DEC 07...	1450	171	212	8.2	26.0	9.0	.6	2300	1200	70	110	--
JAN 13...	1320	105	210	8.5	25.0	10.9	--	400	120	20	--	--
FEB 03...	1500	105	220	8.1	25.0	9.8	1.6	12000	150	40	--	23
MAR 03...	1415	57	235	8.8	27.0	11.2	--	1200	34	490	100	--
APR 06...	0645	46	223	7.7	24.0	9.8	1.7	470	70	230	--	19
MAY 04...	1200	72	247	7.9	27.5	9.2	--	3300	130	81	--	--
JUN 08...	1650	42	252	8.4	31.0	8.4	2.4	1200	230	930	--	21
JUL 12...	1315	285	180	7.4	26.0	8.0	--	84000	13000	48000	73	--
AUG 18...	0930	265	230	8.0	27.0	9.8	1.9	40000	2300	1400	--	--
SEP 14...	1500	702	170	7.6	24.0	8.2	--	56000	4000	8000	--	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)
OCT 06...	6.4	7.3	--	2.0	84	0	69	3.4	8.3	5.0	23	--
NOV 09...	--	--	--	--	116	0	95	1.5	--	--	--	--
DEC 07...	--	9.4	.4	1.7	128	0	105	1.3	9.6	6.3	29	159
JAN 13...	--	--	--	--	120	4	105	.6	--	--	--	--
FEB 03...	9.2	10	--	1.5	127	0	104	1.6	11	6.6	28	--
MAR 03...	--	11	.5	1.4	121	10	99	.4	10	7.1	28	155
APR 06...	8.5	11	--	1.5	132	0	108	4.2	11	7.0	28	--
MAY 04...	--	--	--	--	126	0	103	2.5	--	--	--	--
JUN 08...	10	11	--	1.4	118	2	100	.8	13	7.2	28	--
JUL 12...	--	6.4	.3	1.9	72	0	59	4.6	11	6.0	17	116
AUG 18...	--	--	--	--	120	0	98	1.9	--	--	--	--
SEP 14...	--	--	--	--	80	0	66	3.2	--	--	--	--

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR-Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)
NOV 09...	1445	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 03...	1414	ND	--	ND	--	ND	--	ND	--	ND
MAY 04...	1200	ND	--	ND	--	ND	--	ND	--	ND
AUG 18...	0930	ND	--	ND	--	ND	--	ND	--	ND

DATE	DDT IN BOTTOM MATERIAL (UG/KG)	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)
NOV 09...	ND	ND	ND	ND	.0	ND	ND	ND	ND	ND
MAR 03...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 04...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 18...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)
NOV 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 03...	--	ND	--	ND	--	ND	ND	--	ND	--
MAY 04...	--	ND	--	ND	--	ND	ND	--	ND	--
AUG 18...	--	ND	--	ND	--	ND	ND	--	ND	--

DATE	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
NOV 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 03...	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 04...	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 18...	ND	--	ND	--	ND	--	ND	--	ND	--

ND--Looked for but not detected.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR-Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)
OCT 06...	--	--	--	--	--	.84	2.1	9.5	--	.11	--	--
NOV 09...	--	--	--	--	--	.19	.97	4.3	--	.06	--	--
DEC 07...	155	.77	.01	.02	.12	.14	.92	4.1	.06	.06	0	2
JAN 13...	--	.42	.01	.02	.13	.15	.58	2.6	.06	.08	--	--
FEB 03...	--	--	--	--	--	.18	.60	2.7	--	.01	--	--
MAR 03...	152	--	--	--	--	.21	.33	1.5	--	.03	0	0
APR 06...	--	--	--	--	--	.25	.25	1.1	--	.02	--	--
MAY 04...	--	--	--	--	--	.20	.35	1.6	--	.04	--	--
JUN 08...	--	.06	.00	.02	.30	.32	.38	1.7	.01	.04	1	0
JUL 12...	103	--	--	--	--	9.7	11	50	--	.32	2	0
AUG 18...	--	--	--	--	--	.75	1.4	6.3	--	.08	--	--
SEP 14...	--	--	--	--	--	.65	2.2	9.5	--	.16	0	--

DATE	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT 06...	--	--	--	--	30	--	--	--	--	4.2	298	317
NOV 09...	--	--	--	--	--	--	--	--	--	--	45	43
DEC 07...	<10	3	210	18	80	.2	--	1	10	5.2	48	22
JAN 13...	--	--	--	--	--	--	--	--	--	--	4	1.1
FEB 03...	--	--	--	--	0	--	--	--	--	2.4	28	7.9
MAR 03...	20	6	140	20	70	--	--	0	30	9.1	3	.46
APR 06...	--	--	--	--	30	--	--	--	--	--	6	.75
MAY 04...	--	--	--	--	--	--	--	--	--	7.5	34	6.6
JUN 08...	<10	3	--	8	70	.0	8	0	10	8.6	48	5.4
JUL 12...	70	61	44000	13	1000	.0	--	0	110	7.1	686	528
AUG 18...	--	--	--	--	--	--	--	--	--	5.6	113	81
SEP 14...	--	--	--	--	--	.0	--	0	--	15	424	804

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR-Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	APR 6,77	MAY 4,77	JUN 8,77	JUL 12,77	AUG 18,77	SEP 14,77
TIME	0645	1200	1650	1315	0930	1500
TOTAL CELLS/ML	34	330	5800	0	86	48000
DIVERSITY: DIVISION	0.0	0.9	0.1	0.0	0.0	0.0
.CLASS	0.0	0.9	0.1	0.0	0.0	0.0
..ORDER	0.5	0.9	0.1	0.0	0.0	0.0
...FAMILY	2.1	1.5	0.1	0.0	2.3	1.0
....GENUS	2.1	1.5	0.1	0.0	2.9	1.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....GLOEOACTINIUM	--	-	--	-	5700#	98	--	-	--	-	--	-
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	24000#	50
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	24000#	50
..TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...VOLVOCACEAE												
....GONIUM	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....STAURASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	3	10	--	-	44	1	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	7#	20	12	4	--	-	--	-	9	10	--	-
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-	9	10	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	6	2	--	-	--	-	17#	20	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	7#	20	17	5	44	1	--	-	9	10	--	-
...NAVICULACEAE												
....CALONEIS	--	-	--	-	--	-	--	-	9	10	--	-
....DIPLONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-	--	-	9	10	--	-
....NAVICULA	3	10	23	7	--	-	--	-	17#	20	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	14#	40	35	11	--	-	--	-	9	10	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	230#	71	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR-Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 6,76	NOV 9,76	DEC 7,76	JAN 13,77	FEB 3,77	MAR 3,77
TIME	1435	1445	1450	1320	1500	1415
TOTAL CELLS/ML	0	540	50	180	310	270
DIVERSITY: DIVISION	0.0	0.6	0.0	0.3	0.5	0.5
.CLASS	0.0	0.6	0.0	0.3	0.5	0.5
..ORDER	0.0	2.0	0.6	0.3	0.5	0.9
...FAMILY	0.0	2.4	2.4	2.4	2.7	2.9
....GENUS	0.0	2.4	2.4	2.7	2.9	3.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-	--	-
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	4	1	--	-
....OOCYSTIS	--	-	41	8	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	140#	27	--	-	--	-	--	-	--	-
..TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	--	-	220#	40	--	-	--	-	--	-	--	-
..VOLVOCALES												
...VOLVOCACEAE												
....GONIUM	--	-	41	8	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....STAURASTRUM	--	-	10	2	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	31	6	7	14	--	-	--	-	4	2
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	18	7
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	4	2
....COCCONEIS	--	-	--	-	2	5	19	10	45	15	31	11
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	27	15	21	7	--	-
....CYMBELLA	--	-	--	-	--	-	5	3	12	4	26	10
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	3	1	--	-	9	3
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	5	3	--	-	--	-
....SYNEDRA	--	-	31	6	7	14	11	6	87#	28	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	10	2	11#	23	8	4	33	11	70#	26
...NAVICULACEAE												
....CALONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....DIPLONEIS	--	-	--	-	--	-	--	-	--	-	4	2
....GYROSIGMA	--	-	--	-	*	0	3	1	--	-	--	-
....NAVICULA	--	-	10	2	11#	23	80#	44	54#	17	26	10
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	4	2
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	3	1	4	1	--	-
....NITZSCHIA	--	-	--	-	11#	23	11	6	21	7	48#	18
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	8	4	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	*	0	--	-	--	-	--	-	18	7
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	29	9	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	4	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

RIO GRANDE DE AÑASCO BASIN

50146100 RIO GRANDE DE AÑASCO NEAR AÑASCO, PR

LOCATION.--Lat 18°16'29", long 67°09'43", on Highway 2 bridge at Central Igualdad, and 1.5 mi (2.4 km) southwest of Añasco Plaza.

DRAINAGE AREA.--141 mi^2 (365 km^2) {does not include 39.7 mi^2 (102.8 km^2), flow mostly is diverted to the south coast}.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: September 1958 to December 1960, April 1974 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
06...	1130	E650	150	7.3	24.5	8.7	6.0	250000	61000	67000	17
DEC											
07...	1315	E282	204	7.6	24.5	6.4	1.7	6800	1300	800	45
FEB											
03...	1235	E173	308	7.2	27.0	5.4	139	10000000	3800000	15000	25
APR											
06...	1130	53	8500	4.8	32.0	.0	>279	20000000	5200000	7700000	100
JUN											
08...	1130	50	4150	7.5	31.0	2.8	7.1	78000	26000	3200	46
AUG											
18...	1300	278	230	7.6	30.0	7.0	2.8	70000	5000	19000	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT											
06...	5.8	6.5	2.6	65	0	53	5.2	7.1	6.2	17	.93
DEC											
07...	8.8	9.7	1.9	125	0	103	5.0	8.8	8.0	--	.73
FEB											
03...	11	22	2.5	138	0	113	14	9.7	28	27	.67
APR											
06...	190	1600	90	88	0	72	2230	130	2600	38	.01
JUN											
08...	82	700	28	142	0	116	7.2	170	1200	26	.04
AUG											
18...	--	10	1.9	112	0	92	4.5	9.0	11	25	.66

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT											
06...	.17	.28	2.4	2.7	3.8	17	.19	.23	--	--	--
DEC											
07...	.01	.08	.17	.25	.99	4.4	.03	.05	0	0	10
FEB											
03...	.02	.16	.10	.26	.95	4.2	.05	.05	--	--	--
APR											
06...	.01	.00	6.8	6.8	6.8	30	7.0	8.5	--	--	--
JUN											
08...	.02	.30	.90	1.2	1.3	5.6	.01	.07	1	0	<10
AUG											
18...	.03	.27	1.7	2.0	2.7	12	.05	.12	--	--	--

E Estimated.

50146100 RIO GRANDE DE AÑASCO NEAR AÑASCO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 06...	--	--	80	--	--	--	--	23	1860	3300
DEC 07...	4	14	0	.1	0	0	2	4.7	42	32
FEB 03...	--	--	10	--	--	--	--	1.8	67	31
APR 06...	--	--	200	--	--	--	--	--	549	79
JUN 08...	4	7	250	.1	4	0	30	6.3	391	53
AUG 18...	--	--	390	--	--	--	--	7.5	177	133

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 08...	1130	.0	0	.0	.0	.0	.0	.0	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 08...	.0	.0	.0	.0	.0	0	.0	0	0	0

50147000 RIO CULEBRINAS AT SAN SEBASTIAN, PR

LOCATION.--Lat 18°20'08", long 66°59'46", at bridge on Highway 109, 0.4 mi (0.6 km) southwest of San Sebastián, and 0.9 mi (1.4 km) upstream from Río Guatemala.

DRAINAGE AREA.--16.6 mi^2 (43.0 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1962 to August 1971, May 1973, March 1974 to current year.
SEDIMENT RECORDS: July 1960 to January 1967, December 1968, January 1969, June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT 07...	0730	87	222	7.8	22.5	9.1	2.7	290000	43000	59000	39
DEC 15...	0615	20	215	7.8	19.5	8.8	.3	530000	19000	3000	32
FEB 18...	0645	9.9	220	7.5	19.0	7.1	3.2	530000	39000	12000	30
APR 05...	1525	3.2	260	8.9	29.5	11.4	3.2	110000	10000	3500	30
JUN 15...	0740	76	258	7.9	23.5	9.2	1.9	130000	23000	38000	44
AUG 17...	1635	12	315	8.2	30.0	7.9	1.2	45000	5100	3500	--

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 07...	4.6	8.5	2.0	139	0	114	3.5	11	7.5	23	1.2
DEC 15...	5.6	12	2.0	138	0	113	3.5	9.0	10	41	1.3
FEB 18...	6.0	15	2.3	141	0	116	7.1	6.5	12	40	.87
APR 05...	7.7	14	2.6	96	20	112	.3	6.1	10	40	.17
JUN 15...	5.1	7.7	2.3	148	0	121	3.0	18	9.0	15	1.6
AUG 17...	--	13	2.3	166	0	136	1.7	14	11	29	.65

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 07...	.04	.08	.45	.53	1.7	7.7	.09	.09	--	--	--
DEC 15...	.02	.07	.14	.21	1.5	6.7	.03	.08	2	0	<10
FEB 18...	.05	.25	.18	.43	1.4	6.0	.13	.16	--	--	--
APR 05...	.03	.12	.48	.60	.80	3.5	.15	.17	--	--	--
JUN 15...	.04	.12	.58	.70	2.3	10	.05	.09	3	0	<10
AUG 17...	.02	.06	.40	.46	1.1	5.0	<.01	.08	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 07...	--	--	20	--	--	--	--	4.9	142	33
DEC 15...	2	8	10	.1	1	0	20	5.1	36	1.9
FEB 18...	--	--	20	--	--	--	--	1.4	37	.99
APR 05...	--	--	30	--	--	--	--	--	22	.19
JUN 15...	8	17	100	.0	9	0	20	6.9	147	30
AUG 17...	--	--	30	--	--	--	--	7.0	7	.23

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR

LOCATION.--Lat 18°21'42", long 67°05'33", on right bank, at bridge on Highway 404, 0.3 mi (0.5 km) downstream from Quebrada Yagruma, and 2.8 mi (4.5 km) southeast of Moca.

DRAINAGE AREA.--71.2 mi^2(184.4 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 45 ft (13.7 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are poor.

AVERAGE DISCHARGE.--10 years (1968-77), 267 ft^3/s (7.561 m^3/s), 50.92 in/yr (1,293 mm/yr), 193,400 acre-ft/yr (238 hm^3/yr); median of yearly mean discharges, 266 ft^3/s (7.53 m^3/s), 193,000 acre-ft/yr (238 hm^3/yr). The average discharge published in the 1975-76 report was in error; the correct figures are, 8 years, 276 ft^3/s (7.816 m^3/s), 52.64 in/yr (1,337 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,000 ft^3/s (1,954 m^3/s) Sept. 16, 1975, gage height, 36.6 ft (11.16 m) from slope-area measurement, but may have been exceeded by flood of Oct. 23, 1974, from rating curve extended above 2,600 ft^3/s (73.6 m^3/s) on basis of slope-area and contracted-opening measurements of peak flow; minimum, 19 ft^3/s (0.538 m^3/s) Apr. 22, 1975, gage height, 7.15 ft (2.179 m).

EXTREMES FOR WATER YEAR 1977.--Peak discharge above base of 11,300 ft^3/s (320 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 4	1815	11,300	320	22.16	6.754	Nov. 9	2145	12,000	340	22.48	6.852
Nov. 4	2115	*18,700	530	*25.23	7.690						

Minimum discharge, 24 ft^3/s (0.680 m^3/s) Apr. 6, gage height, 7.24 ft (2.207 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	415	176	74	62	61	37	25	35	62	175	82	222
2	549	168	72	61	58	37	24	43	65	122	71	146
3	1,040	174	462	59	55	36	26	36	60	97	55	543
4	1,560	3,950	265	61	55	35	26	35	54	81	54	639
5	1,640	525	97	56	52	35	24	70	50	73	58	945
6	507	231	126	58	59	34	26	44	49	98	124	345
7	385	178	81	58	55	33	26	35	49	243	72	278
8	392	171	76	61	51	33	27	35	48	164	102	205
9	298	2,480	78	58	51	32	64	33	47	88	338	188
10	270	564	74	50	50	32	108	32	47	100	190	445
11	275	208	69	50	50	31	111	31	54	145	89	878
12	298	180	62	50	48	31	45	31	196	216	75	1,250
13	238	170	66	50	46	30	35	31	271	368	98	600
14	186	158	80	50	46	30	38	31	360	378	82	378
15	1,090	156	84	50	45	30	33	31	280	276	136	2,270
16	318	144	80	50	42	29	31	113	941	153	98	452
17	190	142	76	48	42	29	29	129	267	332	71	275
18	168	140	78	48	40	60	30	129	140	194	106	385
19	295	128	72	46	41	40	29	55	100	138	98	271
20	194	124	75	48	42	35	207	66	84	256	72	307
21	150	126	74	66	41	31	320	83	75	370	79	217
22	142	124	74	102	42	30	59	50	70	148	684	172
23	136	122	72	150	42	28	46	355	66	114	288	154
24	134	97	65	443	41	27	38	806	64	111	122	142
25	128	81	61	100	40	26	37	842	61	101	148	132
26	238	84	61	80	40	26	35	569	80	232	280	198
27	208	80	61	72	40	26	33	215	186	110	154	198
28	160	78	66	70	36	40	33	124	169	95	270	184
29	184	76	62	70	------	36	33	93	78	72	365	132
30	1,240	74	61	69	------	28	34	73	68	55	174	561
31	302	------	61	63	------	26	------	65	------	56	176	------
TOTAL	13,330	11,109	2,865	2,359	1,311	1,013	1,632	4,320	4,141	5,161	4,811	13,112
MEAN	430	370	92.4	76.1	46.8	32.7	54.4	139	138	166	155	437
MAX	1,640	3,950	462	443	61	60	320	842	941	378	684	2,270
MIN	128	74	61	46	36	26	24	31	47	55	54	132
CFSM	6.04	5.20	1.30	1.07	.66	.46	.76	1.95	1.94	2.33	2.18	6.14
IN.	6.96	5.80	1.50	1.23	.68	.53	.85	2.26	2.16	2.70	2.51	6.85
AC-FT	26,440	22,030	5,680	4,680	2,600	2,010	3,240	8,570	8,210	10,240	9,540	26,010

CAL YR 1976 TOTAL 99,561 MEAN 272 MAX 3,950 MIN 33 CFSM 3.82 IN 52.02 AC-FT 197,500

WTR YR 1977 TOTAL 65,164 MEAN 179 MAX 3,950 MIN 24 CFSM 2.51 IN 34.05 AC-FT 129,300

NOTE.--No gage-height record Mar. 3 to Apr. 2.

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.
CHEMICAL ANALYSES: June 1967 to current year.
SEDIMENT RECORDS: March to October 1968, March 1969, January, June and December 1976, September 1977.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	TOTAL CALCIUM (CA) (MG/L)	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC												
14...	0955	82	270	7.4	24.0	8.2	35	4.5	11	2.0	7.5	8.5
MAR												
15...	1415	30	300	8.3	26.0	8.0	35	5.9	16	4.4	3.7	12
JUN												
09...	1230	44	375	7.5	29.0	5.6	43	5.7	15	3.7	11	13
SEP												
15...	1040	260	220	7.9	25.0	8.3	--	--	8.4	2.4	10	8.7

DATE	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC												
14...	35	--	--	--	--	20	--	--	--	--	31	6.9
MAR												
15...	36	--	--	--	--	20	--	--	--	--	--	--
JUN												
09...	32	0	<10	2	5	17	.0	8	0	10	--	--
SEP												
15...	25	--	--	--	--	20	--	--	--	--	168	118

RIO CULEBRINAS BASIN

50149100 RIO CULEBRINAS NEAR AGUADA, PR

LOCATION.--Lat 18°24'03", long 67°09'40", at bridge on Highway 2, and 2.3 mi (3.7 km) northeast of Aguada Plaza.

DRAINAGE AREA.--97.0 mi^2 (251.2 km^2).

PERIOD OF RECORD.--
CHEMICAL ANALYSES: April 1958, September 1958, February 1970 to current year.
SEDIMENT RECORDS: June 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL CALCIUM (CA) (MG/L)
OCT											
22...	1030	225	260	7.7	26.0	8.6	1.8	28000	11000	880	42
DEC											
15...	0940	122	--	--	21.5	--	1.2	8000	1400	2000	38
FEB											
17...	1155	81	302	7.2	27.5	4.2	124	32000000	30000	9500000	41
APR											
05...	1350	E26	438	6.6	34.5	.0	>261	10000000	32000	7700000	47
JUN											
15...	1005	430	295	7.6	26.0	7.0	3.4	420000	41000	50000	53
AUG											
17...	1125	124	292	7.7	28.0	7.2	1.2	43000	2500	3900	--

50149100 RIO CULEBRINAS NEAR AGUADA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT 22...	5.2	11	2.3	154	0	126	4.9	8.9	11	30	.82
DEC 15...	5.4	--	--	164	0	135	--	--	--	--	--
FEB 17...	5.9	15	5.6	172	0	141	17	4.5	14	32	.01
APR 05...	7.0	15	14	169	0	139	68	5.7	19	34	.00
JUN 15...	6.4	8.6	3.2	154	0	126	6.2	22	12	14	1.3
AUG 17...	--	11	2.6	150	0	123	4.8	11	13	23	.62

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)
OCT 22...	.02	.01	.25	.26	1.1	4.9	.04	.05	--	--	--
DEC 15...	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	.00	.05	2.3	2.3	2.3	10	.11	.43	--	--	--
APR 05...	.04	.11	6.1	6.2	6.2	28	.29	.62	--	--	--
JUN 15...	.09	.17	2.8	3.0	4.4	19	.06	.18	2	0	10
AUG 17...	.03	.08	1.3	1.4	2.1	9.1	.05	.08	--	--	--

DATE	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT 22...	--	--	90	--	--	--	--	4.8	81	49
DEC 15...	--	--	--	--	--	--	--	--	39	13
FEB 17...	--	--	630	--	--	--	--	42	375	82
APR 05...	--	--	1600	--	--	--	--	--	683	48
JUN 15...	18	20	410	.1	20	0	40	6.2	440	511
AUG 17...	--	--	160	--	--	--	--	6.2	95	32

DATE	TIME	ALDRIN IN BOTTOM MATERIAL (UG/KG)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	DDD IN BOTTOM MATERIAL (UG/KG)	DDE IN BOTTOM MATERIAL (UG/KG)	DDT IN BOTTOM MATERIAL (UG/KG)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	ETHION IN BOTTOM MATERIAL (UG/KG)
JUN 15...	1005	.0	0	.0	.0	.0	.0	.9	.0	.0

DATE	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	LINDANE IN BOTTOM MATERIAL (UG/KG)	MALATHION IN BOTTOM MATERIAL (UG/KG)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TRITHION IN BOTTOM MATERIAL (UG/KG)	2,4-D IN BOTTOM MATERIAL (UG/KG)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JUN 15...	.0	.0	.0	.0	.0	0	.0	0	0	0

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather record, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1977

Station number	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum Date	Gage height ft (m)	Discharge ft^3/s (m^3/s)
		Río Camuy basin					
50014000	Río Criminales near Lares, PR	Lat 18°17'57", long 66°49'22", left and right abutments on Highway 111 bridge, 3.6 mi (5.8 km) east of Lares.	4.68	1969-77	Sept. 19, 1971	11.61 (3.54)	a4,210 (119)
					Sept. 28, 1972	13.31 (4.06)	a5,970 (169)
					Sept. 8, 1973	7.00 (2.13)	a 900 (25.5)
					Sept. 16, 1975	12.53 (3.82)	a5,130 (145)
					Aug. 27, 1977	11.44 (3.49)	4,040 (114)
		Río Grande de Manatí basin					
50035950	Río Cialitos at Highway 649 at Ciales, PR	Lat 18°20'18", long 66°28'28", on left bank 150 ft (46 m) upstream from bridge, on Highway 649, 0.4 mi (0.64 km) west of Ciales Plaza.	17.0 (44.0)	1969-77	Oct. 30	9.41 (2.87)	4,510 (128)
		Río Piedras basin					
50049100	Río Piedras at Hato Rey, PR	Lat 18°24"34", long 66°04'10", on left downstream bridge on Avenida Piñero at Las Américas Expressway, and about 0.8 mi (1.3 km) southwest of Hato Rey.	15.2 (39.4)	1972-77	Apr. 10	19.93 (6.07)	8,030 (227)
50049600	Quebrada Margarita at Caparra Heights, PR	Lat 18°24'33", long 66°06'18", at bridge on Franklin D. Roosevelt Avenue, near San Patricio Plaza, Ft. Buchanan and Highway 2 interchange, and 0.1 mi (0.2 km) south of Caparra Heights.	1.82 (4.71)	1972-77	Oct. 30	6.18 (1.88)	1,840 (52.1)
		Río Herrera basin					
50062500	Río Herrera near Colonia Dolores, PR	Lat 18°21'02", long 65°52'00", on left downstream bridge on Highway 958, 2.0 mi (3.2 km) south of Colonia Dolores, and 3.2 mi (5.1 km) southwest of Río Grande.	2.75 (7.12)	1966-77	Oct. 7	9.19 (2.80)	1,110 (31.4)
		Río Espíritu Santo basin					
50064700	Quebrada Boneta at Río Grande, PR	Lat 18°22'42", long 65°49'48", at bridge on Highway 3, 0.3 mi (0.5 km) south of Río Grande Plaza and 0.4 mi (0.6 km) upstream from Río Grande	0.77 (1.99)	1965, 1967-77	Sept. 27, 1976	16.36 (4.99)	a 939 (26.6)
					May 27	15.94 (4.86)	889 (25.2)
		Río Daguao basin					
50073200	Río Daguao at Daguao, PR	Lat 18°13'42", long 65°40'39", at railroad bridge, 0.1 mi (0.2 km) downstream from bridge on Highway 3, 0.3 mi (0.5 km) east of Daguao, and 2.8 mi (4.5 km) upstream from mouth.	2.26 (5.85)	1965, 1967-77	Sept. 6	9.72 (2.96)	440 (12.5)
		Río Santiago basin					
50074000	Río Santiago at Naguabo, PR	Lat 18°12'57", long 65°43'41", at bridge on Highway 31, 0.3 mi (0.5 km) northeast of Naguabo, 0.4 mi (0.6 km) downstream from Quebrada Grande, and 2.2 mi (3.5 km) upstream from mouth.	4.99 (12.92)	1965-77	Sept. 6	8.88 (2.71)	520 (14.7)

See footnotes at end of table.

Annual maximum discharge at crest-stage partial-record stations during water year 1977--Continued

Station number	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum Date	Gage height ft (m)	Discharge ft^3/s (m^3/s)
		Río Blanco basin					
50075500	Río Blanco at Florida, PR	Lat 18°14'27", long 65°46'06", at bridge on Highway 191, 0.2 mi (0.3 km) northwest of Florida, 1.4 mi (2.2 km) upstream from Quebrada Peña Pobre, and 3.7 mi (6.0 km) northwest of Naguabo.	11.0 (28.5)	1965-77	May 23	76.77 (23.40)	8,200 (232)
		Río Maunabo basin					
50091000	Río Maunabo at Maunabo, PR	Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo, and 1.3 mi (2.1 km) upstream from mouth.	12.4 (32.1)	1965-77	Sept. 20, 1976	13.37 (4.08)	a1,640 (46.4)
					Sept. 6	10.18 (3.10)	586 (16.6)
		Río Coamo basin					
50106500	Río Coamo near Coamo, PR	Lat 18°03'52", long 66°22'10", on right downstream abutment, on Highway 153, 1.5 mi (2.4 km) south of Coamo.	46.0 (119.1)	1960, 1965-77	Oct. 8, 1972	10.80 (3.29)	a5,120 (145)
					Sept. 10, 1974	13.13 (4.00)	a8,510 (241)
					Sept. 16, 1975	11.99 (3.65)	a6,790 (192)
					1977	#	+
		Río Descalabrado basin					
50108000	Río Descalabrado near Los Llanos, PR	Lat 18°03'08", long 66°25'34", at bridge on Highway 14, 1.5 mi (2.4 km) west of Los Llanos.	12.9 (33.4)	1965-77	Oct. 6	6.64 (2.02)	922 (26.1)
		Río Bucaná basin					
50114400	Río Bucaná near Ponce, PR	Lat 18°02'18", long 60°35'12", on right bank at km 4.9, Highway 14, 2.5 mi (4.0 km) northeast of Degetau Plaza in Ponce.	25.6 (66.3)	1965-77	Oct. 8	8.06 (2.46)	4,890 (138)
		Río Portugués basin					
50115900	Río Portugués at Highway 14 at Ponce, PR	Lat 18°01'09", long 66°36'26", on left downstream side of Highway 14 bridge, 1.7 mi (2.7 km) downstream from Río Chiquito, and 0.6 mi (0.97 km) northeast of Degetau Plaza in Ponce.	18.6 (48.2)	1963-77	Oct. 8	8.76 (2.67)	1,760 (49.8)
		Río Tallaboa basin					
50121000	Río Tallaboa at Peñuelas, PR	Lat 18°03'02", long 66°43'19", on right bank, 350 ft (106.7 m) downstream from Highway 132 bridge, 0.6 mi (1.0 km) south of Peñuelas.	24.2 (62.7)	1959-77	Aug. 6	6.38 (1.94)	3,820 (108)
		Río Guayanilla basin					
50124500	Río Guayanilla at Guayanilla, PR	Lat 18°02'01", long 66°47'57", at bridge on Highway 114 (formerly Highway 2) 1.1 mi (1.8 km) northwest of Guayanilla Plaza, and 3.2 mi (5.1 km) from mouth.	20.8 (53.9)	1970-77	Oct. 8	7.95 (2.42)	5,400 (153)
		Río Culebrinas basin					
50147000	Río Culebrinas at San Sebastián, PR	Lat 18°20'08", long 69°59'46", at bridge on Highway 109, 0.9 mi (1.4 km) upstream from Río Guatemala, and 0.4 mi (0.6 km) southwest of San Sebastián.	16.7 (43.3)	1960, 1966-77	Oct. 4	18.28 (5.57)	6,330 (179)

\+ Discharge undetermined

\# Peaks not recorded

a Discharge revised

Ground Water Records

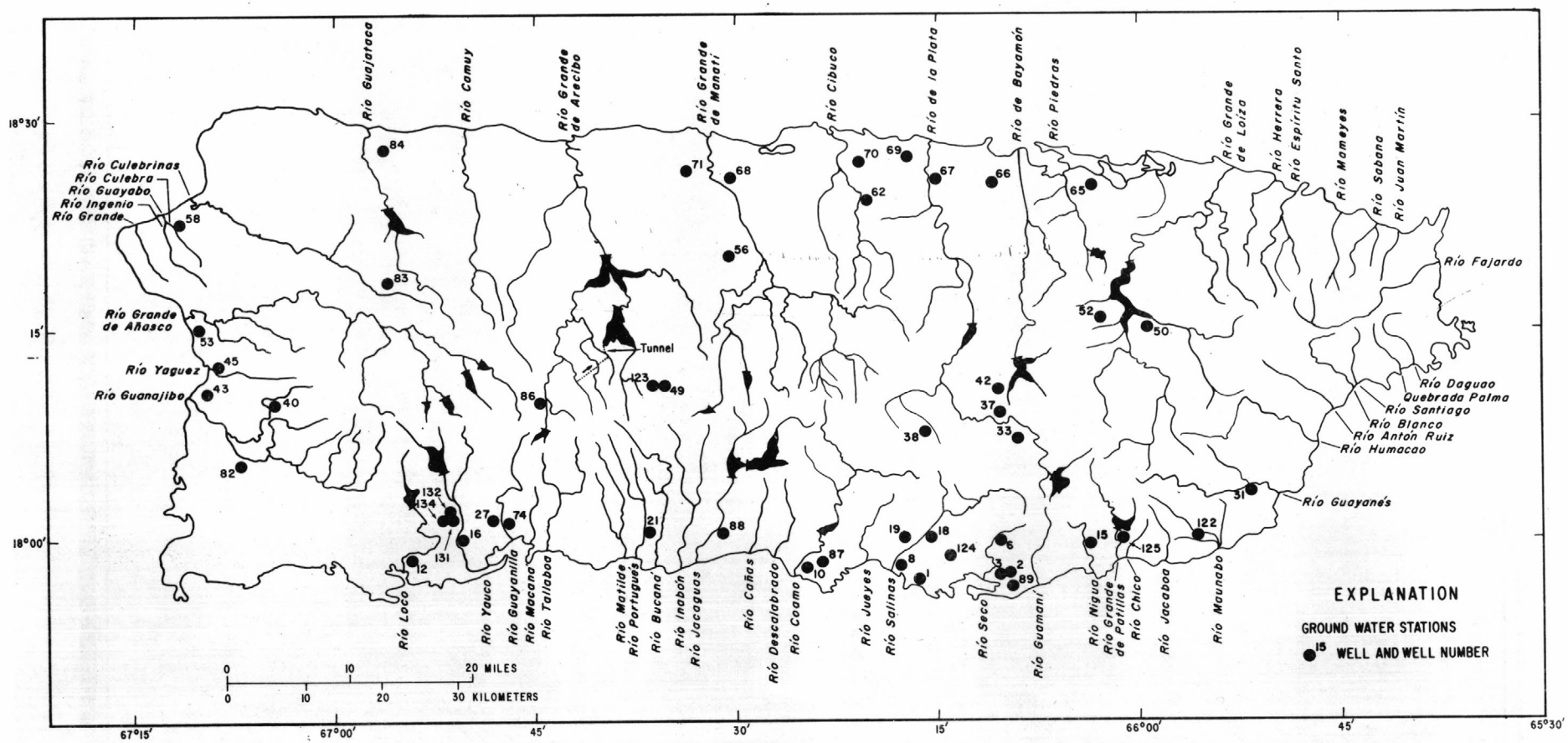

Figure 4.--Location of ground-water stations.

RIO GUAJATACA BASIN

182724066553601. Local number, 84.
LOCATION.--Lat 18°27'24", long 66°55'36".
Owner: Dámaso Soto Espiet.
Name: Quebradillas.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 0-739 ft (225.3 m), perforated 239 ft (88.1 m) to 739 ft (225.3 m). Depth 800 ft (243.8 m).
DATUM.--Altitude of land-surface datum is about 421 ft (128.3 m) above mean sea level. Measuring point: Hole in recorder platform base, 3.00 ft (0.91 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--October 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 371.9 ft (113.4 m) below land-surface datum, Nov. 15, 1976; lowest water level b375.6 ft (114.5 m) below land-surface datum, Oct. 1, 1976.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	b374.5	b372.1	372.7	373.3	372.5	373.5	374.2	374.7	373.1	b374.0	374.3	374.9
10	372.0	b372.0	372.7	373.4	372.7	373.5	374.2	374.8	373.2	373.8	374.4	375.1
15	372.1	372.0	b372.8	373.4	372.8	373.6	374.2	374.9	373.4	373.6	374.5	375.1
20	372.1	372.3	372.9	373.5	373.0	373.7	374.3	374.0	373.6	373.6	374.6	375.1
25	372.4	372.4	373.0	372.7	373.2	373.9	374.3	373.9	b373.8	373.9	374.6	375.2
EOM	372.4	372.6	373.1	372.4	373.3	374.0	374.4	373.1	b374.0	374.1	374.8	375.3

[b]Estimated.

RIO GRANDE DE ARECIBO BASIN

181305066355202. Local number, 49.
LOCATION.--Lat 18°13'05", long 66°35'52".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Jayuya 4.
AQUIFER.--Recent alluvium.
WELL CHARACTERISTICS.--Drilled unused public supply well, diameter 16 to 12 in (0.41 to 0.30 m), cased 16 in (0.41 m) 0-30 ft (0-9.1 m), 12 in (0.30 m) 0-60 ft (0-18.3 m), perforated 12 in (0.30 m) 0-60 ft (0-18.3 m). Depth 100 ft (30.5 m).
DATUM.--Altitude of land-surface datum is about 1,500 ft (426.7 m) above mean sea level. Measuring point: Lower edge of 3/4 in pipe, 1.3 ft (0.40 m) above land-surface datum to Aug. 2, 1977; changed to 1.40 ft (0.43 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well. Discontinued Nov. 19, 1975. Reactivated Mar. 16, 1977.
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 12.37 ft (3.77 m) below land-surface datum, Aug. 4, 1960; lowest water level measured 39.08 ft (11.9 m) below land-surface datum, July 16, 1962.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 16, 1977	16.42	May 5, 1977	16.00	July 21, 1977	15.30	Sept. 9, 1977	16.27
Apr. 6	16.37	June 8	16.07	Aug. 2	16.10		

181038066441201. Local number, 86.
LOCATION.--Lat 18°10'38", long 66°44'12".
Owner: Joaquín Mattei - U.S. Geological Survey.
Name: Adjuntas.
AQUIFER.--Alluvium of Quaternary Age and volcanic rock of Eocene Age.
WELL CHARACTERISTICS.--Drilled test well, diameter 6 in (0.15 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 1,460 ft (445.1 m) above mean sea level. Measuring point: Bottom edge of hole in 6 in (0.15 m) casing, 1.45 ft (0.44 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 6.93 ft (2.11 m) below land-surface datum, Oct. 14, 1976; lowest water level measured 12.41 ft (3.78 m) below land-surface datum, Apr. 5, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	6.93	Jan. 12, 1977	11.55	Apr. 5, 1977	11.35	June 8, 1977	11.86
Nov. 17	9.70	Feb. 15	11.85	May 5	12.38	July 20	11.04
Dec. 15	10.85	Mar. 16	12.20				

RIO GRANDE DE ARECIBO BASIN

181307066355001. Local number, 123.
LOCATION.--Lat 18°13'07", long 66°35'50".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Jayuya 3.
AQUIFER.--Recent alluvium.
WELL CHARACTERISTICS.--Drilled for public supply well, diameter 10 in (0.25) 0-27 ft (0-8.2 m), 10 in (0.25 m) 27-110 ft (8.2-33.5 m) perforated and all gravel packed.
DATUM.--Altitude of land-surface datum is about 1,400 ft (427 m) above mean sea level. Measuring point: Lower edge 0.75 in (0.02 m) pipe on concrete pump base, 1.40 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--January 15, 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 16.65 ft (5.07 m) below land-surface datum, Sept. 9, 1976; lowest water level a49.36 ft (15.04 m) below land-surface datum, Apr. 21, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 13, 1976	a32.61	Jan. 13, 1977	a42.32	Mar. 16, 1977	37.11	June 8, 1977	a42.48
Nov. 17	a42.40	Feb. 15	35.60	May 5	a44.00	July 21	33.40
Dec. 15	a43.00						

[a]Pumping.

RIO GRANDE DE MANATI BASIN

182231066312501. Local number, 56.
LOCATION.--Lat 18°22'31", long 66°31'25".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Montebello.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 12 in (0.30 m) cased to 123 ft (37.5 m). Depth 215 ft (65.6 m).
DATUM.--Altitude of land-surface datum is about 656 ft (199.9 m) above mean sea level. Measuring point: 1.0 in (2.54 cm) hole in pump base, 1.7 ft (0.52 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--January 1960-1972, April 21, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 77.4 ft (23.6 m) below land-surface datum, Sept. 1, 1965; lowest water level measured a243.4 (74.21 m) below land-surface datum, Sept. 13, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	a230.3	Jan. 10, 1977	a266.7	Apr. 7, 1977	a234.3	July 13, 1977	a238.0
Nov. 15	a229.6	Feb. 10	a230.1	May 16	225.4	Aug. 9	a241.7
Dec. 9	a231.4	Mar. 17	226.6	June 3	a235.8	Sept. 13	a243.4

[a]Pumping.

182548066300201. Local number, 68.
LOCATION.--Lat 18°25'48", long 66°30'02".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Manatí 2.
AQUIFER.--Unconsolidated deposits of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 20 to 12 in (0.51 m to 0.30 m), cased 20 in (0.51 m), 8-168 ft (2.4-51.2 m); 12 in (0.30 m) 153-206 ft (46.6-62.8 m); perforated 20 in (0.51 m) 80-168 ft (24.4-51.2 m), 12 in (0.30 m), 153-206 ft (46.6-62.8 m). Depth 212 ft (64.6 m).
DATUM.--Altitude of land-surface datum is about 33 ft (10.1 m) above mean sea level. Measuring point: Bottom edge of hole in 20 in (0.51 m) casing, 4.5 ft (1.37 m) above land-surface datum to June 10, 1976; changed to 3.55 ft (1.08 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Lowest and highest water levels are pumping levels.
PERIOD OF RECORD.--October 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a22.50 ft (6.86 m) below land-surface datum, June 2, 1965; lowest water level measured a37.19 ft (11.3 m) below land-surface datum, Jan. 15, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	a29.95	Jan. 10, 1977	a30.22	Apr. 7, 1977	a29.83	July 13, 1977	a29.75
Nov. 15	a29.49	Feb. 10	a30.21	May 10	a31.83	Aug. 9	a32.70
Dec. 9	a31.14	Mar. 17	a31.83	June 7	a28.71	Sept. 12	a32.57

[a]Pumping.

RIO GRANDE DE MANATI BASIN

182603066333601. Local number, 71.
LOCATION.--Lat 18°26'03", long 66°33'36".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Florida Afuera, Barceloneta.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 12 in (0.30 m), cased 0-150 ft (0-45.7 m). Depth 235 ft (71.6 m).
DATUM.--Altitude of land-surface datum is about 213 ft (64.9 m) above mean sea level. Measuring point: Lower edge of 0.75 in (0.02 m) pipe in pump base, 2.6 ft (0.79 m) above land-surface datum to July 13, 1976, changed to 3.0 ft (0.91 m) above land surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--March 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 191.85 ft (58.5 m) below land-surface datum, May 26, 1970; lowest water level measured 226.9 ft (69.2 m) below land-surface datum, Apr. 4, 1963.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	a198.2	Jan. 11, 1977	a202.2	May 4, 1977	a201.6	Aug. 9, 1977	a200.4
Nov. 15	a199.0	Mar. 17	198.2	June 8	a200.4	Sept. 13	a200.2
Dec. 14	a199.0	Apr. 7	198.0	July 21	a200.6		

[a]Pumping.

RIO CIBUCO BASIN

182446066194801. Local number, 62.
LOCATION.--Lat 18°24'46", long 66°19'48".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Vega Alta 1.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (0.41 to 0.30 m), cased 16 in (0.41 m) 0-50 ft (0-15.2 m), 12 in (0.30 m) 0-110 ft (0-33.5 m). Depth 210 ft (64.1 m).
DATUM.--Land-surface datum is about 102 ft (31.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (0.02 m) pipe in pump base, 1.5 ft (0.46 m) above land-surface datum to Aug. 4, 1964, changed to 1.0 ft (0.30 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--January 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 83.55 ft (25.5 m) below land-surface datum, Mar. 1, 1966; lowest water level measured 134.15 ft (40.9 m) below land-surface datum, Aug. 11, 1976

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8, 1976	a109.5	Jan. 5, 1977	a113.7	May 10, 1977	a119.0	Aug. 19, 1977	a114.0
Nov. 15	a112.3	Feb. 10	a118.7	June 3	a120.0	Sept. 12	a111.0
Dec. 9	a117.0	Apr. 7	a119.0	July 14	a114.0		

[a]Pumping.

182647066201701. Local number, 70.
LOCATION.--Lat 18°26'47", long 66°20'17".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Sabana Hoyos.
AQUIFER.--Limestone of Tertiary Age..
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in (0.20 m), cased 0-90 ft (0-27.4 m), perforated. Depth 90 ft (27.42 m).
DATUM.--Altitude of land-surface datum is about 49 ft (14.9 m) above mean sea level. Measuring point: Top of 8.0 in (0.20 m) liner, 1.7 ft (0.52 m) above land-surface datum, February 1960 to Oct. 27, 1967; top of casing wooden cover, 1.9 ft (0.58 m) above land-surface datum to Dec. 9, 1974; 1.30 ft (0.40 m) thereafter caused by landfill around well house.
REMARKS.--Recording observation well. Measuring point revised.
PERIOD OF RECORD.--February 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 21.33 ft (6.50 m) below land-surface datum, Oct. 26, 1976; lowest water level 31.10 ft (9.48 m) below land-surface datum, July 31, 1975.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	29.48	29.28	29.62	29.70	29.46	29.88	29.92	30.13	30.25	30.38	30.28	30.01
10	29.46	29.32	29.65	29.76	29.53	29.91	29.98	30.15	30.29	30.41	30.28	29.94
15	29.38	29.40	29.64	29.82	29.59	29.97	30.04	30.19	30.32	30.42	30.17	29.91
20	29.32	29.46	29.65	29.78	29.67	29.81	30.08	30.25	30.34	30.41	30.09	29.90
25	29.36	29.54	29.67	29.57	29.74	29.80	30.07	30.26	30.36	30.39	29.97	29.90
EOM	29.38	29.59	29.67	29.43	29.80	29.84	30.09	30.21	30.37	30.35	29.96	29.88

180707066084201. Local number, 33.
LOCATION.--Lat 18°07'07", long 66°08'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Cayey 10.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (0.41 m to 0.30 m), cased 16 in (0.41 m) 0-30 ft (0-9.1 m), 12 in (0.30 m) 0-200 ft (0-61.0 m), perforated 30-200 ft (9.1-61.0m), gravel packed 0-190 ft (0-57.9 m). Depth 220 ft (67.1 m).
DATUM.--Altitude of land-surface datum is about 1,280 ft (390.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.91 cm) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 1.49 ft (0.45 m) below land-surface datum, Jan. 18, 1961; lowest water level measured a169.2 ft (51.6 m) below land-surface datum, Dec. 10, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 17, 1976	a153.8	Feb. 22, 1977	a105.8	May 7, 1977	a 77.0	July 5, 1977	a 80.0
Dec. 10	a169.2	Apr. 15	a 76.1	June 4	a 78.1	Sept. 13	a 73.6
Jan. 4, 1977	a103.8						

[a]Pumping.

180853066095401. Local number, 37.
LOCATION.--Lat 18°08'53", long 66°09'54".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Barrio Rincón de Cidra.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled water supply water-table well, diameter 16 to 8.0 in (0.41 m to 0.20 m), cased 16 in (0.41 m) 0-30 ft (0-9.1 m), 12 in (0.30 m) 0-43 ft (0-13.1 m), perforated 0-43 ft (0-13.1 m). Depth 200 ft (61.0 m).
DATUM.--Altitude of land-surface datum is about 1,180 ft (359.7 m) above mean sea level. Measuring point: Lower edge at 0.75 in (1.91 cm) pipe, 1.9 ft (0.58 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--June 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 18.47 ft (5.63 m) below land-surface datum, Nov. 16, 1966; lowest water level measured 62.87 ft (19.2 m) below land-surface datum, July 5, 1961.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1976	25.11	Jan. 4, 1977	24.61	May 6, 1977	25.22	July 5, 1977	23.99
Nov. 17	23.85	Feb. 22	25.95	June 4	24.85	Sept. 13	25.01
Dec. 8	23.96	Apr. 15	25.34				

180823066154601. Local number, 38.
LOCATION.--Lat 18°08'23", long 66°15'46".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Barrio Robles.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 10 in (0.25 m). Depth 82 ft (25.0 m).
DATUM.--Altitude of land-surface datum is about 1,980 ft (603.7 m) above mean sea level. Measuring point: Top of casing at land-surface datum to June 28, 1972, changed to 1.90 ft (0.58 m) above land-surface datum to Mar. 3, 1976; top of shelter floor, changed to 2.00 ft (0.61 m) above land-surface datum to Sept. 7, 1976; changed to 2.10 ft (0.64 m) above land-surface datum to July 28, 1977; changed to 1.80 ft (0.55 m) above land-surface datum, top clean-out door sill, thereafter.
REMARKS.--Recording observation well. Large fluctuations caused by pumping of nearby wells.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.60 ft (1.10 m) above land-surface datum, Sept. 6, 1960; lowest water level 51.47 ft (15.69 m) below land-surface datum, Sept. 30, 1977.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	6.55	11.65	10.45	16.22	16.72	33.45	b42.10	47.92	49.65	b47.70	46.68	46.95
10	5.99	14.30	12.84	12.11	13.62	33.94	b44.80	47.45	49.10	46.70	46.72	46.96
15	5.22	14.11	15.51	12.85	14.30	33.10	b46.70	46.70	b49.40	46.52	46.81	46.92
20	8.77	14.65	14.00	14.77	b30.20	32.99	47.32	48.75	b48.80	46.49	46.89	48.20
25	b10.70	14.81	12.05	16.22	32.00	32.69	46.72	49.19	b48.70	46.57	46.88	50.88
EOM	11.32	16.26	14.21	16.20	30.64	35.44	47.25	49.41	b47.60	46.59	46.90	51.47

[b]Estimated.

RIO DE LA PLATA BASIN

182518066144201. Local number, 67.
LOCATION.--Lat 18°25'18", long 66°14'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Campanilla.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 12 in (0.30 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 390 ft (118.9 m) above mean sea level. Measuring point: Airline hole in pump base, 1.5 ft (0.46 m) above land-surface datum to Apr. 22, 1974; changed to lower edge of 0.75 in (0.02 m) pipe, 1.0 ft (0.30 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--March 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 29.63 ft (9.03 m) below land-surface datum, Apr. 4, 1962; lowest water level measured 49.9 ft (15.2 m) below land-surface datum, June 6, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	38.35	Jan. 5, 1977	38.32	Apr. 7, 1977	38.69	July 13, 1977	38.77
Nov. 11	37.93	Feb. 8	38.40	May 11	39.45	Aug. 8	38.51
Dec. 8	38.26	Mar. 10	38.83	June 3	38.97	Sept. 13	39.10

182636066164201. Local number, 69.
LOCATION.--Lat 18°26'36", long 66°16'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Higuillar.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 10 in (0.25 m). Depth 200 ft (61.0 m).
DATUM.--Altitude of land-surface datum is about 60 ft (18.3 m) above mean sea level. Measuring point: Airline hole in pump base, 1.1 ft (0.34 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 41.21 ft (12.6 m) below land-surface datum, July 3, 1958; lowest water level measured 58.57 ft (17.8 m) below land-surface datum, Aug. 13, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	a53.45	Jan. 5, 1977	44.92	Apr. 7, 1977	45.09	July 13, 1977	a53.52
Nov. 11	a53.22	Feb. 8	44.66	May 11	a53.35	Aug. 8	a53.19
Dec. 8	a44.70	Mar. 10	52.10	June 8	a53.44	Sept. 13	a53.10

[a]Pumping.

RIO DE BAYAMON AND RIO PIEDRAS BASINS

181047066091701. Local number, 42.
LOCATION.--Lat 18°10'47", long 66°09'17".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Cidra 2.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 13 in (0.33 m), cased 0-64 ft (0-19.5 m), perforated 16-64 ft (4.9-19.5 m). Depth 92 ft (28.0 m).
DATUM.--Altitude of land-surface datum is about 1,340 ft (408.4 m) above mean sea level. Measuring point: Airline hole in pump base, 1.4 ft (0.43 m) above land-surface datum.
REMARKS.Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 13.65 ft (4.16 m) below land-surface datum, Mar. 3, 1976; lowest water level measured 56.32 ft (17.2 m) below land-surface datum, Apr. 1, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1976	17.07	Jan. 4, 1977	17.63	May 6, 1977	a20.78	Aug. 11, 1977	a24.40
Nov. 17	16.50	Feb. 22	19.75	June 4	a20.45	Sept. 13	21.33
Dec. 8	a17.50	Apr. 15	19.17	July 5	a19.50		

[a]Pumping.

182506066030801. Local number, 65.
LOCATION.--Lat 18°25'06", long 66°03'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Hato Rey Central, McCracken well.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 15 in (0.38 m), cased 0-205 ft (0-62.5 m), perforated 64-205 ft (19.5-62.5 m). Depth 205 ft (62.5 m).
DATUM.--Altitude of land-surface datum is about 33 ft (10.1 m) above mean sea level. Measuring point: Top of casing 2.2 ft (0.67 m) above land-surface datum to Apr. 14, 1976, changed to 3.8 ft (1.16 m) above land-surface datum to Jan. 17, 1977, changed to 3.4 ft (1.04 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 22.40 ft (6.83 m) below land-surface datum, Aug. 12, 1976; lowest water level measured 42.40 ft (12.9 m), below land-surface datum, May 13, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1976	28.95	Jan. 17, 1977	a30.82	May 11, 1977	a31.78	Aug. 4, 1977	a29.51
Nov. 10	29.02	Feb. 8	a31.16	June 1	a29.98	Sept. 9	29.95
Dec. 6	29.21	Apr. 13	a31.95	July 7	a34.10		

[a]Pumping.

182547066110801. Local number, 66.
LOCATION.--18°25'47", long 66°11'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Sabana Seca.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well. Depth 130 ft (39.6 m).
DATUM.--Altitude of land-surface datum is about 75 ft (22.9 m) above mean sea level. Measuring point: Lower edge of 0.75 in (0.02 m) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--June 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 44.95 ft (13.7 m) below land-surface datum, Dec. 21, 1961; lowest water level measured 57.75 ft (17.6 m) below land-surface datum, Aug. 13, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	a47.13	Jan. 5, 1977	a48.55	Apr. 7, 1977	a48.59	July 13, 1977	47.53
Nove. 11	a47.86	Feb. 8	a48.02	May 11	a50.30	Aug. 8	46.92
Dec. 8	a48.02	Mar. 10	a48.70	June 3	a50.00	Sept. 13	46.36

[a]Pumping.

RIO GRANDE DE LOIZA BASIN

181550065593201. Local number, 50.
LOCATION.--Lat 18°15'50", long 65°59'32".
Owner: Gurabo Agricultural Experimental Station.
Name: Gurabo.
AQUIFER.--Unconsolidated deposits of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 13 in (0.33 m). Depth 145 ft (44.2 m).
DATUM.--Altitude of land-surface datum is about 148 ft (45.1 m) above mean sea level. Measuring point: Top of 13 in (33.02 cm) casing, 0.5 ft (0.15 m) above land-surface datum to Mar. 1, 1968, changed to top of 12 in (30.48 cm) casing, 0.8 ft (0.24 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--December 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 12.65 ft (3.86 m) below land-surface datum, Sept. 9, 1975; lowest water level measured 44.38 ft (13.5 m) below land-surface datum, June 18, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	28.20	Jan. 14, 1977	29.31	Apr. 15, 1977	36.41	July 13, 1977	34.58
Nov. 16	27.97	Feb. 15	32.99	May 4	35.45	Aug. 5	32.78
Dec. 1	28.30	Mar. 8	34.32	June 16	31.72	Sept. 16	30.40

181538066021301. Local number, 52.
LOCATION.--Lat 18°15'38", long 66°02'13".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Bairoa.
AQUIFER.--Unconsolidated deposits of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 10 in (0.41 m to 0.25 m) 0-69 ft (0-21.0 m), 79-100 ft (24.1-30.48 m), 110-116 ft (33.53-35.36 m), perforated 79-100 ft (24.08-30.48 m), screened 69-79 ft (21.03-24.08 m) and 100-110 ft (30.48-33.53 m); gravel packed to 113 ft (34.44 m). Depth 116 ft (35.4 m).
DATUM.--Altitude of land-surface datum is about 200 ft (61.0 m) above mean sea level. Measuring point: Airline hole in pump base 1.4 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 9.60 ft (2.93 m) below land-surface datum, May 20, 1976; lowest water level measured 115.1 ft (35.1 m) below land-surface datum, June 18, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	26.14	Jan. 14, 1977	27.93	May 4, 1977	a80.15	Aug. 5, 1977	a88.06
Nov. 17	29.02	Feb. 16	a80.50	June 23	a89.88	Sept. 16	a80.55
Dec. 1	14.77	Mar. 8	a82.20	July 13	a79.83		

[a]Pumping.

175735066095901. Local number, 2.
LOCATION.--Lat 17°57'35", long 66°09'59".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Puente Jobos.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 21 in (0.30 m). Depth 148 ft (45.1 m).
DATUM.--Altitude of land-surface datum is about 26 ft (7.9 m) above mean sea level. Measuring point: Bottom edge of 0.88 in (2.24 cm) pipe, 1.7 ft (0.52 m) above land-surface datum.
REMARKS.--Observation well. Lowest water level is a pumping level.
PERIOD OF RECORD.--February 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 3.32 ft (1.01 m) below land-surface datum, July 7, 1972; lowest water level measured 61.78 ft (18.8 m) below land-surface datum, Aug. 6, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	7.45	Jan. 10, 1977	6.15	May 6, 1977	8.45	Aug. 11, 1977	9.83
Nov. 9	5.67	Feb. 15	6.91	May 31	8.50	Sept. 12	7.93
Dec. 8	5.62	Apr. 12	8.37	July 7	10.15		

175734066100401. Local number, 3.
LOCATION.--Lat 17°57'34", long 66°10'04".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Jobos.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Bored unused artesian well, diameter 4 in (0.10 m). Depth 16 ft (4.9 m).
DATUM.--Altitude of land-surface datum is about 25 ft (7.6 m) above mean sea level. Measuring point: Top of 5 in (0.13 m) fitting, 0.3 ft (0.09 m) above land-surface datum to Jan. 11, 1972; changed to top of 5 in (0.13 m) fitting, 0.5 ft (0.15 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 0.01 ft (0.03 cm) below land-surface datum, Jan. 3, 1963; lowest water level: dry at 16 ft (4.9 m) below land-surface datum, many days during 1968 and 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	3.60	Jan. 10, 1977	2.27	May 6, 1977	4.53	Aug. 11, 1977	5.44
Nov. 9	1.89	Feb. 15	3.09	May 31	4.52	Sept. 12	3.48
Dec. 8	1.90	Apr. 12	3.56	July 7	6.43		

175858066100201. Local number, 6.
LOCATION.--Lat 17°58'58", long 66°10'02".
Owner: Doctor Bruno.
Name: Juana 5.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m). Depth 173 ft (52.7 m) reported, 110 ft (33.53 m) measured.
DATUM.--Altitude of land-surface datum is about 127 ft (38.7 m) above mean sea level. Measuring point: Top of casing, 1.3 ft (0.40 m) above land-surface datum to Nov. 15, 1962; changed to 2.9 ft (0.88 m) above land-surface datum to Mar. 27, 1975, lower edge of access hatch; changed to 4.4 ft (1.34 m) above land-surface datum to Mar. 17, 1976, top of shelter floor; changed to 3.0 ft (0.91 m) above land-surface datum, thereafter.
REMARKS.--Recorder installed Jan. 25, 1962. Revised measuring point.
PERIOD OF RECORD.--November 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 29.76 ft (9.07 m) below land-surface datum, Nov. 15, 1960; lowest water level measured 65.95 ft (20.1 m) below land-surface datum, June 2, 1968.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	51.40	b49.90	50.92	51.73	51.74	53.76	56.37	51.75	48.58	52.57	55.77	56.90
10	b51.50	b49.80	50.65	52.02	51.78	54.36	56.96	52.69	50.55	51.55	55.53	57.46
15	b51.40	b49.90	50.51	51.96	51.61	54.83	54.14	52.42	51.63	52.07	55.38	57.60
20	b51.10	b50.10	50.51	51.88	51.84	52.61	50.91	52.56	52.47	52.84	54.79	54.73
25	b50.70	b50.30	50.82	51.59	52.55	54.71	50.29	51.38	53.04	53.66	54.42	53.68
EOM	b50.20	b50.60	51.18	51.50	52.99	55.74	51.00	50.89	53.62	54.78	56.05	54.70

[b]Estimated.

175944066033601. Local number, 15.
LOCATION.--Lat 17°59'44", long 66°03'36".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Pitahaya 1.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.30 m). Depth 181 ft (55.2 m).
DATUM.--Altitude of land-surface datum is about 130 ft (39.6 m) above mean sea level. Measuring point: Top of casing 0.7 ft (0.21 m) above land-surface datum, Sept. 8, 1959 to Apr. 5, 1960; changed to top of recorder platform, 1.5 ft (0.46 m) above land-surface datum to Dec. 31, 1972, changed to 1.10 ft (0.34 m) above land-surface datum, thereafter.
REMARKS.--Recording observation well. Water levels affected by pumping of nearby well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.00 ft (0.91 m) below land-surface datum, Oct. 7, 1970; lowest water level 43.90 ft (13.38 m) below land-surface datum, May 20, 1968.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	15.02	b12.20	10.25	b16.30	22.44	21.90	23.49	28.32	18.46	28.31	29.60	b13.90
10	b17.20	10.74	9.95	18.43	23.45	22.27	27.15	28.21	19.41	28.70	29.50	b11.20
15	b17.50	8.91	10.43	19.76	23.53	22.59	27.50	28.33	20.85	29.02	29.16	11.13
20	b16.20	9.64	11.20	20.38	21.31	22.55	27.69	28.65	25.40	29.18	29.11	13.20
25	b15.00	10.92	12.30	20.87	21.57	22.87	27.88	28.54	26.87	29.35	b20.10	8.58
EOM	b13.60	10.59	b14.50	21.52	21.66	23.19	27.74	23.66	27.67	29.47	b16.70	9.35

[b]Estimated.

180338065523301. Local number, 31.
LOCATION.--Lat 18°03'38", long 65°52'33".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Central Roig.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 20 in (0.51 m), 0-120 ft (36.6 m), 12 in (0.30 m) 120-125 ft (36.6-38.1 m), cased 0-125 ft (0-38.1 m), perforated 40-125 ft (12.2-38.1 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 41 ft (12.5 m) above mean sea level. Measuring point: Airline hole in pump base 3.5 ft (1.07 m) above land-surface datum to June 15, 1976, changed to 4.0 ft (1.22 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Drilled 5 ft (1.52 m) into rock. Affected by nearby pumping.
PERIOD OF RECORD.--July 1959 to August 1973; April 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 5.86 ft (1.79 m) below land-surface datum, Sept. 20, 1960; lowest water level measured a50.57 ft (15.4 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8, 1976	a18.20	Feb. 9, 1977	a32.62	May 4, 1977	a34.77	Aug. 12, 1977	a47.67
Nov. 16	a20.60	Mar. 9	25.78	July 7	a50.57	Sept. 15	a39.94
Dec. 6	a21.70	Apr. 6	43.24				

[a]Pumping.

175641066085101. Local number, 89.
LOCATION.--Lat 17°56'41", long 66°08'51".
Owner: Phillips Puerto Rico Core, Inc.
Name: Phillips observation well 3.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled test well, diameter 4 in (0.10 m). Depth 114 ft (34.8 m).
DATUM.--Altitude of land-surface datum is about 6 ft (1.8 m) above mean sea level. Measuring point: Top of casing 3.00 ft (0.91 m) above land-surface datum to Apr. 19, 1978; changed to 2.25 ft (0.69 m), thereafter.
REMARKS.--Recording observation well. Measuring point revised.
PERIOD OF RECORD.--October 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level +2.70 ft (+0.82 m) above land-surface datum, Jan. 9, 1973; lowest water level 2.50 ft (0.76 m) below land-surface datum, Oct. 13, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	+0.13	+0.22	+0.06	0.53	0.51	0.57	1.00	1.62	1.75	1.99	1.61	1.12
10	+0.36	0.02	0.10	0.32	0.42	0.66	1.10	1.40	1.72	2.00	1.94	1.01
15	+0.40	+0.28	0.06	0.40	0.52	0.68	1.12	1.54	1.83	2.09	1.92	1.06
20	+0.40	+0.15	0.28	0.52	0.40	0.70	1.22	1.68	2.01	1.95	1.90	0.78
25	+0.18	+0.10	0.30	0.41	0.61	0.77	1.43	1.53	1.93	1.91	1.37	0.20
EOM	+0.16	+0.06	0.39	0.53	0.60	0.86	1.32	1.69	2.07	1.89	1.02	0.40

[+]Above land-surface datum.

SOUTHEASTERN RIVERS BASIN

RIO HUMACAO TO RIO SECO BASINS

180026065544301. Local number, 122.
LOCATION.--Lat 18°00'26", long 65°54'43".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Maunabo Calzada.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled exploration well, diameter 4 in (0.10 m). Depth 70 ft (21.3 m).
DATUM.--Altitude of land-surface datum is about 28.5 ft (8.7 m) above mean sea level. Measuring point: Top of shelter floor, 1.7 ft (0.52 m) above land-surface datum to June 15, 1976, changed to 1.4 ft (0.43 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--December 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water-level measured 2.24 ft (0.68 m) below land-surface datum, July 8, 1976; lowest water level measured 12.38 ft (3.77 m) below-land surface datum, Aug. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8, 1976	6.06	Jan. 12, 1977	5.77	Apr. 6, 1977	9.24	Aug. 12, 1977	12.38
Nov. 16	5.52	Feb. 9	10.40	May 4	11.56	Sept. 15	11.23
Dec. 6	6.35	Mar. 10	11.08				

180010066004501. Local number, 125.
LOCATION.--Lat 18°00'10", long 66°00'45".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Patillas STP.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (0.41 m), cased 0-45 ft (0-13.7 m); cased 12 in (0.30 m) 0-49 ft (0-14.9 m); perforated 49-81 ft (14.9-24.7 m). Depth 90 ft (27.4 m).
DATUM.--Altitude of land-surface datum is about 48 ft (14.6 m) above mean sea level. Measuring point: Bottom edge of 0.75 in (0.02 m) pipe in concrete pump base 1.0 ft (0.30 m) above land-surface datum.
REMARKS.--Observation well. This well substitutes Patillas 2 (Lat 18°00'18", long 66°01'02") which was clogged. Water levels affected by pumping of nearby well.
PERIOD OF RECORD.--January 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a30.42 ft (9.3 m) below land-surface datum, Nov. 9, 1976; lowest water level measured a48.75 ft (14.9 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8, 1976	a39.64	Jan. 10, 1977	a48.46	May 6, 1977	a46.70	Aug. 2, 1977	a48.34
Nov. 9	a30.42	Feb. 15	a48.74	May 31	a48.43	Sept. 12	a40.78
Dec. 8	a40.79	Apr. 12	a46.35	July 7	a48.75		

[a]Pumping.

SOUTH COAST RIVERS BASIN

RIO SALINAS TO RIO JACAGUAS BASINS

175658066155401. Local number, 1.
LOCATION.--Lat 17°56'58", long 66°15'54".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Mar Negro.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Bored unused artesian well, diameter 3 in (0.08 m). Depth 23 ft (7.0 m).
DATUM.--Altitude of land-surface datum is about 3 ft (0.91 m) above mean sea level. Measuring point: Top of 1.5 in (0.04 m) fitting, 0.75 ft (0.23 m) above land-surface datum to Mar. 16, 1967; changed to 3.3 ft (1.01 m) above land-surface datum to Sept. 17, 1976, changed to 3.2 ft (0.98 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well. Revised altitude.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +1.83 ft (+0.56 m) above land-surface datum, Dec. 2, 1970; lowest water level measured 3.60 ft (1.10 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	0.71	Jan. 10, 1977	2.13	May 31, 1977	1.79	Aug. 11, 1977	1.92
Nov. 9	1.44	Feb. 15	1.66	July 7	3.60	Sept. 12	1.67
Dec. 9	2.47	Apr. 12	2.36				

[+]Above land-surface datum.

175851066174601. Local number, 8.
LOCATION.--Lat 17°58'51", long 66°17'46".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Salinas 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (0.41 m) to 13 in (0.33 m); cased 16 in (0.41 m) 0-32 ft (0-9.8 m), 13 in (0.33 m) 25-120 ft (7.6-36.6 m); perforated 25-120 ft (7.6-36.6 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 29 ft (8.8 m) above mean sea level. Measuring point: Top of 1.0 in (0.03 m) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 11.95 ft (3.64 m) below land-surface datum, Dec. 14, 1960; lowest water level measured 42.95 ft (13.1 m) below land-surface datum, Dec. 9, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	a28.99	Jan. 10, 1977	a37.10	May 10, 1977	a35.13	Aug. 11, 1977	a35.57
Nov. 9	a28.98	Feb. 15	a42.15	May 31	a35.38	Sept. 13	a41.09
Dec. 9	a29.82	Apr. 12	a36.52	July 7	a37.82		

[a]Pumping.

175823066241801. Local number, 10.
LOCATION.--Lat 17°58'23", long 66°24'18".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Santa Isabel 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 13 in (0.33 m), cased 0-200 ft (0-61.0 m), perforated 128-200 ft (39.0-61.0 m). Depth 202 ft (61.6 m).
DATUM.--Altitude of land-surface datum is about 36 ft (11.0 m) above mean sea level. Measuring point: Airline hole in pump base, 1.1 ft (0.34 m) above land-surface datum to Dec. 1, 1971; changed to 1.45 ft (0.44 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well. Discontinued Jan. 11, 1977.
PERIOD OF RECORD.--September 1958 - April 1972. February 1974 to January 11, 1977.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 5.82 ft (1.77 m) below land-surface datum, Dec. 14, 1960; lowest water level measured 55.34 ft (16.9 m) below land-surface datum, June 24, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO JANUARY 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	46.84	Nov. 9, 1976	43.20	Dec. 9, 1976	43.60	Jan. 11, 1977	44.99

180044066153401. Local number, 18.
LOCATION.--Lat 18°00'44", long 66°15'34".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Cocos.
AQUIFER.--Alluvium of Quaternary Age and undifferentiated rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (0.41 to 30 m), cased 16 in (0.41 m) 0-40 ft (0-12.2 m), 12 in (0.30 m) 0-53 ft (0-16.2 m), perforated 32-53 (9.8-16.2 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 140 ft (42.7 m) above mean sea level. Measuring point: Top edge of 1.0 in (2.54 cm) in pump base, 1.5 ft (0.46 m) above land-surface datum to Dec. 1, 1971, changed to top of 1.0 in (2.54 cm) pipe in pump base, 1.25 ft (0.38 cm) above land-surface datum, thereafter.
REMARKS.--Observation well. Water level affected by nearby pumpage.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 14.67 ft (4.47 m) below land-surface datum, Sept. 20, 1960; lowest water level measured 79.17 ft (24.1 m) below land-surface datum, June 19, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	32.27	Jan. 10, 1977	31.00	May 10, 1977	37.83	Aug. 11, 1977	39.81
Nov. 9	26.82	Feb. 15	34.98	May 31	38.40	Sept. 13	39.51
Dec. 9	27.15	Apr. 12	36.67	July 7	38.35		

180023066175301. Local number, 19.
LOCATION.--Lat 18°00'23", long 66°17'53".
Owner: U.S. Army.
Name: Theater 1.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 to 11 in (40.64 to 27.94 cm), cased 16 in (40.64 cm) 0-64 ft (0-19.51 m), 11 in 0-80 ft (0-24.3 m), perforated 16-64 ft (4.88-19.51 m). Depth 150 ft (45.7 m) reported, 86 ft (26.2 m) measured.
DATUM.--Altitude of land-surface datum is about 140 ft (42.68 m) above mean sea level. Measuring point: Top of casing, 1.0 ft (0.30 m) above land-surface datum to Jan. 11, 1972; changed to top of 1.0 in (2.54 cm) casing liner, 0.85 ft (0.26 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Revised altitude.
PERIOD OF RECORD.--December 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 44.70 (13.6 m) below land-surface datum, Dec. 2, 1970; lowest water level 79.15 ft (24.1 m) below land-surface datum, Oct. 10, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	50.94	Jan. 10, 1977	52.48	May 10, 1977	53.84	Aug. 11, 1977	54.90
Nov. 9	49.68	Feb. 15	56.01	May 31	61.54	Sept. 13	58.63
Dec. 9	51.45	Apr. 12	55.80	July 7	61.57		

175829066232201. Local number, 87.
LOCATION.--Lat 17°58'29", long 66°23'22".
Owner: Francisco Alomar.
Name: Alomar 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well. Depth 112 ft (34.1 m).
DATUM.--Altitude of land-surface datum is about 35.32 ft (10.77 m) above mean sea level. Measuring point: Bottom clean-out door, 2.4 ft (0.73 m) above land-surface datum to Nov. 9, 1976; changed to 4.0 ft (1.22 m) above land-surface datum, top of recorder shelter floor, thereafter.
REMARKS.--Recording observation well. Revised datum above mean sea level and measuring point.
PERIOD OF RECORD.--April 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.45 ft (2.58 m) below land-surface datum, Dec. 10, 1970; lowest water level 49.18 ft (15.0 m) below land-surface datum, July 27, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	b41.70	b36.20	38.45	40.43	41.09	41.70	42.32	43.65	41.50	44.16	b46.30	44.99
10	b40.00	36.43	39.28	40.82	41.10	40.23	41.50	43.87	42.68	45.11	b46.40	45.36
15	b37.58	35.07	39.51	41.33	41.62	39.50	41.90	44.37	42.67	b45.30	46.19	45.82
20	b36.40	35.92	39.78	41.29	42.00	40.59	b42.60	44.78	42.78	b45.40	46.81	45.92
25	b36.30	36.91	40.19	40.98	41.63	41.90	b43.00	42.99	44.08	b45.80	45.10	43.91
EOM	b36.30	37.65	40.30	41.00	41.00	41.73	43.20	41.75	44.61	b46.20	44.27	43.99

bEstimated.

180052066305001. Local number, 88.
LOCATION.--Lat 18°00'52", long 66°30'50".
Owner: Luce and Co.
Name: Hacienda Potala.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 19 in (0.48 m). Depth 143 ft (43.6 m).
DATUM.--Altitude of land-surface datum is about 15 ft (4.6 m) above mean sea level. Measuring point: Top of shelter floor, 2.70 ft (0.82 m) above land-surface datum to Jan. 17, 1971; changed to 2.20 ft (0.67 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Station discontinued, Jan 1, 1973. Reactivated, Apr. 15, 1976.
PERIOD OF RECORD.--May 1968, January 1973; April 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 4.50 ft (1.37 m) below land-surface datum; Feb. 26, 1971; lowest water level measured 37.89 ft (11.6 m) below land-surface datum, July 16, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO JUNE 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	36.09	Jan. 5, 1977	29.56	May 6, 1977	36.70	Aug. 10, 1977	31.19
Nov. 10	30.95	Feb. 16	31.33	June 3	35.48	Sept. 8	28.52
Dec. 9	29.19	Apr. 12	34.12	July 1	35.21		

SOUTH COAST RIVERS BASIN

RIO SALINAS TO RIO JACAGUAS BASINS

175822066134801. Local number, 124.
LOCATION.--Lat 17°58'22", long 66°13'48".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Coquí 2.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (0.40 to 0.30 m), cased 16 in (0.40 m) 20-40 ft (6.1-12.2 m), 12 in (0.30 m) 2-20 ft (0.61-6.1 m); perforated 20-188 ft (6.1-36.0 m). Depth 118 ft (36.0 m).
DATUM.--Altitude of land-surface datum is about 26 ft (7.9 m) above mean sea level. Measuring point: Airline hole in pump base, 1.8 ft (0.55 m) above land-surface datum to June 10, 1976; changed to 2.2 ft (0.67 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--April 24, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a16.44 ft (5.01 m) below land-surface datum, Oct. 6, 1976; lowest water level measured a54.70 ft (16.68 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1976	a16.44	Jan. 10, 1977	a38.87	May 6, 1977	a51.40	Aug. 11, 1977	a24.32
Nov. 9	a30.50	Feb. 15	a44.15	May 31	a53.70	Sept. 12	a21.55
Dec. 8	a33.30	Apr. 12	a49.20	July 7	a54.70		

[a]Pumping.

RIO INABON TO RIO LOCO BASINS

175858066541201. Local number, 12.
LOCATION.--Lat 17°58'58", long 66°54'12".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Guánica 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 13 in (0.41 to 0.33 m), cased 16 in (0.41 m) 0-32 ft (0-9.8 m), 13 in (0.33 m) 25-114 ft (7.6-34.8 m), perforated 25-112 ft (7.6-34.2 m). Depth 120 ft (36.6 m) reported; 114 ft (34.8 m) measured.
DATUM.--Altitude of land-surface datum is about 23 ft (7.0 m) above mean sea level. Measuring point: Airline hole in pump base, 3.0 ft (0.91 m) above land-surface datum to June 17, 1976; changed to 2.2 ft (0.67 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Discontinued Feb. 19, 1977.
PERIOD OF RECORD.--August 1958 to February 1977.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 6.32 ft (1.93 m) below land-surface datum, Oct. 2, 1963; lowest water level measured 39.35 ft (11.99 m) below land-surface datum, Mar. 3, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO FEBRUARY 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 15, 1976	a24.35	Dec. 14, 1977	a25.80	Jan. 6, 1977	a28.28	Feb. 19, 1977	a29.60
Nov. 11	a14.18						

[a]Pumping.

175922066495901. Local number, 16.
LOCATION.--Lat 17°59'22", long 66°49'59".
Owner: Sucesión Lluveras.
Name: Central San Francisco.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 20 in (0.51 m). Depth 185 ft (56.4 m).
DATUM.--Altitude of land-surface datum is about 29.6 ft (9.0 m) above mean sea level. Measuring point: Top of shelter's wooden base 3.60 ft (1.10 m) above land-surface datum through October 4, 1972; changed to 4.06 ft (1.24 m) above land-surface datum, thereafter.
REMARKS.--Recording observation well (Nov. 9, 1960 to Mar. 23, 1965). Water levels affected by pumpage of nearby wells.
PERIOD OF RECORD.--November 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 1.43 ft (0.44 m) below land-surface datum, Dec. 22, 1960; lowest water level measured 35.76 ft (10.9 m) below land-surface datum, Mar. 7, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 11, 1976	7.89	Feb. 23, 1977	19.39	June 3, 1977	14.24	Aug. 15, 1977	19.56
Dec. 14	11.37	Apr. 11	19.98	June 29	26.27	Sept. 9	21.26
Jan. 7, 1977	20.15						

180057066361101. Local number, 21.
LOCATION.--Lat 18°00'57", long 66°36'11".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Alhambra.
AQUIFER.--Ponce Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 20 in (0.51 m), cased 300 ft (91.4 m), perforated 80-300 ft (24.4-91.4 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 53 ft (16.2 m) above mean sea level. Measuring point: Bottom edge 1.5 in (3.81 cm) pipe in concrete pump base 0.7 ft (0.21 m) below land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1958 to August 10, 1972; January 17, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 17.43 ft (5.31 m) below land-surface datum, Dec. 14, 1960; lowest water level measured 97.61 ft (29.8 m) below land-surface datum, Aug. 8, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	a53.80	Feb. 18, 1977	a58.95	May 6, 1977	a65.20	July 1, 1977	a57.90
Dec. 10	a55.90	Apr. 12	a62.40	June 3	a62.80	Aug. 3	a60.90
Jan. 5, 1977	a49.07						

[a]Pumping.

180150066474901. Local number, 27.
LOCATION.--Lat 18°01'50", long 66°47'49".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Quebradas.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (0.41 to 0.30 m), cased 16 in (0.41 m) 0-40 ft (0-12.2 m), 12 in (0.30 m) 0-120 ft (0-36.6 m), perforated 40-120 ft (12.2-36.6 m). Depth 120 ft (36.6 m).
DATUM.--Altitude of land-surface datum is about 59 ft (18.0 m) above mean sea level. Measuring point; Top of 1.0 in (2.54 cm) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum to Jan. 11, 1972; changed to 1.30 ft (0.40 m) above land-surface datum to Sept. 10, 1976; changed to 1.1 ft (0.34 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 25.72 ft (7.84 m) below land-surface datum, Oct. 8, 1959; lowest water level measured 75.1 ft (22.9 m) below land-surface datum, June 27, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 9, 1976	40.13	Feb. 23, 1977	43.13	June 3, 1977	a61.85	Aug. 3, 1977	a56.46
Dec. 15	39.83	Apr. 11	44.76	June 29	a59.90	Sept. 14	a54.13
Jan. 7, 1977	41.19	May 5	a62.50				

[a]Pumping.

180110066473501. Local number, 74.
LOCATION.--Lat 18°01'10", long 66°47'35".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Guayanilla.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (0.41 m), cased 0-103 ft (0-31.4 m), perforated 39-103 ft (11.9-31.4 m). Depth 102 ft (31.1 m).
DATUM.--Altitude of land-surface datum is about 33.8 ft (10.3 m) above mean sea level. Measuring point: Airline hole in pump base, 3.0 ft (0.91 m) above land-surface datum.
REMARKS.--Observation well. Drilled to 195 ft (59.44 m), plugged back to 102 ft (31.1 m).
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 8.56 ft (2.61 m) below land-surface datum, Oct. 21, 1960; lowest water level measured 90.50 ft (27.6 m) below land-surface datum, Aug. 13, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1976	a60.35	Feb. 23, 1977	a52.05	June 3, 1977	a59.42	Aug. 15, 1977	a60.04
Nov. 9	a49.58	Apr. 11	a52.89	June 29	a62.34	Sept. 14	a56.72
Dec. 15	a50.67	May 5	a60.60				

[a]Pumping.

180058066502701. Local number, 131.
LOCATION.--Lat 18°00'58", long 66°50'27".
Owner: Union Carbide Corporation.
Name: Yauco 1 or UCC 2.
AQUIFER.--Alluvium of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, casing slotted 20-145 ft (6.1-44.2 m), open hole below 145 ft (44.2 m). Depth 156 ft (47.6 m).
DATUM.--Altitude of land-surface datum is about 66 ft (20.1 m) above mean sea level. Measuring point: Top of 1.0 in (0.03 m) pipe, 1.70 ft (0.52 m) above land-surface datum to Oct. 1, 1973; top of 3 in (0.08 m) pipe, 2.5 ft (0.76 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 6.73 ft (2.05 m) below land-surface datum; Nov. 20, 1974; lowest water level measured 44.95 ft (13.7 m) below land-surface datum, May 20, 1974.

WATER LEVEL IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 15, 1976	33.60	Jan. 7, 1977	27.60	May 5, 1977	39.19	Aug. 15, 1977	40.19
Nov. 11	21.56	Feb. 23	32.78	June 3	38.58	Sept. 9	38.58
Dec. 14	25.08	Apr. 11	38.50	June 29	38.71		

180133066503301. Local number, 132.
LOCATION.--Lat 18°01'33", long 66°50'33".
Owner: Pittsburg Plate Glass 4.
Name: Yauco 2.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, cased 20 in (0.51 m) 0-20 ft (0-6.1 m), 12 in (0.30 m) perforated pipe 20-84 ft (6.1-25.6 m), 10 in (0.25 m) perforated pipe 84-190 ft (25.6-57.9 m). Depth 190 ft (57.9 m).
DATUM.--Altitude of land-surface datum is about 75 ft (22.9 m) above mean sea level. Measuring point: Top of shelter floor, 2.10 ft (0.64 m) above land-surface datum to Oct. 1, 1976, changed to 2.35 ft (0.72 m) above land-surface datum, thereafter.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--July 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 6.11 ft (1.86 m) below land-surface datum; Oct. 10, 1975; lowest water level 36.91 ft (11.2 m) below land-surface datum, June 27, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	25.06	16.91	16.50	b20.25	b22.70	b25.80	b28.95	30.29	29.95	31.98	31.44	25.52
10	23.59	16.51	16.80	b20.60	b22.90	b26.60	b29.35	30.18	30.20	32.10	31.20	25.38
15	21.51	16.20	17.24	b21.50	b23.10	b27.30	29.86	30.33	30.54	31.80	28.35	25.75
20	19.47	16.12	17.94	b21.70	b23.30	b28.10	29.94	30.37	30.85	31.48	28.86	25.66
25	18.91	16.07	18.58	b22.00	b24.00	28.58	30.16	29.93	31.41	31.68	27.55	25.11
EOM	17.25	16.61	19.42	b22.30	b24.40	b29.00	30.47	29.72	31.52	31.64	26.30	25.48

[b]Estimated.

180120066503201. Local number, 134.
LOCATION.--Lat 18°01'20", long 66°50'32".
Owner: Union Carbide Corporation.
Name: Yauco 4 or UCC 1.
AQUIFER.--Alluvium of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, casing slotted 20-140 ft (6.1-42.7 m) open hole 140-163 ft (42.7-49.7 m). Depth 163 ft (49.7 m).
DATUM.--Altitude of land-surface datum is about 87 ft (26.5 m) above mean sea level. Measuring point: Edge of 0.25 in (0.06 m) hole on top of casing cover 0.4 ft (0.12 m) above land-surface datum to Oct. 1, 1973; top of 3 in (0.08 m) pipe, 3.4 ft (1.04 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 8.57 ft (2.61 m) below land-surface datum; Oct. 10, 1975; lowest water level measured 37.84 ft (11.5 m) below land-surface datum, June 27, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 15, 1976	20.65	Jan. 7, 1977	24.38	May 5, 1977	35.42	Aug. 15, 1977	25.18
Nov. 11	20.75	Feb. 23	21.05	June 3	32.21	Sept. 9	26.75
Dec. 14	21.83	Apr. 11	32.35	June 29	34.15		

180933067050801. Local number, 40.
LOCATION.--Lat 18°09'33", long 67°05'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Rosario.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (0.41 to 0.30 m), cased 16 in (0.41 m) 0-30 ft (0.91 m) 12 in (0.30 m) 0-60 ft (0-18.3 m), perforated 12 in (0.30 m) 10-60 ft (3.0-18.3 m). Depth 105 (32.0 m) above mean sea level.
DATUM.--Altitude of land-surface datum is about 164 ft (50.0 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.91 cm) pipe, 2.8 ft (0.85 m) above land-surface datum to Dec. 21, 1967; changed to 2.7 ft (0.82 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1960 to November 1971; May 1973; March 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 7.91 ft (2.41 m) below land-surface datum, Nov. 6, 1974; lowest water level measured 37.30 ft (11.4 m) below land-surface datum, May 7, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 15, 1976	a13.49	Jan. 6, 1977	a14.23	May 7, 1977	11.17	July 6, 1977	10.40
Nov. 12	a13.62	Feb. 19	a14.25	June 7	a16.85	Aug. 16	a11.50
Dec. 14	a14.40	Apr. 7	10.77				

[a]Pumping.

181018067091601. Local number, 43.
LOCATION.--Lat 18°10'18", long 67°09'16".
Owner: Mayaguez Sugar Co.
Name: Central Rochelaise.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.30 m), cased 0-45 ft (13.7 m), perforated 0-45 ft (13.7 m). Depth 80 ft (24.3 m).
DATUM.--Altitude of land-surface datum is about 7 ft (2.1 m) above mean sea level. Measuring point: Top of 12 in (30.48 cm) casing, 2.2 ft (0.67 m) above land-surface datum to Jan. 11, 1972; changed to 1.9 ft (0.58 m) above land-surface datum, thereafter.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +0.34 ft (+0.10 m) above land surface datum, Oct. 5, 1972; lowest water level measured 2.70 ft (0.82 m) below land-surface datum, Apr. 15, 1970.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	+ 0.03	Jan. 6, 1977	0.20	May 7, 1977	1.60	Aug. 16, 1977	0.00
Nov. 12	+ 0.10	Feb. 19	0.10	June 7	1.66	Sept. 9	+ 0.18
Dec. 14	0.00	Apr. 7	1.66				

[+]Above land-surface datum.

180532067062401. Local number, 82.
LOCATION.--Lat 18°05'32", long 67°06'24".
Owner: U.S. Geological Survey.
Name: Cabo Rojo.
AQUIFER.--Limestone of unknown age.
WELL CHARACTERISTICS.--Drilled test well, diameter 6 in (0.15 m), cased 0-300 ft (0-91.4 m), perforated 170-300 ft (51.8-91.4 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 64 ft (19.5 m) above mean sea level. Measuring point: Hole in shelter floor, 3 ft (0.91 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--October 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.00 ft (2.44 m) below land-surface datum, Oct. 2, 1970; lowest water level 16.57 ft (5.05 m) below land-surface datum, June 22, 1977.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	12.48	10.44	11.87	13.41	14.38	15.22	15.84	15.74	15.93	16.43	15.00	12.36
10	11.76	10.85	12.17	13.62	14.55	15.27	15.82	15.80	16.13	16.40	14.38	12.63
15	11.60	10.03	12.51	13.80	14.74	15.30	15.84	15.96	16.24	15.84	13.35	12.84
20	11.01	10.67	12.84	14.02	14.84	15.29	15.83	16.07	16.51	16.00	13.29	12.76
25	10.96	11.24	12.98	13.98	14.98	15.46	15.68	15.53	16.39	16.18	12.26	11.94
EOM	9.75	11.54	13.21	14.21	15.06	15.69	15.73	15.72	16.53	16.11	11.88	12.06

RIO YAGUEZ AND RIO GRANDE DE AÑASCO BASINS

181233067083201. Local number, 45.
LOCATION.--Lat 18°12'33", long 67°08'32"
Owner: Cervecería India, Inc.
Name: Well 1, Mayaguez.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.30 m), cased 0-82 ft (0-25 m). Depth 82 ft (25.0 m).
DATUM.--Altitude of land-surface datum is about 23 ft (7.0 m) above mean sea level. Measuring point: Top of wood cover, 0.9 ft (0.27 m) above land-surface datum.
REMARKS.--Observation well. Affected by nearby pumping.
PERIOD OF RECORD.--1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 9.41 ft (2.87 m) below land-surface datum, Sept. 15, 1977; lowest water level measured 29.97 ft (9.13 m) below land-surface datum, Jan. 20, 1966.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	10.24	Jan. 5, 1977	11.73	May 7, 1977	12.95	Aug. 16, 1977	11.30
Nov. 12	11.77	Feb. 19	13.44	June 7	14.12	Sept. 15	9.41
Dec. 14	12.73	Apr. 7	12.45	July 6	12.25		

181522067090901. Local number, 53.
LOCATION.--Lat 18°15'22", long 67°09'09".
Owner: P.R. Ports Authority.
Name: Mayaguez Airport.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 8 in (0.20 m), cased 0-114 ft (0-34.8 m), perforated 82-114 ft (25.0-34.8 m), open hole 114-353 ft (34.8-106.6 m). Depth 353 ft (107.6 m).
DATUM.--Altitude of land-surface datum is about 20 ft (6.1 m) above mean sea level. Measuring point: Slot in pump base, 0.4 ft (0.12 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--October 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 1.58 ft (0.48 m) below land-surface datum, Oct. 6, 1972; lowest water level 7.92 ft (2.41 m) below land-surface datum, Apr. 11, 1963.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 15, 1976	2.31	Feb. 19, 1977	5.22	May 7, 1977	7.07	July 6, 1977	4.61
Dec. 14	3.10	Apr. 7	6.99	June 7	6.22	Sept. 15	4.50
Jan. 6, 1977	3.77						

RIO CULEBRINAS BASIN

182228067113301. Local number, 58.
LOCATION.--Lat 18°22'38", long 67°11'33".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Aguada.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 20 in (0.51 m) to 12 in (0.30 m), cased 20 in (0.51 m) 0-40 ft (0-12.2 m), 12 in (0.30 m) 0-60 ft (0-18.3 m), perforated 40-60 ft (12.2-18.3 m). Depth 160 ft (48.8 m).
DATUM.--Altitude of land-surface datum is about 30 ft (9.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.91 cm) pipe in pump base, 1.5 ft (0.46 m) above land-surface datum to Jan. 17, 1972; changed to 1.90 ft (0.58 m) above land-surface datum, thereafter.
REMARKS.--Observation well. Piezometric head measured for highest water level.
PERIOD OF RECORD.--January 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +0.81 ft (0.25 m) above land-surface datum, Sept. 12, 1975; lowest water level measured 83.53 ft (25.5 m) below land-surface datum, Aug. 7, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1976	0.88	Jan. 11, 1977	3.65	Apr. 20, 1977	4.35	July 19, 1977	1.10
Nov. 12	1.80	Feb. 16	3.45	May 3	4.57	Aug. 17	0.80
Dec. 14	3.04	Mar. 15	4.00	June 9	3.70	Sept. 15	0.58

+Above land-surface datum.

182018066593201. Local number, 83.
LOCATION.--Lat 18°20'18", long 66°59'32".
Ownder: P.R. Water Resources Authority.
Name San Sebastián.
AQUIFER.--Volcanic rock of Eocene Age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in (0.15 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 230 ft (70.1 m) above mean sea level. Measuring point: Top of casing, 2.40 ft (0.73 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--May 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 21.95 ft (6.69 m) below land-surface datum, Apr. 15, 1976; lowest water level measured 40.20 ft (12.2 m) below land-surface datum, July 21, 1970.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 22, 1976	28.40	Jan. 12, 1977	30.40	Apr. 5, 1977	31.18	July 19, 1977	28.80
Nov. 10	26.89	Feb. 18	30.66	May 3	30.52	Aug. 18	29.32
Dec. 15	26.35	Mar. 15	30.96	June 9	29.32	Sept. 15	28.35

ILLUSTRATIONS

(Figures 5 to 19)

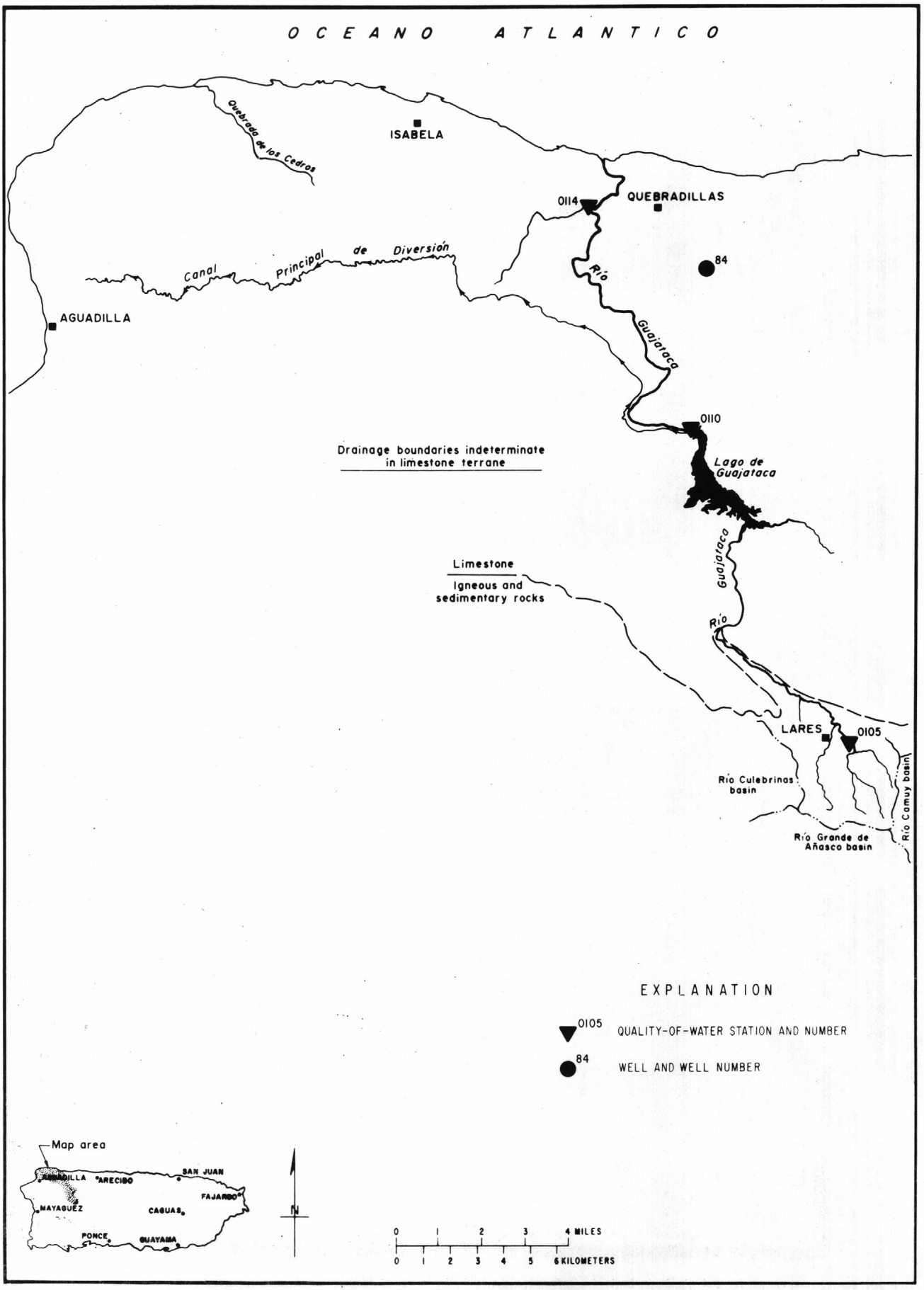

Figure 5.--Río Guajataca basin.

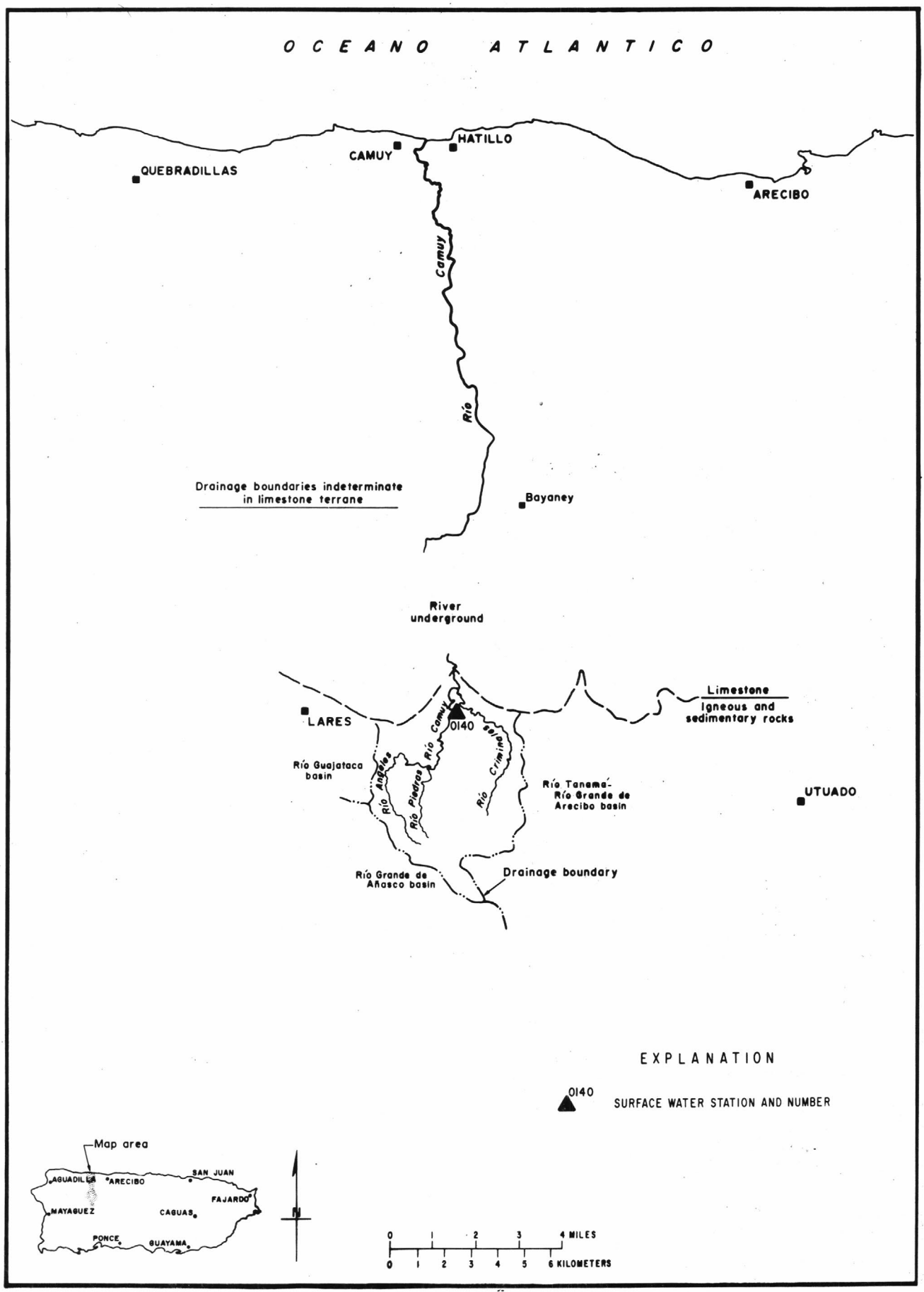

Figure 6.--Río Camuy basin.

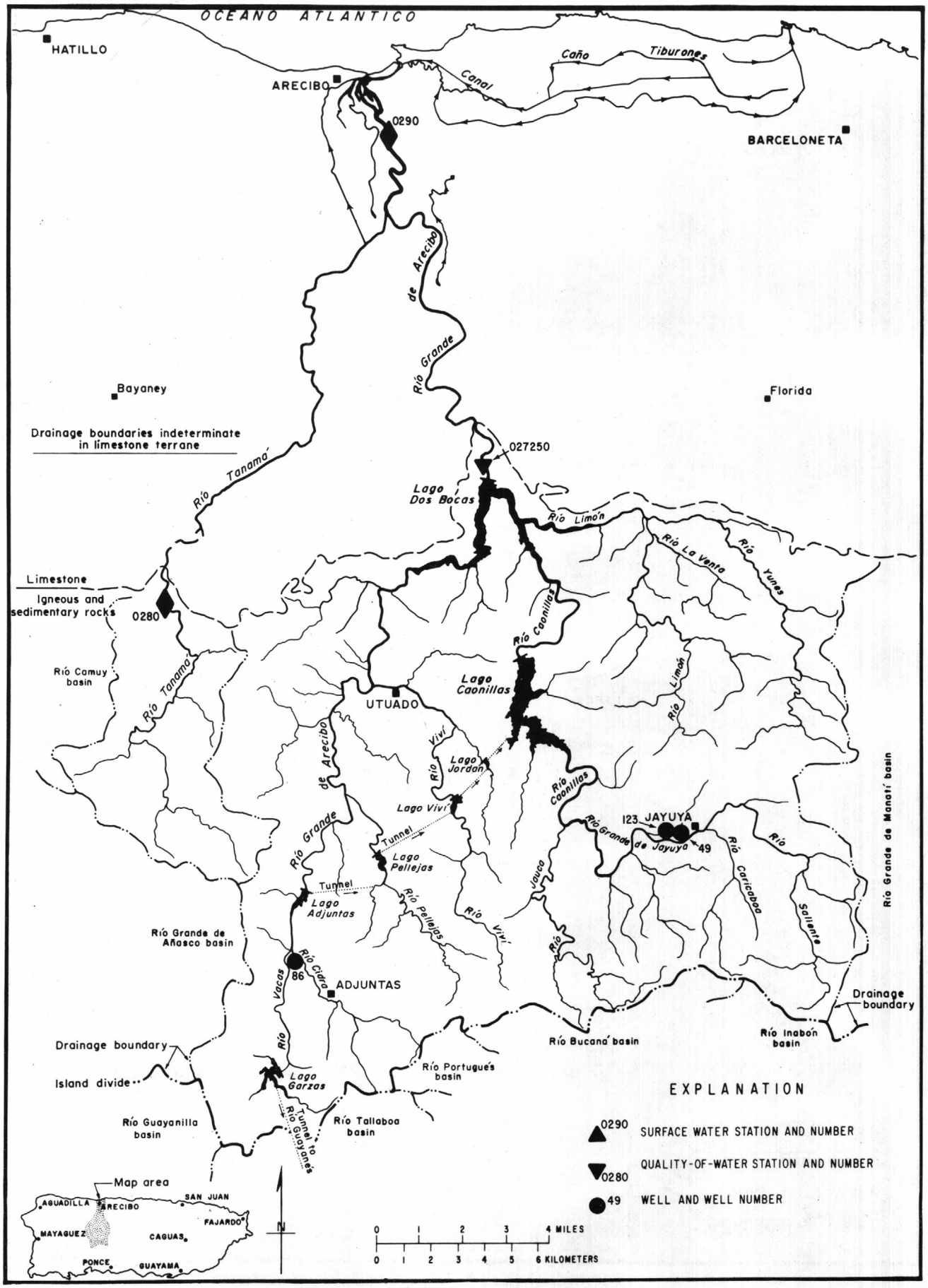

Figure 7.--Río Grande de Arecibo basin.

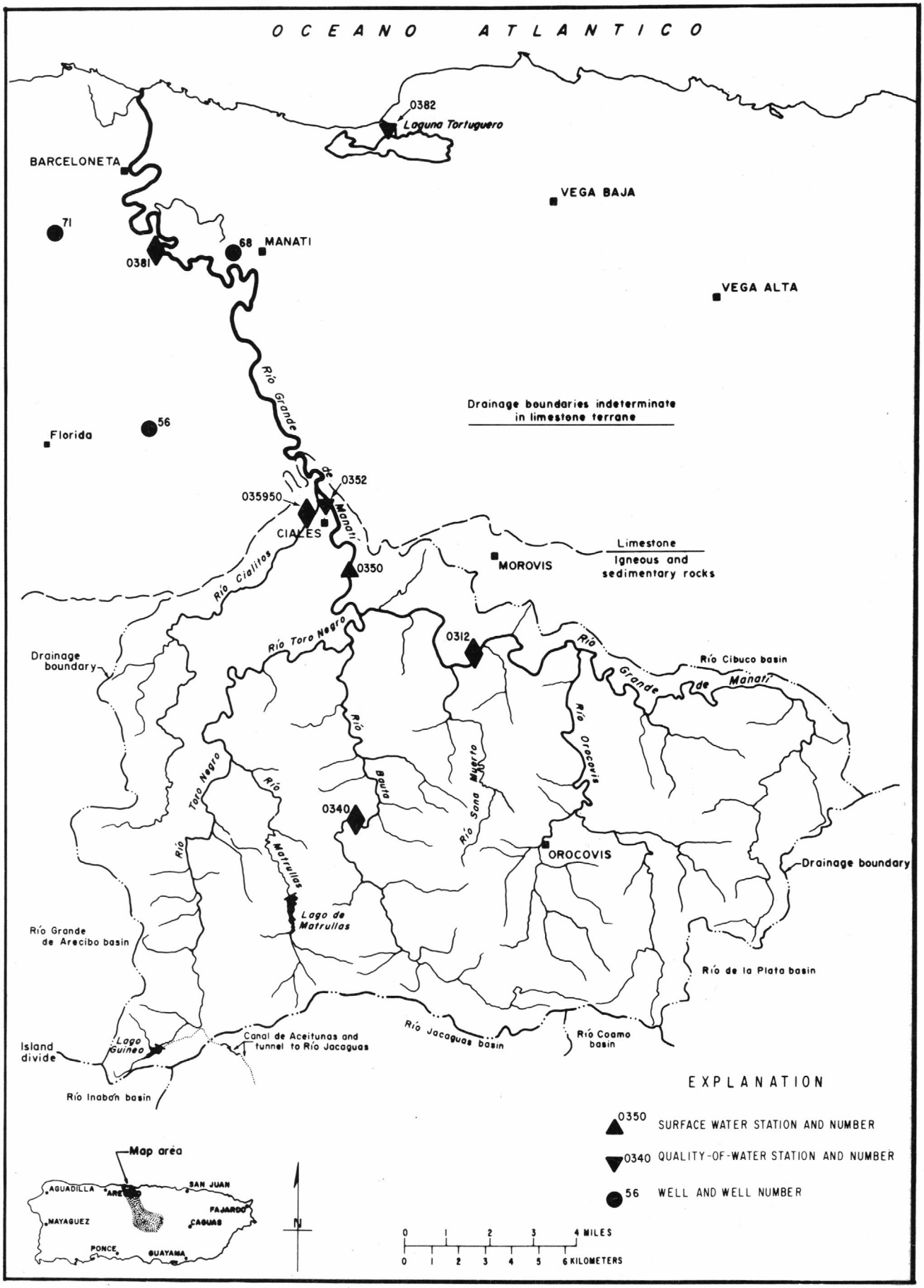

Figure 8.--Río Grande de Manatí basin.

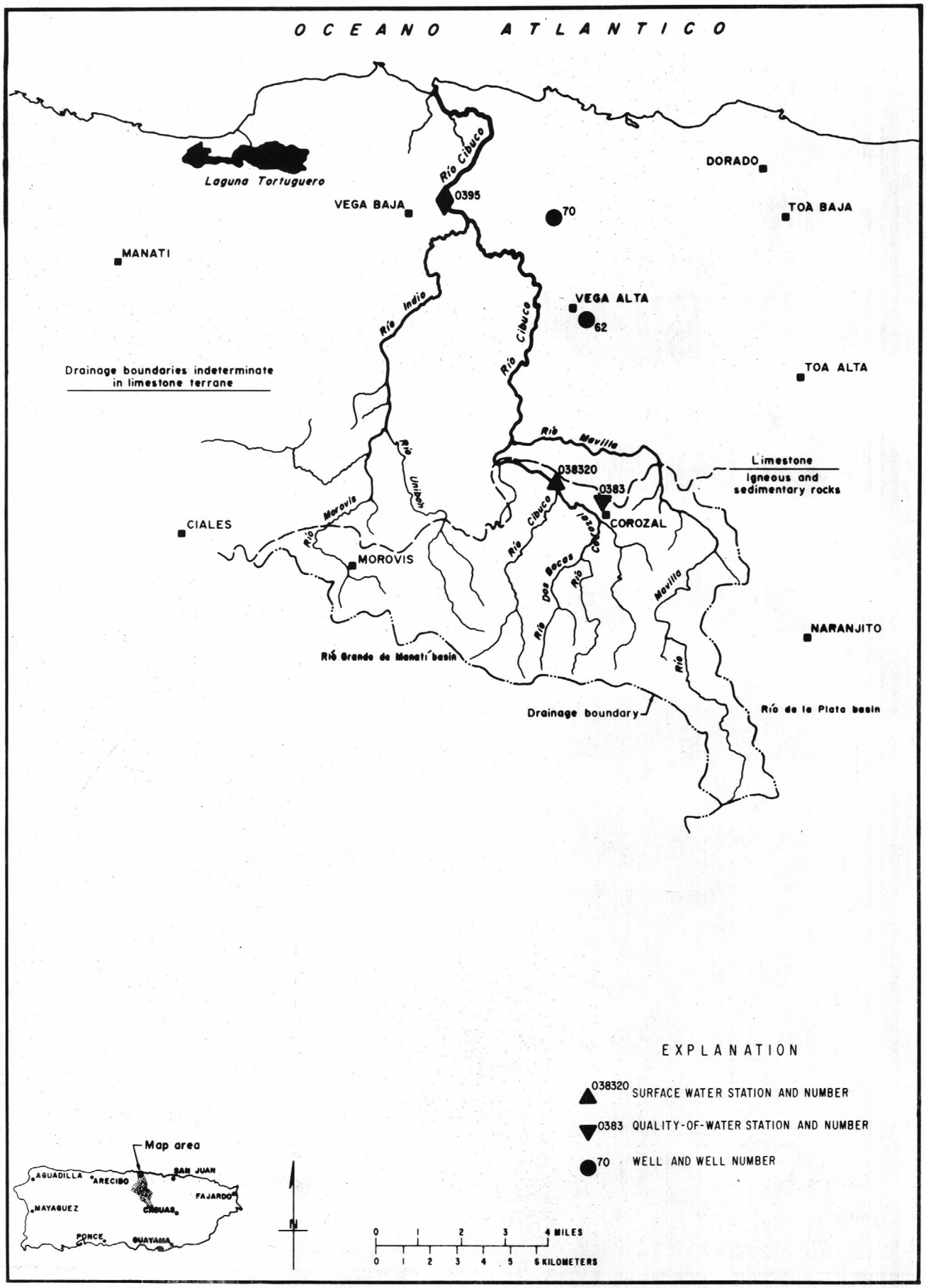

Figure 9.--Río Cibuco basin.

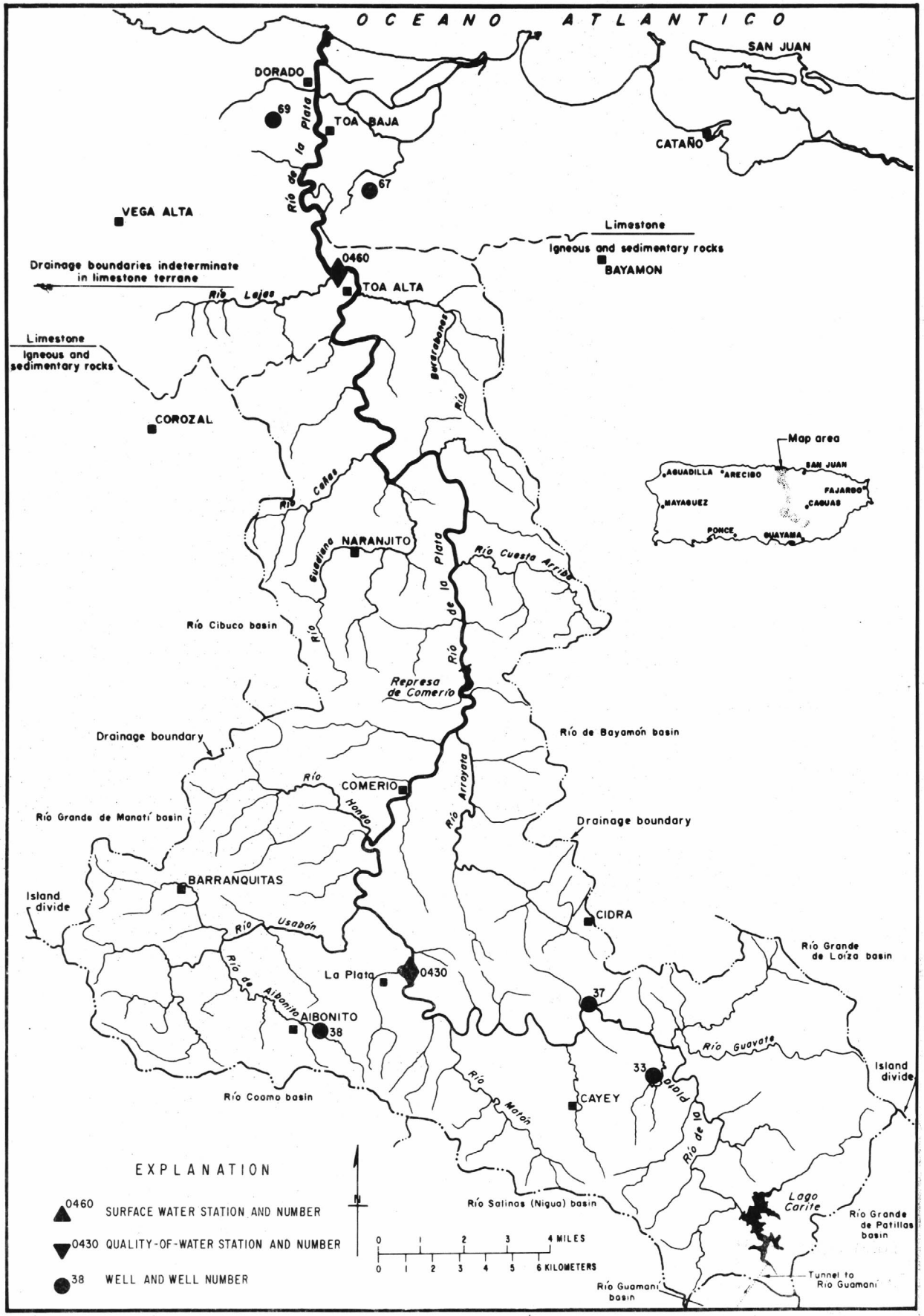

Figure 10.--Río de la Plata basin.

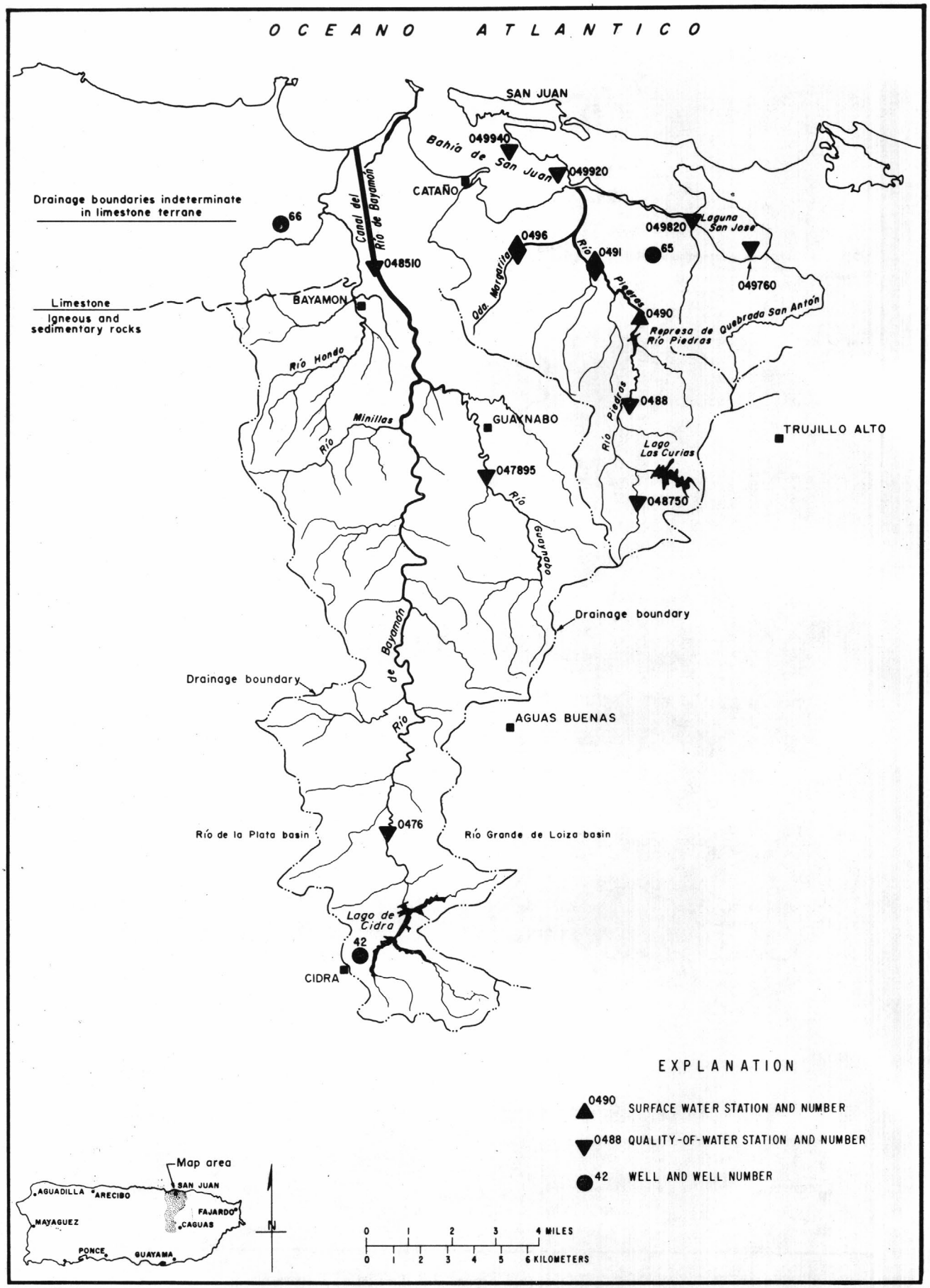

Figure 11.--Río de Bayamón and Río Piedras basins.

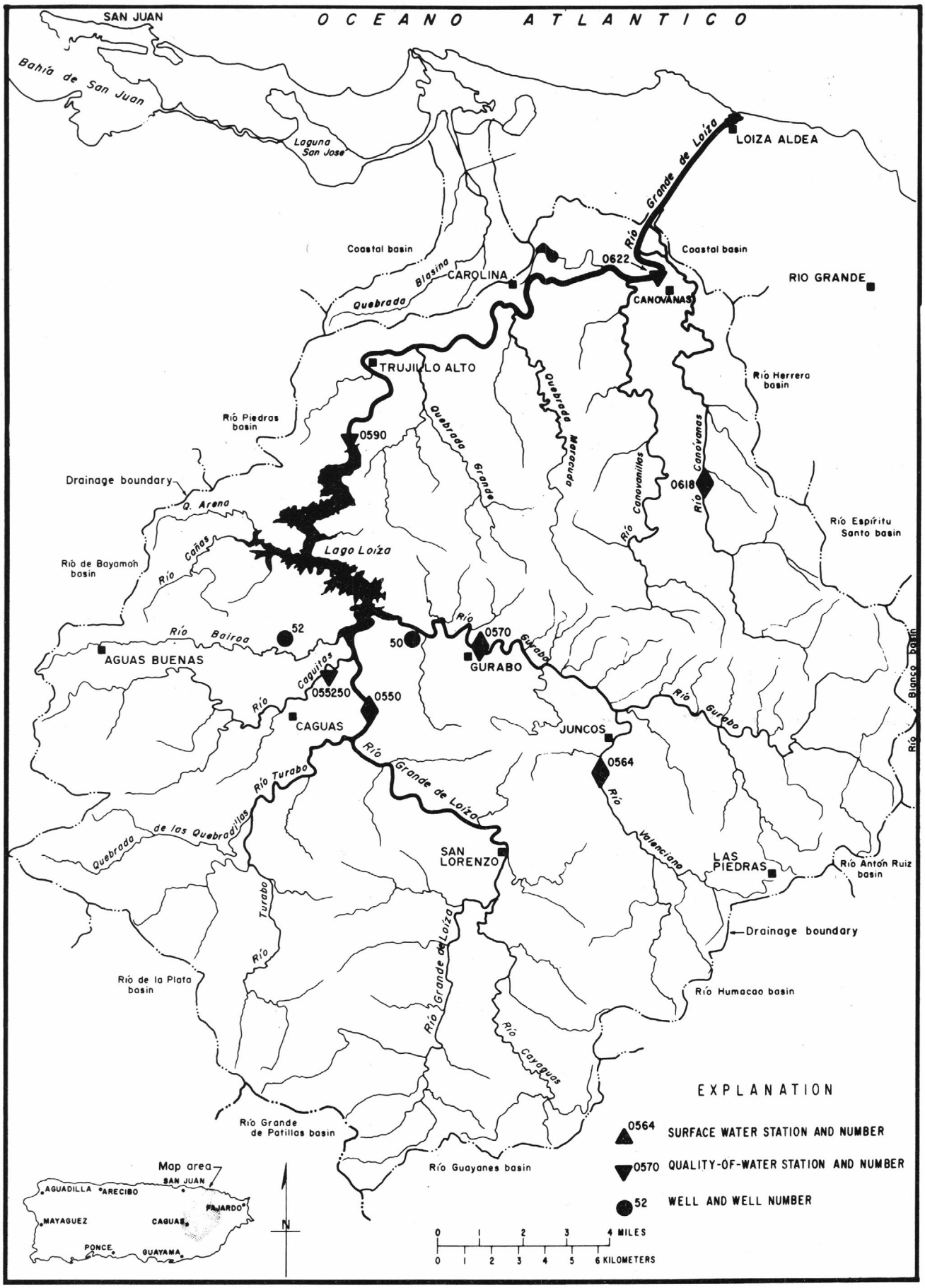

Figure 12.--Río Grande de Loíza basin.

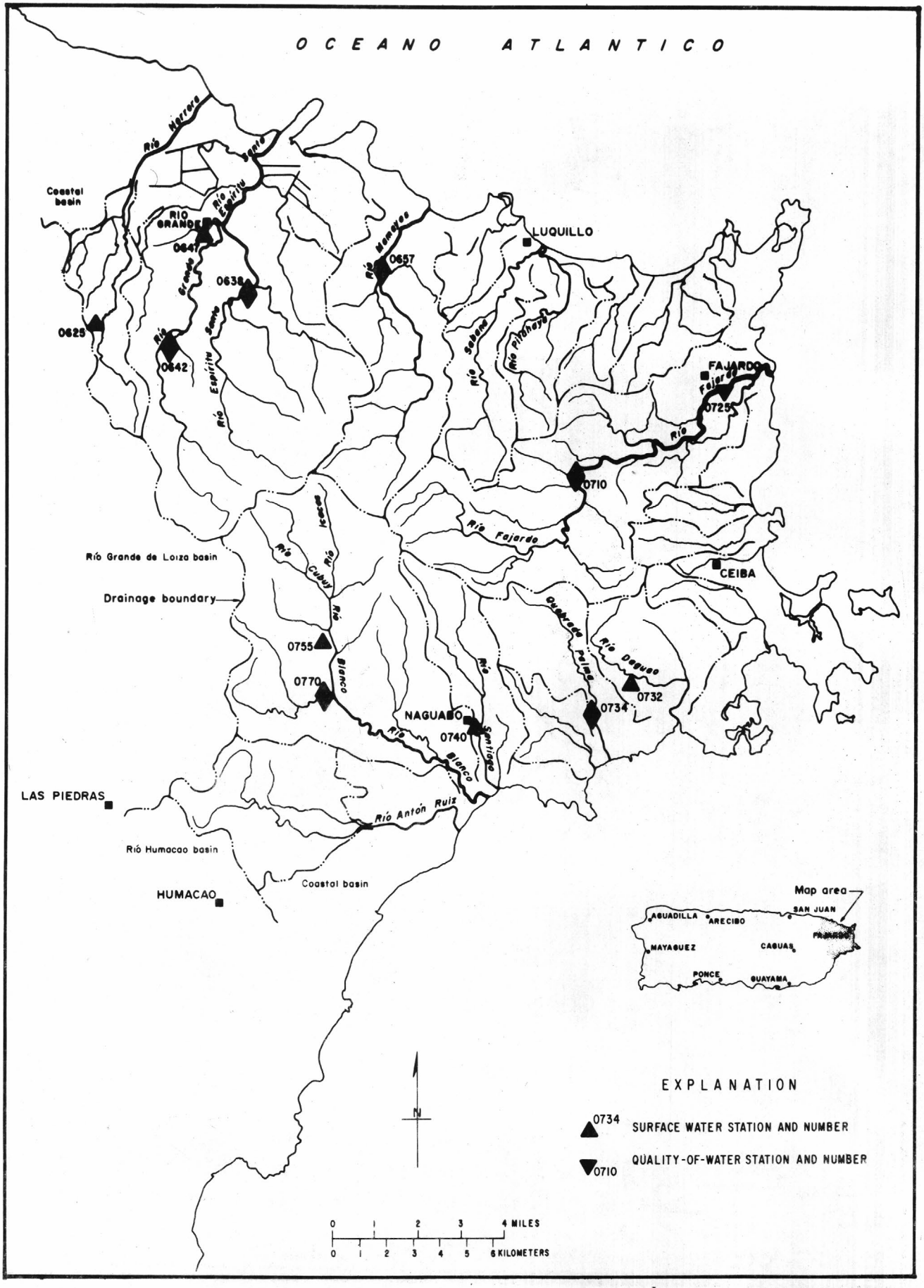

Figure 13.--Northeastern rivers basin--Río Herrera to Río Antón Ruiz basins.

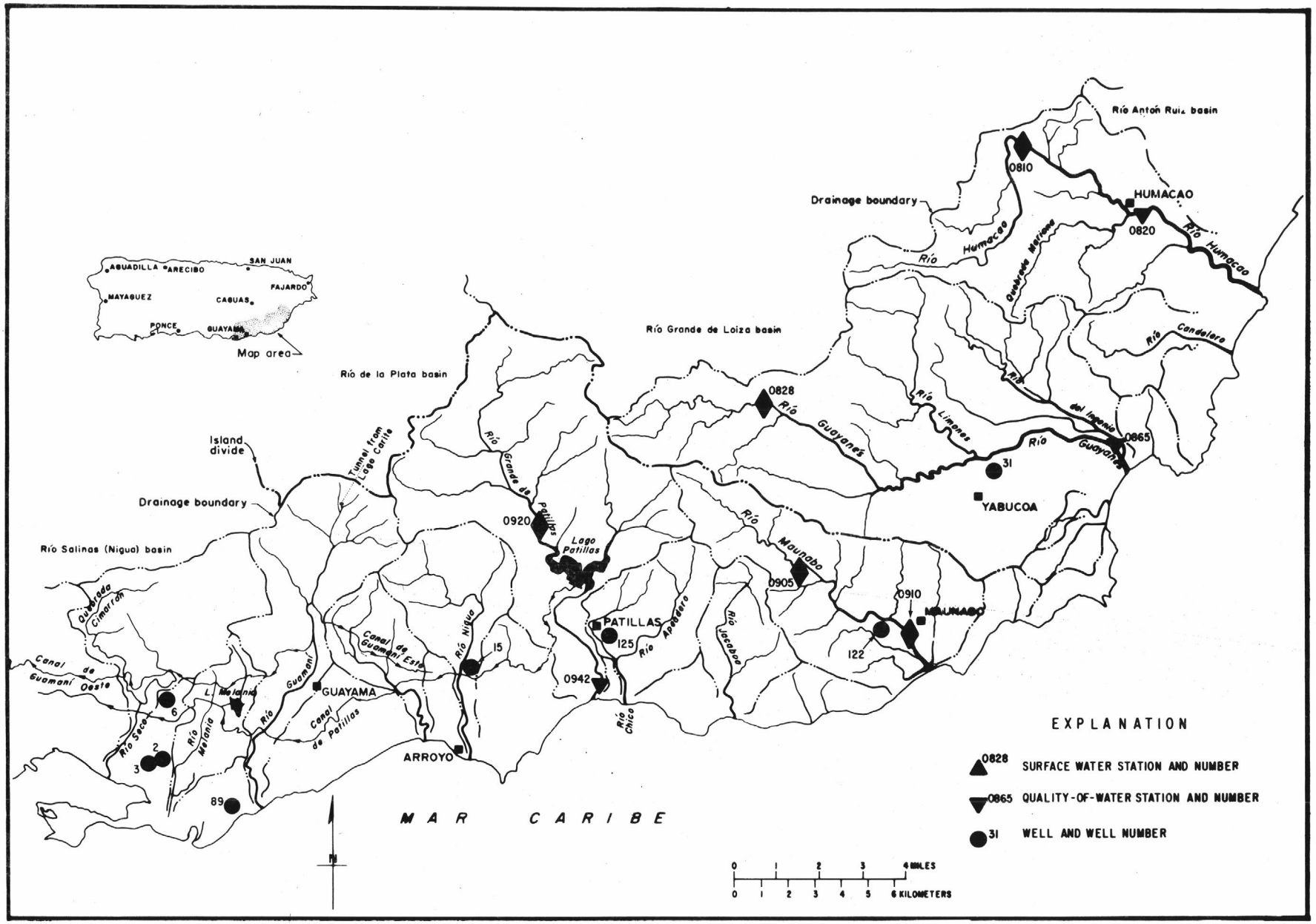

Figure 14.--Southeastern rivers basin--Río Humacao to Río Seco basins.

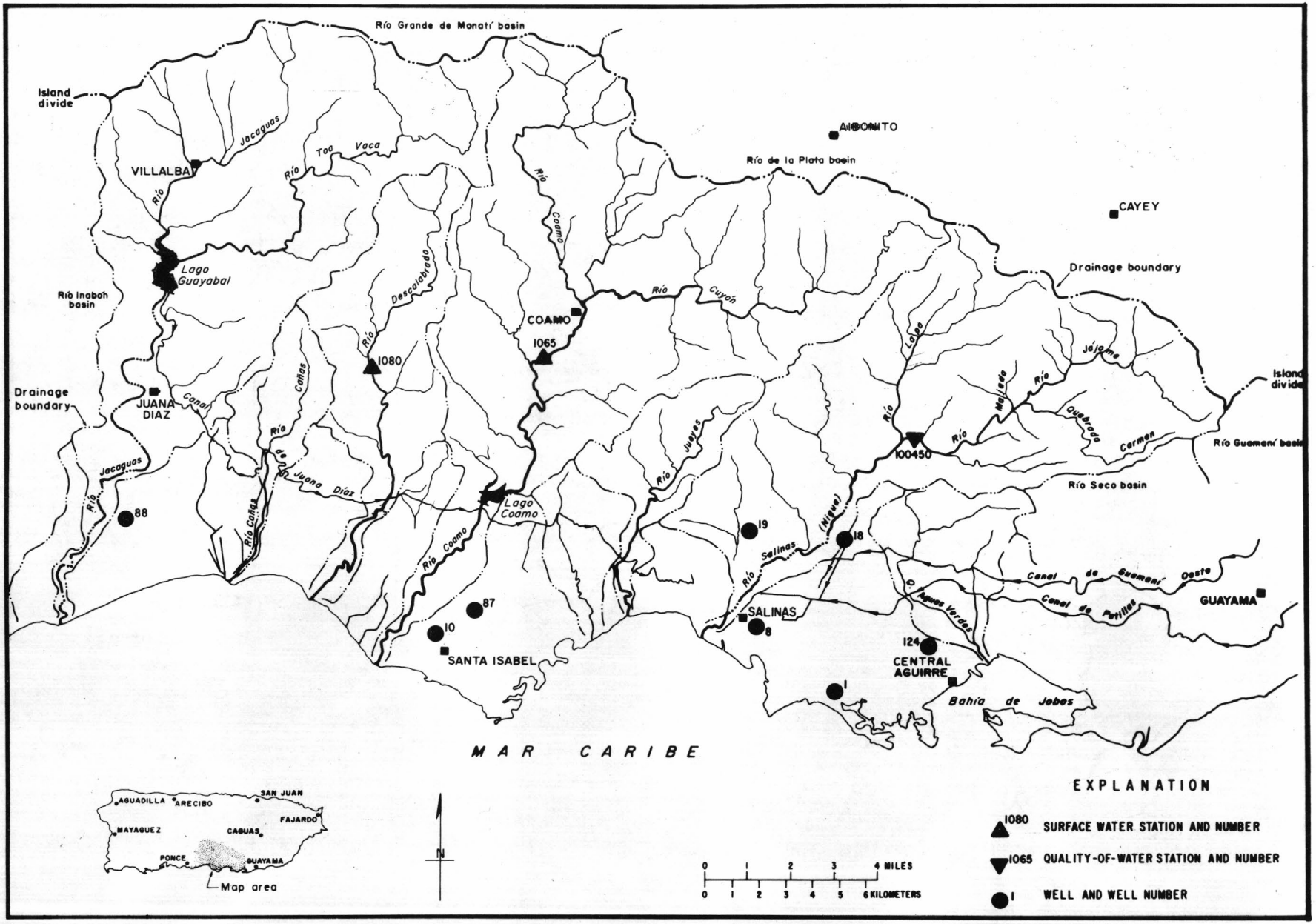

Figure 15.--South coast rivers basin--Río Salinas to Río Jacaguas basins.

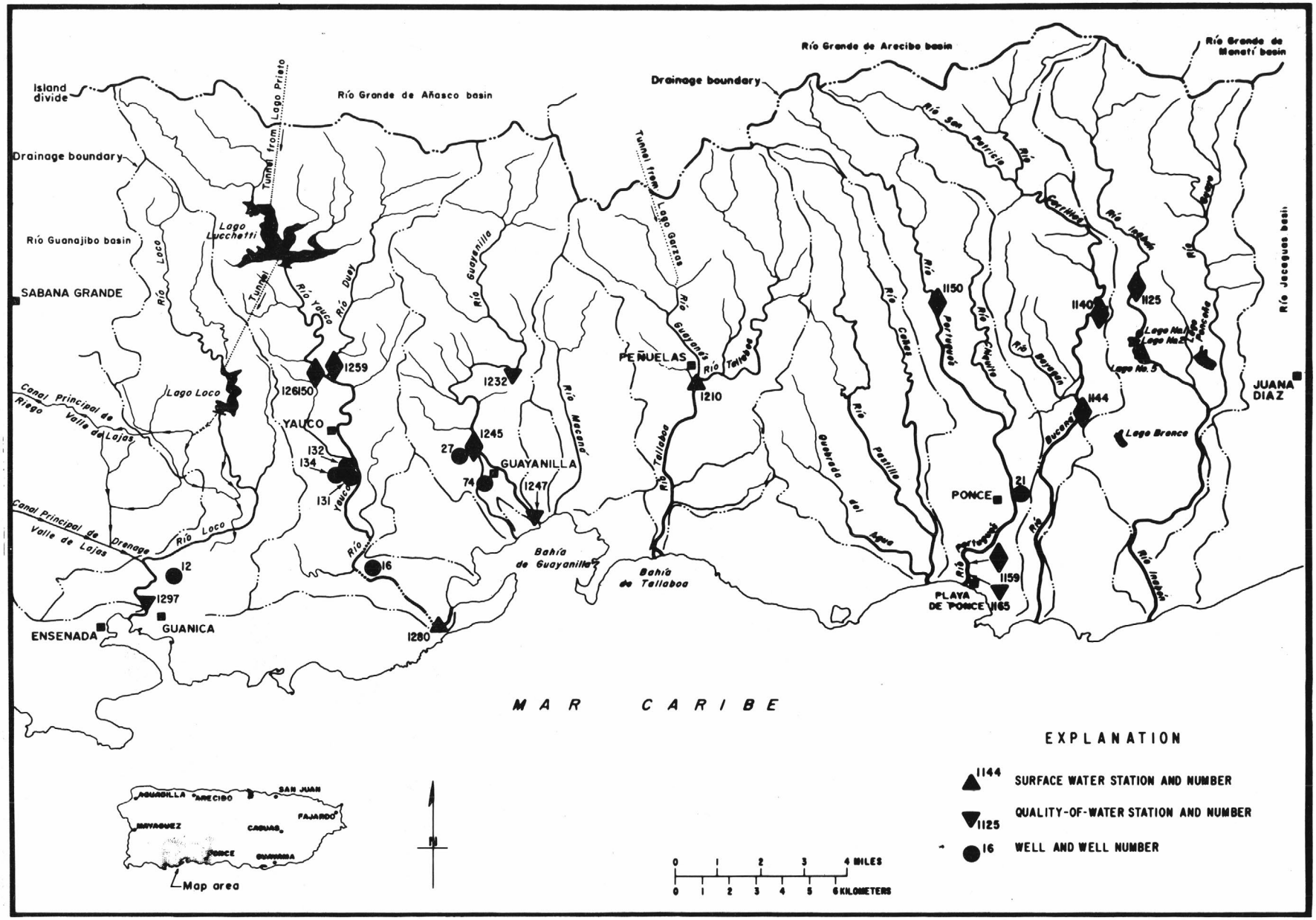

Figure 16.--South coast rivers basin--Río Inabón to Río Loco basins.

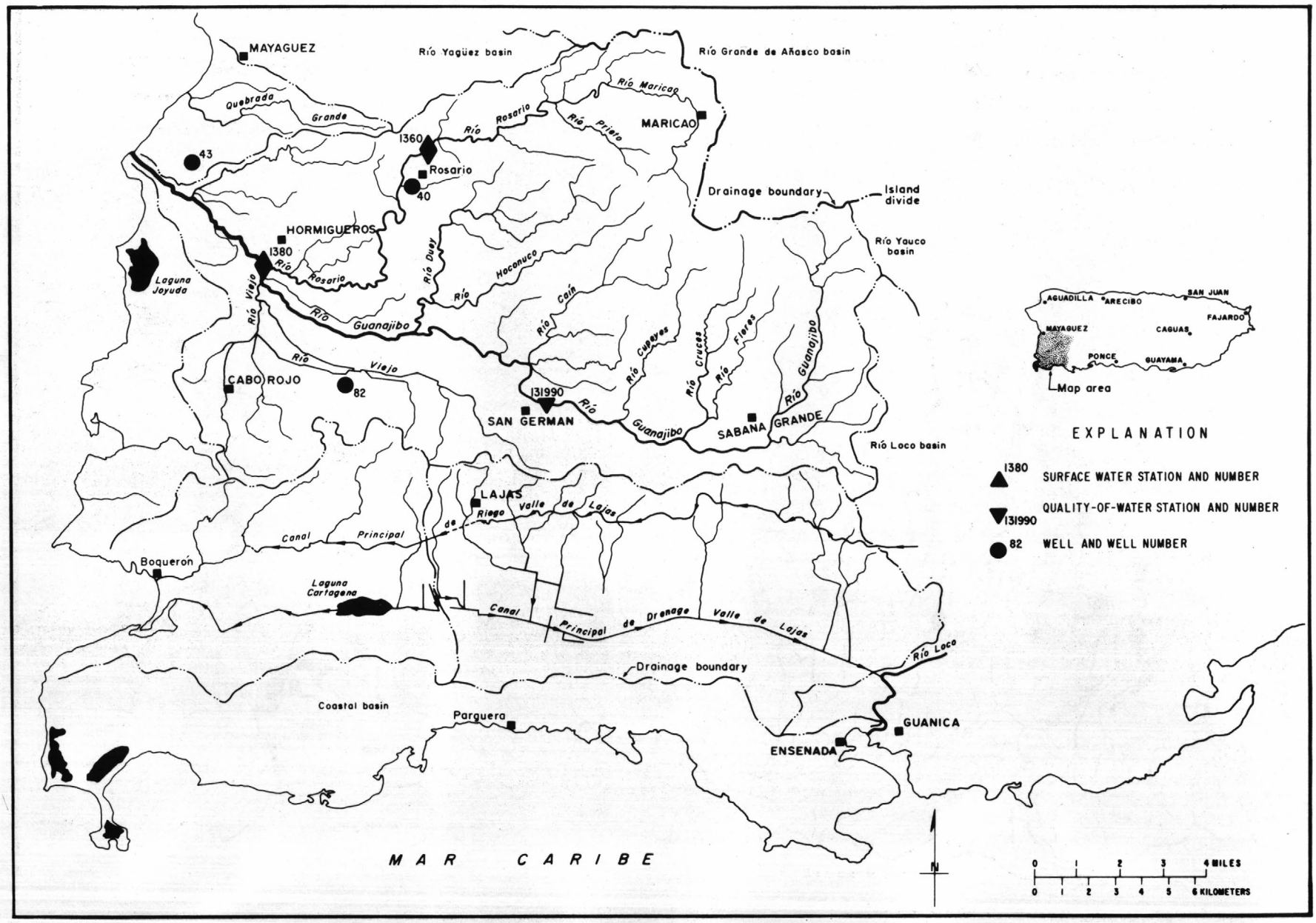

Figure 17.--Río Guanajibo basin.

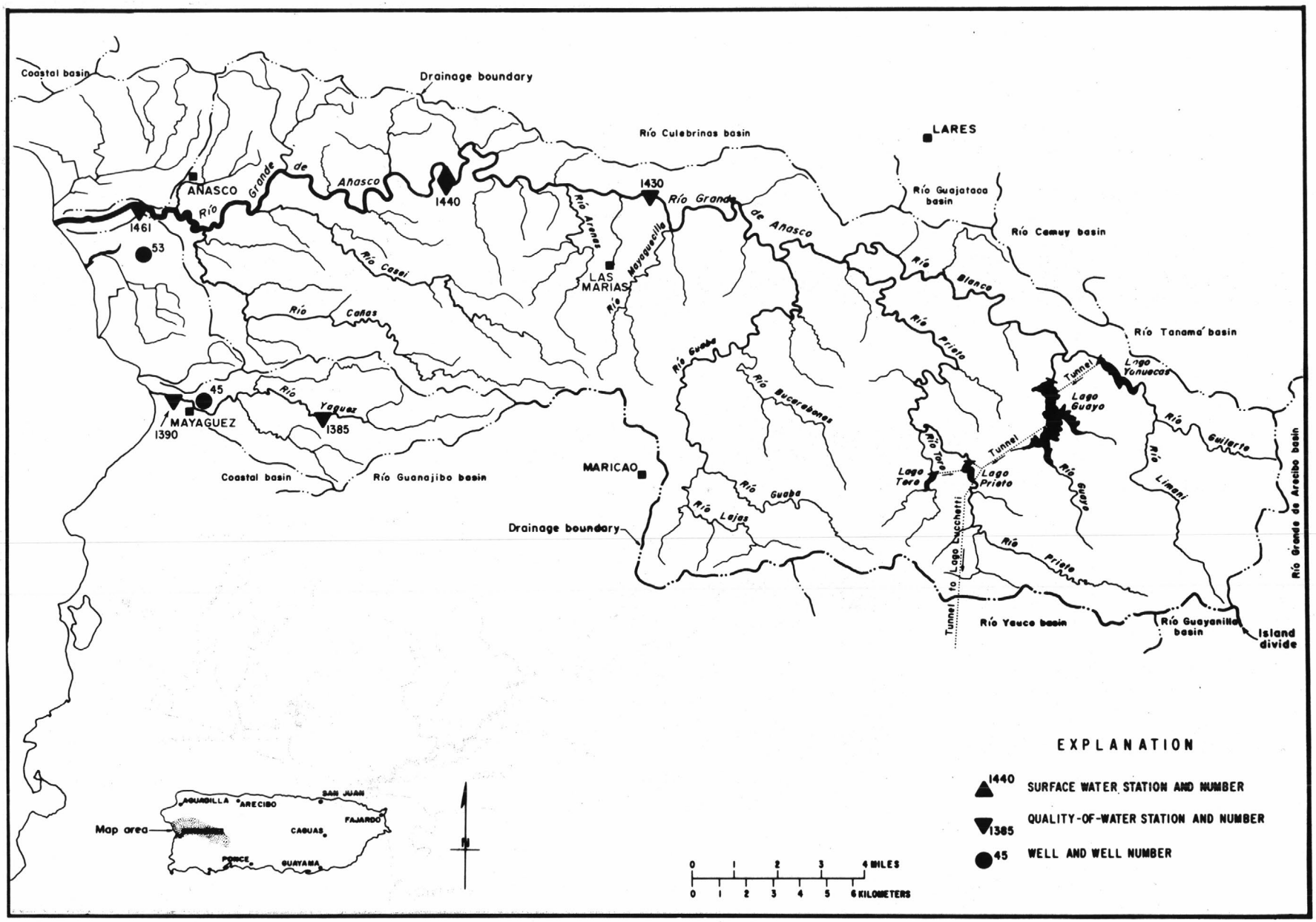

Figure 18.--Río Yaguez and Río Grande de Añasco basins.

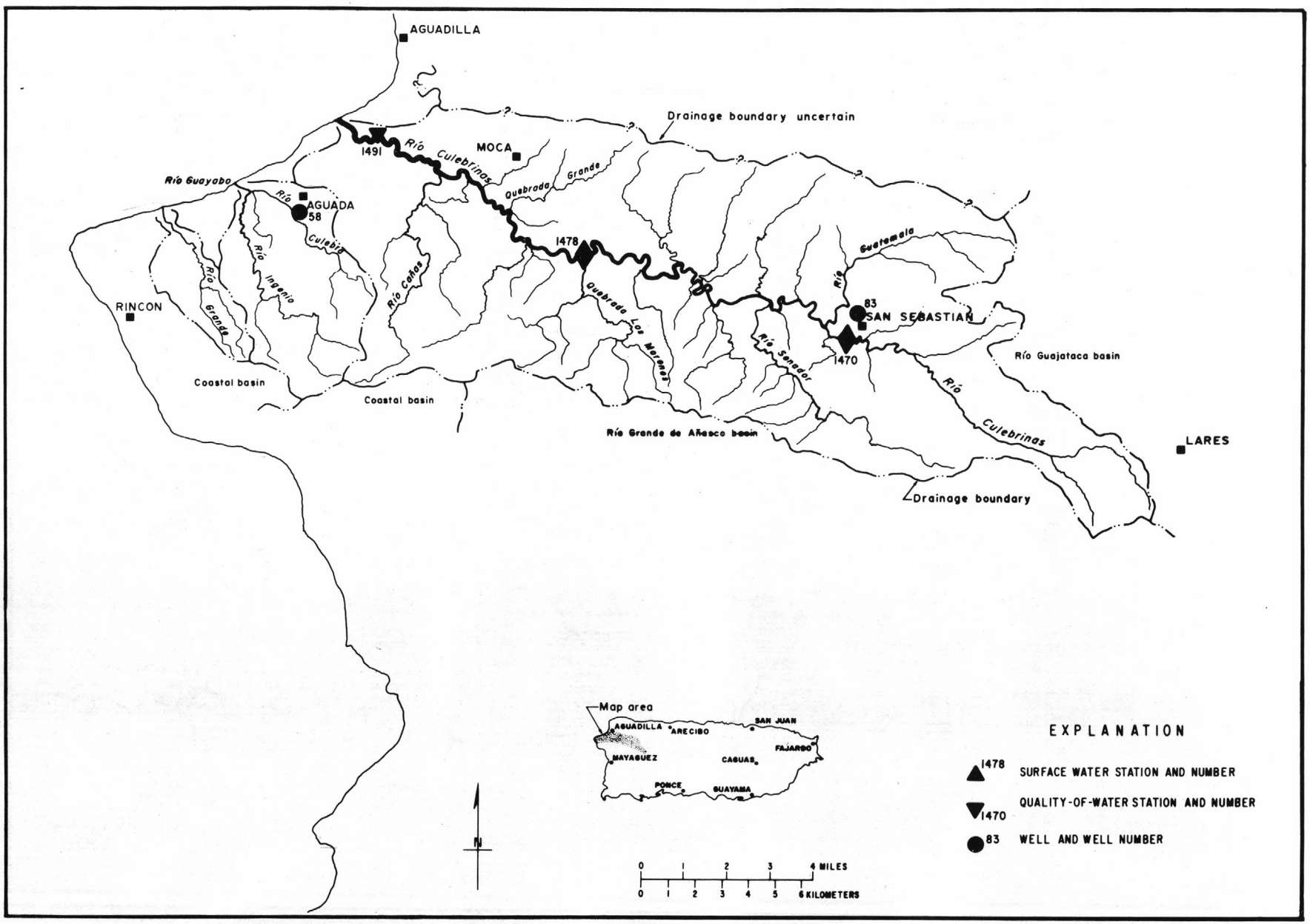

Figure 19.--Río Culebrinas basin.

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR
INT 413

U.S.MAIL

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
GPO Box 4424
San Juan, PR 00936

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

SPECIAL 4TH CLASS BOOK RATE