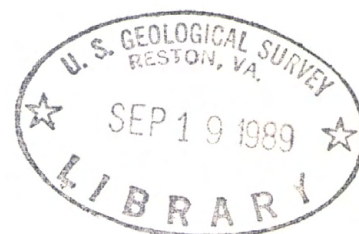




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Water Resources Data Puerto Rico and the U.S. Virgin Islands

Water Year 1987



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-87-1
Prepared in cooperation with the Commonwealth of Puerto Rico
and with other agencies

CALENDAR FOR WATER YEAR 1987

1986

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Water Resources Data Puerto Rico and the U.S. Virgin Islands

Water Year 1987

by R.E. Curtis, Jr., Z. Aquino, P.L. Diaz, and R. Vachier



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-87-1
Prepared in cooperation with the Commonwealth of Puerto Rico
and with other agencies

DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

**For additional information on the water resources investigation programs
in Puerto Rico and the U.S. Virgin Islands write to:**

**Chief, Caribbean District, Water Resources Division
U.S. Geological Survey
GPO Box 4424
San Juan, PR 00936
(Telephone: (809) 749-4346)**

PREFACE

This annual hydrologic data report of Puerto Rico and the U.S. Virgin Islands is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each state, Puerto Rico, the U.S. Virgin Islands, and the other Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by state, local and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

The report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey, Water Resources Division who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The data included in this report was collected under the supervision of Eloy Colón-Dieppa. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete and adheres to Geological Survey policy and established guidelines, the following personnel contributed significantly to the collection, processing and tabulations of the data:

José M. Agis	Senén Guzmán-Ríos
George Arroyo	Karl G. Johnson
Angel Class-Cacho	Sandra Lagares
Iris M. Concepción	Ana V. Sánchez
Carlos Figueroa	José René Sánchez
Javier García	Luis Santiago-Rivera
René García	Luis Soler
Ralph González	José A. Torres
Evelyn S. Guevara	Heriberto Torres-Sierra

This report was prepared in cooperation with agencies of the Commonwealth of Puerto Rico, the Government of the U.S. Virgin Islands, and with other federal agencies under the general supervision of Allen L. Zack, District Chief, Caribbean District, San Juan, Puerto Rico.

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**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) water-quality, (e) elevation)

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WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with local and federal agencies obtains a large amount of data pertaining to the water resources of the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the area. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data for Puerto Rico and the U.S. Virgin Islands, 1987."

This report includes records on both surface and ground water. Specifically, it contains: (1) Discharge records for 49 streamflow-gaging stations, and 1 crest-stage, partial-record streamflow station; (2) water-quality records for 16 streamflow-gaging stations, and for 42 ungaged streamsites, 11 lake sites, 1 lagoon, and 1 bay; and (3) water-level records for 56 observation wells.

Water-resources data for Puerto Rico for calendar years 1958-67 were released in a series of reports entitled "Water Records of Puerto Rico". Water-resources data for the U.S. Virgin Islands for the calendar years 1962-69 were released in a report entitled "Water Records of U.S. Virgin Islands." Included were records of streamflow, ground-water levels, and water-quality data for both surface and ground water.

Beginning with the 1968 calendar year, surface-water records for Puerto Rico were released separately on an annual basis. Ground-water level records and water-quality data for surface and ground water were released in companion reports covering periods of several years. Data for the 1973-74 reports were published under separate covers. Water-resources data reports for 1975-76, 1977, 1978, 1979-80, 1981-82, 1983, 1984, 1985, and 1986 water years consist of one volume each and contain data for streamflow, water quality and ground water.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report PR-87-1". These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on back of title page or by telephone (809) 783-4660.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987**COOPERATION**

The U.S. Geological Survey has had cooperative agreements with organizations of the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands for the systematic collections of water resources data since 1958. Organizations that supplied data are acknowledged in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Puerto Rico Environmental Quality Board
Puerto Rico Aqueduct and Sewer Authority
Puerto Rico Department of Agriculture
Puerto Rico Industrial Development Company
Puerto Rico Department of Public Works
Puerto Rico Highway Authority
Puerto Rico Department of Natural Resources
Puerto Rico Department of Health
Puerto Rico Electric and Power Authority
Puerto Rico Rice Corporation
Puerto Rico Administration for Agricultural Development
Puerto Rico Land Administration
Center for Energy and Environment Research, University
of Puerto Rico
Water Resources Research Institute, University of
Puerto Rico
Water Resources Research Institute, College of the
Virgin Islands
Department of Public Works of the U.S. Virgin Islands

Funds were also provided by the Corps of Engineers, U.S. Army, for the collection of records at five gaging stations published in this report. Ground-water quality data at selected sites was collected with support from the U.S. Environmental Protection Agency.

SUMMARY OF HYDROLOGIC CONDITIONSPrecipitation

Precipitation was slightly higher than usual in the 1987 water year. Precipitation averaged about 104 percent of normal, islandwide, but varied from 121 percent of normal in the northern part of the island to 94 percent of normal in the western part of the island. Monthly average precipitation islandwide for water year 1987 and the 30-year (1951-80) normal as reported by the National Oceanic and Atmospheric Administration are listed in table 1.

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Table 1. Islandwide monthly precipitation and annual averages for 1987 water year and the 30-year reference period, 1951-80.

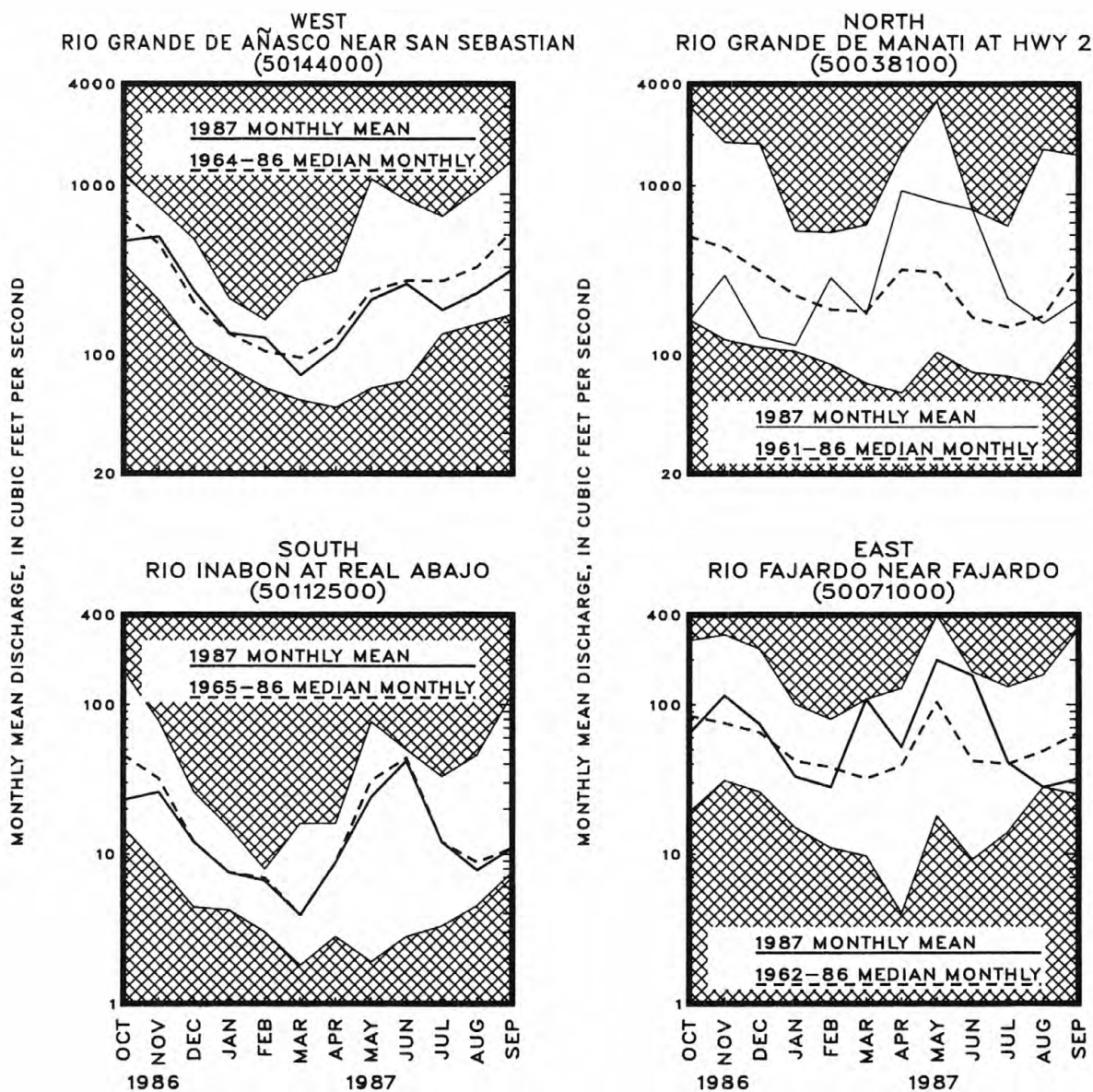
<u>Month</u>	<u>Water year 1987 (inches)</u>	<u>30-year normal (inches)</u>
Oct.	7.12	7.74
Nov.	8.29	5.95
Dec.	2.95	4.32
Jan.	2.99	3.08
Feb.	3.86	2.35
Mar.	3.99	2.63
Apr.	5.83	4.63
May	9.61	6.48
June	8.78	5.58
July	3.59	5.48
Aug.	3.88	7.28
Sept.	<u>5.18</u>	<u>7.78</u>
TOTAL	66.07	63.30

Surface Water

Streamflow in Puerto Rico was generally within normal range during water year 1987. A comparison of 1987 streamflows at 4 representative gaging stations to their long-term median and extreme monthly flows is shown in figure 1. Flows during October were below normal islandwide. The October mean flow for the Río Grande de Manatí gaging station, which is in the northern part of the island, was only 32 percent of the median flow. During November through January, Río Grande de Manatí flows remained below normal while flows at the other index stations, shown on figure 1, were very near their long-term median flows. February flows were near normal islandwide.

During March streamflow continued to decrease seasonally in the northern, southern, and western parts of the island, but intense precipitation caused increased streamflow in the eastern part of the island. The index station on Río Fajardo near Fajardo recorded a monthly mean discharge well above the long term median.

Heavy rains caused significant flooding during April 11-13. The most notable flooding occurred in the northern and eastern parts of the island. Table 2 summarizes peaks experienced at 10 stations in the affected areas. Río Cibuco at Vega Baja experienced the highest peak discharge since the station was established in 1973.



Unshaded area indicates range between highest and lowest monthly mean discharges for the period of record

Figure 1.—Monthly mean discharge of selected streams in Puerto Rico.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Table 2. Peak discharges during April 11-13, 1987 and previous maximum at selected surface water gaging stations in Puerto Rico

Station number	Station name	April 1987 peak (cubic feet per second)	Maximum of record (cubic feet per second)	Water Year	Period of Record
50031200	Río Grande de Manatí near Morovis	6,680	48,000	1985	1-65 to 9-87
50035000	Río Grande de Manatí at Ciales	25,200	125,000	1971	2-59 to 9-87
50038320	Río Cibuco below Corozal	11,400	13,600	1979	5-69 to 9-87
50039500	Río Cibuco at Vega Baja	33,000	30,300	1982	1-73 to 9-87
50046900	Río de la Plata at Highway 2 near Toa Alta	19,200	95,500	1960	1-60 to 9-87
50061800	Río Canóvanas near Campo Rico	2,000	15,000	1982	3-67 to 9-87
50063440	Quebrada Sonadora near El Verde	645	2,160	1985	3-83 to 9-87
50063800	Río Espíritu Santo near Río Grande	7,960	12,400	1984	8-66 to 9-87
50065500	Río Mameyes near Sabana	6,320	19,800	1973	8-67 to 12-73, 6-83 to 9-87
50075000	Río Icacos near Naguabo	893	2,860	1983	1953 to 1962, 10-79 to 9-87

Flows for April, May, and June were well above normal in the northern and eastern part of the island and near normal in the western and southern parts. July flows varied from above normal at the northern index station to below normal at the western station. In August and September, monthly flows were generally below normal.

In the U.S. Virgin Islands, conditions were generally the same as in Puerto Rico. Monthly precipitation totals were well above the 30-year normal in November, May, and June with 155, 254, and 248 percent of normal respectively.

Ground Water

In general, ground-water levels in representative observation wells rose during the two relatively wet seasons (October to December and April to May) in response to above normal rainfall. Record high water levels were recorded at several wells in Puerto Rico and the U.S. Virgin Islands in the 1987 water year (Table 3).

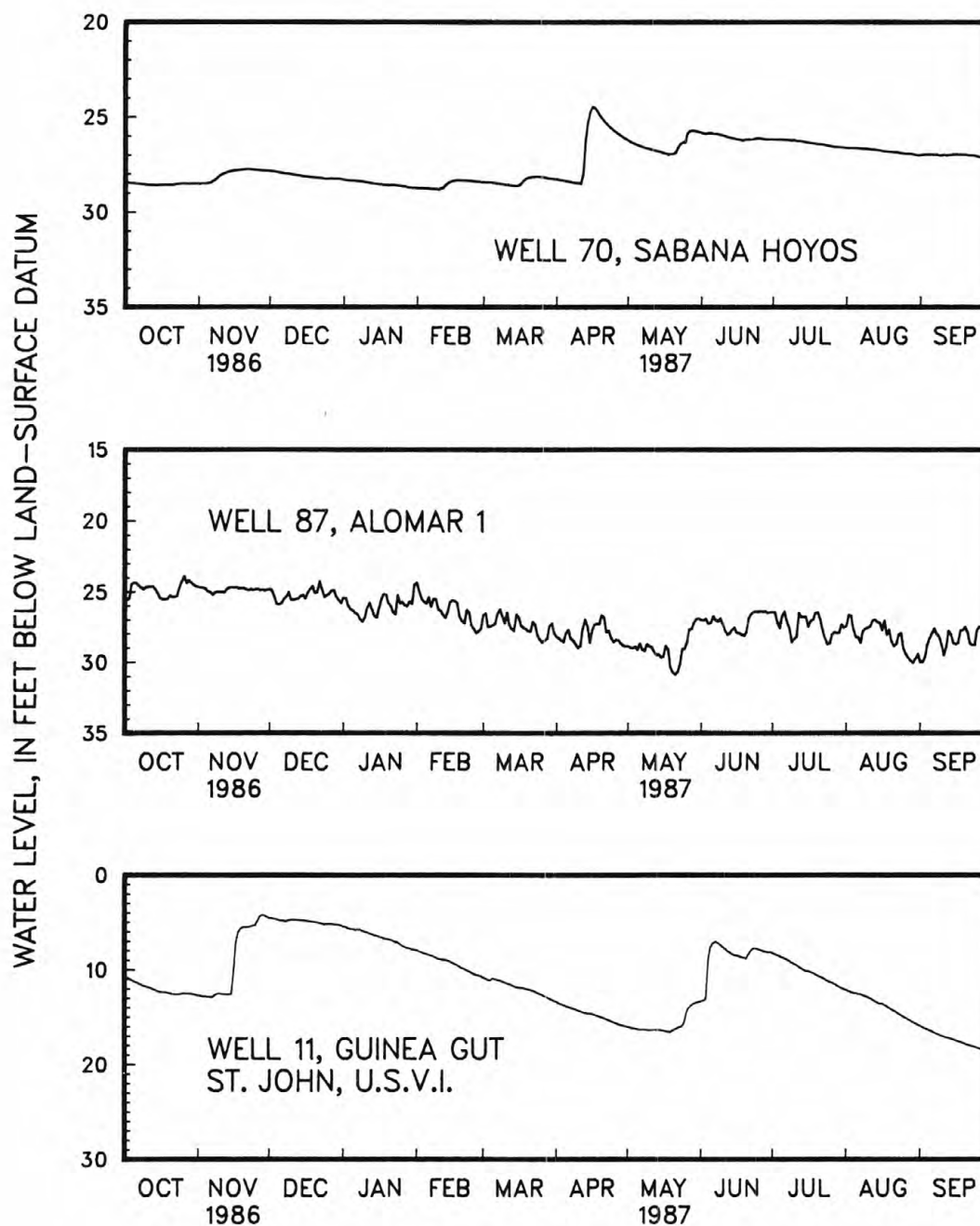


Figure 2 .--Ground-water levels at selected wells in Puerto Rico and the U.S. Virgin Islands.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

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Ground-water levels in the north coast limestone aquifers of Puerto Rico remained practically unchanged during the first half of the water year (fig. 2). However, above normal precipitation during mid-April caused a significant rise in the water levels in this aquifer. At the Sabana Hoyos index well, an increase of 4.0 ft. was recorded. The water level in this well declined during the rest of the year except for a small rise in late May caused by heavy rainfall. At the end of water year 1987, the water level in this well was 1.40 ft. higher than that at the end of water year 1986.

Ground-water levels in the alluvial aquifers along the south coast of Puerto Rico followed a cyclic pattern associated with streamflow and ground-water withdrawals for public supply and irrigation uses. Generally, water levels declined throughout the period in response to low-streamflow conditions and increased ground-water withdrawals as shown in the hydrograph for well 87 in fig. 2.

Table 3.--Highest water level recorded during 1987 water year and previous extreme at selected ground-water wells in Puerto Rico and the U.S. Virgin Islands (water levels in feet below land-surface datum)

Well Name	Local no.	Location	1987 extreme	Date	Previous extreme	Date	Period of Record
Saltos # 1	165	PR	47.62	09-30-87	53.39	09-23-86	1-82 to 9-87
Coto Norte # 3	209	PR	68.40	04-15-87	71.50	07-23-86	10-85 to 9-87
Acrópolis Manatí	208	PR	225.95	05-31-87	228.21	05-18-86	1-86 to 9-87
Ponderosa TW-1	212	PR	63.05	07-15-87	64.00	12-01-85	10-85 to 9-87
Maguayo No. 5	215	PR	40.16	04-18-87	40.89	11-20-85	10-85 to 9-87
Pozo Navy	216	PR	9.38	06-23-87	10.17	11-21-85	10-85 to 9-87
Levittown No. 7	218	PR	6.13	02-22-87	6.52	10-09-85	10-85 to 9-87
Hyde Park TW-10	221	PR	1.48	04-12-87	1.92	05-14-86	12-85 to 9-87
Concordia # 14	7	St. Croix	12.54	06-17-87	15.56	11-13-84	03-82 to 9-87

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Ground water levels in the U.S. Virgin Islands (St. Thomas, St. Croix, and St. John) responded to the same climatological conditions that affected Puerto Rico. The water level rose 8.40 ft. in November and 9.10 ft. during June (fig. 2). At nearby recording wells, a maximum increase of 14.0 ft. was registered during both periods. By the end of water year 1987, the water level was 9.0 ft. lower than at the end of previous water year.

Water Quality

In the 1987 water year, the U.S. Geological Survey in cooperation with local government agencies, completed the third year of sampling for the constituents listed in table 4. These constituents were added to the water quality monitoring program in 1985 and are in addition to the major chemical constituents and physical properties monitored in the continuing water-quality monitoring program in Puerto Rico. The highest concentrations of selected constituents detected during the 1987 water year along with the stations at which these concentrations were detected are summarized in table 4.

Table 4. Surface-water quality stations throughout Puerto Rico with highest concentration of selected constituents during water year 1987 (constituents concentrations in milligrams per liter)

Station number	Station name	Constituent	Concentration
*		Sulfide	
50047530	Río Hondo at Flood Channel near Cataño	Boron	1.7
50055250	Río Caguaitas at Hwy 30 at Caguas	Copper	219
50083500	Río Guayanés at Yabucoa	Iron	46
50083500	Río Guayanés at Yabucoa	Manganese	1.5
50020500	Río Grande de Arecibo near Adjuntas	Zinc	.31
50055250	Río Caguaitas at Hwy 30 at Caguas	Cyanide	.22
50043000	Río de la Plata at Proyecto la Plata	Phenols	.03
50091800	Río Chico at Providencia	MBAS**	1.6

Explanation:

* Sulfide concentration at all water-quality stations were below the detection limit (<0.5 mg/L).

** Methylene blue active substances.

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The presence of high concentrations of fecal coliform (FC) and fecal streptococci (FS) bacteria continues being the principal surface water quality problem in Puerto Rico. Bacteria concentrations exceeding one million colonies per hundred milliliters of raw water were found at several stations including Río Guadiana near Naranjito (50044850), Río Hondo at the Flood Channel near Cataño (50047530), Río Piedras near Río Piedras (50048800), San Juan Bay No.5 at San Juan (50049920), Quebrada Blasina near Carolina (50050300), Río Caguitas at Highway 30 at Caguas (50055250), Río Bairoa near Caguas (50055400), and Río Chico at Providencia (50091800). These sites are located near urban zones, industrial parks, and suburban zones and receive the effluent of the sewage treatment plants.

Two sediment stations were operated during the year, one at the Río Tanamá near Utuado (50028000), and other at the Río Rosario near Hormigueros (50136400). Maximum sediment concentrations recorded were 1,760 milligrams per liter (mg/L) at the Río Tanama site, and 1,640 mg/L at the Río Hormigueros site. Maximum sediment loads at these sites were 5,930 tons per day and 4,700 tons per day, respectively.

SPECIAL NETWORKS AND PROGRAMS

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites on NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1987 water year that began October 1, 1986 and ended September 30, 1987. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 3 to 9. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

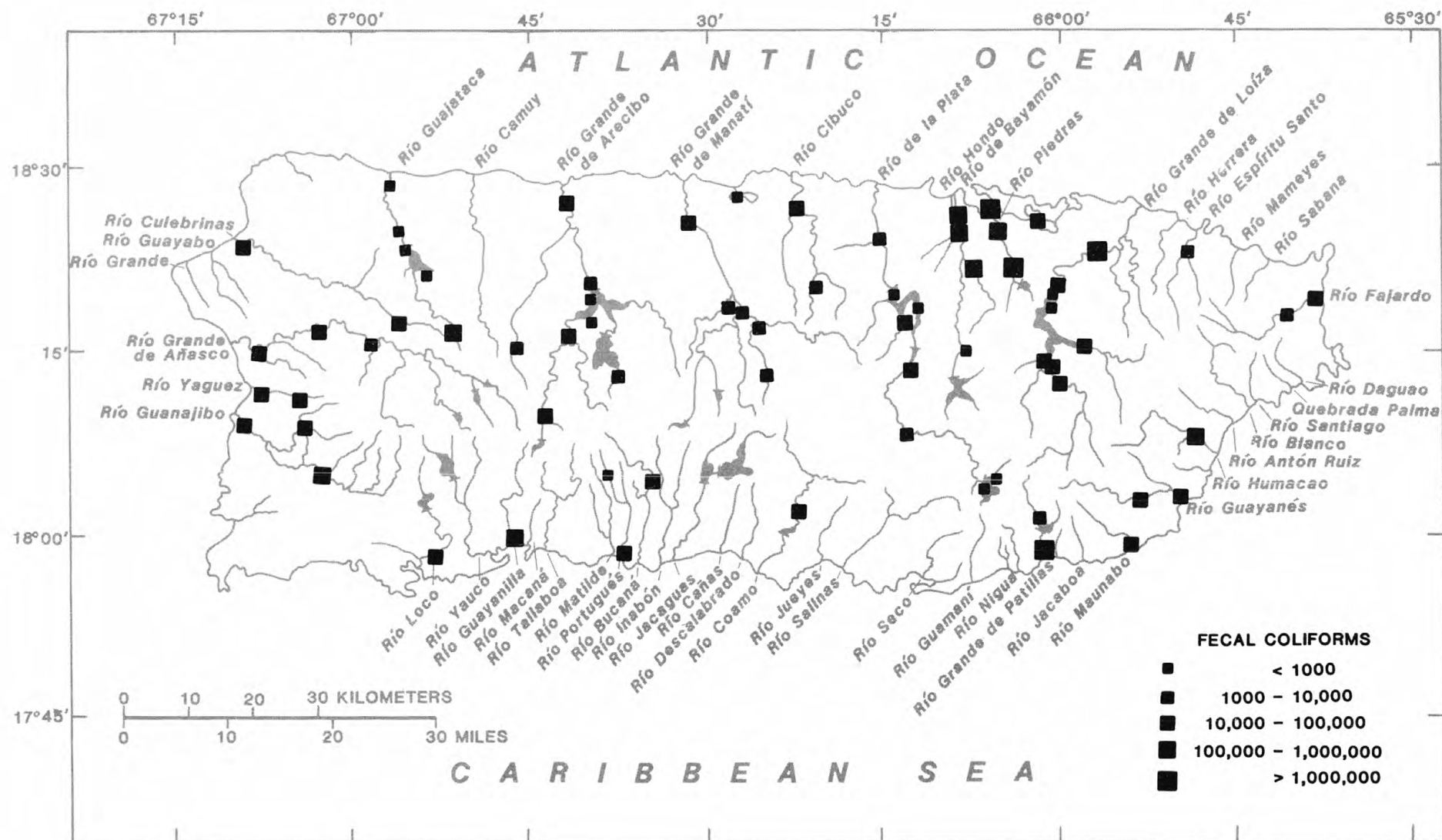


Figure 3.--Location of maximum concentration of fecal coliform bacteria at sampled sites.

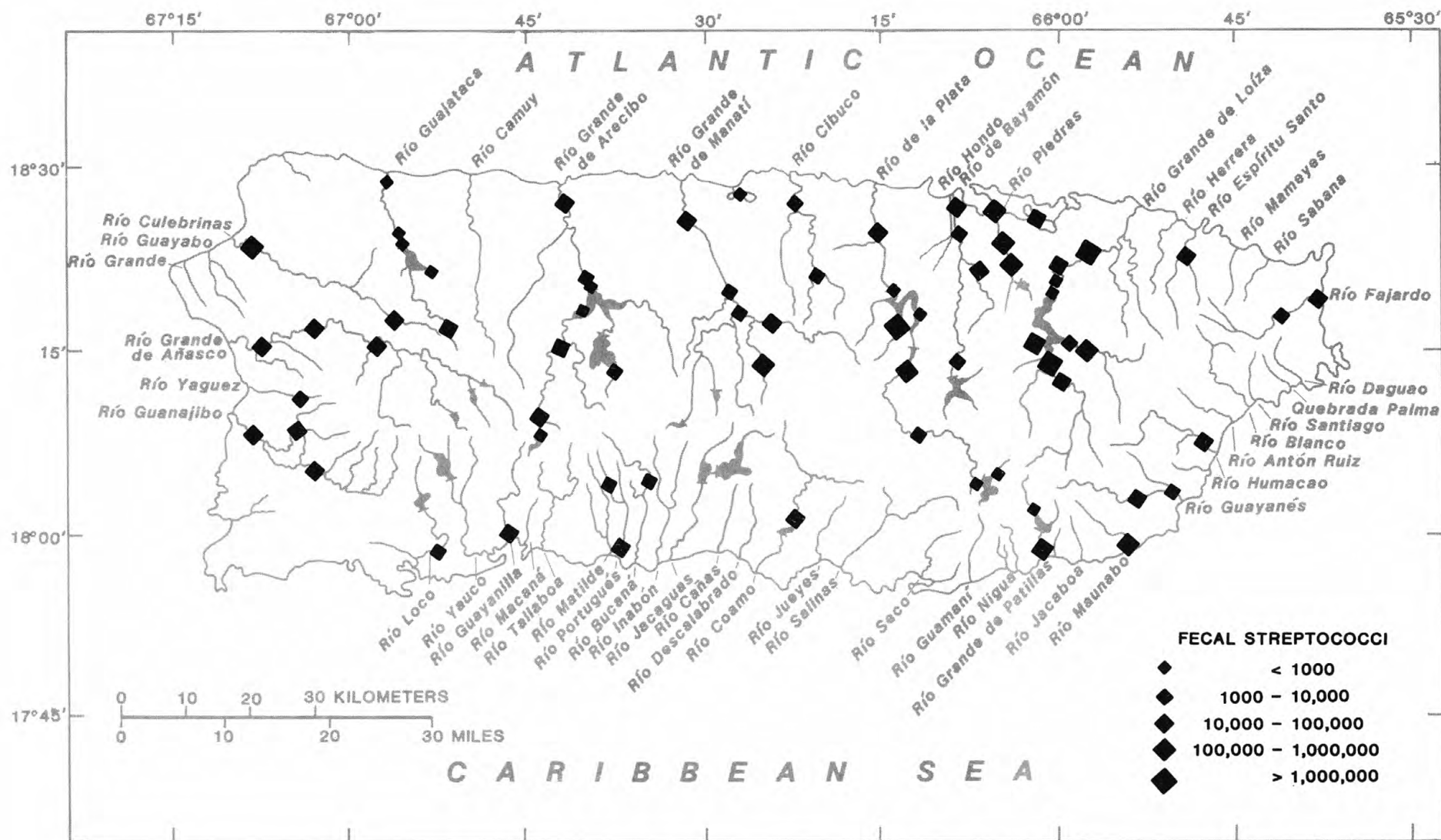


Figure 4.--Location of maximum concentration of fecal streptococci bacteria at sampled sites.

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Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells.

Downstream order system

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 listed between them. A similar order is followed in listing stations in first rank, second rank, and other ranks of tributaries.

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 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."

Latitude-Longitude System

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. 10).

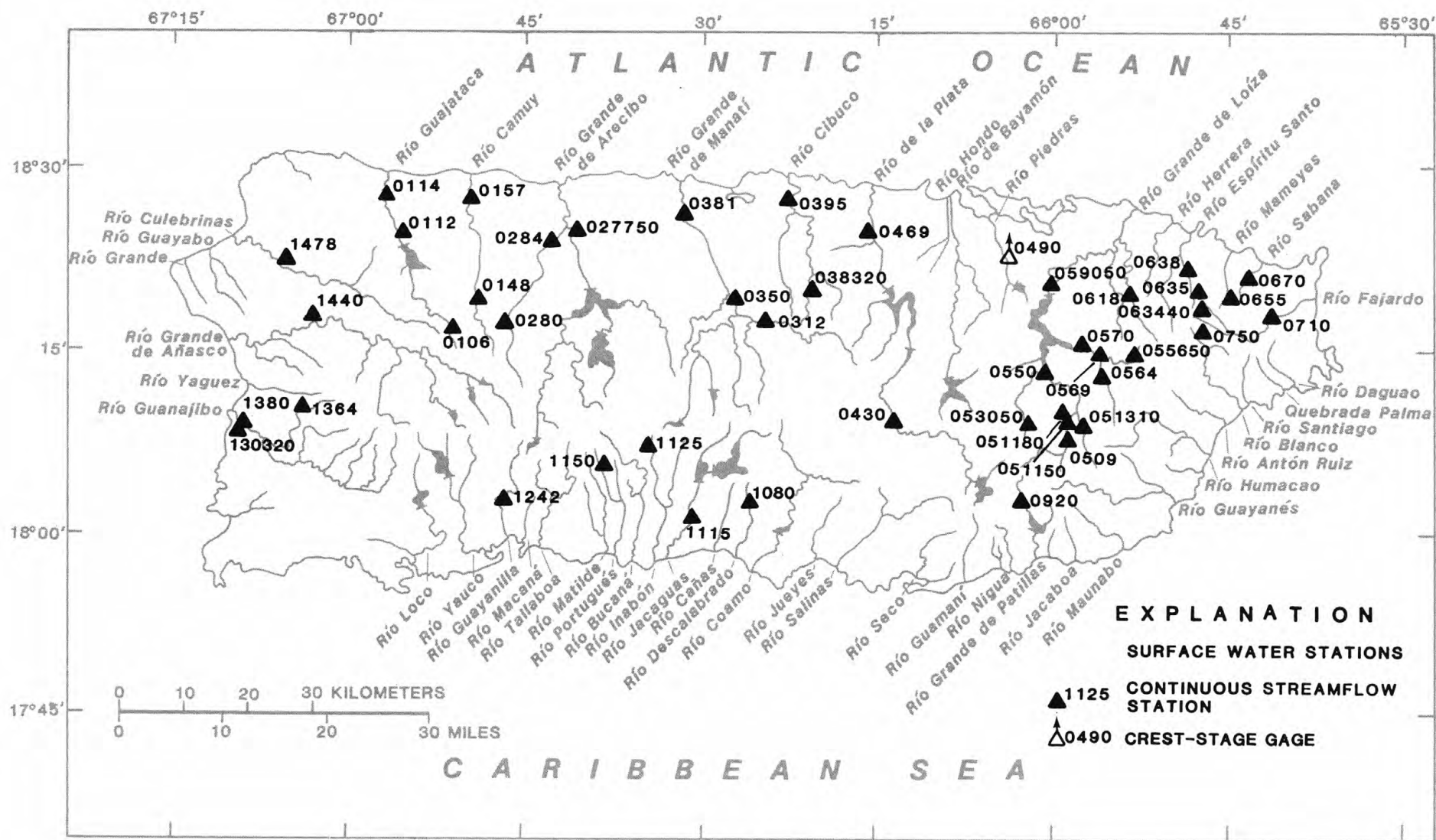


Figure 5.--Location of continuous surface-water and crest-stage gage stations in Puerto Rico.

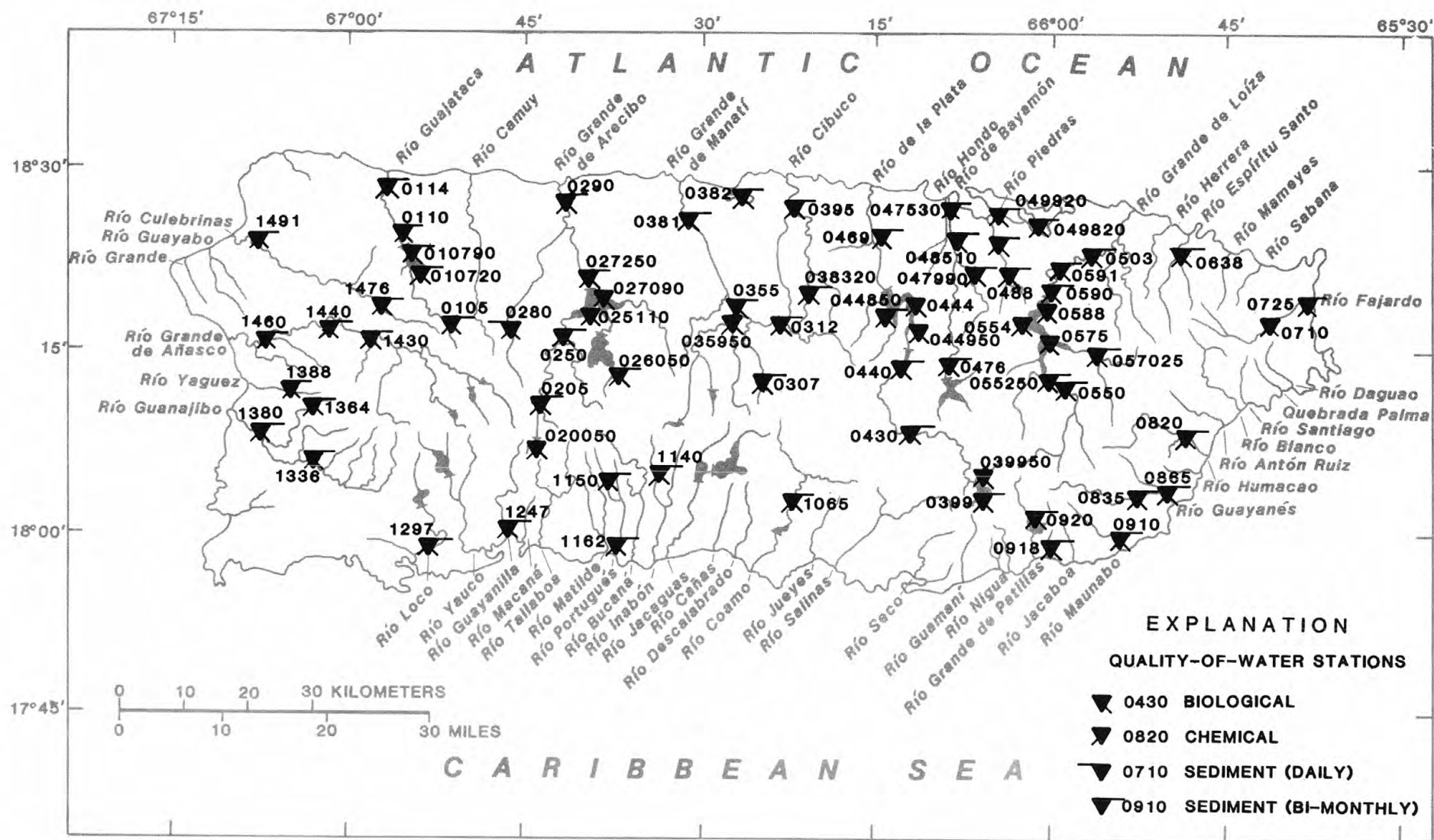


Figure 6.--Location of water-quality stations in Puerto Rico.

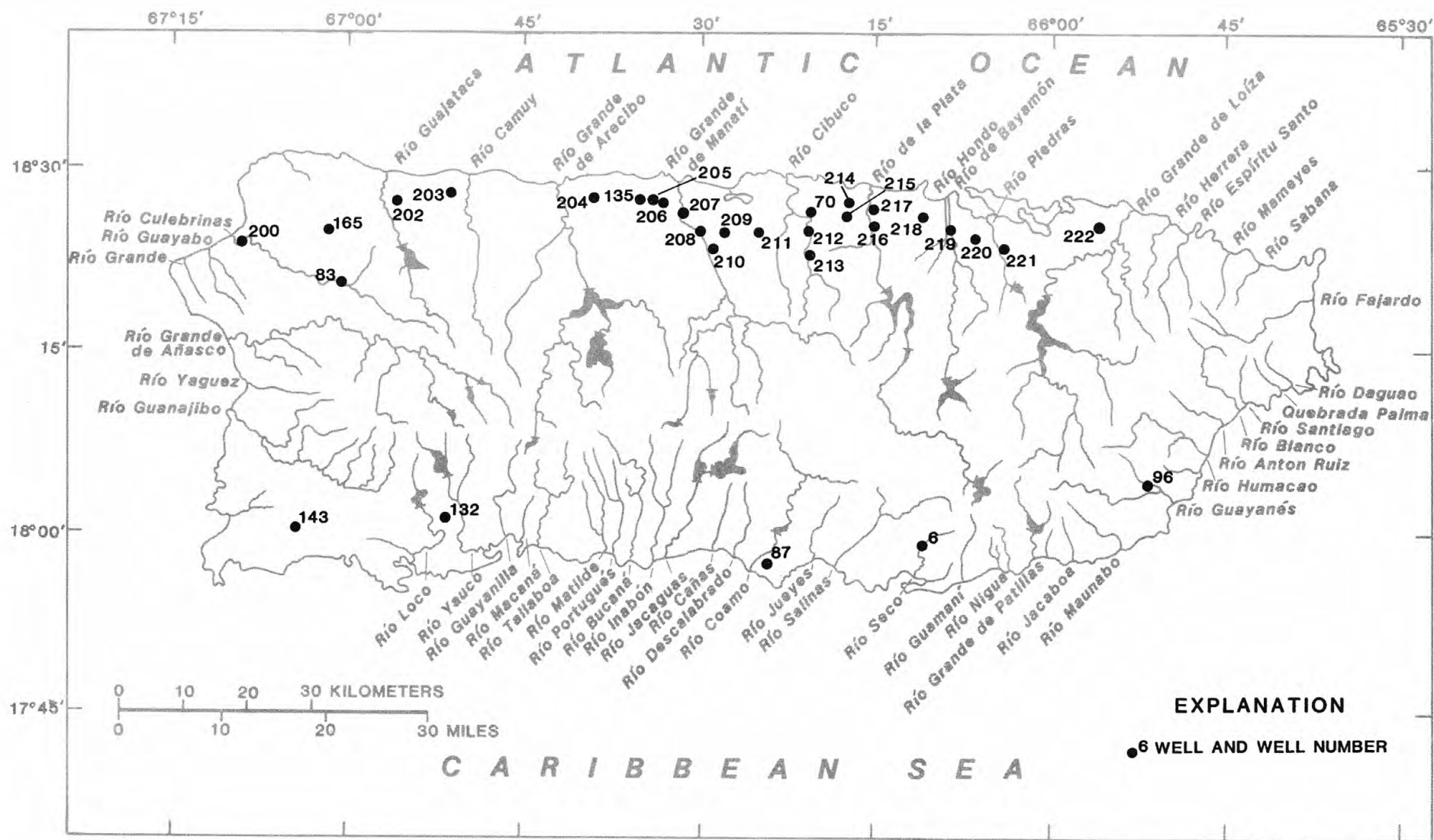


Figure 7.--Location of ground-water stations in Puerto Rico.

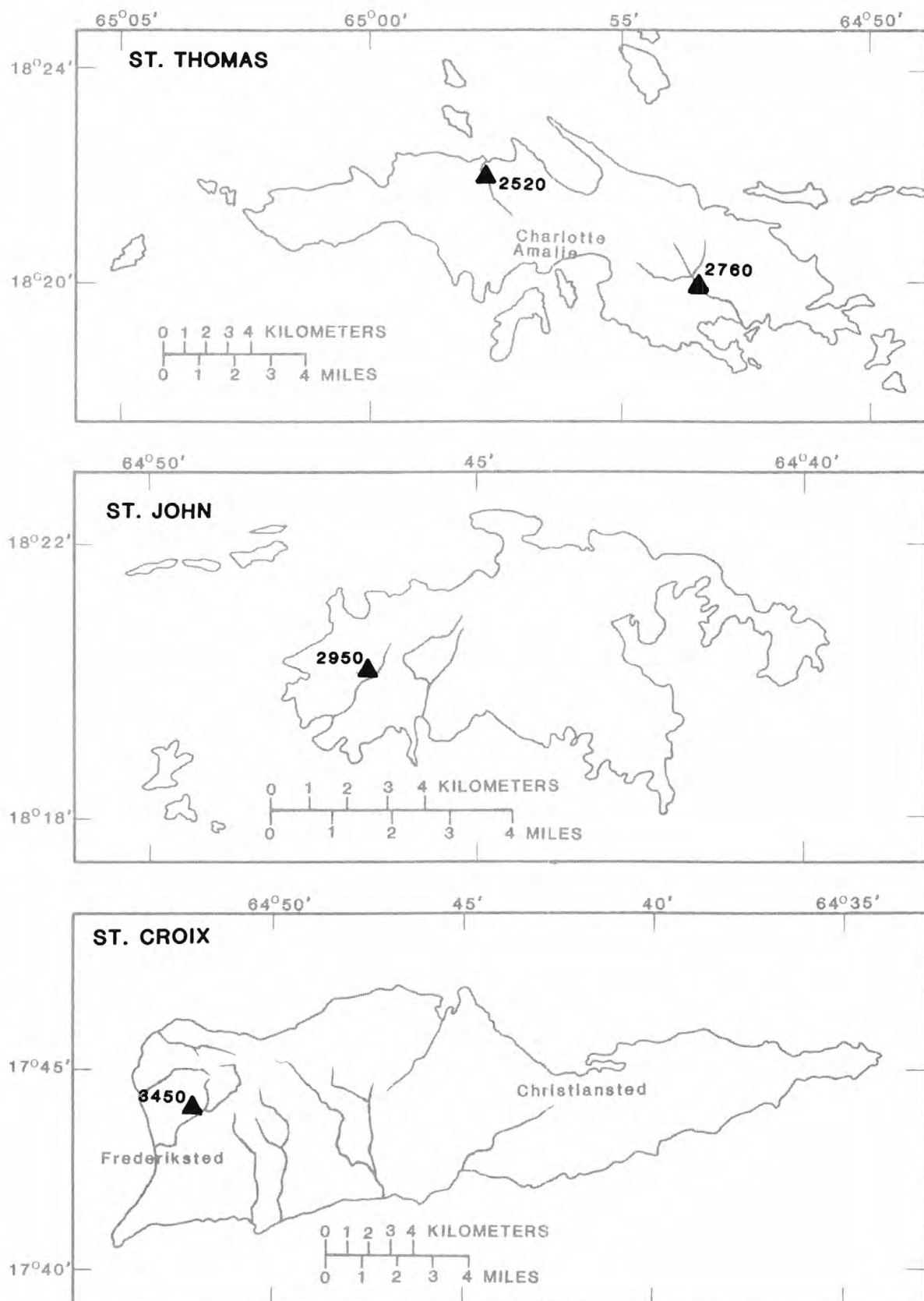


Figure 8.--Location of surface-water stations in the U.S. Virgin Islands.

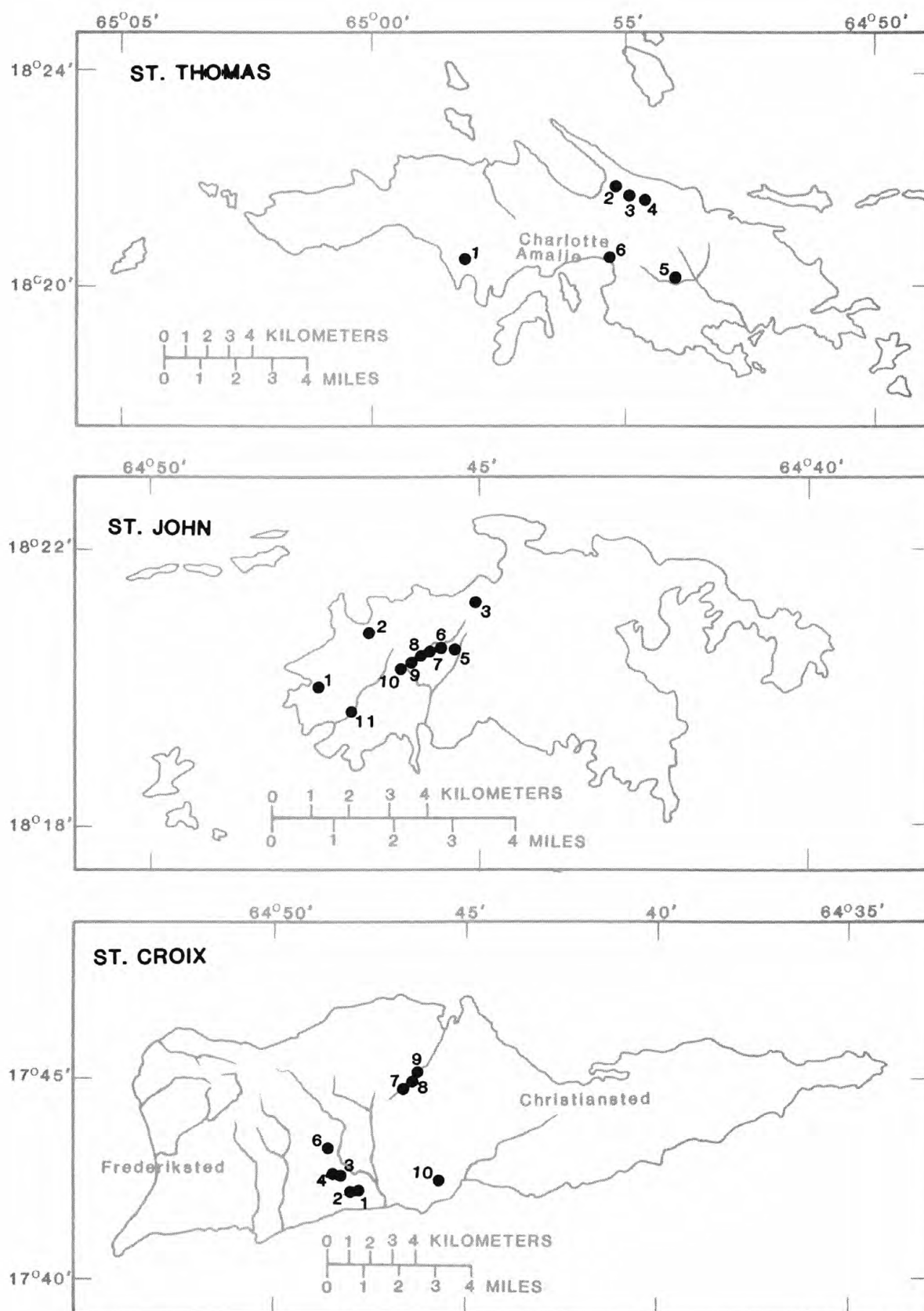


Figure 9.--Location of ground-water stations in the U.S. Virgin Islands.

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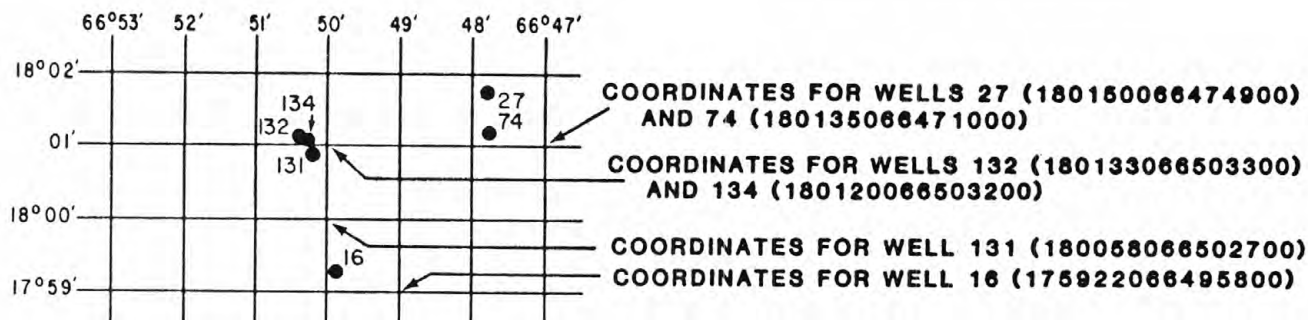


Figure 10.--Grid showing system for numbering wells and miscellaneous sites (latitude and longitude).

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this type of report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 5 and 8.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consists of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

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Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals or electronic satellite data collector platforms that receive stage values at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. 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 determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control.

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.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and contents. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic surveys may be necessary to redefine it. Even when this is done, as time between the last survey increases, the contents computed may increase in error. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

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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 from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted 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 most recently revised figure was first published is given.

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GAGE.--The type of gage in current use, the datum of the current gage, and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computations, to conditions that affect natural flow at the station and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

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EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District office to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives 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 is usually 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 regulations or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations.

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Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables are identified by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated."

Accuracy of the Records

The accuracy of streamflow records 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 measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables are on file in the Caribbean District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

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Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 6.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurement at miscellaneous sites.

On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. Detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey District office.

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One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section 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. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

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, when available, (hourly values) may be obtained from the U.S.G.S. District office whose address is given on the back of the title page of this report.

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 diurnal 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.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the District office.

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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 discharges 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 stream-flow and in predicting long-term sediment-discharge characteristics of the stream.

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

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratories in Denver, Co. or Ocala, Fla. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratories are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first, and tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence, when these parameters are studied.

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In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

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Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

Records of Ground-Water Levels

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.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

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 10.

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Water-level records are obtained from direct measurements with a steel tape or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum 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 day and as an instantaneous observation at noon.

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 of 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 of a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); a landline location designation; the hydrologic-unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

DATUM.--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above mean sea level datum, if available. It is reported with precision depending on the method of determination.

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REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with recorders, daily values tables are published for the instantaneous water-level observation at noon. The highest and lowest water levels of the water year are shown on a line below the table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

Records of Ground-Water Quality

Records of ground-water quality in this type of report differ from other types of records in that for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

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Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed on a following page. The values reported in this type of report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples are obtained by trained personnel. The wells sampled are pumped long enough to assure that the water collected comes directly from the aquifer and has not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Data Presentation

The records of ground-water quality, when available, are published in a section titled QUALITY OF GROUND WATER immediately following the ground-water level records. Data for quality of ground water are listed alphabetically by County, and are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

ACCESS TO WATSTORE DATA

The National WATER Data STORAGE and RETrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

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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 equal to about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present a stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

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, while 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.

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 all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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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 $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ 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 $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on KF-streptococcus 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.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass and represents the actual matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

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).

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Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

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

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

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 salt water.

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 foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second-day (cfs-day) is the volume of water represented by a 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 2,445 cubic meters.

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

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.

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

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

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Dissolved refers to that material in a representative water sample which passes through a 0.45 um membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculations of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

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

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

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 specified 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 stream 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.

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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).

Hydrologic Bench-Mark Network is a network in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter ($\mu\text{g/L}$, $\mu\text{g/L}$) 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. Conversion of chemical concentrations in mg/L to milliequivalents per liter can be done by using the factors in table 5.

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Table 5. Factors for conversion of chemical constituents in milligrams per liter to milliequivalents per liter.

<u>Ion</u>	<u>Multiply by</u>	<u>Ion</u>	<u>Multiply by</u>
Aluminum (Al+3)*.....	0.11119	Iodide (I-1).....	0.00788
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

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

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

National Trends Network (NTN) is a network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area habitat, usually square meters (m²), acres, or hectare. 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.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

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 a particle 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:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
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 matter 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.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

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.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

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 algae 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 per milliliter (cells/mL) of sample.

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

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

$\frac{\text{mg C}}{(\text{m}^2 \cdot \text{time})}$ for periphyton and macrophytes and $\frac{\text{mg C}}{(\text{m}^3 \cdot \text{time})}$ for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either hour or day, depending on the incubation period.

$\frac{\text{mgO}_2}{(\text{m}^2 \cdot \text{time})}$ for periphyton and macrophytes and $\frac{\text{mgO}_2}{(\text{m}^3 \cdot \text{time})}$ for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

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.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

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.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates 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.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

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).

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

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows:
 $\text{concentrations (mg/L)} \times \text{discharge ft}^3/\text{s} \times 0.0027$.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

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 mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

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Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance 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 microsiemens per centimeter 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.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

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. It is associated with the material retained on a 0.45-micrometer filter.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial 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, Hexagenia limbata, is the following:

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Kingdom.....Animal
Phylum.....Arthropoda
Class.....Insecta
Order.....Ephemeroptera
Family.....Ephemeridae
Genus.....Hexagenia
Species.....Hexagenia limbata
  
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Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table heading and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

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.

WATER RESOURCES DATA FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

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

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

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.

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 and which includes 9 of the 12 months. Thus, the year ending September 30, 1980, is called the "1980 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

WATER RESOURCES FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS, 1987

Weighted average is used in this report to indicate discharge-weighted average. It is 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.

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

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

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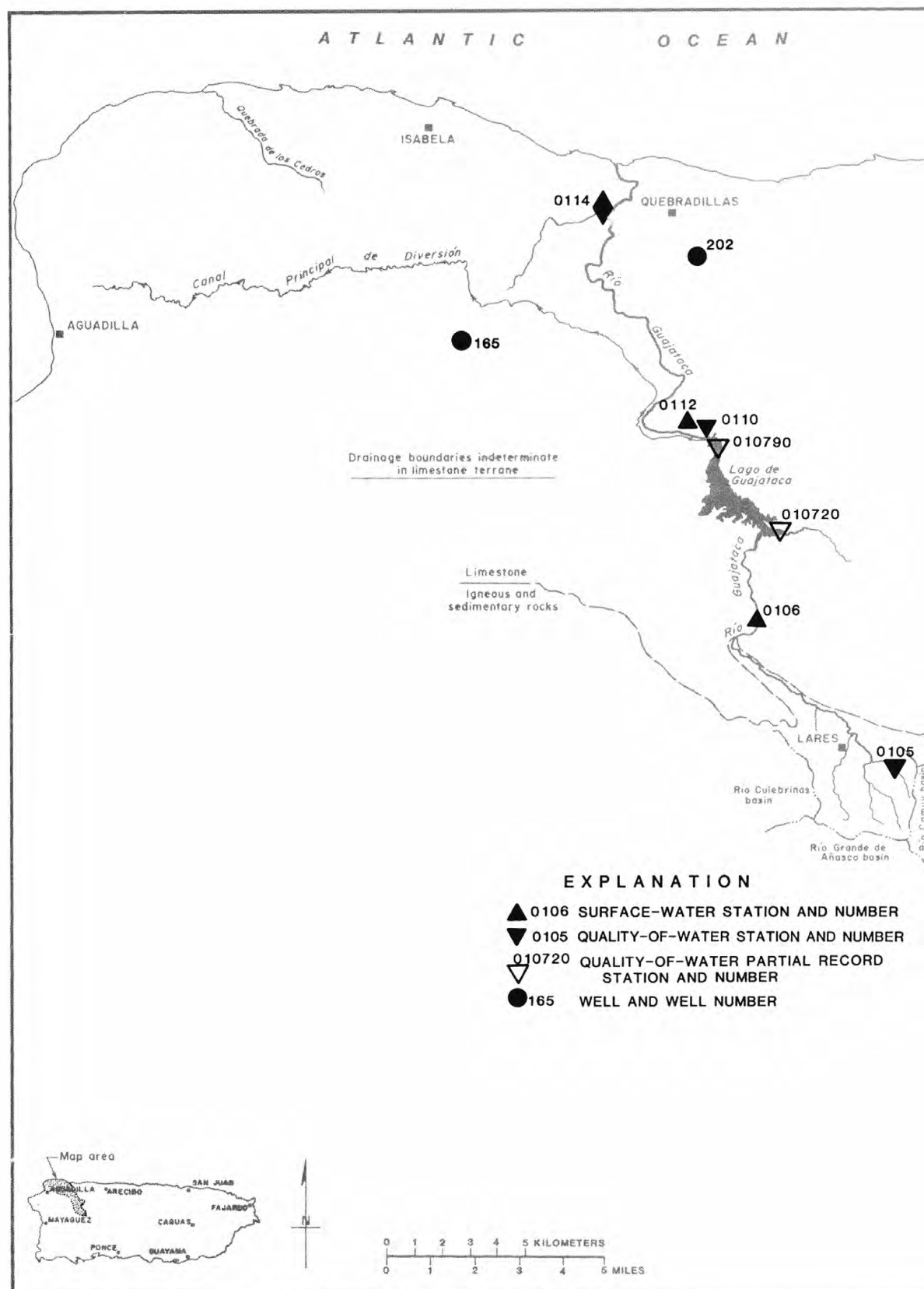


Figure 11.--Río Guajataca basin.

RIO GUAJATACA BASIN

50010500 RIO GUAJATACA AT LARES, PR

WATER-QUALITY RECORDS

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 Anon, and 0.4 mi (0.6 km) northeast of Lares plaza.

DRAINAGE AREA.--3.16 sq mi (8.18 sq km).

PERIOD OF RECORD.--Water years 1958-71, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
24...	0850	9.1	215	7.40	22.5	750	7.6	91	52	K12000	30000
DEC											
05...	0945	6.9	248	7.60	21.0	--	7.9	91	--	K15000	50000
FEB 1987											
20...	0830	1.5	301	7.60	18.5	11	7.1	78	19	K110000	21000
APR											
10...	0925	1.6	252	7.60	22.0	1.4	7.0	83	<10	20000	3000
JUN											
12...	0755	3.7	260	7.90	22.5	32	7.4	87	10	2700	13000
AUG											
07...	0820	2.6	255	7.60	24.0	1.6	6.8	82	15	5300	2000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
24...	73	5	19	6.3	10	0.5	3.4	68	<0.5	11	10
DEC											
05...	--	--	--	--	--	--	--	87	--	--	--
FEB 1987											
20...	--	--	--	--	--	--	--	110	--	--	--
APR											
10...	98	2	28	6.8	13	0.6	1.8	96	<0.5	11	11
JUN											
07...	--	--	--	--	--	--	--	100	--	--	--
AUG											
12...	100	4	31	6.5	13	0.6	2.8	100	--	11	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
24...	0.1	25	126	3.12	1430	1.67	0.03	1.70	0.06	0.74
DEC										
05...	--	--	--	--	1	1.89	0.01	1.90	0.16	0.94
FEB 1987										
20...	--	--	--	--	<1	1.15	0.05	1.20	0.14	0.96
APR										
10...	0.2	31	160	0.71	6	0.68	0.02	0.70	0.03	0.17
JUN										
12...	--	--	--	--	56	1.19	0.01	1.20	0.05	0.65
AUG										
07...	0.2	31	170	1.2	<1	1.19	0.01	1.20	0.03	0.77

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO GUAJATACA BASIN

50010600 RIO GUAJATACA ABOVE LAGO GUAJATACA, PR

LOCATION.--Lat 18°19'57", long 66°55'29", Hydrologic Unit 21010002, 1.0 mi (1.6 km) off road 451, 3 mi (5 km) south of Lago Guajataka, 1.0 mi (1.6 km) east of Eneas and 2.0 mi (3.2 km) west of Piletas.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 565 ft (172 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,600 ft³/s (73.6 m³/s), May 18, 1985, gage height, 12.03 ft (3.667 m), from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-backwater analysis; minimum discharge, 1.9 ft³/s (0.054 m³/s), Feb. 11, 17, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s (42.5 m³/s) and maximum (*):

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. 18	1645	*1,780	50.4	*10.58	3.225	July 27	1830	1,730	49.0	10.48	3.194
May 18	1700	1,520	43.0	10.04	3.060						

Minimum discharge, 2.4 ft³/s (0.068 m³/s), Apr. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	39	283	5.7	6.8	6.6	5.1	94	38	20	14	36
2	5.0	32	105	5.9	6.6	6.6	3.4	85	26	18	12	43
3	57	27	43	5.3	5.6	6.9	4.2	52	98	16	84	119
4	53	27	30	5.4	5.7	7.6	4.0	31	51	15	28	120
5	26	22	22	5.4	5.1	7.8	19	21	43	17	17	61
6	14	21	19	8.4	5.0	6.7	9.7	18	60	13	13	34
7	66	22	17	11	4.7	6.3	36	38	33	11	11	27
8	31	20	16	8.1	4.7	6.1	37	70	22	11	9.8	22
9	48	18	15	6.1	4.7	5.0	17	40	17	11	9.0	44
10	29	16	14	3.7	10	5.6	27	22	15	9.9	8.3	232
11	107	15	12	5.2	57	5.1	82	25	13	9.3	7.7	213
12	56	32	11	5.1	61	5.8	90	27	12	9.3	10	147
13	43	27	11	5.1	22	4.7	54	17	21	8.0	12	96
14	50	16	11	7.3	66	3.7	205	14	14	7.9	7.2	57
15	37	14	11	6.5	43	8.1	246	13	34	10	53	41
16	24	31	9.9	6.5	13	10	168	11	21	9.4	18	34
17	18	36	9.7	6.5	10	10	92	9.8	32	7.4	10	26
18	193	138	9.6	6.5	8.6	6.1	36	163	259	18	42	22
19	219	119	9.0	6.4	7.1	5.5	21	142	91	24	82	31
20	89	48	9.1	6.2	6.7	5.6	15	65	41	11	29	46
21	43	31	8.3	5.8	6.7	4.9	12	30	25	8.7	14	28
22	35	24	8.2	5.7	6.7	4.5	9.2	49	73	16	11	28
23	43	19	7.4	5.7	7.4	4.8	8.2	42	58	129	9.5	23
24	39	18	6.8	5.8	6.9	4.9	7.0	22	32	44	9.2	16
25	35	17	8.5	5.8	6.5	5.2	6.3	289	31	16	8.5	14
26	119	27	5.8	5.7	5.7	5.1	7.0	150	21	17	131	13
27	132	18	5.9	5.7	8.2	4.5	7.5	46	17	219	60	11
28	136	15	6.8	5.5	6.3	4.6	6.4	33	92	87	17	11
29	70	14	8.2	5.4	---	4.1	69	23	55	31	14	12
30	71	24	5.8	15	---	3.0	101	17	37	19	16	9.6
31	50	---	5.9	7.2	---	3.3	---	94	---	15	36	---
TOTAL	1944.6	927	744.9	199.6	407.7	178.7	1405.0	1752.8	1382	857.9	803.2	1616.6
MEAN	62.7	30.9	24.0	6.44	14.6	5.76	46.8	56.5	46.1	27.7	25.9	53.9
MAX	219	138	283	15	66	10	246	289	259	219	131	232
MIN	5.0	14	5.8	3.7	4.7	3.0	3.4	9.8	12	7.4	7.2	9.6

CAL YR 1986 TOTAL 14580.0 MEAN 39.9 MAX 650 MIN 2.2
WTR YR 1987 TOTAL 12220.0 MEAN 33.5 MAX 289 MIN 3.0

RIO GUAJATACA BASIN

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50010600 RIO GUAJATACA ABOVE LAGO GUAJATACA, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 05	1133	21.4	306	23.5	MAY, 06	1132	17.9	387	24.0
DEC, 10	1718	13.6	303	22.0	JUN, 03	1316	20.2	358	24.5
JAN, 14	1243	6.56	318	22.0	JUL, 14	1431	8.14	367	26.0
FEB, 04	1449	5.13	346	22.5	AUG, 05	1206	16.7	337	25.0
MAR, 11	1217	4.58	311	25.0	SEP, 03	1325	20.6	253	24.5
APR, 07	0720	4.26	304	23.0					

RIO GUAJATACA BASIN

50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO DE GUAJATACA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'02", long 66°55'27", off Highway 476 at Lago Guajataka 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.--Water years 1958-64, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
04...	1435	50	315	6.80	25.5	1.2	1.3	16	<10	K91	57
DEC 09...	1330	70	330	6.90	25.0	--	1.5	19	--	K12	K15
FEB 1987											
06...	0800	60	310	7.50	24.5	5.2	4.7	58	14	K4	K5
APR 06...	1540	60	287	7.20	25.5	0.8	2.9	36	12	K1	K1
JUN 09...	1045	60	284	7.40	26.0	1.2	1.4	18	<10	28	28
AUG 04...	1020	45	250	6.60	26.5	10	1.3	17	<10	K21	K20

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
04...	130	4	48	3.3	5.4	0.2	1.8	130	<0.5	9.7	6.6
DEC 09...	--	--	--	--	--	--	--	140	--	--	--
FEB 1987											
06...	--	--	--	--	--	--	--	130	--	--	--
APR 06...	130	12	47	3.6	5.7	0.2	1.4	120	<0.5	9.5	7.7
JUN 09...	--	--	--	--	--	--	--	120	--	--	--
AUG 04...	140	11	50	3.9	5.3	0.2	1.7	130	--	12	7.4

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
04...	<0.1	7.7	160	21.7	4	0.09	<0.01	<0.10	0.32	0.20
DEC 09...	--	--	--	--	<1	0.09	<0.01	<0.10	0.36	0.24
FEB 1987										
06...	--	--	--	--	4	0.09	<0.01	<0.10	0.08	0.42
APR 06...	0.2	7.2	154	25.0	3	0.09	<0.01	<0.10	0.03	0.57
JUN 09...	--	--	--	--	<1	0.09	<0.01	<0.10	0.06	0.74
AUG 04...	0.1	6.1	164	19.9	<1	1.49	<0.01	<1.50	0.01	0.89

K = non-ideal count

RIO GUAJATACA BASIN

50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO DE GUAJATACA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
04...	0.8	--	--	0.04	2	<100	<10	<1	<1	<10
DEC										
09...	0.6	--	--	0.02	--	--	--	--	--	--
FEB 1987										
06...	0.5	--	--	0.01	--	--	--	--	--	--
APR										
06...	0.6	--	--	0.03	2	<100	<10	<1	2	<10
JUN										
09...	0.8	--	--	0.04	--	--	--	--	--	--
AUG										
04...	0.9	2.4	11	0.01	--	--	--	--	--	--

[illegible]

RIO GUAJATACA BASIN

50011200 RIO GUAJATACA BELOW LAGO GUAJATACA, PR

LOCATION.--Lat 18°24'01", long 66°55'40", Hydrologic Unit 21010002, on left bank, 250 ft (76 m) downstream from bridge on Highway 476, 1,000 ft (305 m) downstream from outlet tunnel, and 5.2 mi (8.4 km) southeast of Quebradillas.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1969 to December 1970, April 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 535 ft (163 m), from topographic map.

REMARKS.-- Records fair. Flow regulated by Lago Guajataka Dam. Low flows are from seepage through and under dam and nearby springs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,350 ft³/s (38.2 m³/s), May 13, 1986, gage height, 11.97 ft (3.648 m), from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of step-backwater analysis; minimum discharge, 0.53 ft³/s (0.015 m³/s), May 31, June 1, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 451 ft³/s (12.8 m³/s), April 20, gage height, 9.39 ft (2.862 m); minimum discharge, 0.70 ft³/s (0.020 m³/s), May 23-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.4	1.6	1.4	1.2	1.1	1.6	1.2	1.1	147	1.9	2.5
2	1.5	1.4	1.5	1.4	1.1	1.1	1.5	1.0	1.1	149	1.8	2.5
3	1.8	1.4	1.4	1.4	.94	1.2	1.4	.90	1.3	154	1.9	2.5
4	1.6	1.4	1.4	1.4	1.1	1.3	1.2	62	1.3	165	1.9	2.4
5	1.5	1.4	1.4	1.5	1.4	1.3	1.2	175	1.3	163	1.9	2.2
6	1.4	1.5	1.4	1.8	1.6	1.3	1.1	186	1.4	162	1.9	2.2
7	1.7	1.4	1.4	1.7	1.5	1.2	1.2	185	1.3	64	1.9	2.2
8	1.4	1.4	1.4	1.5	1.4	1.2	1.1	185	1.4	1.8	1.9	2.2
9	1.4	1.3	1.6	1.4	1.4	1.1	1.1	184	1.4	1.9	1.9	2.0
10	1.3	1.3	1.6	1.4	1.6	1.3	1.1	184	1.4	1.9	2.0	1.9
11	1.4	1.3	1.5	1.4	1.9	1.1	1.2	66	1.4	2.1	2.1	2.3
12	1.3	1.3	1.5	1.4	1.6	1.0	1.6	.91	1.4	2.1	2.1	2.2
13	1.3	1.3	1.4	1.5	1.5	1.1	1.5	.84	1.4	2.0	2.1	2.2
14	1.3	1.3	1.3	1.7	1.4	1.0	36	.85	1.4	2.0	2.4	2.3
15	1.3	1.3	1.3	1.5	1.4	1.1	241	.82	1.3	2.2	2.1	2.3
16	1.3	1.3	1.4	1.4	1.3	1.1	361	.81	1.3	2.1	2.1	2.3
17	1.5	1.3	1.4	1.5	1.3	1.2	362	.81	1.3	1.9	2.1	2.2
18	1.7	1.3	1.3	1.4	1.4	.95	360	.80	1.9	1.8	2.2	2.2
19	2.1	1.4	1.3	1.4	1.4	1.0	357	.77	88	1.8	2.3	2.3
20	1.6	1.6	1.3	1.5	1.4	1.0	391	.77	142	2.0	2.2	2.5
21	1.4	1.4	1.3	1.6	1.4	1.0	429	.78	143	2.2	2.2	2.4
22	1.3	1.3	1.3	1.6	1.3	1.0	232	.74	143	2.1	2.1	2.4
23	1.4	1.4	1.3	1.6	1.3	1.0	132	.70	143	2.1	2.1	2.5
24	1.4	1.4	1.3	1.6	1.4	1.0	56	.70	144	2.0	2.1	2.5
25	1.3	1.6	1.4	1.6	1.4	1.2	.87	.71	145	1.9	2.5	2.5
26	1.3	1.6	1.4	1.6	1.4	1.2	.85	.81	144	1.8	2.6	2.2
27	1.5	1.4	1.4	1.7	1.4	1.2	.83	1.1	144	1.8	2.5	2.2
28	1.5	1.4	1.4	1.5	1.2	1.1	1.0	1.2	146	1.8	2.5	2.3
29	1.4	1.4	1.4	1.4	---	1.0	1.0	1.2	146	1.8	2.5	2.6
30	1.4	1.4	1.6	1.4	---	1.1	2.2	1.2	146	1.9	2.5	2.6
31	1.4	---	1.6	1.4	---	1.4	---	1.1	---	1.9	2.5	---
TOTAL	45.1	41.6	43.8	46.6	38.64	34.85	2980.55	1247.72	1698.4	1050.9	66.8	69.6
MEAN	1.45	1.39	1.41	1.50	1.38	1.12	99.4	40.2	56.6	33.9	2.15	2.32
MAX	2.1	1.6	1.6	1.8	1.9	1.4	429	186	146	165	2.6	2.6
MIN	1.3	1.3	1.3	1.4	.94	.95	.83	.70	1.1	1.8	1.8	1.9

CAL YR 1986 TOTAL 27032.04 MEAN 74.1 MAX 1110 MIN .71
WTR YR 1987 TOTAL 7364.56 MEAN 20.2 MAX 429 MIN .70

RIO GUAJATACA BASIN

50011200 RIO GUAJATACA BELOW LAGO DE GUAJATACA, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 04	0813	1.40	360	26.0	APR, 07	1158	1.16	343	27.0
DEC, 12	0856	1.52	303	25.5	MAY, 06	1345	188	276	26.0
JAN, 14	1507	1.76	356	25.0	JUN, 06	1150	1.25	384	27.0
FEB, 05	1327	1.38	327	26.0	AUG, 03	1316	1.83	376	26.0
MAR, 11	1433	1.05	361	26.0	SEP, 02	1512	2.52	345	27.0

RIO GUAJATACA BASIN

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR

LOCATION.--Lat 18°28'31", long 66°57'46", Hydrologic Unit 21010002, on left bank at ford 1.7 mi (2.7 km) upstream from bridge on Highway 2, 1.6 mi (2.6 km) west of Quebradillas plaza, 2.1 mi (3.4 km) upstream from the Atlantic Ocean, and 6.6 mi (10.6 km) downstream from Lago Guajataca.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to May 1969 (monthly measurements only), July 1969 to December 1970, April 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 0.0 ft (0.0 m), from topographic map.

REMARKS.--Records poor. Flow regulated by lago Guajataca 6.6 mi (10.6 km) upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,200 ft³/s (176 m³/s), May 13, 1986, estimated based on a mean daily discharge correlation with station 50011200, 6.5 miles upstream; minimum discharge, 6.2 ft³/s (0.176 m³/s), Sept. 4, 9-12, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,730 ft³/s (134 m³/s), Mar 16; minimum daily discharge, 6.0 ft³/s (0.170 m³/s), Jan. 16, during period of estimated record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	e16	14	12	e7.2	e7.0	e9.5	e14	17	91	16	e18
2	e15	e16	33	12	e7.2	e7.8	e9.5	e11	17	88	16	e18
3	e14	e16	14	14	e7.2	e7.0	e9.5	e10	25	86	16	e18
4	15	e16	13	22	e7.2	e7.0	e10	e160	25	99	15	e22
5	17	e16	12	11	e7.2	e7.6	e9.8	e130	19	94	15	19
6	15	25	12	e7.9	e7.0	e7.6	9.9	e190	30	89	15	18
7	22	17	11	e7.2	e7.2	e7.6	10	e190	25	66	15	18
8	28	17	11	e7.2	e10	e8.4	10	e190	20	18	15	18
9	17	17	11	e8.0	e9.0	e8.4	11	184	18	17	15	18
10	23	17	11	e8.0	11	e8.4	11	173	17	17	15	e18
11	e19	16	11	e8.0	71	e8.4	11	121	17	17	17	e19
12	e16	17	11	e7.0	280	e7.0	15	26	16	19	21	e50
13	e15	19	11	e7.0	85	e8.1	72	19	17	17	21	26
14	e15	17	11	e7.0	24	e8.1	163	17	17	17	22	20
15	e15	15	11	e7.0	28	e11	422	16	32	18	23	21
16	e16	20	15	e6.2	12	e190	1190	16	19	18	e27	e22
17	e18	e15	14	e7.0	12	218	862	16	17	17	e27	19
18	e20	e13	11	e6.8	12	11	434	16	163	17	e27	20
19	e25	e12	11	e6.4	12	9.8	316	16	309	17	e28	e19
20	e18	e19	11	e6.4	11	e11	e350	16	135	21	e18	e136
21	e16	13	e11	e6.6	11	9.7	e1100	17	108	18	e16	80
22	e15	e12	e11	e6.6	11	e10	e450	17	129	18	e16	25
23	e16	e12	e10	e6.6	13	e10	e160	18	132	18	e15	22
24	e16	12	e11	e6.8	14	e10	e90	19	99	20	e15	e20
25	e15	12	11	e6.8	e7.0	e10	e10	18	97	18	e15	e22
26	e15	13	12	e6.8	e7.0	e10	e9.8	19	96	18	e18	e22
27	e17	13	12	e7.7	e7.0	e10	e9.7	19	93	17	e19	e20
28	e17	12	12	e7.2	e7.0	e10	e12	19	185	18	e18	e19
29	e16	12	12	e7.2	---	e10	e12	19	186	17	e18	e19
30	e16	12	12	e7.2	---	e13	e20	19	100	16	e18	e23
31	e16	---	12	e7.2	---	9.6	---	23	---	16	e18	---
TOTAL	533	459	385	254.8	704.2	671.5	5808.7	1798	2180	1037	570	809
MEAN	17.2	15.3	12.4	8.22	25.1	21.7	194	58.0	72.7	33.5	18.4	27.0
MAX	28	25	33	22	280	218	1190	190	309	99	28	136
MIN	14	12	10	6.2	7.0	7.0	9.5	10	16	16	15	18

CAL YR 1986 TOTAL 63410.9 MEAN 174 MAX 4300 MIN 8.8
WTR YR 1987 TOTAL 15210.2 MEAN 41.7 MAX 1190 MIN 6.2

e Estimated

RIO GUAJATACA BASIN

61

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
05...	1610	17	515	7.20	25.5	0.5	9.1	112	<10	K64	600
DEC											
12...	0945	11	592	7.30	23.5	0.4	6.0	71	<10	K73	260
FEB 1987											
03...	1455	7.1	613	7.30	24.5	0.5	8.7	105	<10	K50	K110
APR											
06...	1315	9.8	572	7.20	26.0	0.3	7.4	92	<10	K10	K4
JUN											
09...	1330	19	470	7.60	25.0	1.3	7.4	89	<10	K110	240
AUG											
04...	1340	15	463	7.40	26.5	0.6	10.3	128	37	K31	96

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
05...	210	25	74	7.2	15	0.5	1.1	190	<0.5	9.4	26
DEC											
12...	--	--	--	--	--	--	--	220	--	--	--
FEB 1987											
03...	--	--	--	--	--	--	--	200	--	--	--
APR											
06...	250	28	83	9.9	26	0.8	1.1	220	<0.5	9.9	54
JUN											
09...	--	--	--	--	--	--	--	190	--	--	--
AUG											
04...	210	19	71	7.7	17	0.5	1.2	190	--	9.0	28

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
05...	<0.1	6.6	253	11.6	<1	1.49	0.01	1.50	0.21	0.68
DEC										
12...	--	--	--	--	1	2.29	0.01	2.30	0.01	0.99
FEB 1987										
03...	--	--	--	--	1	2.29	0.01	2.30	0.02	0.28
APR										
06...	0.1	6.2	322	8.34	6	2.49	0.01	2.50	0.03	0.87
JUN										
09...	--	--	--	--	4	1.79	0.01	1.80	0.04	0.36
AUG										
04...	0.1	6.4	254	10.5	3	0.09	0.01	1.00	0.17	0.83

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
05...	0.7	2.2	--	0.01	<1	<100	<10	<1	<1	<10
DEC										
12...	1.0	3.3	15	<0.01	--	--	--	--	--	--
FEB 1987										
03...	0.3	2.6	12	0.01	--	--	--	--	--	--
APR										
06...	0.9	3.4	15	0.01	<1	<100	20	<1	4	<10
JUN										
09...	0.4	2.2	9.7	0.03	--	--	--	--	--	--
AUG										
04...	1.0	2.0	--	0.02	--	--	--	--	--	--

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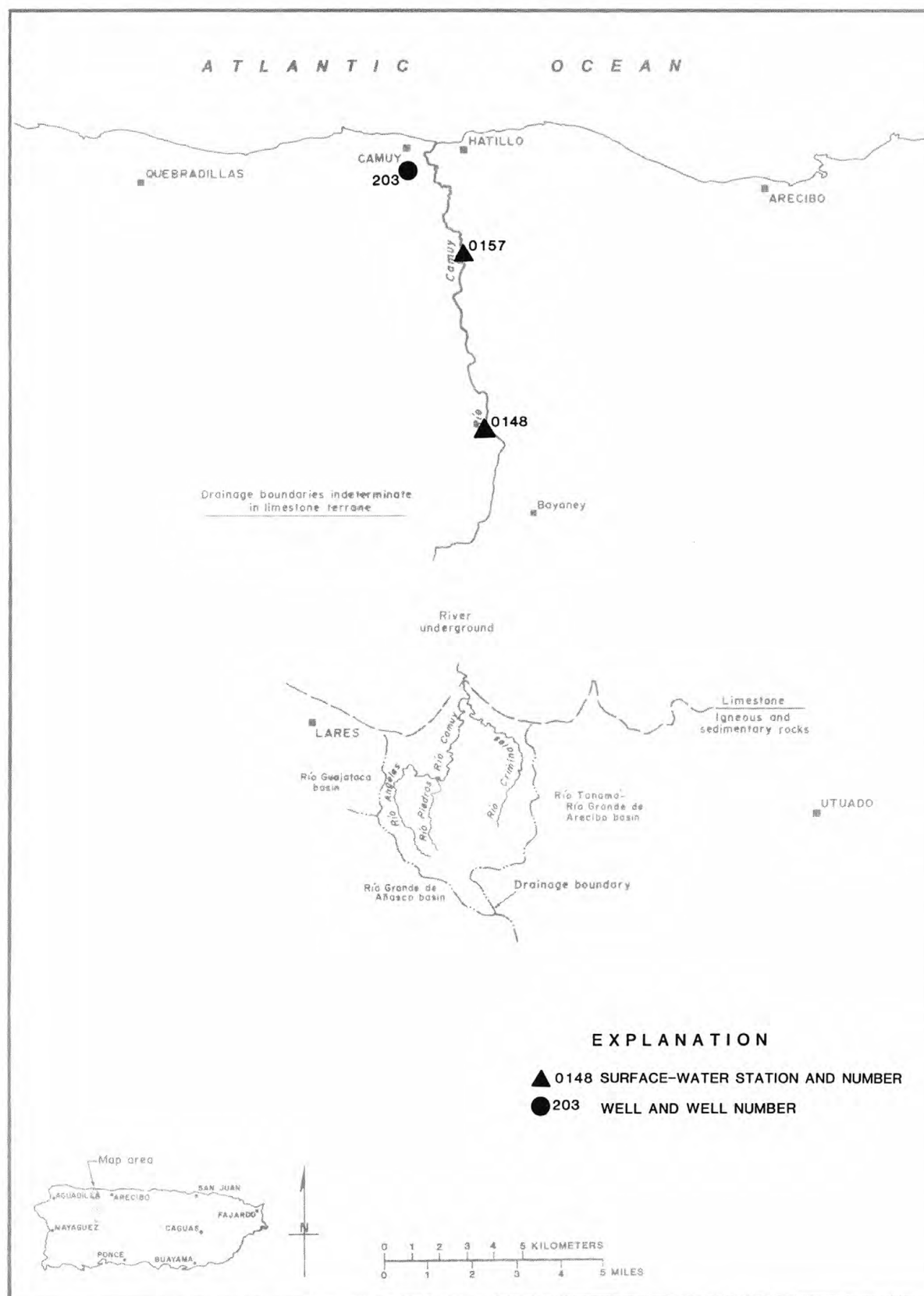


Figure 12.--Río Camuy basin.

RIO CAMUY BASIN

50014800 RIO CAMUY NEAR BAYANEY, PR

LOCATION ---Lat 18°23'48", long 66°49'04", Hydrologic Unit 21010002, on left bank at Highway 488, 1.4 mi (2.2 km) southeast of school at Santiago, 0.9 mi (1.4 km) northwest from Escuela Manuel A. Rivera at Bayaney and 9.1 mi (14.6 km) upstream from Atlantic Ocean.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 341 ft (104 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,450 ft³/s (183 m³/s), Oct. 7, 1985, gage height, 17.66 ft (5.383 m), from rating curve extended above 300 ft³/s (8.50 m³/s) on basis of step-backwater analysis; minimum discharge, 28 ft³/s (0.79 m³/s), Mar. 15-17, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s (56.6 m³/s) and maximum (*):

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)
June 28	1645	*2,730	77.3	*13.12	3.999						

Minimum discharge, 31 ft³/s (0.878 m³/s), all or part of each day Mar. 28 to Apr. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	87	286	55	50	41	31	280	111	108	60	64
2	49	80	300	53	46	39	31	215	96	96	54	85
3	64	74	139	53	43	39	37	157	114	89	62	86
4	159	83	109	52	43	39	41	98	87	87	74	110
5	169	71	99	52	42	38	65	76	101	94	62	114
6	100	73	93	52	42	38	40	67	212	79	52	83
7	169	72	89	60	41	36	51	72	129	77	50	84
8	111	71	85	57	40	36	58	129	93	76	49	85
9	93	70	82	55	40	36	35	100	82	80	49	67
10	85	67	81	51	89	35	39	70	77	75	47	169
11	78	67	79	50	324	34	227	107	72	70	46	304
12	125	79	78	47	370	34	472	102	68	66	44	427
13	77	100	76	47	152	34	283	72	67	64	56	253
14	89	75	76	49	97	34	204	65	66	62	45	133
15	94	70	76	52	111	49	315	61	72	60	65	114
16	82	128	75	49	76	44	388	57	92	67	54	107
17	66	153	72	46	67	69	295	51	99	59	46	97
18	169	339	70	46	56	40	131	181	240	57	44	82
19	282	598	67	44	53	37	92	196	222	89	60	99
20	210	257	66	44	50	38	77	90	102	73	66	168
21	105	149	65	44	48	36	69	93	97	63	53	106
22	87	132	64	44	46	35	66	141	189	57	44	105
23	101	111	63	42	45	34	60	139	142	55	43	95
24	126	97	61	43	43	33	54	92	153	55	42	80
25	83	91	61	43	43	32	50	261	116	52	43	73
26	126	88	62	41	42	33	46	200	89	46	71	70
27	155	91	61	41	50	33	44	105	80	210	86	67
28	185	80	58	41	43	31	44	87	436	205	56	64
29	173	79	58	42	---	31	44	88	293	89	47	66
30	120	82	57	67	---	31	293	76	142	68	47	63
31	105	---	56	63	---	31	---	131	---	63	64	---
TOTAL	3689	3614	2764	1525	2192	1150	3682	3659	3939	2491	1681	3520
MEAN	119	120	89.2	49.2	78.3	37.1	123	118	131	80.4	54.2	117
MAX	282	598	300	67	370	69	472	280	436	210	86	427
MIN	49	67	56	41	40	31	31	51	66	46	42	63

CAL YR 1986 TOTAL 52490 MEAN 144 MAX 1700 MIN 29
WTR YR 1987 TOTAL 33906 MEAN 92.9 MAX 598 MIN 31

RIO CAMUY BASIN

50014800 RIO CAMUY NEAR BAYANEY, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 03	1251	73.6	309	24.0	APR, 06	1353	37.8	333	25.0
DEC, 09	1250	36.5	278	23.0	MAY, 05	1247	74	311	24.0
JAN, 13	1327	46.1	320	23.0	JUN, 02	1250	78.3	284	24.5
FEB, 03	1411	42	286	23.0	AUG, 04	1207	67.4	281	24.5
MAR, 10	1252	35.6	313	23.0	SEP, 01	1417	60.5	270	25.0

RIO CAMUY BASIN

50015700 RIO CAMUY NEAR HATILLO, PR

LOCATION.--Lat 18°27'44", long 66°49'56", Hydrologic Unit 21010002, 1.8 mi (2.9 km) southwest of Hatillo plaza, and 1.8 mi (2.9 km) southeast of Camuy plaza, 1.2 mi (1.9 km) south of Planta de Purificación, and 3.3 mi (5.5 km) upstream from Atlantic Ocean.

DRAINAGE AREA.--Indeterminate.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 13 ft (4 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s), Oct. 7, 1985, gage height, 24.75 ft (7.544 m), from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of step-backwater analysis; minimum discharge, 36 ft³/s (1.02 m³/s), Mar. 19, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s (70.8 m³/s) and maximum (*):

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)
Feb. 12	0300	2,560	72.5	14.91	4.544	Apr. 30	2200	3,320	94.0	16.40	4.999
Apr. 13	0330	3,230	91.5	16.23	4.947	June 28	2000	*4,000	113	*17.59	5.361
Apr. 16	2100	3,400	96.3	16.55	5.044						

Minimum daily discharge, 37 ft³/s (1.05 m³/s), Mar. 2, during period of estimated record.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	101	213	61	53	56	e38	638	161	140	e90	69
2	64	94	e360	59	54	54	e37	322	117	123	75	90
3	66	89	e210	58	48	53	e40	250	157	114	82	86
4	136	95	e130	58	47	53	e45	134	123	108	97	95
5	221	86	e120	58	46	53	e90	107	116	110	84	168
6	111	95	e110	59	46	52	57	95	309	99	69	107
7	202	90	e100	66	45	51	51	99	191	98	e62	98
8	152	91	e95	64	44	50	103	179	133	92	e58	102
9	116	91	e92	60	43	51	57	136	117	110	e57	75
10	111	87	e90	57	65	53	57	97	108	103	e58	208
11	80	85	e86	56	631	50	352	142	99	94	e56	424
12	129	87	82	54	1140	49	1410	152	95	85	e56	670
13	83	120	82	55	286	48	1480	101	90	82	e90	402
14	93	91	e81	57	134	51	624	88	89	78	e60	170
15	101	87	e81	63	151	84	608	83	87	76	e94	131
16	97	114	80	57	105	e74	1100	77	120	81	e86	127
17	79	166	77	55	93	e120	1060	69	92	76	e64	115
18	158	206	74	53	81	e64	340	146	407	74	e60	94
19	408	712	73	51	75	e58	200	305	384	e140	e80	87
20	373	402	71	51	70	e60	150	114	142	e110	e84	187
21	143	180	70	51	67	e56	115	122	141	e90	72	131
22	117	162	69	51	66	e54	107	168	312	e80	56	117
23	103	155	67	50	63	e52	84	202	221	e74	54	107
24	149	124	66	49	62	e50	89	225	193	e72	53	91
25	101	117	67	48	60	e47	82	474	175	e66	e58	82
26	117	111	67	48	60	e49	75	468	132	e62	e100	78
27	215	114	67	48	70	e48	71	174	126	e350	e110	75
28	171	101	64	47	59	e45	69	140	817	e300	e80	72
29	230	101	64	48	---	e42	68	129	661	e200	57	74
30	122	101	63	68	---	e41	541	121	190	e160	e56	71
31	125	---	62	65	---	e39	---	151	---	e110	69	---
TOTAL	4439	4255	3033	1725	3764	1707	9200	5708	6105	3557	2227	4403
MEAN	143	142	97.8	55.6	134	55.1	307	184	203	115	71.8	147
MAX	408	712	360	68	1140	120	1480	638	817	350	110	670
MIN	64	85	62	47	43	39	37	69	87	62	53	69

CAL YR 1986 TOTAL 95169 MEAN 261 MAX 5460 MIN 48
WTR YR 1987 TOTAL 50123 MEAN 137 MAX 1480 MIN 37

e Estimated

RIO CAMUY BASIN

50015700 RIO CAMUY NEAR HATILLO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 03	1014	88.6	306	23.5	APR, 06	1014	57.5	353	27.0
DEC, 12	1208	82	303	23.5	MAY, 05	1022	108	344	24.0
JAN, 13	1032	54.5	342	22.0	JUN, 02	1012	115	293	24.5
FEB, 03	1125	49	316	22.5	AUG, 04	0912	98.5	316	24.0
MAR, 10	1046	52.5	335	23.5	SEP, 01	1131	71	306	25.0

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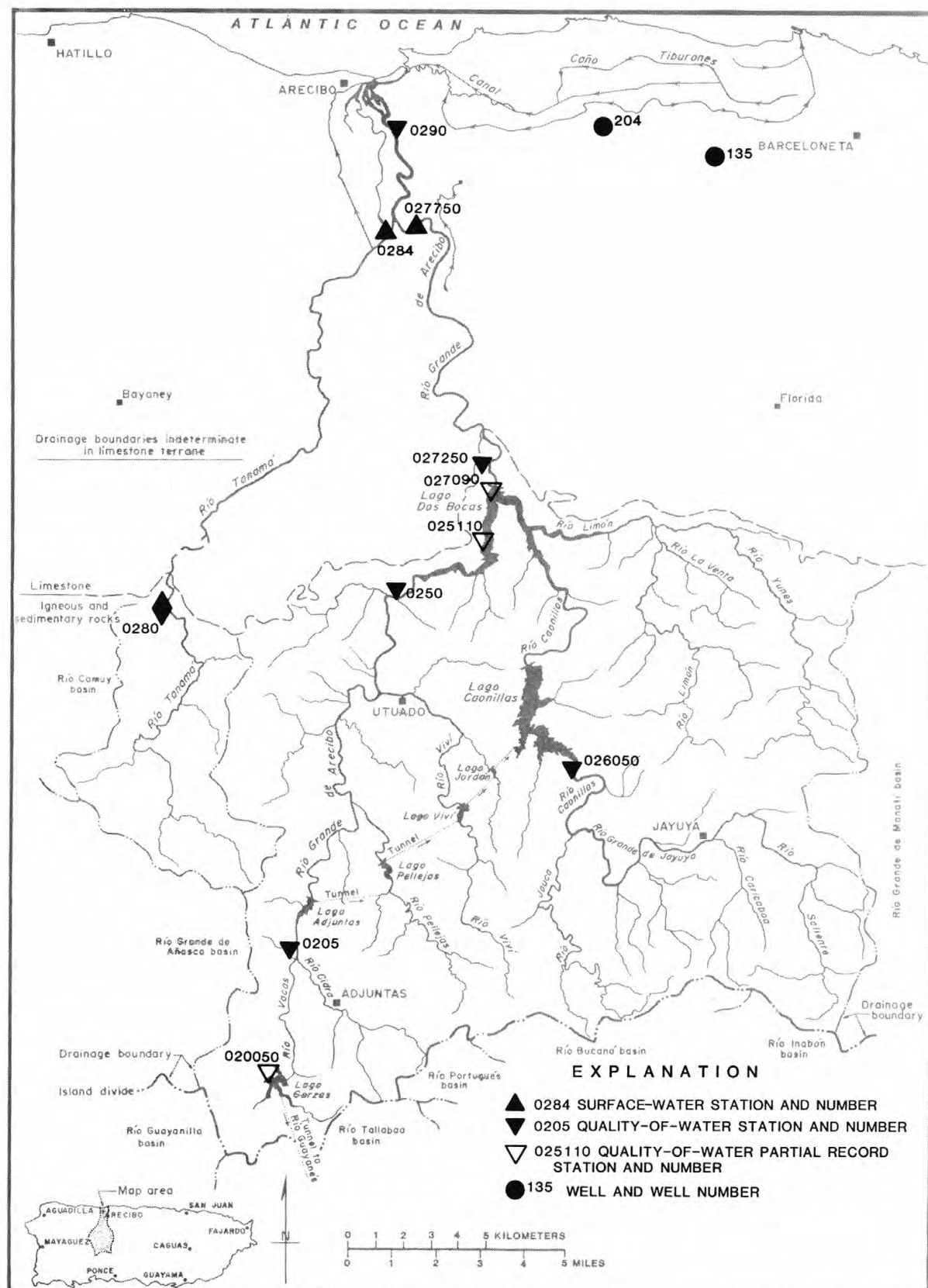


Figure 13.--Río Grande de Arecibo basin.

RIO GRANDE DE ARECIBO BASIN

50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°10'54", long 66°44'12", at Highway 135 bridge, 1.0 mi (1.6 km) upstream from Lago Adjuntas, and 1.5 mi (2.4 km) northwest of Adjuntas plaza.

DRAINAGE AREA.--12.7 sq mi (32.9 sq km) this does not include 6.0 sq mi (15.6 sq km) above Lago Garzas.

PERIOD OF RECORD.--Water years 1969-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
23...	0819	26	274	7.60	21.5	24	7.7	92	24	1150	2600
DEC											
04...	0850	67	229	7.30	19.5	--	8.3	95	--	1300	2000
FEB 1987											
19...	0825	16	343	7.60	18.5	0.5	6.5	73	<10	2700	85000
APR											
22...	0835	14	322	7.60	23.5	0.5	7.8	97	<10	580	K42000
JUN											
17...	1530	26	276	8.20	29.0	35	7.0	96	31	2300	14000
AUG											
25...	1430	E1000	305	7.50	25.0	81	7.9	101	17	20000	370000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
23...	130	30	28	14	44	2	3.8	98	<0.5	13	34
DEC											
04...	--	--	--	--	--	--	--	68	--	--	--
FEB 1987											
19...	--	--	--	--	--	--	--	110	--	--	--
APR											
22...	120	6	30	10	21	0.9	1.9	110	<0.5	10	30
JUN											
17...	--	--	--	--	--	--	--	98	--	--	--
AUG											
25...	88	9	23	7.5	27	1	3.0	79	--	12	35

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
23...	<0.1	29	225	15.8	10	0.85	0.05	0.90	0.14	0.16
DEC										
04...	--	--	--	--	<1	0.59	0.01	0.60	0.03	0.27
FEB 1987										
19...	--	--	--	--	3	1.06	0.04	1.10	0.09	0.81
APR										
22...	<0.1	30	199	7.52	<1	0.72	0.08	0.80	0.06	0.74
JUN										
17...	--	--	--	--	363	0.88	0.12	1.00	0.18	0.92
AUG										
25...	0.1	22	177	--	61	1.06	0.04	1.10	0.25	0.65

K = non-ideal count
E = estimate

RIO GRANDE DE ARECIBO BASIN

50020500 RIO GRANDE DE ARECIBO NR ADJUNTAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
23...	0.3	1.2	5.3	0.13	<1	<100	<10	<1	<1	<10
DEC										
04...	0.3	0.9	4.0	0.04	--	--	--	--	--	--
FEB 1987										
19...	0.9	2.0	8.9	0.10	--	--	--	--	--	--
APR										
22...	0.8	1.6	7.1	0.11	<1	<100	<10	<1	<1	<10
JUN										
17...	1.1	2.1	9.3	0.23	--	--	--	--	--	--
AUG										
25...	0.9	2.0	8.9	0.12	--	--	--	--	--	--

[illegible]

RIO GRANDE DE ARECIBO BASIN
50025000 RIO GRANDE DE ARECIBO NEAR UTUADO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'11", long 66°41'59", at bridge near Highway 10 at km 56.4, 0.5 mi (0.8 km) downstream from Rio de Caguana, and 2.5 mi (4.0 km) north of Utuado plaza.

DRAINAGE AREA.--66.0 sq mi (170.9 sq km) this excludes 6.0 sq mi (15.5 sq km) upstream from Lago Garzas to Rio Guayanes in the Rio Tallaboa basin.

PERIOD OF RECORD.--Water years 1959-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
22...	1345	65	202	7.20	27.0	74	7.1	90	15	28000	7600
DEC											
03...	1400	199	235	7.60	26.5	--	7.5	95	--	K18000	25000
FEB 1987											
18...	1300	52	306	7.90	26.5	0.7	7.4	93	<10	1200	670
APR											
21...	1345	50	260	7.60	32.0	9	6.9	96	<10	2200	K620
JUN											
17...	1225	108	244	8.20	30.0	36	8.0	107	33	K14000	1700
AUG											
25...	1125	90	249	7.60	28.5	59	7.4	96	<10	24000	7200

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
22...	96	21	26	7.5	14	0.6	2.6	75	<0.5	22	15
DEC											
03...	--	--	--	--	--	--	--	84	--	--	--
FEB 1987											
18...	--	--	--	--	--	--	--	86	--	--	--
APR											
21...	99	14	27	7.7	14	0.6	2.4	85	<0.5	24	13
JUN											
17...	--	--	--	--	--	--	--	80	--	--	--
AUG											
25...	95	22	25	7.8	14	0.6	2.5	73	--	23	14

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
22...	<0.1	27	159	27.9	88	0.97	0.03	1.00	0.06	0.44
DEC										
03...	--	--	--	--	45	1.02	0.08	1.10	0.19	0.41
FEB 1987										
18...	--	--	--	--	5	1.35	0.05	1.40	0.08	0.92
APR										
21...	0.2	28	170	24.8	23	1.04	0.06	1.10	0.07	0.93
JUN										
17...	--	--	--	--	109	1.57	0.03	1.60	0.07	0.33
AUG										
25...	0.1	26	156	37.9	60	1.08	0.02	1.10	0.04	1.20

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

OCT 1986										
22...	0.5	1.5	6.6	0.14	<1	<100	<10	<1	3	10
DEC										
03...	0.6	1.7	7.5	0.33	--	--	--	--	--	--
FEB 1987										
18...	1.0	2.4	11	0.15	--	--	--	--	--	--
APR										
21...	1.0	2.1	--	0.16	<1	<100	<10	<1	3	20
JUN										
17...	0.4	2.0	--	0.12	--	--	--	--	--	--
AUG										
25...	1.2	2.3	10	0.09	--	--	--	--	--	--

[illegible]

RIO GRANDE DE ARECIBO BASIN

50026050 RIO CAONILLAS ABOVE LAGO CAONILLAS NEAR JAYUYA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°13'26", long 66°38'22", 300 ft (91 m) off Highway 531, 700 ft (213 m) upstream from Lago Caonillas, 3.3 mi (5.3 km) northwest of Jayuya plaza.

DRAINAGE AREA.--40.4 sq mi (104.6 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
23...	1235	31	219	8.00	27.0	1.2	6.3	82	<10	440	K50
DEC											
04...	1300	55	175	8.20	24.0	6.9	8.1	99	<10	310	K70
FEB 1987											
19...	1140	33	218	8.00	23.0	0.3	8.3	100	<10	K54	K190
APR											
22...	1210	39	212	8.30	28.0	0.5	7.7	100	<10	K40	K10
JUN											
18...	0835	77	180	8.00	23.5	3.3	8.2	99	34	2100	350
AUG											
26...	0930	37	166	7.70	25.5	26	8.1	102	<10	7500	7100

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
23...	76	6	20	6.3	11	0.6	2.1	70	<0.5	15	11
DEC											
04...	--	--	--	--	--	--	--	63	--	--	--
FEB 1987											
19...	--	--	--	--	--	--	--	69	--	--	--
APR											
22...	76	9	20	6.3	11	0.5	1.4	67	<0.5	15	12
JUN											
18...	--	--	--	--	--	--	--	62	--	--	--
AUG											
26...	61	3	16	5.2	9.8	0.6	1.6	58	--	14	9.6

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
23...	0.1	23	130	10.9	2	0.39	0.01	0.40	0.07	0.63
DEC										
04...	--	--	--	--	1	0.49	0.01	0.50	0.03	0.27
FEB 1987										
19...	--	--	--	--	6	0.49	0.01	0.50	0.01	0.59
APR										
22...	0.1	23	130	11	1	0.19	0.01	0.20	0.01	0.39
JUN										
18...	--	--	--	--	19	0.59	0.01	0.60	0.03	0.27
AUG										
26...	0.1	20	111	11.1	25	0.29	0.01	0.30	0.01	0.99

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO GRANDE DE ARECIBO BASIN

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

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--169 sq mi (436 sq km) does not include 6.0 sq mi (15.6 sq km) above Lago Garzas.

PERIOD OF RECORD.--Water years 1970-71, 1974 to current year.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986 22...	1050	28	247	7.10	27.0	2.6	4.8	61	<10	92	66
DEC 03...	1100	E500	224	7.10	25.5	--	4.8	59	--	K1500	2000
FEB 1987 18...	1055	E1000	230	7.10	24.0	11	4.9	59	<10	230	K140
APR 21...	1110	E1000	238	6.90	25.5	12	4.9	59	17	210	320
JUN 17...	1015	E1000	189	7.20	26.5	11	3.8	47	32	K40	K98
AUG 26...	0910	15	204	7.00	27.5	36	3.5	44	12	2100	K230

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986 22...	85	7	23	6.7	11	0.5	2.3	78	<0.5	15	10
DEC 03...	--	--	--	--	--	--	--	71	--	--	--
FEB 1987 18...	--	--	--	--	--	--	--	72	--	--	--
APR 21	72	10	20	5.3	9.1	0.5	2.0	62	<0.5	13	9.3
JUN 17...	--	--	--	--	--	--	--	66	--	--	--
AUG 26...	82	7	22	6.5	11	0.5	1.4	75	--	13	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986 22...	0.1	22	137	10.3	3	0.29	0.01	0.30	0.06	0.34
DEC 03...	--	--	--	--	5	0.69	0.01	0.70	0.03	0.67
FEB 1987 18...	--	--	--	--	13	0.59	0.01	0.60	0.03	1.1
APR 21...	0.1	22	130	--	5	0.17	0.03	0.20	0.13	0.37
JUN 17...	--	--	--	--	17	0.59	0.01	0.60	0.03	1.2
AUG 26...	0.1	20	120	4.86	9	0.63	0.07	0.70	0.21	0.63

K = non-ideal count
E = estimate

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO GRANDE DE ARECIBO BASIN

50027750 RIO GRANDE DE ARECIBO ABOVE ARECIBO, PR

LOCATION.--Lat 18°25'29", long 66°41'44", Hydrologic Unit 21010002, 0.8 mi (1.3 km) upstream from Rio Tanamá, 4.0 mi (6.4 km) south of Arecibo and 6.7 mi (10.8 km) above mouth, and 10.2 mi (16.4 km) downstream from Lago Dos Bocas.

DRAINAGE AREA.--200 mi² (520 km²), approximately, of which an undetermined amount does not contribute directly to surface runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 30 ft (9 m), from topographic map.

REMARKS.--Records fair. Flow regulated by Lago Dos Bocas Dam 10.2 mi (16.4 km) upstream.

AVERAGE DISCHARGE.--5 years (1983-87), 487 ft³/s (13.79 m³/s), 33.07 in/yr (840 mm/yr), 352,800 acre-ft/yr (435 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,800 ft³/s (1,300 m³/s), May 18, 1985, gage height, 18.22 ft (5.553 m), from floodmark, from rating curve extended above 2,400 ft³/s (68.0 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 30 ft³/s (0.850 m³/s), Mar. 30, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,300 ft³/s (122 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Feb. 12	0145	*2,370 67.1	*6.69 2.039

Minimum discharge, 38 ft³/s (1.076 m³/s), Mar. 13, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	461	207	704	82	46	180	42	497	742	649	95	67
2	236	66	1100	54	185	50	42	439	937	560	62	50
3	74	272	469	131	263	75	47	281	1600	677	71	664
4	209	330	230	121	323	74	351	397	1260	629	347	736
5	188	88	517	50	314	48	266	459	640	331	258	114
6	819	70	150	75	279	50	467	431	1040	144	561	60
7	811	56	103	119	190	42	98	250	880	86	134	53
8	1040	56	330	657	103	42	56	377	597	65	62	174
9	852	196	160	856	102	144	194	252	579	213	57	399
10	412	420	206	217	78	102	415	153	558	241	55	491
11	485	420	187	126	453	44	697	1170	700	747	130	610
12	96	272	436	323	1220	40	1540	1100	558	287	57	572
13	74	401	505	354	317	38	1560	611	644	70	69	503
14	81	419	145	105	365	41	1120	601	424	371	57	466
15	57	89	81	68	145	164	1170	471	540	295	555	247
16	255	83	179	125	343	55	1300	655	626	291	147	535
17	480	61	196	113	651	54	1530	335	495	531	59	616
18	138	576	86	157	564	47	831	733	479	764	81	567
19	224	1630	80	182	617	105	304	795	527	376	405	243
20	221	1560	147	250	581	161	562	1180	447	599	761	272
21	273	1060	76	72	205	477	547	666	561	133	445	249
22	97	282	350	483	183	190	610	613	814	385	74	469
23	371	197	730	180	233	314	516	518	816	585	167	460
24	237	317	409	218	147	414	482	577	1010	143	570	596
25	74	83	162	121	52	191	155	857	533	76	99	293
26	107	66	319	387	73	104	227	852	248	62	67	85
27	160	68	223	73	191	87	389	678	273	271	570	121
28	114	57	126	55	342	52	430	731	421	586	637	414
29	596	464	150	49	---	61	452	691	771	635	95	205
30	893	190	147	53	---	47	491	499	777	529	190	191
31	885	---	119	52	---	43	---	502	---	257	272	---
TOTAL	11020	10056	8822	5908	8565	3536	16891	18371	20497	11588	7209	10522
MEAN	355	335	285	191	306	114	563	593	683	374	233	351
MAX	1040	1630	1100	856	1220	477	1560	1180	1600	764	761	736
MIN	57	56	76	49	46	38	42	153	248	62	55	50
AC-FT	21860	19950	17500	11720	16990	7010	33500	36440	40660	22980	14300	20870
CFSM	1.78	1.68	1.42	.95	1.53	.57	2.82	2.96	3.42	1.87	1.16	1.75
IN.	2.05	1.87	1.64	1.10	1.59	.66	3.14	3.42	3.81	2.16	1.34	1.96

CAL YR 1986 TOTAL 180400 MEAN 494 MAX 10700 MIN 42 AC-FT 357800 CFSM 2.47 IN. 33.55
WTR YR 1987 TOTAL 132985 MEAN 364 MAX 1630 MIN 38 AC-FT 263800 CFSM 1.82 IN. 24.74

RIO GRANDE DE ARECIBO BASIN

50027750 RIO GRANDE DE ARECIBO ABOVE ARECIBO, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 18	1014	51.1	288	25.0	MAY, 08	1040	130	245	26.0
DEC, 17	1138	65.8	252	24.0	JUN, 08	1134	157	247	27.0
JAN, 20	1035	88	270	24.0	JUL, 15	0922	141	223	26.5
FEB, 13	1026	107	252	23.5	AUG, 20	1117	90	266	27.0
MAR, 18	1203	46.2	296	25.0	SEP, 15	1056	71	252	27.0
APR, 09	1038	50.3	304	22.5					

RIO GRANDE DE ARECIBO BASIN

50028000 RIO TANAMA NEAR UTUADO, PR

LOCATION.--Lat 18°18'02", long 66°46'58", Hydrologic Unit 21010001, 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 mi² (47.7 km²).

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 and crest-stage gage. Elevation of gage is 938.32 ft (286.00 m) above mean sea level. Datum of gage was lowered 3.00 ft (0.914 m) on Oct. 1978. Prior to Nov. 17, 1966, non-recording gage and Nov. 17, 1966 to Sept. 30, 1978 recording gage, both at present site.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--27 years (1961-87), 48.6 ft³/s (1.376 m³/s), 35.87 in/yr (911 mm/yr), 35,210 acre-ft/yr (43.4 hm³/yr); median of yearly mean discharges, 48 ft³/s (1.36 m³/s), 34,800 acre-ft/yr (43hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,190 ft³/s (345 m³/s), May 18, 1985, gage height, 17.45 ft (5.319 m) new datum in use, from floodmark and recorder, from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 6.6 ft³/s (0.187 m³/s), June 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 2	1715	*6,420	182	*14.96	4.560

Minimum daily discharge, 14 ft³/s (0.396 m³/s), Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	35	138	25	27	21	19	e23	55	27	21	34
2	217	34	62	25	25	21	17	e34	169	26	19	31
3	63	40	e49	24	24	20	16	e32	70	25	23	27
4	37	39	e43	24	23	20	40	e22	39	25	20	61
5	45	32	e39	24	23	20	20	e19	59	e28	20	29
6	51	31	38	26	23	20	18	19	81	e22	17	24
7	40	30	37	30	22	19	26	25	45	e20	17	63
8	37	30	36	27	21	19	17	30	36	e32	16	38
9	40	29	35	25	21	18	16	21	33	e21	16	44
10	34	29	35	24	30	18	e18	79	32	e20	16	42
11	49	28	34	23	164	17	e50	48	29	e20	15	53
12	35	57	33	23	80	17	e200	29	29	e19	19	82
13	47	47	32	27	35	16	e120	23	29	e19	19	88
14	43	36	32	25	30	16	e80	21	27	e19	23	47
15	38	31	32	25	30	17	e75	20	54	e23	25	37
16	32	38	32	23	26	18	e130	19	39	e22	17	33
17	28	69	31	23	24	19	e120	19	57	22	16	29
18	28	226	30	22	23	17	e50	48	73	37	102	28
19	38	233	29	21	23	26	e45	31	38	39	44	45
20	27	129	28	21	22	27	e40	23	40	32	20	38
21	24	83	27	21	22	19	e30	30	35	28	16	44
22	25	66	27	21	21	20	e25	48	89	22	15	48
23	25	e59	27	22	21	17	e23	36	44	21	15	38
24	32	e56	27	22	21	17	e21	25	34	20	47	29
25	33	e52	28	21	21	20	e20	30	31	20	39	26
26	30	e64	28	21	22	20	e18	29	29	22	25	25
27	42	e60	26	21	33	18	e17	23	27	32	17	24
28	69	e50	26	22	22	17	e16	22	52	25	15	42
29	51	51	26	27	---	17	e15	22	34	20	14	30
30	53	74	26	67	---	17	e20	21	29	19	55	24
31	43	---	26	30	---	17	---	62	---	23	45	---
TOTAL	1378	1838	1119	782	879	585	1322	933	1438	750	788	1203
MEAN	44.5	61.3	36.1	25.2	31.4	18.9	44.1	30.1	47.9	24.2	25.4	40.1
MAX	217	233	138	67	164	27	200	79	169	39	102	88
MIN	22	28	26	21	21	16	15	19	27	19	14	24
AC-FT	2730	3650	2220	1550	1740	1160	2620	1850	2850	1490	1560	2390
CFSM	2.42	3.33	1.96	1.37	1.71	1.03	2.39	1.64	2.61	1.31	1.38	2.18
IN.	2.79	3.72	2.26	1.58	1.78	1.18	2.67	1.89	2.91	1.52	1.59	2.43

CAL YR 1986 TOTAL 19225 MEAN 52.7 MAX 445 MIN 14 AC-FT 38130 CFSM 2.86 IN. 38.87
WTR YR 1987 TOTAL 13015 MEAN 35.7 MAX 233 MIN 14 AC-FT 25820 CFSM 1.94 IN. 26.31

e Estimated

RIO GRANDE DE ARECIBO BASIN

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50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: January 1968 to current year.

REMARKS.--Sediment samples were collected by a local observer on a weekly basis and during high flow events.

Estimates for period of missing daily record were made from a sediment transport curve developed from a period of record over 5 years.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 20,400 mg/L November 27, 1968; minimum daily mean, 0 mg/L during water year 1985.

SEDIMENT LOADS: Maximum daily, 167,000 tons (152,000 tonnes) May 18, 1985, minimum daily, 0.0 ton (0.0 tonne) several days during many years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,760 mg/L June 02, 1987; minimum daily mean, 2.0 mg/L several days.

SEDIMENT LOADS: Maximum daily, 5,930 tons (5,380 tonnes) June 02, 1987; minimum daily, 0.08 ton (0.07 tonne) several days.

WATER-QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
24...	1200	27	154	7.40	22.5	14	5.7	68	<10	2500	2900
DEC											
05...	1305	39	182	7.80	21.5	--	8.7	102	--	200	690
FEB 1987											
20...	1130	21	189	8.00	21.0	2.0	9.4	109	22	K40	240
APR											
09...	1020	16	173	7.80	23.5	3.0	8.5	104	<10	280	440
JUN											
12...	1025	30	168	8.40	24.0	3.2	9.1	112	29	K140	330
AUG											
07...	1110	17	160	8.40	26.5	2.6	8.7	112	13	K64	560

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
24...	63	6	15	6.2	11	0.6	2.3	57	<0.5	11	8.7
DEC											
05...	--	--	--	--	--	--	--	56	--	--	--
FEB 1987											
20...	--	--	--	--	--	--	--	57	--	--	--
APR											
09...	64	10	16	5.8	8.2	0.5	1.8	54	<0.5	14	8.2
JUN											
12...	--	--	--	--	--	--	--	61	--	--	--
AUG											
07...	67	9	17	6.0	3.6	0.2	1.9	58	--	10	8.1

K = non-ideal count

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER-QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986 24...	<0.1	25	113	8.27	18	0.59	0.01	0.60	0.03	0.77
DEC 05...	--	--	--	--	--	0.79	0.01	0.80	0.02	0.48
FEB 1987 20...	--	--	--	--	22	0.59	0.01	0.60	0.01	0.89
APR 09...	0.1	25	111	4.76	12	0.59	0.01	0.60	0.01	0.69
JUN 12...	--	--	--	--	11	0.59	0.01	0.60	0.04	0.46
AUG 07...	0.2	25	107	5.01	1	0.29	0.01	0.30	0.01	0.99

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
24...	0.8	1.4	6.2	0.02	<1	<100	<10	<1	<1	<10
DEC										
05...	0.5	1.3	5.8	0.03	--	--	--	--	--	--
FEB 1987										
20...	0.9	1.5	6.6	0.03	--	--	--	--	--	--
APR										
09...	0.7	1.3	5.8	0.03	<1	<100	<10	<1	1	10
JUN										
12...	0.5	1.1	4.9	0.04	--	--	--	--	--	--
AUG										
07...	1.0	1.3	5.8	0.02	--	--	--	--	--	--

[illegible]

RIO GRANDE DE ARECIBO BASIN

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50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER-QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

				SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. PERCENT FINER THAN .002 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .004 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .008 MM	
DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)					
JUN 1987								
02...	1700	1950	35000	184000	3	5	12	
02...	1715	1440	14100	54900	6	11	18	
02...	1730	1100	7900	23500	10	17	27	
DATE		SED. SUSP. FALL DIAM. PERCENT FINER THAN .016 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN 1.00 MM
JUN 1987								
02...	12	18	40	60	84	96	99	
02...	26	37	57	79	92	97	99	
02...	38	48	67	89	99	99	99	

RIO GRANDE DE ARECIBO BASIN

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	22	4	.24	35	16	1.5	138	792	1570
2	217	1450	4890	34	15	1.4	62	65	11
3	63	99	33	40	35	6.6	49	30	4.0
4	37	20	2.0	39	25	2.6	43	20	2.3
5	45	64	17	32	13	1.1	39	13	1.4
6	51	74	26	31	10	.84	38	12	1.2
7	40	30	3.2	30	10	.81	37	12	1.2
8	37	22	3.2	30	10	.81	36	12	1.2
9	40	26	3.2	29	9	.70	35	12	1.1
10	34	15	1.4	29	9	.70	35	15	1.4
11	49	72	19	28	7	.53	34	17	1.6
12	35	18	1.7	57	75	19	33	20	1.8
13	47	75	25	47	48	9.1	32	20	1.7
14	43	30	4.4	36	12	1.2	32	20	1.7
15	38	24	3.3	31	10	.84	32	20	1.7
16	32	13	1.1	38	29	5.0	32	20	1.7
17	28	10	.76	69	176	113	31	17	1.4
18	28	10	.76	226	1110	2590	30	17	1.4
19	38	39	9.6	233	1200	1680	29	16	1.3
20	27	7	.51	129	356	159	28	16	1.2
21	24	6	.23	83	150	34	27	16	1.2
22	25	6	.41	66	70	12	27	16	1.2
23	25	6	.41	59	50	8.0	27	16	1.2
24	32	14	1.4	56	50	7.6	27	16	1.2
25	33	26	4.6	52	50	7.0	28	16	1.2
26	30	17	1.4	64	98	28	28	16	1.2
27	42	43	12	60	81	17	26	16	1.1
28	69	115	41	50	55	7.4	26	16	1.1
29	51	54	11	51	50	6.9	26	15	1.1
30	53	50	14	74	221	140	26	15	1.1
31	43	30	3.5	--	--	--	26	14	.98
TOTAL	1378	---	5135.32	1838	---	4862.63	1119	---	1622.88

RIO GRANDE DE ARECIBO BASIN

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50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	25	12	.81	27	10	.73	21	4	.23
2	25	11	.74	25	10	.68	21	3	.17
3	24	10	.65	24	10	.65	20	3	.16
4	24	10	.65	23	10	.62	20	3	.16
5	24	10	.65	23	10	.62	20	3	.16
6	26	10	.70	23	10	.62	20	3	.16
7	30	10	.81	22	10	.59	19	3	.15
8	27	10	.73	21	10	.57	19	3	.15
9	25	10	.68	21	10	.57	18	3	.15
10	24	11	.71	30	48	12	18	3	.15
11	23	12	.75	164	818	1490	17	3	.14
12	23	12	.75	80	184	93	17	2	.09
13	22	12	.87	35	16	1.5	16	2	.09
14	21	12	.81	30	15	1.2	16	2	.09
15	21	15	1.0	30	15	1.2	17	2	.09
16	23	15	.93	26	15	1.1	18	3	.15
17	23	16	.99	24	15	.97	19	2	.10
18	22	16	.95	23	15	.93	17	2	.09
19	21	15	.85	23	15	.93	26	13	1.9
20	21	15	.85	22	15	.89	27	10	1.0
21	21	15	.85	22	15	.89	19	3	.15
22	21	15	.85	21	14	.79	20	3	.16
23	22	15	.89	21	12	.68	17	2	.09
24	22	15	.89	21	11	.62	17	2	.09
25	21	12	.68	21	10	.57	20	3	.16
26	21	12	.68	22	12	.71	20	3	.16
27	21	12	.68	33	15	1.3	18	3	.15
28	22	13	.77	22	5	.30	17	3	.14
29	27	15	1.1	--	--	--	17	3	.14
30	67	150	40	--	--	--	17	2	.09
31	30	10	.81	--	--	--	17	3	.14
TOTAL	782	---	64.08	879	---	1615.23	585	---	6.85

RIO GRANDE DE ARECIBO BASIN

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	19	3	.15	23	5	.31	55	120	56
2	17	3	.14	34	13	1.2	169	1760	5930
3	16	2	.09	32	12	1.0	70	100	27
4	40	95	41	22	4	.24	39	20	2.1
5	20	5	.27	19	3	.15	59	94	34
6	18	2	.10	19	3	.15	81	185	79
7	26	12	.84	25	13	1.8	45	33	4.0
8	17	2	.09	30	21	3.7	36	14	1.4
9	16	3	.13	21	5	.28	33	12	1.1
10	18	2	.10	79	483	496	32	12	1.0
11	50	40	5.4	48	151	29	29	10	.78
12	200	650	351	29	10	.78	29	10	.78
13	120	270	87	23	5	.31	29	9	.70
14	80	110	24	21	3	.17	27	7	.51
15	75	95	19	20	3	.16	51	108	58
16	130	310	109	19	3	.15	39	25	2.6
17	120	270	87	19	3	.15	57	106	61
18	50	40	5.4	48	57	16	73	301	247
19	45	30	3.6	31	20	1.1	38	50	5.1
20	40	21	2.3	23	5	.31	40	20	2.2
21	30	10	.81	30	9	.73	35	22	2.1
22	25	6	.41	48	83	32	89	160	49
23	23	5	.31	36	20	1.9	44	25	3.0
24	21	4	.23	25	6	.41	34	15	1.4
25	20	3	.16	30	10	.81	31	10	.84
26	18	2	.10	29	10	.78	29	9	.70
27	17	2	.09	23	3	.19	27	8	.58
28	16	2	.09	22	2	.12	52	75	28
29	15	2	.08	22	2	.12	34	20	1.8
30	20	3	.16	21	2	.11	29	9	.70
31	---	--	--	62	136	70	--	--	--
TOTAL	1322	---	739.05	933	---	660.13	1438	---	6602.39

RIO GRANDE DE ARECIBO BASIN

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	27	6	.44	21	4	.23	34	25	2.3
2	26	6	.42	19	3	.15	31	10	.84
3	25	6	.41	23	3	.19	27	9	.66
4	25	10	.68	20	4	.22	61	299	191
5	28	10	.76	20	4	.22	29	10	.78
6	22	7	.42	17	3	.14	24	6	.39
7	20	4	.22	17	2	.09	63	110	49
8	32	54	11	16	2	.09	38	15	1.5
9	21	6	.34	16	2	.09	44	50	12
10	20	3	.16	16	2	.09	42	31	4.9
11	20	3	.16	15	2	.08	53	111	23
12	19	3	.15	19	5	.26	82	258	215
13	19	3	.15	19	4	.21	88	192	108
14	19	2	.10	23	13	2.0	47	30	3.8
15	23	4	.25	25	10	.68	37	15	1.5
16	22	4	.25	17	3	.14	33	12	1.1
17	22	4	.24	16	2	.09	29	9	.70
18	37	47	14	102	784	1500	28	8	.60
19	39	44	8.1	44	73	18	45	51	13
20	32	23	4.7	20	4	.22	38	37	3.8
21	28	10	.76	16	2	.09	44	55	10
22	22	4	.24	15	2	.08	48	63	12
23	37	3	.17	15	2	.08	38	20	2.1
24	39	3	.16	47	199	186	29	9	.70
25	20	3	.16	39	75	24	26	6	.42
26	22	3	.18	25	10	.68	25	6	.41
27	32	46	11	17	2	.09	24	5	.32
28	25	8	.54	15	2	.08	42	73	29
29	20	4	.22	14	2	.08	30	15	1.2
30	19	3	.15	55	131	84	24	6	.39
31	23	6	.37	45	52	11	--	--	--
TOTAL	750	---	56.90	788	---	1829.37	1203	---	690.41

RIO GRANDE DE ARECIBO BASIN

50028400 RIO TANAMA AT CHARCO HONDO, PR

LOCATION.--Lat 18°24'52", long 66°42'52", on right bank at abandoned power house at Charco Hondo, 1.5 mi (2.4 km) upstream from mouth, and 4 mi (6 km) south of Arecibo.

DRAINAGE AREA.--57.6 mi² (149.2 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1969 to June 1971, October 1981 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 60 ft (18 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversion 0.8 mi (1.3 km) upstream for municipal supply of Arecibo.

AVERAGE DISCHARGE.--7 years (1970,1982-87), 95.4 ft³/s (2.702 m³/s), 22.49 in/yr (571 mm/yr), 69,120 acre-ft/yr (85.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s (425 m³/s), May 18, 1985, gage height, 17.95 ft (5.471 m), from floodmark, from rating curve extended above 1,000 ft³/s (28.3 m³/s) on basis of step-backwater analysis; minimum discharge, 14 ft³/s (0.396 m³/s), Mar. 30, 31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 2	1945	*1,610	45.6	*9.54	2.908

Minimum discharge, 14 ft³/s (0.396 m³/s), Mar. 30, 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	55	163	31	31	21	20	49	69	44	29	49
2	157	53	176	30	28	21	18	78	193	39	25	43
3	121	48	99	30	25	22	20	74	151	38	31	57
4	105	61	75	30	24	22	28	50	82	37	28	76
5	e125	48	e62	31	23	22	50	38	71	46	27	85
6	78	51	e61	32	23	21	28	32	179	35	24	66
7	140	49	e59	39	22	20	33	32	146	34	22	72
8	e148	49	e57	34	21	20	60	45	92	38	19	74
9	91	48	e56	33	21	21	20	43	65	48	20	49
10	68	47	e54	29	22	19	20	66	61	41	18	80
11	56	49	e52	29	149	19	140	102	52	32	19	131
12	71	56	e50	28	264	19	478	82	50	27	17	162
13	51	89	e48	30	82	19	279	48	46	26	26	120
14	71	61	e46	38	46	20	172	42	45	25	18	92
15	60	50	e45	32	45	27	166	37	44	27	35	59
16	56	57	e44	29	34	26	292	33	83	34	29	57
17	50	115	e42	27	29	25	273	30	66	26	22	47
18	67	225	41	26	27	22	135	62	112	26	99	41
19	97	509	41	26	25	23	105	105	105	53	140	42
20	e96	233	40	26	23	44	86	49	57	39	66	85
21	e72	139	38	24	23	25	62	68	57	42	32	61
22	68	96	38	24	23	25	55	105	139	31	26	72
23	52	82	37	23	22	21	50	126	95	29	24	77
24	79	72	36	24	21	19	45	66	63	27	27	50
25	56	66	37	22	20	24	42	64	61	27	71	43
26	95	65	37	22	21	25	38	105	47	26	62	38
27	93	75	35	22	31	21	36	71	43	30	35	35
28	85	70	34	22	24	20	35	52	58	39	29	34
29	100	61	34	24	---	19	33	46	86	29	28	58
30	63	69	33	54	---	15	44	42	62	25	41	37
31	76	---	32	36	---	14	---	70	---	26	70	---
TOTAL	2584	2748	1702	907	1149	681	2863	1912	2480	1046	1159	1992
MEAN	83.4	91.6	54.9	29.3	41.0	22.0	95.4	61.7	82.7	33.7	37.4	66.4
MAX	157	509	176	54	264	44	478	126	193	53	140	162
MIN	37	47	32	22	20	14	18	30	43	25	17	34
AC-FT	5130	5450	3380	1800	2280	1350	5680	3790	4920	2070	2300	3950
CFSM	1.45	1.59	.95	.51	.71	.38	1.66	1.07	1.44	.59	.65	1.15
IN.	1.67	1.77	1.10	.59	.74	.44	1.85	1.23	1.60	.68	.75	1.29

CAL YR 1986 TOTAL 35102 MEAN 96.2 MAX 982 MIN 24 AC-FT 69620 CFSM 1.67 IN. 22.67
WTR YR 1987 TOTAL 21223 MEAN 58.1 MAX 509 MIN 14 AC-FT 42100 CFSM 1.01 IN. 13.71

e Estimated

RIO GRANDE DE ARECIBO BASIN

50028400 RIO TANAMA AT CHARCO HONDO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 18	1342	90.3	204	23.5	MAR, 18	1646	21.0	268	24.5
DEC, 17	1509	42.8	252	23.5	MAY, 11	1007	61.6	178	24.0
JAN, 20	1327	25.6	292	22.5	AUG, 20	1345	52.2	240	25.0
FEB, 13	1507	76.7	257	23.5	SEP, 15	1254	53.7	263	25.0

RIO GRANDE DE ARECIBO BASIN

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°27'20", long 66°42'10", Hydrologic Unit 21010002, at bridge on unimproved road, about 500 ft (152 m) upstream from Central Cambalache, near Highway 2, 8.3 mi (13.4 km) downstream from Dos Bocas Reservoir, 1.9 mi (3.1 km) downstream from Rio Tanamá, and 1.6 mi (2.6 km) southeast of Arecibo.

DRAINAGE AREA.--200 sq mi (520 sq km), approximately.

PERIOD OF RECORD.--Water years 1963-66, 1969 to current year.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
NOV 1986											
03...	1245	124	354	7.80	26.5	4.7	8.5	106	31	270	K73
DEC											
09...	1015	400	294	7.60	24.0	--	8.1	96	--	310	330
FEB 1987											
06...	1200	126	301	8.10	24.0	2.5	9.5	113	<10	210	K130
APR											
24...	0925	E200	299	7.30	25.5	2.7	7.0	86	<10	470	250
JUN											
19...	0915	E750	250	7.70	25.0	130	7.3	88	34	K13000	20000
AUG											
21	1115	E500	247	7.50	27.5	31	6.4	80	<10	K500	1700

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
03...	150	9	50	5.8	8.3	0.3	1.7	140	<0.5	10	10
DEC											
09...	--	--	--	--	--	--	--	110	--	--	--
FEB 1987											
06...	--	--	--	--	--	--	--	110	--	--	--
APR											
24...	130	11	43	5.8	8.7	0.3	1.6	120	<0.5	12	11
JUN											
19...	--	--	--	--	--	--	--	100	--	--	--
AUG											
21...	100	7	31	6.0	9.4	0.4	2.6	95	--	12	10

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
03...	0.1	15	185	61.9	3	0.69	0.01	0.70	0.02	0.58
DEC										
09...	--	--	--	--	2	0.69	0.01	0.70	0.01	0.29
FEB 1987										
06...	--	--	--	--	4	0.49	0.01	0.50	0.01	0.29
APR										
24...	0.1	17	171	--	5	0.69	0.01	0.70	0.02	1.6
JUN										
19...	--	--	--	--	431	0.39	0.01	0.40	0.01	0.59
AUG										
21...	0.1	19	150	--	41	0.43	0.02	0.50	0.08	0.52

K = non-ideal count
E = estimate

RIO GRANDE DE ARECIBO BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
03...	0.6	1.3	5.8	0.05	<1	<100	<10	<1	<1	<10
DEC										
09...	0.3	1.0	4.4	0.03	--	--	--	--	--	--
FEB 1987										
06...	0.3	0.8	3.5	0.03	--	--	--	--	--	--
APR										
24...	1.6	2.3	10	0.03	<1	<100	<10	<1	13	<10
JUN										
19...	0.6	1.0	--	0.03	--	--	--	--	--	--
AUG										
21...	0.6	1.1	--	0.12	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986										
03...	410	<5	70	<0.1	<1	<1	20	<0.01	<1	0.01
DEC										
09...	--	--	--	--	--	--	--	--	--	--
FEB 1987										
06...	--	--	--	--	--	--	--	--	--	--
APR										
24...	420	<5	50	0.2	<1	<1	<10	<0.01	6	0.01
JUN										
19...	--	--	--	--	--	--	--	--	--	--
AUG										
21	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
JUN 1987									
19...	0915	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.03	<0.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)
JUN 1986								
19...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.14	<0.01

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)
JUN 1986								
19...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01

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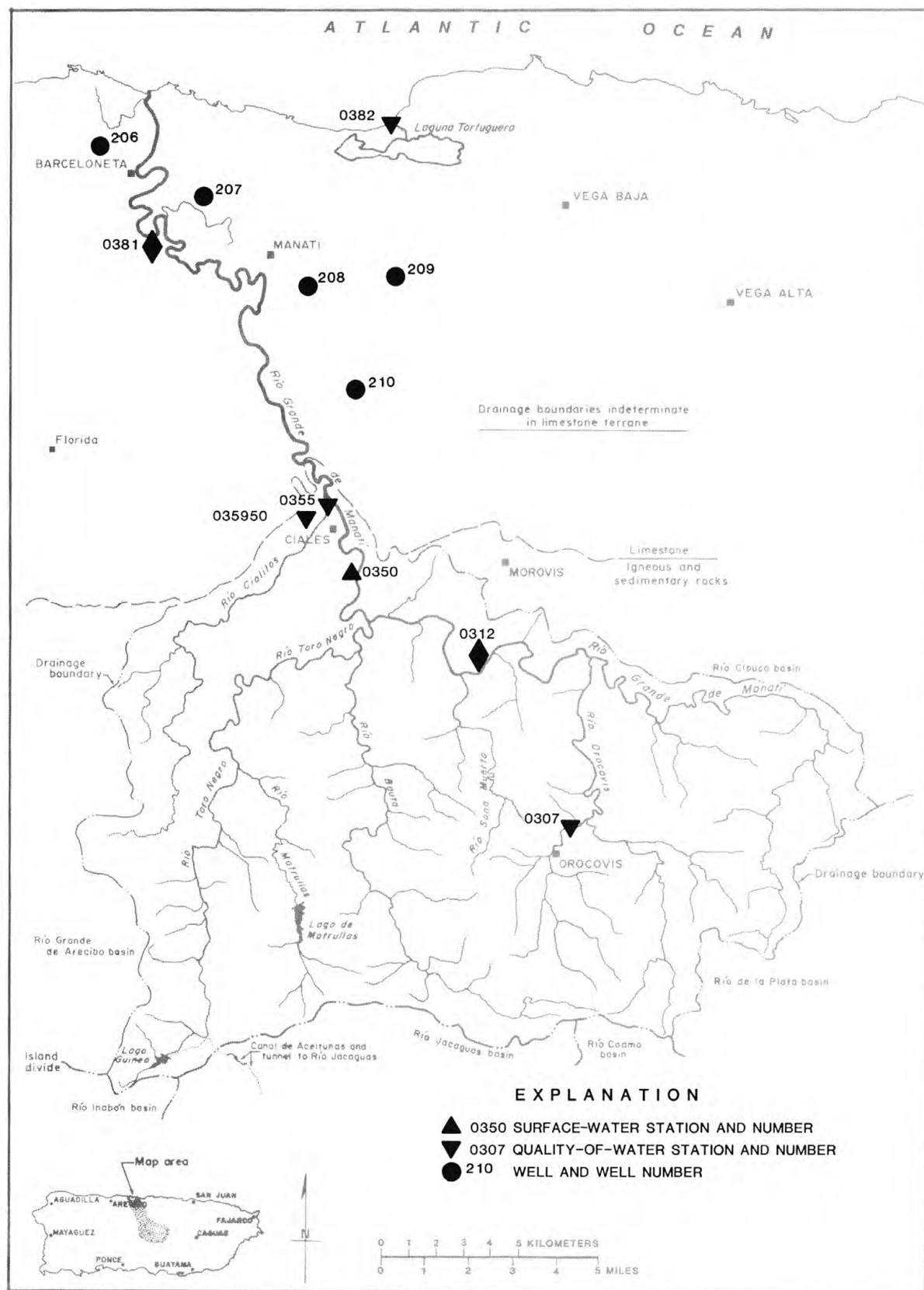


Figure 14.--Río Grande de Manatí basin.

RIO GRANDE DE MANATI BASIN
50030700 RIO OROCOVIS NEAR OROCOVIS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°14'20", long 66°22'58", at flat low bridge about 300 ft (91 m) northwest of Highway 568, 1.0 mi (1.6 km) north of Orocovis plaza.

DRAINAGE AREA.--10.1 sq mi (26.2 sq km).

PERIOD OF RECORD.--Water year 1979 to current year.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
29...	1420	8.1	303	7.70	24.5	3.6	6.9	88	17	K890	310
DEC 17...	1310	6.9	337	7.80	22.0	0.8	7.8	34	<10	600	230
FEB 1987											
12...	0845	17	264	8.00	20.0	17	8.3	96	<10	6000	23000
APR 15...	1225	E200	172	7.50	23.0	180	8.2	101	18	39000	K120000
JUN 04...	1035	51	211	7.80	23.5	7.8	7.9	98	<10	12000	26000
AUG 24...	1220	7.1	288	8.40	27.0	1.9	9.6	125	11	360	200

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FEI FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
29...	120	5	28	11	12	0.5	1.7	110	<0.5	11	11
DEC 17...	--	--	--	--	--	--	--	120	--	--	--
FEB 1987											
12...	--	--	--	--	--	--	--	85	--	--	--
APR 15...	61	2	15	5.8	8.3	0.5	2.5	59	<0.5	12	11
JUN 04...	--	--	--	--	--	--	--	65	--	--	--
AUG 24...	130	12	33	12	13	0.5	1.6	120	--	11	14

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
29...	0.1	31	172	3.76	<1	1.39	0.01	1.40	0.03	0.47
DEC 17...	--	--	--	--	14	0.99	0.01	1.00	0.01	0.19
FEB 1987										
12...	--	--	--	--	18	1.18	0.02	1.20	0.01	0.49
APR 15...	0.1	20	110	0.0	376	1.06	0.04	1.10	0.08	0.92
JUN 04...	--	--	--	--	10	0.75	0.05	0.80	0.12	1.2
AUG 24...	0.2	34	190	3.64	4	0.59	0.01	0.60	0.06	0.24

K = non-ideal count
E = estimate

[illegible]

RIO GRANDE DE MANATI BASIN

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR

LOCATION.--Lat 18°17'45", long 66°24'47", Hydrologic Unit 21010001, on right bank, 0.1 mi (0.2 km) downstream from Quebrada Perchas, 0.8 mi (1.3 km) upstream from Rio Sana Muerto, and 2.2 mi (3.5 km) south of Morovis.

DRAINAGE AREA.--55.2 mi² (143.0 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 440 ft (134 m), from topographic map. Feb. 2, 1966 to Apr. 27, 1967, staff gage read twice daily.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station. Public water-supply pumpage, about 300 ft (91 m) above the station, influences low-flow discharges.

AVERAGE DISCHARGE.--22 years (1966-87), 106 ft³/s (3.002 m³/s), 26.08 in/yr (662 mm/yr), 76,800 acre-ft/yr (94.7 hm³/yr); median of yearly mean discharges, 98 ft³/s (2.78 m³/s), 71,000 acre-ft/yr (88 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s (1,359 m³/s), May 18, 1985, gage height, 17.89 ft (5.453 m), from floodmarks, from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of computations of flow over broad-crested weir and step-backwater analysis; minimum discharges, 4.4 ft³/s (0.125 m³/s), Apr. 15, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s (99.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 11	2330	*6,680 189	*6.88 2.097	June 2	1700	4,570 129	5.75 1.753

Minimum discharge, 21 ft³/s (0.595 m³/s), Feb. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	39	57	28	49	30	28	62	201	95	59	60
2	30	57	50	27	37	29	28	59	593	96	52	62
3	31	45	49	25	31	29	26	64	427	95	71	44
4	34	41	45	27	28	30	25	63	259	91	64	47
5	84	54	42	27	26	29	41	56	189	125	71	53
6	98	48	41	28	25	27	216	59	162	90	50	43
7	36	78	39	39	25	26	228	54	151	91	45	38
8	31	93	39	51	24	25	80	81	139	91	45	39
9	29	76	38	40	23	24	51	174	133	83	47	36
10	28	72	36	31	132	24	46	242	129	81	44	36
11	27	101	34	29	514	25	762	230	121	78	43	36
12	26	196	36	28	259	38	1310	219	119	74	49	71
13	25	264	35	28	111	28	431	139	119	71	47	56
14	29	133	46	32	80	26	578	104	110	71	45	45
15	27	89	65	38	71	76	556	85	108	72	56	58
16	e24	83	48	34	54	139	309	74	118	73	56	110
17	e25	122	47	29	44	191	235	69	104	68	42	122
18	e26	179	41	27	41	105	156	315	101	70	93	88
19	e24	207	40	27	36	57	128	269	101	71	83	102
20	e27	197	34	26	34	47	113	345	110	66	47	172
21	45	e93	32	26	33	53	101	395	209	65	41	63
22	51	e70	30	25	31	43	94	369	490	64	39	50
23	41	e63	28	25	30	35	87	287	207	60	38	45
24	82	e54	27	26	29	31	82	232	140	58	37	41
25	67	e56	28	24	29	54	77	338	123	58	45	44
26	91	e71	29	24	31	54	74	400	112	61	54	38
27	95	55	30	23	43	39	72	214	104	59	39	36
28	51	50	29	23	35	33	69	175	102	67	38	34
29	39	54	28	25	---	32	65	149	100	56	74	34
30	37	65	29	107	---	31	64	147	98	55	61	36
31	32	---	29	62	---	29	---	271	---	65	43	---
TOTAL	1331	2805	1181	1011	1905	1439	6132	5740	5179	2320	1618	1739
MEAN	42.9	93.5	38.1	32.6	68.0	46.4	204	185	173	74.8	52.2	58.0
MAX	98	264	65	107	514	191	1310	400	593	125	93	172
MIN	24	39	27	23	23	24	25	54	98	55	37	34
AC-FT	2640	5560	2340	2010	3780	2850	12160	11390	10270	4600	3210	3450
CFSM	.78	1.69	.69	.59	1.23	.84	3.70	3.35	3.13	1.36	.95	1.05
IN.	.90	1.89	.80	.68	1.28	.97	4.13	3.87	3.49	1.56	1.09	1.17
CAL YR 1986	TOTAL 31805	MEAN 87.1	MAX 2740	MIN 24	AC-FT 63090	CFSM 1.58	IN. 21.43					
WTR YR 1987	TOTAL 32400	MEAN 88.8	MAX 1310	MIN 23	AC-FT 64270	CFSM 1.61	IN. 21.83					

e Estimated

RIO GRANDE DE MANATI BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
29...	1030	34	252	7.60	24.5	23	8.8	106	17	K350	K180
DEC											
17...	0950	44	284	8.00	22.5	2.8	8.9	105	<10	230	K170
FEB 1987											
12...	1200	E300	194	7.70	22.5	72	8.4	99	11	K7600	43000
APR											
15...	0945	420	164	7.50	23.0	69	8.3	99	<10	5100	21000
JUN											
04...	1340	230	193	7.90	25.5	12	8.0	100	<10	5100	6400
AUG											
20...	1145	46	196	7.60	29.5	180	7.1	71	12	4800	1500

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
29...	88	8	21	8.7	11	0.5	2.0	80	<0.5	11	12
DEC											
17...	--	--	--	--	--	--	--	100	--	--	--
FEB 1987											
12...	--	--	--	--	--	--	--	66	--	--	--
APR											
15...	60	15	14	6.2	9.3	0.5	2.2	46	<0.5	12	11
JUN											
04...	--	--	--	--	--	--	--	60	--	--	--
AUG											
20...	81	10	19	8.1	11	0.5	3.2	71	--	12	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
29...	0.1	26	140	12.8	30	1.19	0.01	1.20	0.25	2.4
DEC										
17...	--	--	--	--	11	0.49	0.01	0.50	0.01	0.19
FEB 1987										
12...	--	--	--	--	60	1.67	0.03	1.70	0.06	1.4
APR										
15...	0.2	23	105	120	67	1.27	0.03	1.30	0.05	0.85
JUN										
04...	--	--	--	--	16	0.96	0.04	1.00	0.08	1.3
AUG										
20...	0.1	23	130	16.1	91	0.76	0.04	0.80	0.10	1.5

K = non-ideal count
E = estimate

RIO GRANDE DE MANATI BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
29...	2.7	3.9	--	0.48	<1	<100	<10	<1	<1	10
DEC										
17...	0.2	0.7	--	0.05	--	--	--	--	--	--
FEB 1987										
12...	1.5	3.2	14	0.11	--	--	--	--	--	--
APR										
15...	0.9	2.2	9.7	0.16	<1	<100	10	1	12	20
JUN										
04...	1.4	2.4	--	0.12	--	--	--	--	--	--
AUG										
20...	8.1	8.9	--	0.20	--	--	--	--	--	--

[illegible]

RIO GRANDE DE MANATI BASIN

99

50035000 RIO GRANDE DE MANATI AT CIALES, PR

LOCATION.--Lat 18°19'26", long 66°27'36", Hydrologic Unit 21010001, on left bank, 1.6 mi (2.6 km) upstream from Hwy 145 bridge, 0.8 mi (1.3 km) downstream from Quebrada Saliente, 0.9 mi (1.4 km) upstream from Quebrada Cojo Vales, and 1.2 mi (1.9 km) southeast of Ciales.

DRAINAGE AREA.--128 mi² (332 km²), excludes 6.0 mi² (15.5 km²), the runoff from which is diverted through El Guineo and de Matruillas reservoirs.

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 Rio Grande de Manati at Highway 145 at Ciales at site 1.6 mi (2.6 km) downstream, drainage area 132 mi² (342 km²).

GAGE.--Water-stage recorder. Elevation of gage is 140 ft (43 m), from topographic map. Prior to Apr. 1, 1962, staff gage, read twice daily, at site 100 ft (30 m) upstream at same datum. January 1971 to December 1972 at site 1.6 mi (2.6 km) downstream at different datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--27 years (1961-87), 266 ft³/s (7.530 m³/s), 28.22 in/yr (717 mm/yr), 192,700 acre-ft/yr (238 hm³/yr); median of yearly mean discharges, 246 ft³/s (6.97 m³/s), 178,000 acre-ft/yr (219 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125,000 ft³/s (3,540 m³/s), Oct. 9, 1970, gage height, 24.0 ft (7.32 m), from floodmark, from rating curve extended above 3,000 ft³/s (85.0 m³/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 discharge, 20 ft³/s (0.566 m³/s), Apr. 20, 21, 1984.

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 (2.6 km) upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Apr. 12	0200	*25,200	714	*11.92	3.633	June 2	1815	13,700	388	8.99	2.740
May 18	1745	7,150	202	6.67	2.033						

Minimum discharge, 43 ft³/s (1.22 m³/s), Jan. 1.

RIO GRANDE DE MANATI BASIN

50035000 RIO GRANDE DE MANATI AT CIALES, PR--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	71	124	60	101	74	74	159	467	171	116	107
2	61	97	100	59	78	69	73	151	2220	165	110	125
3	84	89	93	58	64	68	69	152	1370	166	138	199
4	97	82	87	57	56	68	68	156	697	162	129	140
5	276	95	85	55	52	68	70	139	463	208	126	125
6	306	91	83	70	52	68	1100	141	526	158	103	110
7	110	118	79	136	51	68	744	135	492	155	102	89
8	74	155	79	101	53	66	214	163	360	153	102	103
9	65	131	79	76	54	65	125	465	300	148	101	87
10	60	120	79	65	193	65	93	1040	280	145	96	84
11	58	140	77	60	1250	62	1210	848	257	144	94	92
12	57	257	77	58	756	79	4560	567	237	139	99	207
13	53	525	79	70	235	72	1290	340	232	134	100	173
14	67	212	87	69	222	65	1620	273	221	133	91	126
15	61	146	115	74	188	100	1600	231	224	134	152	137
16	59	148	e140	62	127	334	724	205	265	135	149	152
17	68	325	e110	54	106	334	624	192	215	127	103	241
18	60	440	e100	53	94	213	361	1440	225	125	230	238
19	59	311	e92	51	83	133	287	976	224	128	230	255
20	59	311	e86	49	78	205	244	1080	236	123	116	511
21	68	168	e76	47	77	151	224	1460	446	126	103	159
22	78	130	74	45	75	130	210	1420	1580	124	94	124
23	88	128	74	45	73	91	201	957	552	120	88	115
24	176	119	73	47	70	79	189	735	299	117	87	101
25	138	153	72	47	68	135	177	1020	237	116	113	100
26	198	120	72	44	69	165	166	1260	209	122	143	93
27	147	108	70	43	91	111	160	559	194	119	94	91
28	112	100	69	43	85	90	155	433	185	124	88	87
29	84	97	68	47	---	84	154	399	178	117	105	88
30	75	110	63	181	---	79	168	433	177	114	115	93
31	66	---	61	125	---	75	---	643	---	119	92	---
TOTAL	3033	5097	2623	2051	4501	3466	16954	18172	13568	4271	3609	4352
MEAN	97.8	170	84.6	66.2	161	112	565	586	452	138	116	145
MAX	306	525	140	181	1250	334	4560	1460	2220	208	230	511
MIN	53	71	61	43	51	62	68	135	177	114	87	84
AC-FT	6020	10110	5200	4070	8930	6870	33630	36040	26910	8470	7160	8630
CFSM	.76	1.33	.66	.52	1.26	.87	4.42	4.58	3.53	1.08	.91	1.13
IN.	.88	1.48	.76	.60	1.31	1.01	4.93	5.28	3.94	1.24	1.05	1.26

CAL YR 1986 TOTAL 83400 MEAN 228 MAX 12500 MIN 47 AC-FT 165400 CFSM 1.79 IN. 24.24
WTR YR 1987 TOTAL 81697 MEAN 224 MAX 4560 MIN 43 AC-FT 162000 CFSM 1.75 IN. 23.74

e Estimated

WATER QUALITY RECORDS

PERIOD OF RECORD--- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 26	1039	119	204	25.0	MAY, 13	1110	351	175	25.0
DEC, 22	1321	74	202	25.5	JUN, 12	1050	236	209	27.0
JAN, 22	1009	46.4	257	22.5	JUL, 09	1048	148	221	28.0
FEB, 09	1457	54.2	231	28.5	AUG, 06	1030	102	221	28.0
MAR, 25	1014	144	235	26.5	SEP, 14	1119	120	184	28.5
APR, 10	1136	99.4	196	23.0					

RIO GRANDE DE MANATI BASIN

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50035500 RIO GRANDE DE MANATI AT HIGHWAY 149 AT CIALES, RP

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'46", long 66°28'06", at bridge on Highway 149, about 800 ft (244 m) upstream from confluence with Rio Cialitos, 0.5 mi (0.8 km) north of Ciales plaza.

DRAINAGE AREA.--136 sq mi (352 sq km) this excludes the 6 sq mi (15.5 sq km) upstream from Lago El Guineo and Lago de Matrullas, flow from which is diverted to Rio Jacaguas.

PERIOD OF RECORD.--Water years 1979 to current year.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
17...	1225	161	193	8.05	25.5	14	9.0	111	14	K810	770
DEC											
23...	1020	68	248	7.55	24.0	5.1	8.1	97	<10	K60	K80
FEB 1987											
24...	0955	64	240	7.40	25.0	1.6	7.9	97	<10	K140	K72
APR											
24...	1000	166	250	7.50	27.0	0.5	7.8	99	<10	K160	K80
JUN											
18...	0915	192	233	8.20	26.0	2.0	8.0	--	<10	K180	K100
AUG											
20	0915	113	169	7.90	27.5	160	5.4	--	13	K9300	3600

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
17...	76	1	19	7.0	9.8	0.5	2.0	75	<0.5	11	10
DEC											
23...	--	--	--	--	--	--	--	99	--	--	--
FEB 1987											
24...	--	--	--	--	--	--	--	35	--	--	--
APR											
24...	130	37	24	16	74	3	4.5	89	<0.5	12	16
JUN											
18...	--	--	--	--	--	--	--	88	--	--	--
AUG											
20...	65	5	16	6.1	8.9	0.5	23	60	--	11	9.5

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
17...	0.1	23	127	55.2	23	0.95	0.05	1.0	0.12	0.48
DEC										
23...	--	--	--	--	11	0.29	0.01	0.30	0.02	0.68
FEB 1987										
24...	--	--	--	--	15	0.39	0.01	0.40	0.03	0.27
APR										
24...	0.1	27	227	102	<1	0.59	0.01	0.60	0.02	0.18
JUN										
18...	--	--	--	--	1	0.29	0.01	0.30	0.03	0.37
AUG										
20...	0.1	21	110	33.6	9	0.66	0.04	0.70	0.08	0.62

K = non-ideal count

RIO GRANDE DE MANATI BASIN

50035500 RIO GRANDE DE MANATI AT HIGHWAY 149 AT CIALES, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
17...	0.6	1.6	--	0.10	<1	<100	20	<1	<1	<10
DEC										
23...	0.7	1.0	4.4	0.06	--	--	--	--	--	--
FEB 1987										
24...	0.3	0.7	3.1	0.06	--	--	--	--	--	--
APR										
24...	0.2	0.8	3.5	0.05	<1	<100	10	<1	9	<10
JUN										
18...	0.4	0.7	--	0.07	--	--	--	--	--	--
AUG										
20...	0.7	1.4	--	0.23	--	--	--	--	--	--

[illegible]

RIO GRANDE DE MANATI BASIN

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50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'18", long 66°28'28", 100 ft (30 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 plaza.

DRAINAGE AREA.--17.0 sq mi (44.0 sq km).

PERIOD OF RECORD.--Water years 1969-71, 1974 to current year.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
17...	1415	27	184	7.55	23.5	58	3.8	105	11	5500	7300
DEC											
23...	1240	9.2	244	7.75	23.0	3.5	9.0	106	<10	400	790
FEB 1987											
24...	1240	7.8	244	7.60	23.0	5.5	8.0	94	44	270	400
APR											
24...	1300	21	240	7.80	27.5	1.2	8.2	105	<10	340	230
JUN											
18...	1130	31	233	8.60	26.5	1.9	8.6	--	<10	K970	570
AUG											
20...	1140	18	198	8.20	28.0	17	6.2	--	15	590	600

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
17...	71	2	20	5.1	8.5	0.5	2.2	69	<0.5	11	8.8
DEC											
23...	--	--	--	--	--	--	--	104	--	--	--
FEB 1987											
24...	--	--	--	--	--	--	--	110	--	--	--
APR											
24...	100	0	30	6.6	13	0.6	2.1	110	<0.5	8.9	13
JUN											
18...	--	--	--	--	--	--	--	95	--	--	--
AUG											
20...	80	0	22	6.0	9.3	0.5	1.8	80	--	8.5	9.3

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
17...	<0.1	22	119	8.73	64	0.49	0.01	0.50	0.01	0.19
DEC										
23...	--	--	--	--	7	0.69	0.01	0.70	0.01	0.29
FEB 1987										
24...	--	--	--	--	11	0.59	0.01	0.60	0.01	0.69
APR										
24...	0.1	29	169	9.70	3	0.69	0.01	0.70	0.01	0.19
JUN										
18...	--	--	--	--	9	1.48	0.02	1.50	0.04	0.16
AUG										
20...	0.2	28	130	8.92	7	0.89	0.01	0.90	0.02	0.38

K = non-ideal count

RIO GRANDE DE MANATI BASIN

50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
17...	0.2	0.7	--	0.08	<1	100	<10	<1	<1	10
DEC 23...	0.3	1.0	4.4	0.09	--	--	--	--	--	--
FEB 1987										
24...	0.7	1.3	5.8	0.13	--	--	--	--	--	--
APR 24...	0.2	0.9	4.0	0.06	<1	<100	<10	<1	3	<10
JUN 18...	0.2	1.7	--	0.09	--	--	--	--	--	--
AUG 20...	0.4	1.3	--	0.10	--	--	--	--	--	--

[illegible]

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

LOCATION.--Lat 18°25'52", long 66°31'37", Hydrologic Unit 21010002, at bridge on Highway 2, and 2.3 mi (3.7 km) west of Manati.

DRAINAGE AREA.--197 mi² (510 km²), approximately, of which about 38 mi² (98 km²) is partly or entirely noncontributing, excludes 6.0 mi² (15.5 km²) 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. Elevation of gage is 14 ft (4 m), from topographic map. Prior to 1968 crest-stage gage at same site and datum 3.57 ft (1.088 m) lower.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--17 years (1971-87), 394 ft³/s (11.16 m³/s), 27.16 in/yr (690 mm/yr), 285,500 acre-ft/yr (354 hm³/yr); median of yearly mean discharges, 387 ft³/s (11.0 m³/s), 280,000 acre-ft/yr (350 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 97,200 ft³/s (2,750 m³/s), Oct. 7, 1985, gage height, 33.79 ft (10.299 m) from rating curve extended above 15,000 ft³/s (425 m³/s) on basis of slope-area measurements of peak flow; minimum discharge, 33 ft³/s (0.935 m³/s), May 12, 1984.

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 CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft³/s (255 m³/s) and maximum (*):

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)
Apr. 12	unknown	*33,000	934	unknown		June 2	unknown	11,000	312	unknown	

Minimum discharge, 89 ft³/s (2.52 m³/s), Jan. 27, 28.

REVISIONS.--The peak discharges and annual maximum (*) reported for some water years have been revised as shown in the following table. They supersede figures published in the reports for 1970, 1971, 1975-76, 1979-80, 1981-82, 1983, 1984 and 1985.

Water Year	Date	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Water Year	Date	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
1970	Nov. 9, 1969	*68,100	1,930	32.85	10.013		Sept. 13, 1982	21,200	600	29.96	9.132
1971	Oct. 9, 1970	*81,800	2,360	33.30	10.150	1983	Apr. 21, 1983	*30,200	855	30.84	9.400
1975	Oct. 23, 1974	21,000	595	29.92	9.120		May 14, 1983	18,700	530	29.52	8.998
	Sept. 16, 1975	*21,400	606	29.99	9.141	1984	Sept. 11, 1984	8,600	244	27.36	8.339
1979	July 19, 1979	19,000	538	29.57	9.013	1985	Nov. 3, 1984	17,300	490	29.26	8.918
	Aug. 31, 1979	*34,500	977	31.18	9.504		May 17, 1985	37,300	1,060	31.38	9.565
1982	Dec. 13, 1981	*31,000	878	30.91	9.421		May 18, 1985	*90,000	2,550	33.54	10.223

RIO GRANDE DE MANATI BASIN

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	121	202	95	178	118	111	228	1040	288	157	143
2	111	138	189	94	150	109	111	201	e2150	274	155	195
3	106	148	173	92	125	106	102	194	3140	288	200	166
4	167	149	163	91	111	107	103	214	1150	276	190	352
5	138	145	149	92	102	106	121	185	877	329	187	192
6	651	168	146	96	101	105	235	179	775	276	168	201
7	222	174	144	148	98	100	e200	242	936	e255	149	148
8	166	271	133	160	98	98	e270	205	680	e256	143	159
9	138	228	131	133	98	96	186	316	590	244	144	142
10	122	208	130	113	107	95	179	1020	554	238	142	131
11	115	217	128	105	1070	94	860	1500	511	231	138	134
12	110	220	127	99	2460	97	e13900	1020	478	222	133	209
13	109	850	127	96	636	107	4030	599	469	214	146	342
14	122	415	140	208	417	99	1330	428	443	209	136	219
15	120	273	156	136	339	144	e1250	332	434	204	131	199
16	111	227	153	121	262	290	e1250	281	496	203	131	175
17	113	313	136	104	205	673	e1100	253	434	199	139	306
18	116	885	127	97	175	459	679	e1230	407	194	140	390
19	108	848	119	94	156	237	507	1780	479	199	138	223
20	123	615	115	92	140	319	416	1950	411	e192	157	685
21	129	352	112	93	131	209	361	2080	521	e188	164	315
22	135	266	115	93	126	237	316	2040	e1770	185	145	205
23	133	239	108	93	118	162	305	1640	972	177	135	180
24	236	206	104	92	115	135	280	998	588	170	129	159
25	196	211	105	95	112	162	259	1580	433	172	134	150
26	277	267	106	91	111	229	242	1980	386	174	275	138
27	222	194	105	90	128	179	227	1070	346	172	164	132
28	189	181	102	90	137	144	216	817	322	173	137	127
29	158	177	100	92	---	130	212	819	307	167	130	124
30	134	189	98	181	---	121	209	839	299	157	183	135
31	121	---	98	259	---	114	---	936	---	155	143	---
TOTAL	5006	8895	4041	3535	8006	5381	29567	27156	22398	6681	4763	6376
MEAN	161	296	130	114	286	174	986	876	747	216	154	213
MAX	651	885	202	259	2460	673	13900	2080	3140	329	275	685
MIN	106	121	98	90	98	94	102	179	299	155	129	124
AC-FT	9930	17640	8020	7010	15880	10670	58650	53860	44430	13250	9450	12650
CFSM	.82	1.51	.66	.58	1.45	.88	5.00	4.45	3.79	1.09	.78	1.08
IN.	.95	1.68	.76	.67	1.51	1.02	5.58	5.13	4.23	1.26	.90	1.20

CAL YR 1986 TOTAL 147697 MEAN 405 MAX 21100 MIN 90 AC-FT 293000 CFSM 2.05 IN. 27.89
WTR YR 1987 TOTAL 131805 MEAN 361 MAX 13900 MIN 90 AC-FT 261400 CFSM 1.83 IN. 24.89

e Estimated

RIO GRANDE DE MANATI BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
NOV 1986											
03...	1650	142	330	7.50	28.0	4.4	8.7	112	2600	25000	130
DEC											
15...	1130	150	356	7.70	25.5	2.9	7.7	94	K8600	K11000	140
FEB 1987											
24...	1035	118	383	7.50	25.0	5.5	7.1	86	K12000	5500	160
APR											
23...	1205	E350	347	7.20	27.5	5.5	6.9	88	3900	9300	150
JUN											
08...	1250	679	271	7.50	27.5	16	7.9	100	3400	3900	110
SEP											
28...	1105	126	299	7.70	29.0	5.8	7.1	92	4700	K1000	140

DATE	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 1986											
03...	13	41	7.3	11	0.4	1.7	120	10	10	0.1	21
DEC											
15...	0	43	7.7	11	0.4	1.7	140	9.6	12	0.1	19
FEB 1987											
24...	9	50	8.2	11	0.4	1.9	150	11	18	0.1	19
APR											
23...	0	48	8.3	12	0.5	2.0	150	10	15	0.1	21
JUN											
08...	13	34	6.7	9.8	0.4	1.9	100	9.5	13	0.1	22
SEP											
28...	9	43	8.0	11	0.4	7.5	130	9.0	11	0.1	21

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)
NOV 1986											
03...	186	178	71.3	0.76	0.07	0.09	0.4	0.15	0.14	0.12	0.37
DEC											
15...	194	192	78.6	0.77	0.03	0.04	0.5	0.08	0.08	0.06	0.18
FEB 1987											
24...	203	214	64.7	0.92	0.07	0.09	1.0	0.09	0.08	0.08	0.25
APR											
23...	199	200	--	0.99	0.08	0.10	0.7	0.09	0.07	0.06	0.18
JUN											
08...	165	161	302	0.84	0.07	0.09	0.4	0.13	0.06	0.04	0.12
SEP											
28...	184	193	65.7	0.73	0.05	0.06	0.5	0.10	0.01	0.05	0.15

K = non-ideal count
E = estimate

RIO GRANDE DE MANATI BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 1986 03...	30	<1	43	<0.5	1	<1	<3	4	10	<5
DEC 15...	--	--	--	--	--	--	--	--	--	--
FEB 1987 24...	10	<1	53	<0.5	1	<1	<3	2	12	<5
APR 23...	--	--	--	--	--	--	--	--	--	--
JUN 08...	20	<1	47	<0.5	<1	2	<3	5	24	<5
SEP 28...	10	<1	43	<0.5	<1	<1	<3	3	12	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 1986 03...	6	17	<0.1	<10	<1	<1	<1	180	6	13
DEC 15...	--	--	--	--	--	--	--	--	--	--
FEB 1987 24...	5	55	0.1	<10	<1	<1	<1	210	6	8
APR 23...	--	--	--	--	--	--	--	--	--	--
JUN 08...	7	25	0.2	<10	1	<1	<1	150	<6	11
SEP 28...	<4	24	<0.1	<10	3	<1	<1	190	6	14

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN, TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 08...	1250	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 08...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 08...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01

RIO GRANDE DE MANATI BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP., SIEVE DIAM. PERCENT FINER THAN .062 MM
NOV 1986					
03...	1650	142	77	30	63
DEC					
15...	1130	150	98	40	69
FEB 1987					
24...	1035	118	34	11	73
APR					
23...	1205	E350	256	--	51
JUN					
08...	1250	679	110	202	60
SEP					
28...	1105	126	71	24	85

E=estimate

LAGUNA TORTUGUERO BASIN

50038200 LAGUNA TORTUGUERO OUTLET NEAR VEGA BAJA, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1964-66, 1969-71, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986										
17...	1345	16	1580	7.70	30.5	8.6	116	34	K6	K5
DEC										
23...	1400	1	1460	8.00	28.0	7.4	95	23	K6	K18
FEB 1987										
24...	1315	27	1410	7.90	28.0	7.6	98	22	K5	K24
APR										
20...	1330	96	968	7.40	31.0	6.6	89	--	29	21
JUN										
15...	1000	48	897	7.80	29.0	5.8	75	18	K57	430
AUG										
14...	1155	E35	957	7.80	31.5	6.5	88	20	26	840

DATE	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)
OCT 1986										
17...	110	<0.05	6	0.58	0.02	0.60	0.20	1.1	1.3	1.9
DEC										
23...	150	--	2	0.78	0.02	0.80	0.44	1.4	1.8	2.6
FEB 1987										
24...	140	--	1	1.08	0.02	1.10	0.33	1.1	1.4	2.5
APR										
20...	120	<0.05	2	0.98	0.02	1.00	0.09	1.0	1.1	2.1
JUN										
15...	110	--	<1	0.98	0.02	1.00	0.12	0.9	1.0	2.0
AUG										
14...	140	--	<1	0.78	0.02	0.80	0.19	1.0	1.2	2.0

DATE	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT 1986										
17...	8.4	0.02	60	10	60	10	10	<0.010	3	0.05
DEC										
23...	12	<0.01	--	--	--	--	--	--	--	--
FEB 1987										
24...	11	<0.01	--	--	--	--	--	--	--	--
APR										
20...	9.3	0.01	60	10	100	10	10	<0.010	7	0.06
JUN										
15...	8.9	0.03	--	--	--	--	--	--	--	--
AUG										
14...	8.9	0.22	--	--	--	--	--	--	--	--

K = non-ideal count
E = estimate

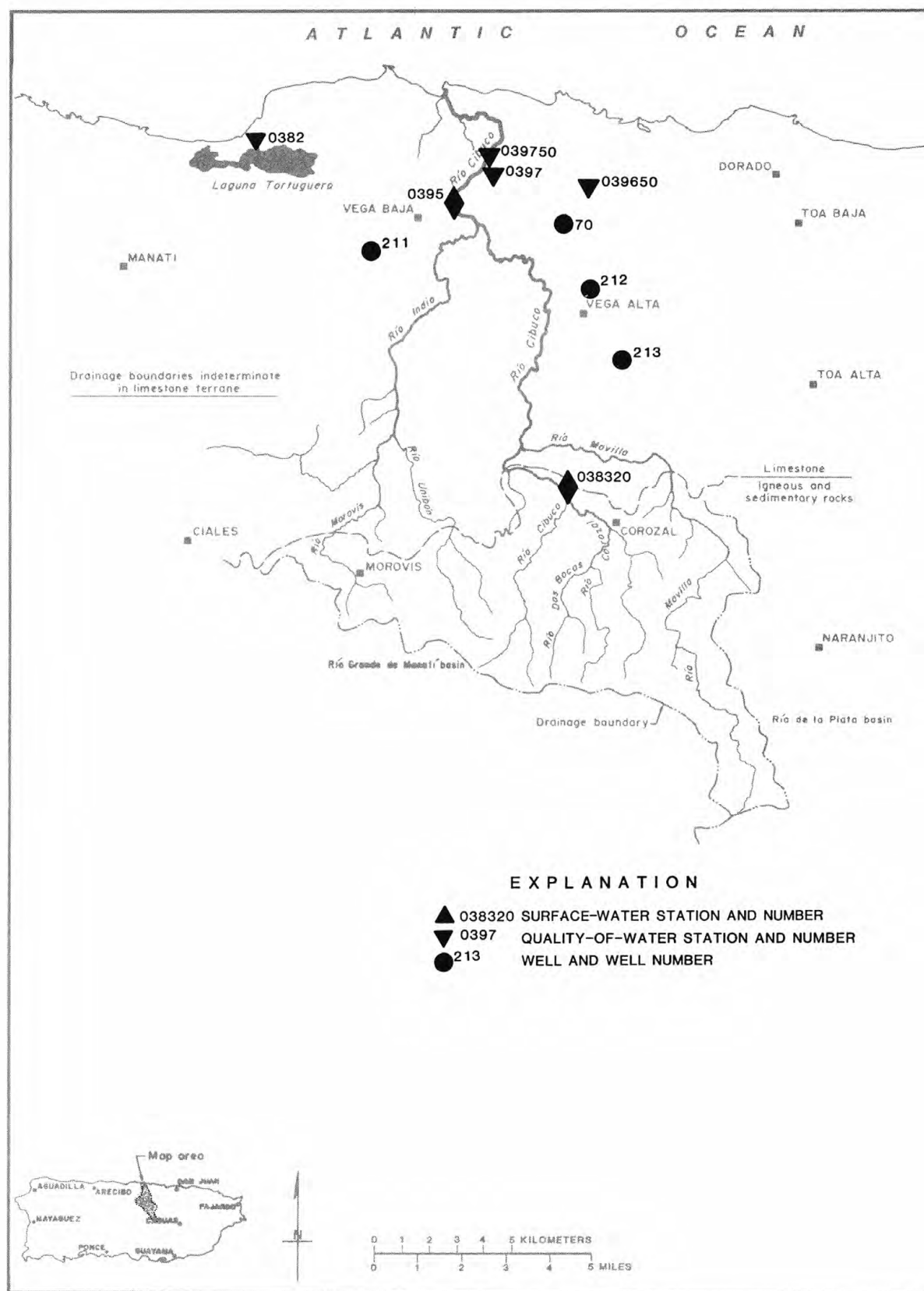


Figure 15.--Río Cibuco basin.

RIO CIBUCO BASIN

50038320 RIO CIBUCO BELOW COROZAL, PR

LOCATION.--Lat 18°21'13", long 66°20'07", Hydrologic Unit 21010001, on right bank, 150 ft (46 m) downstream from Rio Corozal, and 1.4 mi (2.3 km) northwest of Corozal.

DRAINAGE AREA.--15.1 mi² (39.1 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 195 ft (59 m), from topographic map.

REMARKS.--Records fair except those for June 28 to July 8 and estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--18 years (1970-87), 30.0 ft³/s (0.850 m³/s), 26.98 in/yr (685 mm/yr), 21,740 acre-ft/yr (26.8 hm³/yr); median of yearly mean discharges, 33 ft³/s (0.93 m³/s), 23,900 acre-ft/yr (29 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft³/s (385 m³/s), Nov. 7, 1979, gage height, 19.80 ft (6.035 m), from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of float and slope-area measurements of peak flow; minimum daily discharge, 1.3 ft³/s (0.037 m³/s), July 24-26, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 18	1800	2,780	78.7	11.18	3,408		
Mar. 16	1800	4,210	119	12.96	3,950		
Apr. 11	2230	*11,400	323	*18.99	5,788		
May 20	0545	3,170	89.8	11.70	3,566		
May 21	1100	4,640	131	13.43	4,093		

Minimum discharge, 4.2 ft³/s (0.119 m³/s), Feb. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	24	21	8.9	11	9.2	27	26	58	21	13	52
2	12	19	17	9.0	8.5	8.7	28	26	124	26	11	33
3	10	35	16	8.8	7.6	9.0	26	33	214	24	39	18
4	8.6	28	15	8.6	7.4	9.4	26	27	77	26	20	14
5	8.5	15	15	9.1	6.5	8.7	31	24	55	23	17	13
6	8.1	35	14	9.1	7.2	8.8	28	24	48	20	13	12
7	8.2	34	14	13	6.0	8.1	28	26	43	22	12	12
8	8.5	48	14	11	5.4	7.6	26	54	39	19	12	19
9	9.9	31	14	11	5.0	7.4	24	87	39	18	15	13
10	8.9	30	15	9.6	38	7.6	25	32	37	18	11	12
11	8.0	21	13	8.7	260	7.3	e1240	64	34	16	11	12
12	8.0	80	13	9.0	152	8.1	e600	41	41	15	42	40
13	12	58	32	9.1	35	7.0	e145	33	33	15	18	15
14	9.5	36	23	16	22	7.6	e180	32	31	15	15	20
15	9.7	47	26	13	17	106	e170	26	41	18	20	19
16	9.1	31	18	7.7	14	294	e96	24	30	15	14	107
17	7.8	24	21	7.5	12	321	e72	23	28	14	13	41
18	7.3	266	15	7.0	11	e62	e57	100	28	14	34	e18
19	22	e55	14	7.5	10	e36	e50	77	28	13	25	e39
20	11	e38	14	7.3	9.7	32	e45	412	28	14	13	47
21	7.7	e34	13	6.9	10	83	e41	576	38	14	11	23
22	8.0	28	12	6.9	9.1	41	e38	189	51	13	11	e16
23	8.1	22	12	8.0	8.5	28	e36	e108	29	12	10	e14
24	9.6	29	11	7.1	8.3	26	e34	e70	25	12	10	13
25	8.6	22	13	6.9	8.8	67	e32	e197	24	12	20	13
26	7.8	19	14	7.1	14	38	e31	97	23	12	33	12
27	18	19	12	6.5	19	29	e30	85	22	12	12	11
28	10	17	12	6.9	11	28	28	61	21	18	11	12
29	34	25	11	9.4	---	28	30	51	22	12	15	12
30	15	20	9.8	43	---	28	28	46	21	12	17	12
31	11	---	9.6	16	---	27	---	103	---	16	16	---
TOTAL	335.9	1190	473.4	315.6	734.0	1388.5	3252	2774	1332	511	534	694
MEAN	10.8	39.7	15.3	10.2	26.2	44.8	108	89.5	44.4	16.5	17.2	23.1
MAX	34	266	32	43	260	321	1240	576	214	26	42	107
MIN	7.3	15	9.6	6.5	5.0	7.0	24	23	21	12	10	11
AC-FT	666	2360	939	626	1460	2750	6450	5500	2640	1010	1060	1380
CFSM	.72	2.63	1.01	.67	1.74	2.97	7.18	5.93	2.94	1.09	1.14	1.53
IN.	.83	2.93	1.17	.78	1.81	3.42	8.01	6.83	3.28	1.26	1.32	1.71

CAL YR 1986 TOTAL 11498.2 MEAN 31.5 MAX 1640 MIN 5.7 AC-FT 22810 CFSM 2.09 IN. 28.33
WTR YR 1987 TOTAL 13534.4 MEAN 37.1 MAX 1240 MIN 5.0 AC-FT 26850 CFSM 2.46 IN. 33.34

e Estimated

RIO CIBUCO BASIN

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50038320 RIO CIBUCO BELOW COROZAL, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-76, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
31...	0945	11	375	7.50	24.5	14	7.2	87	28	4800	3400
DEC											
22...	1100	12	393	8.00	22.5	2.7	7.9	92	13	K650	390
FEB 1987											
17...	1105	13	393	7.70	23.0	1.4	7.0	83	19	K9800	3200
APR											
27...	1120	41	313	7.80	25.0	3.5	8.1	99	15	36000	4700
JUN											
05...	0930	57	305	7.90	25.5	56	7.9	97	18	K6100	5100
AUG											
10	1010	11	310	7.70	27.0	11	7.6	95	21	2600	620

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
31...	130	8	33	11	19	0.8	3.9	120	<0.5	15	20
DEC											
22...	--	--	--	--	--	--	--	130	--	--	--
FEB 1987											
17...	--	--	--	--	--	--	--	130	--	--	--
APR											
27...	130	18	33	11	16	0.6	2.9	110	<0.5	16	24
JUN											
05...	--	--	--	--	--	--	--	110	--	--	--
AUG											
10...	130	15	32	11	19	0.7	2.9	110	--	14	20

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
31...	0.1	30	204	6.06	22	0.65	0.15	0.80	0.92	2.0
DEC										
22...	--	--	--	--	18	1.04	0.26	1.30	0.50	0.8
FEB 1987										
17...	--	--	--	--	5	1.01	0.09	1.10	0.98	0.92
APR										
27...	0.1	30	199	22.2	17	1.08	0.12	1.20	0.49	0.51
JUN										
05...	--	--	--	--	60	0.71	0.19	0.90	0.92	0.18
AUG										
10...	0.2	32	200	5.94	1	0.94	0.16	1.10	0.22	0.98

K = non-ideal count

RIO CIBUCO BASIN

50038320 RIO CIBUCO BELOW COROZAL, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
31...	2.9	3.7	--	0.61	1	<100	<10	<1	<1	10
DEC										
22...	1.3	2.6	12	0.33	--	--	--	--	--	--
FEB 1987										
17...	1.9	3.0	13	0.77	--	--	--	--	--	--
APR										
27...	1.0	2.2	9.7	0.27	<1	<100	<10	<1	19	<10
JUN										
05...	1.1	2.0	--	0.45	--	--	--	--	--	--
AUG										
10...	1.2	2.3	--	0.20	--	--	--	--	--	--

[illegible]

50039500 RIO CIBUCO AT VEGA BAJA, PR

LOCATION.--Lat 18°26'53", long 66°22'29", Hydrologic Unit 21010002, on right bank, at bridge on Hwy. 2, 0.6 mi (1.0 km) downstream from Rio Indio, and 0.8 mi (1.3 km) east of Vega Baja.

DRAINAGE AREA.--99.1 mi² (256.7 km²), of which 25.4 mi² (65.8 km²), does not contribute directly to surface runoff.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 7.79 ft (2.37 m) above mean sea level.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--14 years (1974-87), 132 ft³/s (3.738 m³/s), 18.09 in/yr (459 mm/yr), 95,630 acre-ft/yr (118 hm³/yr); median of yearly mean discharges, 130 ft³/s (3.68 m³/s), 94,180 acre-ft/yr (116 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s), Apr. 12, 1987, gage height, 19.10 ft (5.822 m), from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of indirect measurements; minimum discharge, 6.1 ft³/s (0.173 m³/s), July 24, 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 11, 1965 reached a stage of 26.2 ft (7.99 m), datum unknown, discharge about 28,000 ft³/s (793 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft³/s (90.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 12	unknown	*34,000	19.10	May 21	1800	7,920	16.70

Minimum daily discharge, 20 ft³/s (0.566 m³/s), Mar. 7-11, 13, during period of estimated record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	81	117	57	73	e30	e64	141	333	115	92	111
2	43	96	114	55	51	e30	e61	135	591	111	78	209
3	51	80	95	51	46	e25	e61	138	843	135	296	100
4	42	142	91	47	43	e25	e59	168	537	144	159	e70
5	39	98	84	48	39	e25	e56	131	325	162	182	e50
6	39	167	79	47	39	e25	e70	131	294	115	101	e40
7	39	184	77	54	38	e20	e60	127	278	128	86	e40
8	42	356	74	63	38	e20	e60	180	248	146	81	e60
9	47	221	73	60	36	e20	e50	219	226	109	84	e45
10	55	180	78	53	68	e20	e60	226	215	108	73	e40
11	44	162	77	48	765	e20	e1500	192	197	99	71	e150
12	45	175	74	43	1250	e25	e10000	226	195	93	74	e50
13	46	307	75	43	e600	e20	e2000	154	204	91	147	e60
14	58	210	141	102	260	e25	e1000	158	174	89	76	e60
15	46	214	129	94	192	e100	e1100	135	207	98	80	e60
16	49	245	90	56	e100	e1000	623	120	223	102	77	e500
17	42	154	92	47	e70	e900	479	113	171	87	68	e150
18	50	203	84	43	e50	e500	361	184	168	87	67	e50
19	68	1080	76	41	e40	e300	314	376	173	97	120	e200
20	76	e650	70	40	e35	e150	278	1100	162	85	75	e210
21	130	e300	71	39	e40	e200	250	2610	156	86	65	e150
22	115	e200	67	37	e35	e120	229	1330	305	84	60	e90
23	77	e150	63	38	e30	e100	215	473	208	76	59	e90
24	83	e140	60	40	e30	89	198	350	159	75	59	e70
25	54	184	70	37	e30	e150	181	781	145	80	61	e60
26	45	171	66	36	e35	e130	172	881	136	78	165	e50
27	43	129	68	36	e50	e104	161	433	127	83	76	e50
28	61	124	62	36	e35	e86	153	354	121	122	65	e55
29	68	132	59	39	---	e78	149	311	120	86	62	e55
30	114	139	58	119	---	e72	154	277	124	85	87	e55
31	59	---	60	89	---	e66	---	400	---	106	88	---
TOTAL	1816	6674	2494	1638	4118	4475	20118	12554	7365	3162	2934	2980
MEAN	58.6	222	80.5	52.8	147	144	671	405	245	102	94.6	99.3
MAX	130	1080	141	119	1250	1000	10000	2610	843	162	296	500
MIN	39	80	58	36	30	20	50	113	120	75	59	40
AC-FT	3600	13240	4950	3250	8170	8880	39900	24900	14610	6270	5820	5910
CFSM	.59	2.24	.81	.53	1.48	1.46	6.77	4.09	2.48	1.03	.96	1.00
IN.	.68	2.51	.94	.61	1.55	1.68	7.55	4.71	2.76	1.19	1.10	1.12

CAL YR 1986 TOTAL 48954 MEAN 134 MAX 4650 MIN 26 AC-FT 97100 CFSM 1.35 IN. 18.38
WTR YR 1987 TOTAL 70328 MEAN 193 MAX 10000 MIN 20 AC-FT 139500 CFSM 1.94 IN. 26.40

e Estimated

RIO CIBUCO BASIN

50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
17...	1000	42	509	7.40	27.0	1.0	3.3	42	11	K940	470
DEC											
23...	1115	62	497	7.50	24.0	2.8	4.1	49	<10	3400	K310
FEB 1987											
09...	1350	36	503	7.60	24.5	11	4.1	49	<10	410	250
APR											
20...	1110	260	443	7.50	26.0	8.4	6.2	77	10	K1200	K1900
JUN											
16...	0950	214	356	7.70	25.5	43	6.0	73	12	25000	K9400
AUG											
14...	1010	69	377	7.30	27.0	--	4.1	51	--	K12000	760

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
17...	190	23	63	8.5	17	0.6	3.7	170	<0.5	17	22
DEC											
23...	--	--	--	--	--	--	--	190	--	--	--
FEB 1987											
09...	--	--	--	--	--	--	--	180	--	--	--
APR											
20...	180	14	60	8.4	16	0.5	3.2	170	<0.5	17	21
JUN											
16...	--	--	--	--	--	--	--	140	--	--	--
AUG											
14...	200	17	67	7.2	12	0.4	2.3	150	--	16	17

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
17...	0.1	19	252	28.6	3	1.23	0.07	1.30	0.10	1.6
DEC										
23...	--	--	--	--	4	1.42	0.08	1.50	0.13	0.57
FEB 1987										
09...	--	--	--	--	3	1.21	0.09	1.30	0.21	0.89
APR										
20...	0.1	16	250	176	38	1.18	0.02	1.20	0.08	0.62
JUN										
16...	--	--	--	--	64	0.86	0.04	0.90	0.08	0.12
AUG										
14...	0.2	16	250	46.6	4	1.11	0.09	1.20	0.18	0.52

K = non-ideal count

RIO CIBUCO BASIN

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50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 17...	1.7	3.0	13	0.28	1	100	10	<1	3	10
DEC 23...	0.7	2.2	9.7	0.26	--	--	--	--	--	--
FEB 1987 09...	1.1	2.4	11	0.34	--	--	--	--	--	--
APR 20...	0.7	1.9	--	0.08	1	100	10	<1	8	10
JUN 16...	<0.2	--	--	0.19	--	--	--	--	--	--
AUG 14...	0.7	1.9	8.4	0.19	10	100	10	<1	10	110

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT 1986 17...	420	6	40	<0.1	<1	<1	40	0.01	1	0.02
DEC 23...	--	--	--	--	--	--	--	--	--	--
FEB 1987 09...	--	--	--	--	--	--	--	--	--	--
APR 20...	130	5	110	<0.1	<1	<1	10	0.01	3	0.01
JUN 16...	--	--	--	--	--	--	--	--	--	--
AUG 14...	140	5	40	<0.1	<1	<1	40	0.01	1	0.02

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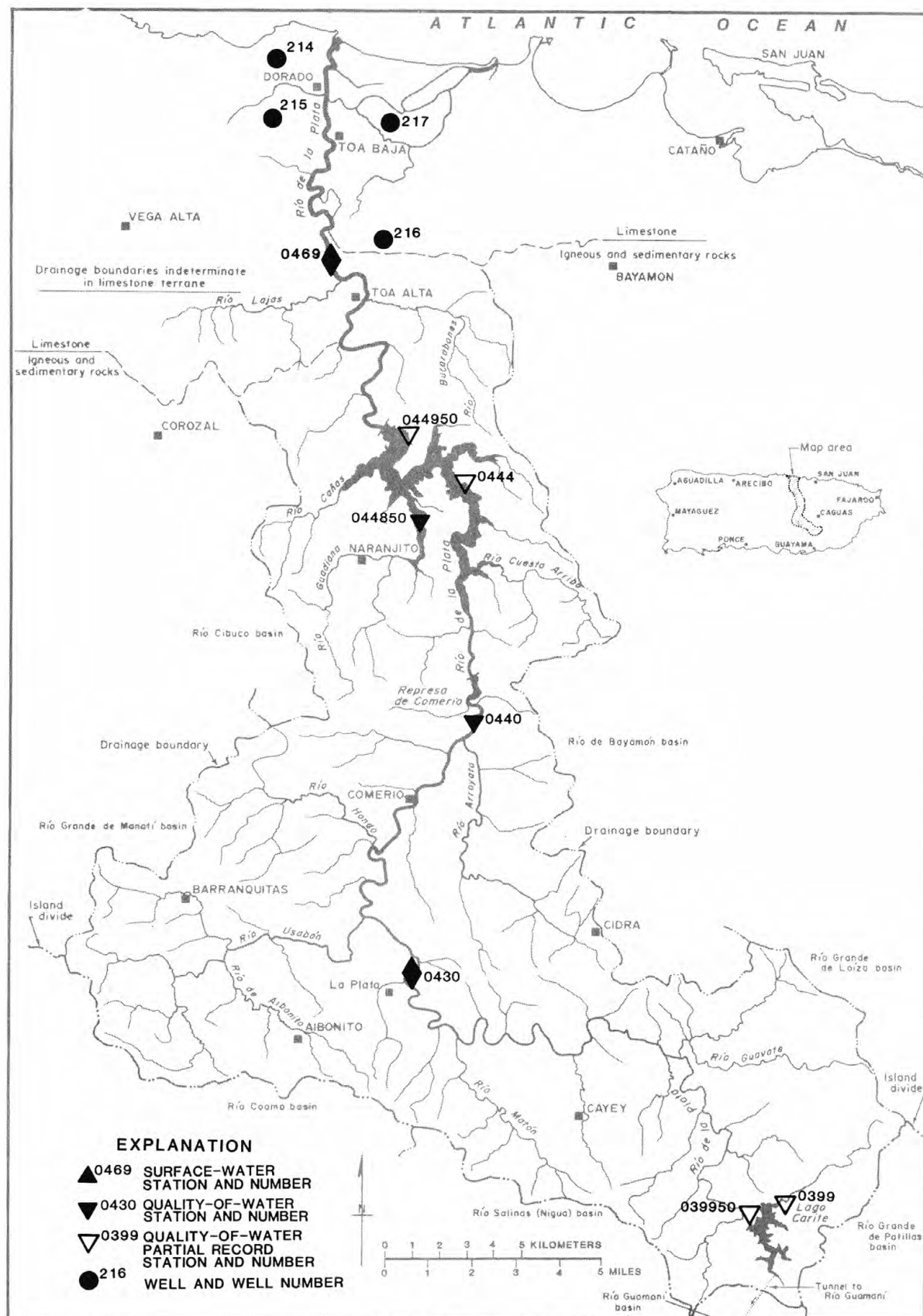


Figure 16.--Río de la Plata basin.

RIO DE LA PLATA BASIN

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR

LOCATION.--Lat 18°09'37", long 66°13'44", Hydrologic Unit 21010005, at upstream side of bridge on Highway 173, 0.4 mi (0.6 km) northeast of Proyecto La Plata, and 2.5 mi (4.0 km) upstream from Rio Usabón.

DRAINAGE AREA.--54.8 mi² (141.9 km²), excludes 8.2 mi² (21.1 km²) upstream from Carite Reservoir, the flow of which is diverted to Rio 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. Elevation of gage is 850 ft (259 m), from topographic map. Prior to Mar. 29, 1961, wire-weight gage read twice daily at same site and datum.

REMARKS.--Records fair. National Weather Service gage-height telemeter at station. The Puerto Rico Aqueduct and Sewer Authority operates a pumping plant about 5 mi (8 km) upstream which can divert as much as 23 ft³/s (0.65 m³/s) into Cidra Reservoir.

AVERAGE DISCHARGE.--27 years (1961-87), 110 ft³/s (3.115 m³/s), 27.26 in/yr (692 mm/yr), 79,700 acre-ft/yr (98 hm³/yr); median of yearly mean discharges, 88 ft³/s (2.49 m³/s), 63,800 acre-ft/yr (79 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,600 ft³/s (1,690 m³/s), Aug. 27, 1961, gage height, 32.21 ft (9.818 m), from rating curve extended above 7,000 ft³/s (198 m³/s) on basis of slope-area measurement; minimum daily discharge, 2.6 ft³/s (0.074 m³/s), July 25, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 17	1615	*4,440 126	*10.43 3.179	June 21	2115	4,020 114	10.25 3.124

Minimum daily discharge, 8.2 ft³/s (0.232 m³/s), Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	23	59	47	57	13	9.5	17	47	24	36	19
2	22	24	57	47	34	11	9.4	19	30	20	17	15
3	21	25	64	46	28	12	9.0	21	182	19	85	15
4	20	24	66	45	25	14	8.9	22	86	20	90	12
5	20	62	61	49	24	16	9.1	21	30	142	125	9.9
6	24	68	61	74	23	15	177	28	23	84	79	9.2
7	21	105	74	123	21	11	111	24	20	86	41	8.3
8	20	81	78	71	20	10	40	19	22	43	32	8.2
9	20	59	68	64	20	9.7	26	45	22	30	27	9.7
10	32	50	67	38	23	9.9	23	26	21	25	26	11
11	30	110	105	30	478	11	260	26	17	24	20	10
12	28	1390	109	27	86	10	203	53	16	19	19	10
13	28	364	84	25	276	14	199	29	17	17	17	9.3
14	27	98	107	24	206	10	109	21	17	16	33	9.0
15	34	65	78	30	75	9.1	204	21	18	21	50	9.7
16	50	96	74	25	46	12	90	19	46	28	28	9.3
17	50	533	65	23	36	12	45	17	20	19	18	9.3
18	28	216	62	21	31	11	35	54	17	17	16	58
19	22	116	60	20	29	12	30	24	17	16	25	109
20	18	90	58	20	26	9.5	27	60	251	15	18	130
21	17	79	57	20	24	12	24	97	582	47	16	20
22	26	75	55	21	22	12	22	208	1070	39	14	14
23	24	68	54	22	21	12	21	87	177	20	12	17
24	21	63	53	37	18	12	21	70	59	15	11	13
25	62	64	52	31	15	13	21	101	37	13	11	17
26	45	63	54	25	15	16	20	202	30	13	11	12
27	31	62	53	23	17	15	19	41	25	13	12	10
28	31	63	54	22	17	15	20	26	23	23	10	10
29	24	60	53	21	---	12	18	38	21	14	11	20
30	22	67	51	138	---	11	18	32	75	11	11	33
31	22	---	50	68	---	10	---	183	---	16	10	---
TOTAL	862	4263	2043	1277	1713	372.2	1828.9	1651	3018	909	931	646.9
MEAN	27.8	142	65.9	41.2	61.2	12.0	61.0	53.3	101	29.3	30.0	21.6
MAX	62	1390	109	138	478	16	260	208	1070	142	125	130
MIN	17	23	50	20	15	9.1	8.9	17	16	11	10	8.2
AC-FT	1710	8460	4050	2530	3400	738	3630	3270	5990	1800	1850	1280
CFSM	.51	2.59	1.20	.75	1.12	.22	1.11	.97	1.84	.54	.55	.39
IN.	.59	2.89	1.39	.87	1.16	.25	1.24	1.12	2.05	.62	.63	.44

CAL YR 1986 TOTAL 20833.0 MEAN 57.1 MAX 1390 MIN 6.2 AC-FT 41320 CFSM 1.04 IN. 14.14
WTR YR 1987 TOTAL 19515.0 MEAN 53.5 MAX 1390 MIN 8.2 AC-FT 38710 CFSM .98 IN. 13.25

RIO DE LA PLATA BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
20...	1150	18	448	8.50	29.0	2.0	8.9	120	13	K40	K60
DEC											
16...	1130	75	309	7.90	23.5	20	8.4	102	15	K750	K140
FEB 1987											
10...	1045	24	444	8.30	24.5	0.7	9.6	119	<10	K160	460
APR											
14...	1320	93	328	7.90	27.5	15	7.3	95	17	K1500	K1100
JUN											
02...	0920	30	392	8.10	26.5	9.8	7.3	94	<10	2300	3000
AUG											
12...	1050	21	446	8.00	29.0	--	8.6	116	--	K150	340

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
20...	130	0	31	12	29	1	2.7	130	<0.5	18	26
DEC											
16...	--	--	--	--	--	--	--	100	--	--	--
FEB 1987											
10...	--	--	--	--	--	--	--	150	--	--	--
APR											
14...	110	1	29	9.4	23	1	2.5	110	<0.5	18	23
JUN											
02...	--	--	--	--	--	--	--	150	--	--	--
AUG											
12...	36	0	8.6	3.6	9.6	0.7	1.8	100	--	9.8	10

DATE	FLUO- RIDE, DIS- SOLVED (MG/L)	SILICA, DIS- SOLVED (MG/L AS)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED	SOLIDS, DIS- SOLVED (TONS PER	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED	NITRO- GEN, NITRATE TOTAL (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L)	NITRO- GEN, AMMONIA TOTAL (MG/L)	NITRO- GEN, ORGANIC TOTAL (MG/L)
OCT 1986										
20...	0.2	25	222	10.8	4	0.24	0.06	0.30	0.15	1.9
DEC										
16...	--	--	--	--	23	0.94	0.06	1.00	0.02	0.48
FEB 1987										
10...	--	--	--	--	1	1.88	0.02	1.90	0.02	0.68
APR										
14...	0.2	22	193	48.5	23	1.09	0.11	1.20	0.12	0.48
JUN										
02...	--	--	--	--	27	1.26	0.04	1.30	0.05	0.55
AUG										
12...	0.1	12	162	9.18	11	0.95	0.05	1.00	0.04	0.66

K = non-ideal count

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
20...	2.0	2.3	--	0.20	1	<100	40	<1	4	10
DEC										
16...	0.5	1.5	6.6	0.28	--	--	--	--	--	--
FEB 1987										
10...	0.7	2.6	12	0.59	--	--	--	--	--	--
APR										
14...	0.6	1.8	8.0	0.36	1	<100	20	<1	5	20
JUN										
02...	0.6	1.9	--	0.35	--	--	--	--	--	--
AUG										
12...	0.7	1.7	7.5	0.35	--	--	--	--	--	--

[illegible]

RIO DE LA PLATA BASIN

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50044000 RIO DE LA PLATA NEAR COMERIO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°14'33", long 66°12'28", at bridge on Highway 156, 0.56 mi (0.9 km) upstream from dam, about 2.0 mi (3.2 km) northeast of Comerio plaza.

DRAINAGE AREA.--139 sq mi (360 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
21...	0930	41	438	7.90	27.0	1.5	7.7	99	28	K100	360
DEC											
18...	0950	91	380	8.00	23.0	1.9	8.7	104	<10	370	340
FEB 1987											
11...	1420	E800	254	7.60	23.5	130	8.0	97	52	K83000	96000
APR											
16...	0825	E300	241	7.60	23.0	64	7.6	91	21	K8100	K12000
JUN											
22...	0930	E1600	146	7.60	23.0	200	8.1	96	11	K50000	K110000
AUG											
18...	0850	86	375	7.90	27.5	1.3	7.6	97	15	800	1400

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
21...	140	3	34	14	27	1	2.7	140	<0.5	17	27
DEC											
18...	--	--	--	--	--	--	--	130	--	--	--
FEB 1987											
11...	--	--	--	--	--	--	--	180	--	--	--
APR											
16...	85	9	20	8.4	15	0.7	2.7	76	<0.5	14	11
JUN											
22...	--	--	--	--	--	--	--	49	--	--	--
AUG											
18...	140	0	33	13	23	0.9	2.6	140	--	15	25

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
21...	0.1	27	233	25.8	8	1.51	0.08	1.60	0.15	0.75
DEC										
18...	--	--	--	--	17	0.98	0.02	1.00	0.03	0.57
FEB 1987										
11...	--	--	--	--	128	1.33	0.07	1.40	0.17	8.4
APR										
16...	0.2	24	141	--	82	1.33	0.07	1.40	0.09	1.0
JUN										
22...	--	--	--	--	85	0.71	0.09	0.80	0.17	1.7
AUG										
18...	0.2	26	220	51.1	4	0.98	0.02	1.00	0.04	0.56

K = non-ideal count
E = estimate

RIO DE LA PLATA BASIN

50044000 RIO DE LA PLATA NEAR COMERIO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
21...	0.9	2.5	--	0.31	2	<100	50	1	8	10
DEC										
18...	0.6	1.6	7.1	0.24	--	--	--	--	--	--
FEB 1987										
11...	8.6	10	44	0.72	--	--	--	--	--	--
APR										
16...	1.1	2.5	11	0.28	<1	100	20	<1	2	20
JUN										
22...	1.9	2.7	12	0.43	--	--	--	--	--	--
AUG										
18...	0.6	1.6	--	0.30	--	--	--	--	--	--

[illegible]

RIO DE LA PLATA BASIN

50044850 RIO GUADIANA NEAR NARANJITO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'39", long 66°13'28", at steel-cross-bridge 0.8 mi (1.3 km) northwest of Highway 164, 1.2 mi (1.9 km) upstream from mouth and about 2.0 mi (3.2 km) northeast of Naranjito plaza.

DRAINAGE AREA.--4.0 sq mi (10.3 sq km).

PERIOD OF RECORD.--Water year 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
21...	1315	4.5	285	7.80	28.5	3.0	7.5	96	<10	410	540
DEC											
18...	1245	9.0	375	8.10	24.0	1.6	8.0	96	<10	--	--
FEB 1987											
23...	0945	7.4	369	8.10	21.5	0.4	8.4	96	<10	K810	690
APR											
16...	1115	42	280	7.80	25.0	6.0	7.7	94	<10	K7800	26000
JUN											
22...	1105	E100	218	8.00	23.0	58	8.5	99	<10	K65000	K1000000
AUG											
18...	1050	8.9	308	8.10	27.5	2.4	8.2	104	<10	K850	470

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
21...	130	21	31	13	17	0.7	2.3	110	<0.5	17	25
DEC											
18...	--	--	--	--	--	--	--	120	--	--	--
FEB 1987											
23...	--	--	--	--	--	--	--	120	--	--	--
APR											
16...	100	17	22	11	14	0.6	2.0	83	<0.5	20	18
JUN											
22...	--	--	--	--	--	--	--	74	--	--	--
AUG											
18...	140	25	31	14	16	0.6	2.0	110	--	13	21

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
21...	0.1	27	198	2.36	6	1.38	0.02	1.40	0.06	0.14
DEC										
18...	--	--	--	--	13	1.37	0.03	1.40	0.08	0.42
FEB 1987										
23...	--	--	--	--	2	1.29	0.01	1.30	0.01	0.69
APR										
16...	0.2	26	163	18.5	27	1.59	0.01	1.60	0.02	0.38
JUN										
22...	--	--	--	--	167	0.87	0.03	0.90	0.05	0.45
AUG										
18...	0.1	27	190	4.52	6	1.19	0.01	1.20	0.01	0.39

K = non-ideal count
E = estimate

RIO DE LA PLATA BASIN

50044850 RIO GUADIANA NEAR NARANJITO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
21...	0.2	1.6	--	0.24	1	100	<10	<1	5	<10
DEC										
18...	0.5	1.9	8.4	0.22	--	--	--	--	--	--
FEB 1987										
23...	0.7	2.0	8.9	0.17	--	--	--	--	--	--
APR										
16...	0.4	2.0	8.9	0.17	<1	<100	20	<1	7	20
JUN										
22...	0.5	1.4	6.2	0.31	--	--	--	--	--	--
AUG										
18...	0.4	1.6	7.1	0.19	--	--	--	--	--	--

[illegible]

RIO DE LA PLATA BASIN

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

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'41", long 66°15'39", at Highway 2, 1.3 mi (2.1 km) downstream from Rio Lajas, and 1.6 mi (2.6 km) northwest of Toa Alta, 11.3 mi (18.2 km) downstream from Puerto Rico Aqueduct and Sewer Authority reservoir.

DRAINAGE AREA.--208 sq mi (539 sq km), exclude 8.2 sq mi (21.2 sq km) upstream from Lago Carite, flow from which is diverted to Rio Guamani.

PERIOD OF RECORD.--Water years 1958 to current year

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 1986											
16...	1250	26	520	7.70	30.5	1.0	10.2	137	510	K30	190
DEC											
26...	1020	44	421	7.40	25.5	2.9	5.4	66	3600	K1300	180
FEB 1987											
13...	1135	376	38	7.60	25.0	54	6.3	77	K16000	23000	130
APR											
29...	1040	55	425	7.70	29.5	1.7	10.6	139	3600	K90	180
JUN											
03...	1345	1600	320	7.70	26.5	53	7.5	93	K1500	3400	88
AUG											
11...	1310	61	435	7.50	27.5	2.4	8.3	105	K740	K20	170

DATE	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 1986											
16...	23	58	11	27	0.9	3.9	168	20	31	0.1	18
DEC											
26...	18	53	11	19	0.6	2.7	160	21	26	0.1	19
FEB 1987											
13...	11	37	9.4	16	0.6	3.4	120	18	22	0.2	16
APR											
29...	16	56	10	18	0.6	2.6	165	20	18	0.1	18
JUN											
03...	7	23	7.5	12	0.6	2.6	82	13	15	0.2	19
AUG											
11...	0	47	12	20	0.7	2.6	159	14	24	0.2	21

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 1986											
16...	336	270	19.0	0.32	0.08	--	0.8	0.18	0.09	0.06	--
DEC											
26...	250	252	29.7	0.80	0.19	0.24	0.9	0.17	0.15	0.12	0.37
FEB 1987											
13...	205	197	208	0.45	0.15	0.19	0.9	0.19	0.09	0.09	0.28
APR											
29...	248	243	36.6	0.29	<0.01	--	0.9	0.08	0.04	0.03	0.09
JUN											
03...	150	146	648	0.90	0.16	0.21	1.4	0.19	0.19	0.11	0.34
AUG											
11...	223	240	39.5	0.32	0.08	0.10	0.8	0.18	0.09	0.06	0.18

K = non-ideal count

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 1986 16...	20	3	54	<0.5	2	<1	<3	6	13	<5
DEC 26...	--	--	--	--	--	--	--	--	--	--
FEB 1987 13...	120	1	43	<0.5	<1	<1	<3	8	110	<5
APR 29...	--	--	--	--	--	--	--	--	--	--
JUN 03...	80	<1	34	1	<1	2	<3	6	71	<5
AUG 11...	--	--	--	--	--	--	--	--	--	--

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 1986 16...	6	110	<0.1	<10	1	<1	<1	270	7	6
DEC 26...	--	--	--	--	--	--	--	--	--	--
FEB 1987 13...	5	36	0.4	<10	2	<1	<1	130	<6	15
APR 29...	--	--	--	--	--	--	--	--	--	--
JUN 03...	6	5	0.2	<10	<1	<1	<1	99	8	8
AUG 11...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN, TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 03...	1345	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.02	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 03...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 03...	<0.01	<0.1	<0.1	<1	<0.01	0.01	<0.01	<0.01	<0.01

RIO DE LA PLATA BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .062 MM
OCT 1986					
16...	1250	26	13	0.91	40
DEC					
26...	1020	44	43	5.1	71
FEB 1987					
13...	1135	376	124	126	93
APR					
29...	1040	55	107	16	90
JUN					
03...	1345	1600	87	376	76

RIO DE LA PLATA BASIN

50046900 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR

LOCATION.--Lat 18°24'41", long 66°15'39", Hydrologic Unit 21010005, on left bank, at downstream side of bridge on Highway 2, 1.3 mi (2.1 km) downstream from Rio Lajas, and 1.6 mi (2.6 km) northwest of Toa Alta, 11.3 mi (18.2 km) downstream from Puerto Rico Aqueduct and Sewer Authority reservoir. Prior to September 25, 1984, at site about 1.0 mi (1.6 km) upstream.

DRAINAGE AREA.--208 mi² (539 km²), excludes 8.2 mi² (21.2 km²) upstream from Lago Carite, flow from which is diverted to Rio Guamaní. Area at site used prior to September 25, 1984, 200 mi² (518 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1959 (measurement only), January 1960 to current year. Prior to September 1984, published as Rio de la Plata at Toa Alta, P.R.

GAGE.--Water-stage recorder. Elevation of gage is 0.0 ft (0.0 m), from topographic map.

REMARKS.--Records fair. National Weather Service gage-height telemeter at station. Regulation at all stages by Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage.

AVERAGE DISCHARGE.--27 years (1961-87), 280 ft³/s (7.930 m³/s), 19.12 in/yr (486 mm/yr), 202,900 acre-ft/yr (250 hm³/yr); median of yearly mean discharges, 237 ft³/s (6.71 m³/s), 172,000 acre-ft/yr (210 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,500 ft³/s (2,700 m³/s), Sept. 6, 1960, gage height, 36.35 ft (11.079 m), from floodmark, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of contracted-opening measurement of peak flow at site 1.0 mi upstream and different datum; minimum discharge, 2.2 ft³/s (0.062 m³/s), Apr. 25, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations of major floods, as pointed out by local residents are as follows: Sept. 13, 1928, 120,000 ft³/s (3,400 m³/s), gage height, 37.4 ft (11.40 m); June 16, 1943, 82,000 ft³/s (2,320 m³/s), gage height, 34.4 ft (10.48 m), at site 1.0 mi upstream and different datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s (170 m³/s) and maximum (*):

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)
Apr. 12	0015	*19,200	544	*18.54	5.651	May 21	1230	8,480	240	14.50	4.420

Minimum discharge, 14 ft³/s (0.396 m³/s), Mar. 11-13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	93	305	33	136	46	19	53	1130	223	81	110
2	15	108	160	31	107	38	19	53	1390	148	93	141
3	16	88	110	28	73	29	21	95	1770	168	438	93
4	21	96	95	27	51	22	22	99	1180	159	317	71
5	24	86	80	27	40	19	24	63	529	361	352	51
6	23	114	78	26	34	17	26	58	369	297	211	40
7	22	150	74	28	32	17	596	51	278	279	145	31
8	27	390	70	32	29	15	211	72	218	266	96	31
9	44	271	90	77	27	15	79	148	198	177	111	32
10	41	286	87	98	220	15	38	412	195	159	75	26
11	20	259	79	68	1170	15	1540	351	168	129	56	23
12	31	1670	132	48	1960	15	9060	583	145	113	46	48
13	26	2290	169	40	383	14	3730	325	162	96	48	32
14	24	626	215	37	472	15	1360	182	132	87	44	22
15	29	402	254	59	320	56	1590	105	278	95	51	25
16	30	369	146	44	178	80	1140	75	215	110	52	23
17	19	518	129	39	113	720	624	60	206	109	66	24
18	17	1570	108	36	85	312	352	102	197	126	50	23
19	43	949	87	33	66	130	232	1000	199	110	68	25
20	181	692	71	32	57	76	177	1440	226	112	62	205
21	181	276	61	33	48	73	140	3400	631	109	49	193
22	45	168	53	32	44	54	118	1830	3050	102	36	72
23	44	156	49	31	42	33	100	1170	1080	122	28	47
24	71	124	43	28	39	31	89	534	477	89	25	31
25	42	112	49	26	38	31	75	1500	301	78	24	25
26	32	169	45	25	42	28	67	2050	223	107	165	22
27	332	125	43	25	66	32	61	905	179	99	61	18
28	217	109	41	25	57	28	58	517	172	124	42	17
29	181	184	40	24	---	23	54	364	233	101	33	24
30	133	410	37	56	---	22	53	461	184	91	29	36
31	78	---	34	74	---	20	---	859	---	90	211	---
TOTAL	2025	12860	3034	1222	5929	2041	21675	18917	15715	4436	3165	1561
MEAN	65.3	429	97.9	39.4	212	65.8	722	610	524	143	102	52.0
MAX	332	2290	305	98	1960	720	9060	3400	3050	361	438	205
MIN	15	86	34	24	27	14	19	51	132	78	24	17
AC-FT	4020	25510	6020	2420	11760	4050	42990	37520	31170	8800	6280	3100
CFSM	.33	2.14	.49	.20	1.06	.33	3.61	3.05	2.62	.72	.51	.26
IN.	.38	2.39	.56	.23	1.10	.38	4.03	3.52	2.92	.83	.59	.29

CAL YR 1986 TOTAL 81868.8 MEAN 224 MAX 12000 MIN 3.0 AC-FT 162400 CFSM 1.12 IN. 15.23
WTR YR 1987 TOTAL 92580 MEAN 254 MAX 9060 MIN 14 AC-FT 183600 CFSM 1.27 IN. 17.22

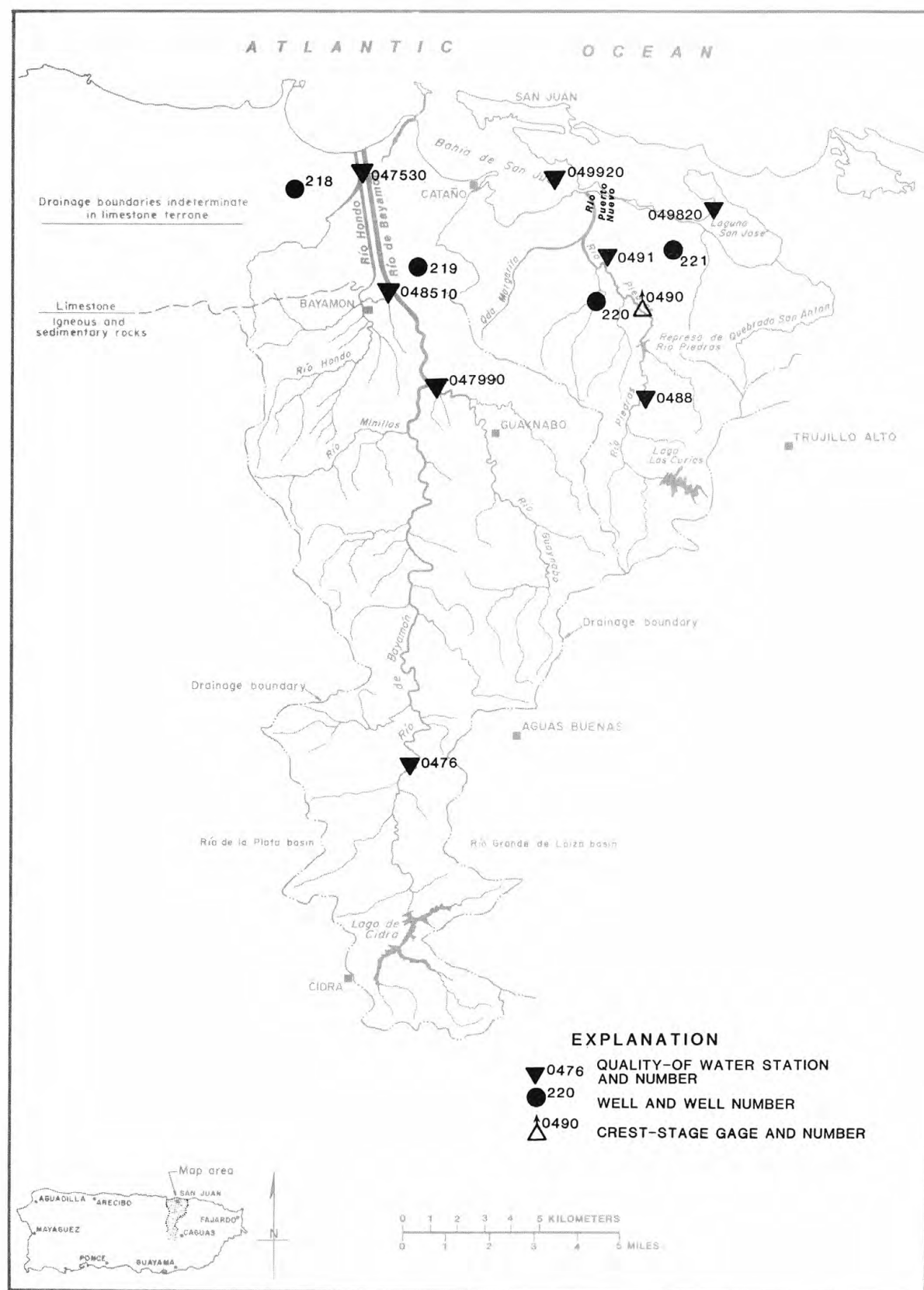


Figure 17.--Río Hondo to Río Puerto Nuevo basins.

RIO HONDO BASIN

50047530 RIO HONDO AT FLOOD CHANNEL NEAR CATANO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°26'13", long 66°09'36", at Rio Hondo Channel, 800 ft (245 m) below junction with Rio Hondo, 0.9 mi (1.5 km) downstream from bridge on de Diego Expressway and 1.1 mi (1.8 km) above mouth.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
20...	0920	--	6200	7.50	27.0	10	0.3	4	159	54000	11000
DEC											
30...	0915	--	13500	7.30	26.0	5.1	0.5	6	300	K640000	93000
FEB 1987											
25...	1315	--	21000	7.90	30.5	5.3	9.8	141	210	K750000	K8200
APR											
23...	0905	--	23000	8.30	28.5	3.5	6.8	95	220	K1400000	60000
JUN											
25...	0835	--	8800	7.70	28.5	2.2	2.2	29	47	K1200000	30000
AUG											
27...	1145	--	2390	7.70	31.5	26	6.6	91	18	27000	K2000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
20...	700	569	66	129	1099	17	41	127	<0.5	290	2100
DEC											
30...	--	--	--	--	--	--	--	189	--	--	4700
FEB 1987											
25...	--	--	--	--	--	--	--	170	--	--	390
APR											
23...	2500	2400	190	500	4500	39	170	160	<0.5	1200	8400
JUN											
25...	--	--	--	--	--	--	--	180	--	--	2800
AUG											
27...	260	180	38	39	330	9	18	77	--	97	700

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
20...	0.2	10	3800	--	24	0.09	0.01	<0.10	4.40	2.6
DEC										
30...	--	--	--	--	18	0.08	0.02	<0.10	8.90	6.1
FEB 1987										
25...	--	--	--	--	11	0.06	0.04	<0.10	6.60	5.4
APR										
23...	0.5	5.4	15100	--	25	0.06	0.04	1.0	2.80	36
JUN										
25...	--	--	--	--	24	0.15	0.05	0.20	4.20	4.9
AUG										
27...	0.2	9.2	1280	--	33	0.35	0.05	0.40	0.70	0.7

K = non-ideal count
E = estimate

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO DE BAYAMON BASIN

50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR

WATER-QUALITY RECORDS

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 plaza.

DRAINAGE AREA.--18.5 sq mi (47.9 sq km).

PERIOD OF RECORD.--Water years 1958-65, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
20...	1600	24	267	8.20	27.0	6.0	7.7	100	100	K100	230
DEC											
16...	1540	20	301	7.90	22.5	7.9	8.6	102	10	K700	K1200
FEB 1987											
10...	1350	26	279	8.20	23.0	2.6	8.3	100	<10	K64	560
APR											
30...	0930	28	270	7.80	24.0	--	8.0	98	--	K80	250
JUN											
02...	1240	19	277	8.40	27.5	4.2	8.0	105	<10	490	3100
AUG											
12...	1400	35	235	8.00	26.0	--	7.9	101	--	230	660

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD WH WAT MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
20...	80	0	18	8.6	15	0.7	2.9	89	<0.5	10	16
DEC											
16...	--	--	--	--	--	--	--	100	--	--	--
FEB 1987											
10...	--	--	--	--	--	--	--	98	--	--	--
APR											
30...	94	0	22	9.6	16	0.7	2.5	94	<0.5	11	23
JUN											
02...	--	--	--	--	--	--	--	100	--	--	--
AUG											
12...	82	0	19	8.5	17	0.8	2.1	89	--	11	15

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
20...	0.1	22	146	9.46	8	0.29	0.01	0.30	0.02	0.28
DEC										
16...	--	--	--	--	17	--	<0.01	0.70	<0.01	0.59
FEB 1987										
10...	--	--	--	--	3	--	<0.01	0.40	<0.01	0.39
APR										
30...	0.1	22	160	12.1	2	--	<0.01	0.20	<0.01	0.49
JUN										
02...	--	--	--	--	6	0.59	0.01	0.60	0.02	1.2
AUG										
12...	0.1	22	147	13.9	4	0.48	0.02	0.50	0.01	0.29

K = non-ideal count

RIO DE BAYAMON BASIN

50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 20...	0.3	0.6	--	0.05	1	<100	<10	<1	10	10
DEC 16...	0.6	1.3	5.8	0.05	--	--	--	--	--	--
FEB 1987 10...	0.4	0.8	3.5	0.03	--	--	--	--	--	--
APR 30...	0.5	0.7	3.1	0.03	1	<100	30	2	5	10
JUN 02...	0.2	0.8	--	0.05	--	--	--	--	--	--
AUG 12...	0.3	0.8	3.5	0.09	--	--	--	--	--	--

[illegible]

RIO DE BAYAMON BASIN

50047990 RIO GUAYNABO NEAR BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°22'32", long 66°07'59", at bridge on Highway 833, 0.2 mi (0.3 km) upstream from Rio de Bayamon, and 2.3 mi (3.7 km) southeast of Bayamon plaza.

DRAINAGE AREA.--73.2 sq mi (189.6 sq km).

PERIOD OF RECORD.--Water years 1958, 1964, 1971-73, 1976, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
28...	1110	50	353	7.00	25.0	44	7.0	85	33	K7600	3600
DEC											
22...	1440	26	488	7.50	26.5	74	3.8	48	28	K83000	5700
FEB 1987											
23...	1235	19	515	7.50	25.5	0.7	5.5	68	19	4200	K300
APR											
29...	1345	20	437	7.50	30.0	1.1	8.5	113	10	2900	K200
JUN											
16...	1305	71	380	7.90	28.5	72	6.0	77	19	K200000	55000
AUG											
19...	0905	22	410	7.30	27.5	2.4	4.2	53	20	K95000	9300

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
28...	130	7	35	9.5	22	0.9	4.5	120	<0.5	17	24
DEC											
22...	--	--	--	--	--	--	--	160	--	--	--
FEB 1987											
23...	--	--	--	--	--	--	--	170	--	--	--
APR											
29...	160	0	44	13	26	0.9	3.5	150	<0.5	15	35
JUN											
16...	--	--	--	--	--	--	--	140	--	--	--
AUG											
19...	150	1	39	13	25	0.9	3.5	150	--	13	28

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
28...	0.1	22	206	27.8	93	0.93	0.07	1.00	1.40	1.5
DEC										
22...	--	--	--	--	58	0.27	0.03	0.30	3.10	0.8
FEB 1987										
23...	--	--	--	--	19	0.07	0.03	0.10	2.70	0.6
APR										
29...	0.2	26	250	13.5	4	0.46	0.04	0.50	0.09	1.1
JUN										
16...	--	--	--	--	138	0.54	0.06	0.60	0.68	1.0
AUG										
19...	0.2	31	240	14.3	5	0.24	0.06	0.30	1.00	1.0

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO DE BAYAMON BASIN

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'29", long 66°09'04", at bridge on Highway 890, 1.0 (1.6 km) downstream from bridge on Highway 2, and 3.2 mi (5.1 km) above mouth.

DRAINAGE AREA.--71.9 sq mi (186.2 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Prior to 1979 sampling site was 0.8 mile (1.3 km) downstream but was changed because of flood channel construction.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
28...	0815	350	342	7.20	24.0	72	6.2	74	67	45000	28000
DEC											
19...	0815	E100	478	7.10	23.0	27	4.3	50	18	23000	3900
FEB 1987											
17...	1425	56	460	7.30	28.5	8.2	3.9	50	20	54000	2600
APR											
27...	1505	55	419	7.70	31.5	1.5	10.8	147	16	21000	K100
JUN											
05...	1140	E150	367	7.60	28.0	130	5.0	64	<10	K170000	6400
AUG											
10...	1330	56	381	7.50	31.5	14	7.7	106	15	51000	K1500

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
28...	110	3	30	9.1	17	0.7	4.0	110	<0.5	18	18
DEC											
19...	--	--	--	--	--	--	--	160	--	--	--
FEB 1987											
17...	--	--	--	--	--	--	--	150	--	--	--
APR											
27...	160	0	42	13	24	0.9	2.7	160	<0.5	22	40
JUN											
05...	--	--	--	--	--	--	--	130	--	--	--
AUG											
10...	150	8	38	13	23	0.8	2.6	140	--	17	24

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
28...	0.1	21	183	173	180	0.36	0.14	0.50	0.56	1.2
DEC										
19...	--	--	--	--	59	0.44	0.16	0.60	1.40	0.7
FEB 1987										
17...	--	--	--	--	26	0.41	0.09	0.50	1.00	1.2
APR										
27...	0.2	25	265	39.0	4	0.34	0.06	0.40	0.01	1.1
JUN										
05...	--	--	--	--	236	0.74	0.06	0.80	0.11	0.3
AUG										
10...	0.2	27	230	34.8	1	0.41	0.09	0.50	0.24	1.1

K = non-ideal count
E = estimate

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 28...	1.8	2.3	--	0.32	1	100	<10	1	<1	20
DEC 19...	2.1	2.7	12	0.26	--	--	--	--	--	--
FEB 1987 17...	2.2	2.7	12	0.44	--	--	--	--	--	--
APR 27...	1.1	1.5	6.6	0.13	1	100	30	<1	13	20
JUN 05...	0.4	1.2	--	0.16	--	--	--	--	--	--
AUG 10...	1.3	1.8	--	0.37	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT 1986 28...	5900	5	330	0.2	<1	<1	40	<0.01	4	0.04
DEC 19...	--	--	--	--	--	--	--	--	--	--
FEB 1987 17...	--	--	--	--	--	--	--	--	--	--
APR 27...	250	<5	190	1.7	<1	<1	<10	<0.01	7	0.05
JUN 05...	--	--	--	--	--	--	--	--	--	--
AUG 10...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 05...	1140	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.04	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 05...	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 05...	<0.01	<0.1	<0.1	<1	<0.01	0.01	<0.01	<0.01	<0.01

RIO PUERTO NUEVO BASIN

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--8.17 sq mi (20.9 sq km).

PERIOD OF RECORD.--Water years 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
NOV 1986											
03...	0915	7.9	418	7.45	25.0	2.5	6.2	76	89	K60000	K330000
DEC											
08...	0945	10	420	7.45	23.0	--	7.1	83	--	K250000	K260000
FEB 1987											
19...	1005	5.6	392	7.25	22.0	--	7.3	84	<10	K71000	25000
APR											
06...	0910	5.7	359	7.40	24.0	15	5.5	66	25	K1100000	K130000
JUN											
10...	0825	16	316	7.80	25.0	21	7.2	--	10	46000	67000
AUG											
11...	1045	13	352	8.00	27.5	1	6.4	--	13	26000	42000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
03...	140	0	36	12	27	1	4.3	150	<0.5	20	28
DEC											
08...	--	--	--	--	--	--	--	151	--	--	--
FEB 1987											
19...	--	--	--	--	--	--	--	140	--	--	--
APR											
06...	140	5	36	11	25	1	4.0	130	<0.5	16	24
JUN											
10...	--	--	--	--	--	--	--	120	--	--	--
AUG											
11...	120	0	30	10	22	0.9	2.6	120	--	12	23

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
03...	0.1	30	247	5.29	9	0.62	0.08	0.70	5.00	2.4
DEC										
08...	--	--	--	--	--	0.84	0.06	0.90	3.70	1.2
FEB 1987										
19...	--	--	--	--	--	0.76	0.04	0.80	0.47	0.33
APR										
06...	0.2	31	225	3.59	34	0.68	0.12	0.80	1.20	1.6
JUN										
10...	--	--	--	--	5	0.78	0.02	0.80	0.34	1.3
AUG										
11...	0.2	29	200	8.64	31	0.48	0.02	0.50	0.15	0.95

K = non-ideal count

RIO PUERTO NUEVO BASIN

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
03...	7.4	8.1	36	0.96	1	100	<10	<1	<1	<10
DEC										
08...	4.9	5.8	26	0.87	--	--	--	--	--	--
FEB 1987										
19...	0.8	1.6	--	1.0	--	--	--	--	--	--
APR										
06...	2.8	3.6	16	0.56	2	100	10	<1	4	20
JUN										
10...	1.6	2.4	--	0.18	--	--	--	--	--	--
AUG										
11...	1.1	1.6	7.1	0.28	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986										
03...	510	<5	200	0.2	<1	<1	40	<0.01	6	0.16
DEC										
08...	--	--	--	--	--	--	--	--	--	--
FEB 1987										
19...	--	--	--	--	--	--	--	--	--	--
APR										
06...	1000	<5	220	<0.1	<1	<1	20	<0.01	6	0.07
JUN										
10...	--	--	--	--	--	--	--	--	--	--
AUG										
11...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 1987										
10...	0915	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 1987										
10...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 1987									
10...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01

RIO PUERTO NUEVO BASIN

50049100 RIO PIEDRAS AT HATO REY, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--15.4 sq mi (39.9 sq km).

PERIOD OF RECORD.--Water years 1971 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DEMAND, CHEM- ICAL (HIGH LEVEL) (PER- CENT SATUR- ATION)	OXYGEN, DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
03...	1145	16	395	7.55	27.5	1.8	5.4	69	34	38000	8100
DEC 08...	1240	29	306	7.25	27.0	--	4.9	62	--	240000	98000
FEB 1987											
19...	1305	12	480	7.25	26.0	17	5.6	69	16	K110000	24000
APR 06...	1245	5.7	381	7.50	29.0	22	5.2	68	36	470000	7200
JUN 10...	1210	35	359	7.80	29.0	9.9	6.6	--	18	320000	K190000
AUG 11...	1330	24	423	7.90	30.0	3.1	5.0	--	14	220000	K110000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
03...	140	0	41	10	26	1	3.6	150	<0.5	17	25
DEC 08...	--	--	--	--	--	--	--	112	--	--	--
FEB 1987											
19...	--	--	--	--	--	--	--	150	--	--	--
APR 06...	140	0	39	9.4	25	1	3.8	140	<0.5	19	24
JUN 10...	--	--	--	--	--	--	--	140	--	--	--
AUG 11...	140	0	37	11	28	1	3.4	140	--	11	30

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
03...	0.1	27	239	10.4	11	0.79	0.21	1.00	0.67	1.1
DEC 08...	--	--	--	--	--	0.79	0.01	0.80	0.02	0.48
FEB 1987										
19...	--	--	--	--	36	1.21	0.29	1.50	1.10	1.1
APR 06...	0.2	26	230	3.54	50	0.59	0.11	0.70	1.10	1.5
JUN 10...	--	--	--	--	1	0.52	0.08	0.60	1.50	1.4
AUG 11...	0.2	31	240	15.6	11	0.80	0.10	0.90	0.59	1.3

K = non-ideal count

[illegible]

RIO PUERTO NUEVO BASIN

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

WATER-QUALITY RECORDS

LOCATION.--Lat 18°25'46", long 66°02'10", 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.--Water years 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (IN)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3
NOV 1986 18...	1005	1.00	14000	8.55	27.5	16.0	5.5	73	60000	23000	132
DEC 31...	0830	1.00	16000	9.05	26.5	19.0	4.4	58	K81000	12000	127
FEB 1987 25...	0910	1.00	25000	8.40	26.0	13.8	1.2	16	K93000	K14000	160
APR 30...	0920	1.00	13800	9.00	29.5	23.0	5.7	78	K8200	K1000	130
JUN 25...	1030	1.00	11000	9.00	29.5	19.9	8.4	114	K7700	K10000	100
AUG 27...	0730	1.00	25000	8.70	29.5	18.0	3.6	51	K1300	K500	140

DATE	SOLIDS, RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV 1986 18...	6	0.09	0.01	0.10	0.22	2.2	2.4	2.5	0.57	16
DEC 31...	28	--	<0.01	0.10	0.12	2.4	2.5	2.6	0.53	18
FEB 1987 25...	11	--	<0.01	0.10	1.20	2.5	3.7	3.8	0.70	13
APR 30...	9	--	<0.01	0.10	0.05	2.4	2.4	2.5	0.31	11
JUN 25...	41	0.07	0.03	0.10	0.11	1.8	1.7	1.8	0.26	13
AUG 27...	16	--	<0.01	0.10	0.05	1.7	1.8	1.9	0.40	16

K = non-ideal count

RIO PUERTO NUEVO BASIN

50049920 BAHIA DE SAN JUAN NO. 5 AT SAN JUAN, PR

WATER-QUALITY RECORDS

LOCATION--Lat 18°26'37", long 66°05'11", 0.4 mi (0.6 km) west of Puente de la Constitucion, and 0.5 mi (0.8 km) south from U.S. Naval Reservation.

DRAINAGE--Indeterminate.

PERIOD OF RECORD--Water years 1974 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (IN)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03
NOV 1986											
18...	1135	1.00	10000	7.90	29.0	53.0	5.8	78	K12000	K730	133
DEC											
31...	1000	1.00	47000	7.95	27.0	41.5	3.7	55	K182000	59000	120
FEB 1987											
25...	1035	1.00	33000	7.90	27.5	36.0	0.2	3	K1500000	55000	130
APR											
30...	1200	1.00	42000	7.90	29.5	29.0	2.2	34	K860000	K12000	140
JUN											
25...	1230	1.00	31000	7.50	30.0	20.8	1.6	23	210000	K11000	140
AUG											
27...	1000	1.00	32000	7.80	30.5	23.4	1.8	27	45000	2300	120

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV 1986											
18...	5	0.06	0.04	0.10	1.00	0.90	1.9	2.0	--	0.28	4.8
DEC											
31...	12	0.09	0.01	0.10	0.64	0.06	0.7	0.8	--	0.08	2.4
FEB 1987											
25...	6	0.09	0.01	0.10	1.20	2.0	3.2	3.3	--	0.30	5.2
APR											
30...	10	0.07	0.03	0.10	1.70	1.5	3.2	3.3	--	0.31	3.1
JUN											
25...	151	0.23	0.07	0.30	2.20	0.60	2.8	3.1	14	0.41	2.0
AUG											
27...	10	0.16	0.04	0.20	0.78	0.32	1.1	1.3	5.8	0.14	4.7

K = non-ideal count

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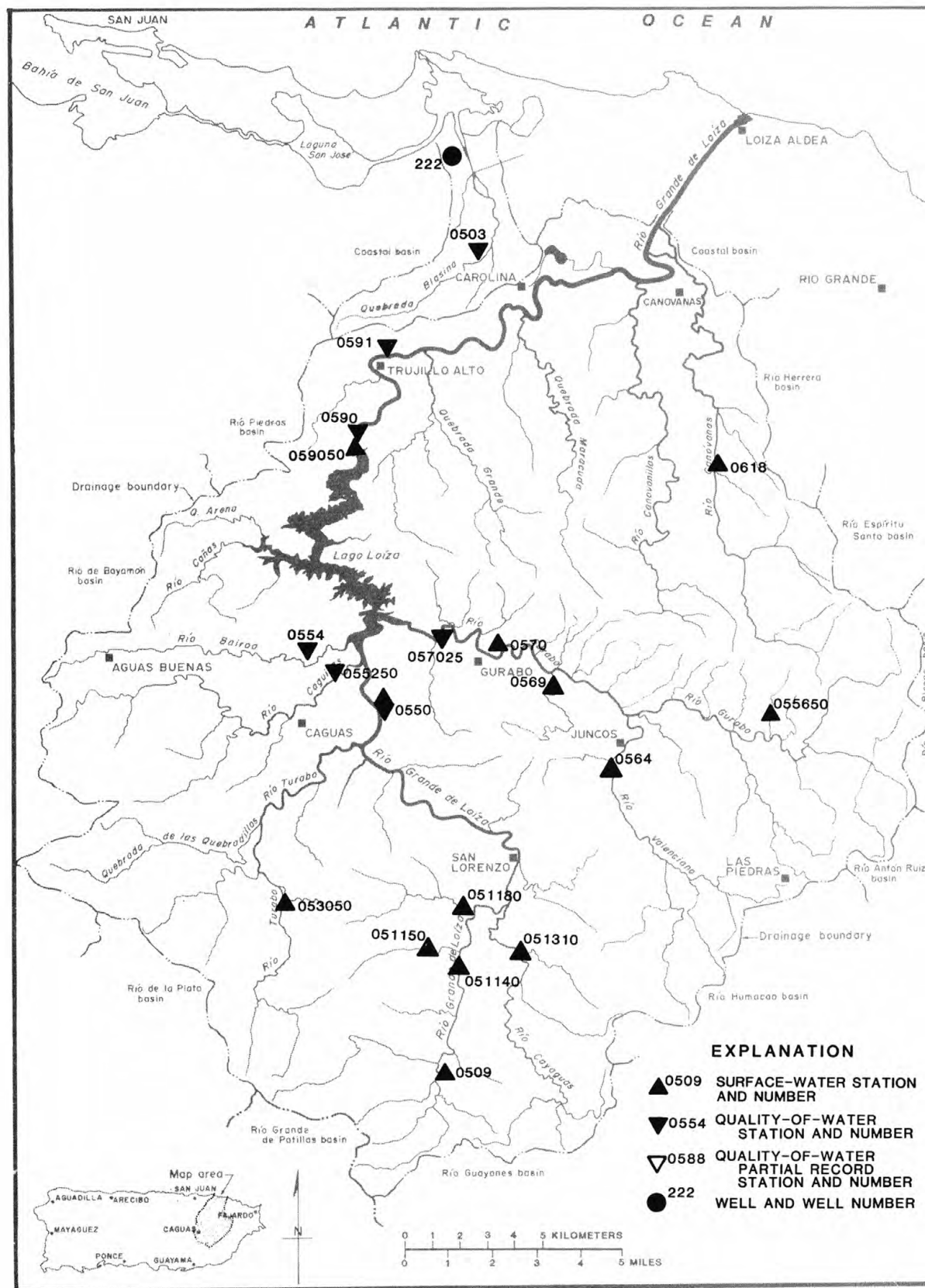


Figure 18.--Río Grande de Loíza basin.

RIO GRANDE DE LOIZA BASIN
50050300 QUEBRADA BLASINA NEAR CAROLINA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°23'27", long 65°58'28", at bridge on Highway 3, 1.4 mi (2.3 km) south of Valle Arriba Heights housing area, and 1.2 mi (1.9 km) west-southwest of Carolina plaza.

DRAINAGE AREA.--2.96 sq mi (7.67 sq km).

PERIOD OF RECORD.--Water years 1973 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
17...	1410	8.6	765	6.95	30.0	4.0	1.0	13	110	K1700000	K1100000
DEC											
04...	1345	6.5	470	7.30	28.0	--	0.5	7	--	340000	52000
FEB 1987											
10...	1300	4.4	472	7.00	27.0	3.7	0.2	3	97	560000	670000
APR											
15...	1415	9.8	438	7.20	28.5	1.5	2.1	27	27	310000	310000
JUN											
09...	1240	5.4	425	7.80	29.0	1.6	6.4	--	14	37000	4700
AUG											
21...	0855	3.6	539	7.60	28.5	3.1	0.0	0	47	K560000	41000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
17...	170	12	50	9.8	78	3	4.1	153	<0.5	26	110
DEC											
04...	--	--	--	--	--	--	--	175	--	--	--
FEB 1987											
10...	--	--	--	--	--	--	--	160	--	--	--
APR											
15...	180	10	56	9.8	32	1	4.0	170	<0.5	33	27
JUN											
09...	--	--	--	--	--	--	--	170	--	--	--
AUG											
21...	180	0	54	10	39	1	4.4	190	--	13	48

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
17...	0.3	24	394	9.05	12	--	<0.01	<0.10	1.20	2.5
DEC										
04...	--	--	--	--	--	0.01	0.09	0.10	5.50	7.5
FEB 1987										
10...	--	--	--	--	2	--	<0.01	<0.10	2.20	2.5
APR										
15...	0.2	21	285	7.54	28	1.27	0.13	1.40	0.19	1.3
JUN										
09...	--	--	--	--	<1	0.57	0.13	0.70	0.88	1.2
AUG										
21...	0.3	29	310	3.01	<1	0.09	0.01	0.10	2.30	1.8

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 17...	3.7	--	--	0.85	4	100	20	1	9	10
DEC 04...	13	13	58	0.28	--	--	--	--	--	--
FEB 1987 10...	4.7	--	--	0.40	--	--	--	--	--	--
APR 15...	1.5	2.9	13	0.40	1	100	30	<1	2	20
JUN 09...	2.1	2.8	12	0.20	--	--	--	--	--	--
AUG 21...	4.1	4.2	--	1.70	--	--	--	--	--	--

[illegible]

RIO GRANDE DE LOIZA BASIN

50050900 RIO GRANDE DE LOIZA AT QUEBRADA ARENAS, PR

LOCATION.--Lat 18°07'10", long 65°59'22", Hydrologic Unit 21010005, at intersection of Highways 181 and 9990, 0.2 mi (0.3 km) upstream from confluence with Rio Emajagua and about 7.1 mi (11.4 km) southwest of San Lorenzo.

DRAINAGE AREA.--6.00 mi² (15.54 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--10 years (1978-87), 30.4 ft³/s (0.861 m³/s), 68.80 in/yr, (1,748 mm/yr), 22,020 acre-ft/yr (27.2 hm³/yr); median of yearly mean discharges, 28 ft³/s (0.79 m³/s), 20,300 acre-ft/yr (25 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft³/s (331 m³/s), Nov. 5, 1983, gage height, 14.78 ft (4.505 m), from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of step-backwater analysis; minimum discharge, 2.8 ft³/s (0.079 m³/s), May 5, 6, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Nov. 12	1545	2,350	66.6	8.60	2.621	June 21	1645	*4,330	123	*10.40	3.170
June 20	0715	2,120	60.0	8.34	2.542						

Minimum discharge, 5.4 ft³/s (0.153 m³/s), Apr. 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	9.7	19	14	17	8.2	6.2	8.0	13	25	18	13
2	8.4	10	19	13	14	8.6	5.9	8.5	12	28	13	16
3	8.0	8.8	33	13	13	13	7.6	10	29	33	17	15
4	7.9	11	22	16	13	18	6.2	12	16	80	22	11
5	7.6	13	32	34	13	25	7.1	21	13	39	29	9.8
6	7.9	11	21	49	12	10	62	24	13	26	16	9.5
7	8.5	54	47	38	11	9.3	13	9.8	20	23	13	9.4
8	8.9	64	22	18	11	8.5	8.2	8.3	12	22	12	9.4
9	63	21	25	16	11	8.3	6.4	8.0	18	20	13	12
10	21	20	33	15	11	8.2	5.9	7.9	13	31	11	12
11	13	24	78	15	17	9.0	5.7	9.5	12	22	10	11
12	12	480	30	14	11	11	121	9.8	12	19	10	9.8
13	10	68	29	13	41	7.9	39	8.5	12	18	9.9	9.3
14	11	56	27	15	35	7.6	56	7.5	11	17	9.5	9.5
15	12	46	23	17	20	8.0	20	7.0	49	34	10	8.4
16	26	124	20	13	13	13	14	7.0	29	17	10	8.4
17	14	58	21	13	11	12	22	6.9	15	15	8.9	10
18	12	36	19	13	11	9.7	13	6.7	18	15	8.8	18
19	9.9	28	19	12	9.9	8.1	14	181	81	16	12	12
20	9.6	25	21	13	9.4	7.5	11	34	363	16	17	9.4
21	10	23	18	12	9.1	7.2	10	149	404	111	10	8.5
22	68	23	16	11	8.9	7.0	9.8	32	274	20	11	10
23	16	20	15	36	8.8	6.8	9.5	20	63	15	10	9.1
24	14	19	15	19	8.5	6.5	9.1	25	41	13	9.9	9.7
25	39	35	16	14	8.3	6.6	8.6	59	39	13	9.6	8.9
26	18	60	15	13	8.2	6.4	8.5	60	29	14	10	8.2
27	13	36	33	13	9.1	6.2	8.4	26	28	13	9.3	8.8
28	11	23	31	11	8.8	6.3	8.4	19	29	13	9.1	8.2
29	11	21	18	11	---	6.2	7.9	17	42	11	9.0	52
30	11	19	16	40	---	6.2	8.2	15	30	12	12	33
31	11	---	15	31	---	6.3	---	14	---	85	16	---
TOTAL	501.3	1446.5	768	575	374.0	282.6	532.6	831.4	1740	836	386.0	379.3
MEAN	16.2	48.2	24.8	18.5	13.4	9.12	17.8	26.8	58.0	27.0	12.5	12.6
MAX	68	480	78	49	41	25	121	181	404	111	29	52
MIN	7.6	8.8	15	11	8.2	6.2	5.7	6.7	11	11	8.8	8.2
AC-FT	994	2870	1520	1140	742	561	1060	1650	3450	1660	766	752
CFSM	2.70	8.04	4.13	3.09	2.23	1.52	2.96	4.47	9.67	4.49	2.08	2.11
IN.	3.11	8.97	4.76	3.56	2.32	1.75	3.30	5.15	10.79	5.18	2.39	2.35

CAL YR 1986 TOTAL 8923.1 MEAN 24.4 MAX 480 MIN 6.9 AC-FT 17700 CFSM 4.07 IN. 55.32
WTR YR 1987 TOTAL 8652.9 MEAN 23.7 MAX 480 MIN 5.7 AC-FT 17160 CFSM 3.95 IN. 53.65

RIO GRANDE DE LOIZA BASIN

50050900 RIO GRANDE DE LOIZA AT QUEBRADA ARENAS, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 20	1210	14.8	141	25.0	MAY, 19	1118	40.9	104	24.5
FEB, 12	1032	11.7	152	23.0	JUN, 09	1116	12.7	142	27.0
MAR, 19	1123	8.33	149	24.0	JUL, 14	1121	17	146	25.0
APR, 15	1131	19.7	126	26.0	SEP, 15	0858	8.2	152	25.0

RIO GRANDE DE LOIZA BASIN

50051150 QUEBRADA BLANCA AT EL JAGUAL, PR

LOCATION.--Lat 18°09'40", long 65°58'58", Hydrologic Unit 21010005, 0.1 mi (0.2 km) upstream from bridge on Highway 181, and 2.8 mi (4.5 km) southwest of San Lorenzo.

DRAINAGE AREA.--3.25 mi² (8.42 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 459 ft (140 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,400 ft³/s (210 m³/s), May 17, 1985, gage height, 14.58 ft (4.444 m), from floodmark, from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of step-backwater analysis and slope-area measurement; minimum discharge, 0.46 ft³/s (0.013 m³/s), May 8, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s (28.3 m³/s) and maximum (*):

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)
June 21	1645	*2,750	77.9	*10.58	3.225	June 22	0100	1,160	32.8	8.52	2.597

Minimum discharge, 1.2 ft³/s (0.034 m³/s), Apr. 27-30, May 1, 2, 7, 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	2.0	4.2	3.4	3.5	2.1	1.8	1.2	1.9	4.2	4.7	e2.3
2	1.9	2.1	4.2	3.2	2.8	2.0	1.8	2.1	2.3	4.0	2.9	e2.6
3	1.9	2.0	8.2	3.2	2.9	2.4	2.0	1.9	4.0	3.9	41	1.7
4	1.9	3.1	5.1	3.5	2.8	3.5	1.9	1.7	3.0	11	8.8	1.7
5	1.9	13	4.7	11	3.0	5.9	1.8	1.6	2.7	6.2	5.8	2.0
6	1.9	4.1	4.2	10	2.9	2.3	2.6	2.3	2.6	3.8	4.1	1.5
7	1.9	8.0	5.0	7.9	2.8	2.1	2.4	1.3	2.7	3.5	3.5	1.4
8	1.9	6.7	3.9	3.4	2.9	2.0	1.9	1.3	2.4	4.0	3.1	1.4
9	3.1	4.2	4.3	3.8	3.0	1.8	1.8	1.3	2.2	3.1	2.8	1.5
10	2.5	4.5	4.4	2.9	3.2	1.8	1.6	1.3	2.4	3.2	2.5	2.0
11	2.2	54	12	2.7	23	1.9	1.6	12	2.0	2.9	2.3	1.6
12	2.6	130	7.9	2.5	3.3	2.7	16	3.4	2.1	2.7	2.2	1.5
13	2.2	34	5.8	2.2	27	1.9	6.7	1.8	3.0	2.5	2.4	1.4
14	2.9	15	8.5	2.7	13	1.7	3.8	1.5	2.0	2.5	2.2	1.4
15	2.7	24	6.9	3.1	5.9	1.8	2.9	1.3	17	24	12	1.5
16	25	33	5.9	2.9	3.7	4.6	2.3	1.3	3.7	4.0	3.1	1.5
17	3.6	97	5.0	3.4	3.4	3.6	2.0	1.3	4.4	3.1	2.3	7.4
18	2.6	29	4.6	3.8	3.2	3.0	1.8	1.4	2.5	2.7	2.1	2.5
19	2.3	12	4.5	3.3	3.0	2.1	1.8	11	4.9	2.4	2.3	13
20	2.2	8.5	4.3	3.6	3.0	1.9	1.6	4.6	104	2.2	e2.7	2.9
21	2.1	6.5	4.0	3.7	2.9	1.8	1.6	32	214	14	e2.4	1.6
22	2.4	5.7	3.6	3.7	2.6	1.7	1.6	29	168	3.6	e2.3	1.9
23	2.3	5.1	3.4	6.2	2.5	2.0	1.5	8.1	26	2.7	e2.3	1.8
24	2.3	4.7	3.3	4.2	2.4	2.2	1.4	7.9	13	2.4	e2.2	1.6
25	6.5	7.1	3.6	3.8	2.3	2.5	1.4	23	8.3	2.1	e2.1	1.5
26	3.4	5.1	3.3	3.7	2.4	2.1	1.4	12	5.9	2.5	e2.1	1.4
27	2.7	5.0	3.6	3.5	2.5	2.0	1.3	4.9	5.1	2.3	e2.0	1.4
28	2.2	4.6	4.6	3.4	2.3	1.9	1.2	3.3	7.8	3.2	e1.9	1.3
29	2.1	4.9	3.5	3.8	---	1.9	1.2	2.7	12	2.1	e1.9	2.8
30	2.1	4.4	3.5	43	---	1.8	1.2	2.3	5.7	2.3	e1.8	2.0
31	2.0	---	4.3	5.9	---	1.8	---	2.0	---	9.0	e2.0	---
TOTAL	99.3	539.3	154.3	167.4	138.2	72.8	73.9	182.8	637.6	142.1	135.8	70.1
MEAN	3.20	18.0	4.98	5.40	4.94	2.35	2.46	5.90	21.3	4.58	4.38	2.34
MAX	25	130	12	43	27	5.9	16	32	214	24	41	13
MIN	1.9	2.0	3.3	2.2	2.3	1.7	1.2	1.2	1.9	2.1	1.8	1.3
AC-FT	197	1070	306	332	274	144	147	363	1260	282	269	139

CAL YR 1986 TOTAL 2111.4 MEAN 5.78 MAX 161 MIN 1.3 AC-FT 4190
WTR YR 1987 TOTAL 2413.6 MEAN 6.61 MAX 214 MIN 1.2 AC-FT 4790

e Estimated

RIO GRANDE DE LOIZA BASIN

50051150 QUEBRADA BLANCA AT EL JAGUAL, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 16	1357	2.76	254	24.5	JUN, 10	1344	2.79	235	29.0
FEB, 06	1356	2.81	244	28.0	JUL, 16	1042	3.97	213	25.5
MAR, 20	1040	1.93	266	25.5	AUG, 20	0943	2.83	255	26.0
APR, 13	1710	8.13	228	25.0	SEP, 15	1323	1.62	256	28.5
MAY, 19	1324	1.66	230	27.0					

RIO GRANDE DE LOIZA BASIN

50051180 QUEBRADA SALVATIERRA NEAR SAN LORENZO, PR

LOCATION.--Lat 18°10'24", long 65°58'38", Hydrologic Unit 21010005, on left downstream side of bridge on Highway 181, 0.2 mi (0.3 km) upstream from Rio Grande de Loiza, and 1.5 mi (2.4 km) southwest of San Lorenzo.

DRAINAGE AREA.--3.74 mi² (9.69 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1984 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 330 ft (100 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,320 ft³/s (264 m³/s), May 17, 1985, gage height, 17.10 ft (5.212 m), from floodmark, from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of step-backwater analysis and slope-area measurement; minimum discharge, 0.69 ft³/s (0.020 m³/s), Apr. 9-13, 15, 16, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
June 21	1645	*1,270	36.0	*9.00	2.743

Minimum discharge, 0.95 ft³/s (0.027 m³/s), May. 7-11, 16 and Sept. 14-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.8	e1.3	1.8	2.5	e1.2	1.1	1.0	e1.6	2.6	2.4	1.5
2	1.6	1.7	1.3	1.8	2.0	e1.2	1.1	1.5	1.6	2.4	2.1	1.6
3	1.6	1.7	1.5	1.8	1.9	e1.3	1.1	1.3	1.8	2.6	25	1.5
4	1.5	6.1	1.4	1.7	1.9	e2.0	1.1	1.3	1.6	4.1	4.5	1.5
5	1.5	14	1.6	4.1	1.9	e2.2	1.1	1.3	1.5	3.6	2.9	1.6
6	1.5	6.2	1.5	3.6	1.9	e1.4	1.9	1.8	1.4	2.5	2.5	1.3
7	1.5	e10	3.1	e5.2	1.9	e1.3	2.0	1.1	1.4	2.4	2.3	1.3
8	1.6	e8.0	1.7	e3.3	1.9	e1.2	1.7	.97	1.4	2.6	2.3	1.2
9	2.1	e6.4	1.9	e2.7	1.9	e1.2	1.7	.96	1.5	2.4	2.3	1.2
10	2.1	e6.7	2.0	e2.0	1.9	e1.2	1.7	.97	1.9	2.7	2.3	1.2
11	1.8	e50	6.8	e1.7	27	e1.2	1.9	3.1	1.5	2.3	2.3	1.1
12	1.7	e134	2.8	e1.7	3.0	e1.7	14	1.9	1.4	2.3	2.3	1.1
13	1.6	25	2.2	e1.7	31	e1.1	4.3	1.2	3.1	2.3	2.3	1.0
14	2.4	7.6	3.1	e1.6	20	1.0	3.6	1.1	2.8	2.2	2.2	1.0
15	2.2	9.1	2.6	e1.6	8.2	1.0	3.3	1.1	28	7.3	4.0	.95
16	11	22	2.3	e1.6	3.3	1.8	2.1	.99	7.8	2.9	2.4	.95
17	2.8	20	1.9	1.5	e2.8	2.6	1.9	1.0	2.7	2.4	2.3	14
18	2.1	11	1.9	1.5	e2.5	1.8	1.6	1.0	2.3	2.3	2.2	1.5
19	1.7	4.7	1.8	1.5	e2.2	1.2	1.5	4.8	3.0	2.2	2.3	27
20	1.6	3.5	1.8	1.5	e1.9	1.1	1.3	5.3	76	2.2	2.4	2.6
21	1.5	2.9	1.8	1.5	e1.6	1.0	1.3	37	134	7.6	2.2	e1.6
22	1.8	2.7	1.8	1.4	e1.4	1.1	1.3	40	123	2.9	2.1	e1.6
23	1.6	e2.4	1.7	2.0	e1.2	1.0	1.2	12	14	2.3	2.1	e1.2
24	1.8	e2.1	1.7	1.6	e1.2	1.0	1.2	8.4	5.5	2.2	2.0	e1.3
25	3.5	e2.2	1.7	1.5	e1.2	1.3	1.1	18	5.1	2.2	1.9	e1.2
26	3.3	e1.8	1.7	1.4	e1.3	1.1	1.1	14	e3.5	2.2	1.9	e1.2
27	4.1	e2.5	1.7	1.4	e1.3	1.0	1.1	4.5	e3.4	2.2	1.8	e1.2
28	2.7	e1.8	2.2	1.5	e1.3	1.1	1.1	3.0	e2.8	2.3	1.7	e1.2
29	2.1	e2.0	1.7	1.5	---	1.1	1.0	2.3	e3.2	2.2	1.7	e1.2
30	1.9	e1.8	1.7	23	---	1.1	1.0	e2.0	3.3	2.1	1.6	e1.2
31	1.8	---	1.8	4.1	---	1.1	---	e1.8	---	2.2	1.6	---
TOTAL	71.7	371.7	64.0	84.8	132.1	40.6	61.4	176.69	442.1	86.7	93.9	78.00
MEAN	2.31	12.4	2.06	2.74	4.72	1.31	2.05	5.70	14.7	2.80	3.03	2.60
MAX	11	134	6.8	23	31	2.6	14	40	134	7.6	25	27
MIN	1.5	1.7	1.3	1.4	1.2	1.0	1.0	.96	1.4	2.1	1.6	.95
AC-FT	142	737	127	168	262	81	122	350	877	172	186	155

CAL YR 1986 TOTAL 1775.6 MEAN 4.86 MAX 146 MIN 1.0 AC-FT 3520
WTR YR 1987 TOTAL 1703.69 MEAN 4.67 MAX 134 MIN .95 AC-FT 3380

e Estimated

RIO GRANDE DE LOIZA BASIN

50051180 QUEBRADA SALVATIERRA NEAR SAN LORENZO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 16	1137	1.66	371	24.5	JUN, 11	0952	1.54	353	27.0
FEB, 06	1148	1.90	371	23.5	JUL, 16	1253	2.84	272	26.5
MAR, 20	1243	1.11	353	26.5	AUG, 20	1137	2.40	343	26.5
APR, 13	1604	3.06	298	25.0	SEP, 15	1447	0.97	376	28.5
MAY, 18	1504	0.99	372	27.0					

RIO GRANDE DE LOIZA BASIN

50051310 RIO CAYAGUAS AT CERRO GORDO, PR

LOCATION.--Lat 18°09'13", long 65°57'20", Hydrologic Unit 21010005, at downstream side on bridge on Highway 912, at Barrio Cerro Gordo, 2.8 mi (4.5 km) south of San Lorenzo.

DRAINAGE AREA.--10.2 mi² (26.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 490 ft (150 m), from topographic map. Prior to Oct. 1, 1983, at site 2,000 ft (610 m) downstream at different datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--10 years (1978-87), 48.5 ft³/s (1.374 m³/s), 64.57 in/yr (1,640 mm/yr), 35,140 acre-ft/yr (43.33 hm³/yr); median of yearly mean discharges, 40.3 ft³/s (1.14 m³/s), 29,200 acre-ft/yr (36 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft³/s (374 m³/s), Aug. 31, 1979, gage height, 9.44 ft (2.877 m), site and datum then in use, from rating curve extended above 1,000 ft³/s (28.3 m³/s) on the basis of slope-area measurement; minimum discharge, 7.1 ft³/s (0.201 m³/s), Feb. 4, May 3, 1981, Apr. 12, 13, 16, 17, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 12	1745	*1,450	41.1	*11.46	3.493

Minimum daily discharge, 8.1 ft³/s (0.229 m³/s), Jan 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19	19	18	9.6	27	e17	e13	11	14	36	57	20
2	e18	25	21	9.9	21	e18	e12	e10	14	37	30	21
3	e17	18	40	11	19	e22	e16	e11	110	47	39	23
4	e16	26	22	16	19	e32	e13	e13	50	61	31	20
5	e15	74	24	118	21	e52	e15	20	16	79	39	19
6	e16	46	13	50	20	e21	e130	125	13	30	36	15
7	e17	71	30	69	19	e20	e27	23	21	29	26	17
8	e18	166	12	e17	18	e19	e16	18	15	31	26	18
9	114	74	17	e14	19	e18	e14	18	25	28	28	20
10	54	74	21	e13	18	e17	e13	19	26	41	26	26
11	28	97	61	e13	31	e18	e12	21	14	27	26	22
12	32	695	18	e12	19	e23	e250	22	13	25	23	19
13	22	222	e15	e11	115	e20	e80	16	32	25	21	17
14	30	125	e17	e10	88	e17	e110	16	20	25	21	19
15	42	148	e16	22	e54	e16	31	15	e72	139	22	16
16	91	176	e13	8.1	e35	e17	15	14	e45	34	22	19
17	50	69	e14	8.2	e25	e35	21	13	e22	26	22	26
18	46	48	e13	11	e23	33	18	13	e28	27	21	47
19	32	42	14	10	e23	20	15	e25	e80	29	22	32
20	29	39	17	17	e20	19	14	e380	e520	26	26	17
21	31	35	13	20	e19	19	13	e72	e600	85	19	17
22	104	32	10	20	e19	18	13	e310	e400	56	16	21
23	57	25	8.9	75	e18	16	13	e70	e90	36	17	19
24	63	21	8.4	41	e18	15	12	e47	e60	34	18	18
25	266	40	12	21	e17	16	12	e50	e58	32	16	17
26	82	58	9.7	18	e16	15	12	e120	e44	35	17	15
27	33	75	9.6	17	e19	13	11	56	e41	33	16	13
28	25	20	28	16	e18	12	10	23	e43	38	14	12
29	22	17	10	16	---	13	11	18	e62	31	14	20
30	31	15	9.2	51	---	13	10	15	e52	32	18	21
31	22	---	12	38	---	e14	---	14	---	115	20	---
TOTAL	1442	2592	546.8	782.8	778	618	952	1598	2600	1329	749	606
MEAN	46.5	86.4	17.6	25.3	27.8	19.9	31.7	51.5	86.7	42.9	24.2	20.2
MAX	266	695	61	118	115	52	250	380	600	139	57	47
MIN	15	15	8.4	8.1	16	12	10	10	13	25	14	12
AC-FTS	2860	5140	1080	1550	1540	1230	1890	3170	5160	2640	1490	1200
CFSM	4.56	8.47	1.73	2.48	2.72	1.95	3.11	5.05	8.50	4.20	2.37	1.98
IN.	5.26	9.45	1.99	2.85	2.84	2.25	3.47	5.83	9.48	4.85	2.73	2.21

CAL YR 1986 TOTAL 14726.8 MEAN 40.3 MAX 695 MIN 8.4 AC-FT 29210 CFSM 3.96 IN. 53.71
WTR YR 1987 TOTAL 14593.6 MEAN 40.0 MAX 695 MIN 8.1 AC-FT 28950 CFSM 3.92 IN. 53.22

e Estimated

RIO GRANDE DE LOIZA BASIN

50051310 RIO CAYAGUAS AT CERRO GORDO, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 20	1540	26	126	24.5	JUN, 10	1214	30.6	313	28.0
FEB, 12	1256	20.1	182	28.0	JUL, 14	1357	27.1	131	26.0
MAR, 19	1421	20.6	138	27.5	AUG, 19	1453	25.7	147	28.0
APR, 15	1343	25	120	25.5	SEP, 15	1134	16.9	125	27.0
MAY, 18	1309	13.7	127	28.5					

RIO GRANDE DE LOIZA BASIN

50053050 RIO TURABO AT BORINQUEN, PR

LOCATION.--Lat 18°10'10", long 66°02'37", Hydrologic Unit 21010005, at right upstream end of bridge on Highway 765, 0.5 mi (0.8 km) south of Villa Borinquen, and 7.3 mi (11.7 km) upstream from Rio Grande de Loiza.

DRAINAGE AREA.--7.89 mi² (20.44 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 430 ft (131 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s (328 m³/s), May 18, 1985, gage height, 17.06 ft (5.200 m), from floodmark, from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of step-backwater analysis and slope-area measurement; minimum discharge, 4.0 ft³/s (0.113 m³/s), May 6, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
June 21	1645	*3,910	111	*11.17	3.405

Minimum discharge, 1.1 ft³/s (0.031 m³/s), Sept. 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	e10	17	15	20	6.2	3.3	2.4	19	21	14	9.9
2	7.1	e9.0	17	15	13	6.6	3.0	5.0	17	18	8.0	9.5
3	5.7	e10	27	15	11	20	6.6	4.2	24	16	113	8.5
4	5.5	e11	14	20	8.7	25	6.5	4.5	22	43	57	6.6
5	4.7	e12	11	29	8.1	26	9.3	4.9	20	35	68	5.3
6	4.4	e25	10	35	5.9	12	11	8.6	18	21	64	4.2
7	4.2	e60	17	36	4.0	7.7	8.7	2.6	28	22	46	5.8
8	4.1	e35	11	27	5.2	7.0	6.2	2.1	18	29	46	7.4
9	19	e21	14	23	3.5	6.7	6.2	2.1	19	18	43	9.1
10	12	e23	20	16	3.8	6.4	6.1	9.5	18	17	27	10
11	e11	e150	57	15	74	8.6	15	54	15	15	24	9.8
12	e9.0	e100	41	14	20	14	85	25	11	14	23	8.6
13	e8.0	e50	30	12	27	6.3	50	13	14	14	22	7.1
14	e9.0	41	50	17	32	6.7	58	9.4	14	12	20	7.5
15	e15	32	30	18	31	10	28	8.2	46	43	26	9.0
16	e20	71	27	12	22	11	17	8.0	31	18	22	7.8
17	e13	101	21	11	18	20	13	7.0	22	14	19	31
18	e11	54	17	12	15	15	8.4	11	17	12	22	21
19	e10	40	16	11	15	8.3	6.4	49	26	12	27	29
20	e10	33	15	10	13	6.6	5.5	65	232	11	25	7.4
21	e20	30	12	8.0	12	4.7	5.5	145	260	69	20	4.1
22	e30	27	12	7.7	11	4.3	4.8	102	179	20	18	6.7
23	e14	26	12	27	12	4.0	4.7	59	84	13	16	5.0
24	e20	24	11	15	9.9	4.4	4.6	62	51	10	17	7.3
25	e25	23	14	11	8.0	6.5	3.0	69	44	9.5	16	4.6
26	e15	22	14	8.3	7.3	5.3	3.0	63	33	11	16	3.0
27	e12	29	17	8.5	8.2	4.4	3.0	36	30	9.2	14	2.2
28	e11	23	27	5.4	7.5	4.1	2.9	29	33	18	12	1.7
29	e11	22	20	4.8	---	3.6	2.7	23	53	7.4	8.2	14
30	e11	19	19	95	---	4.3	2.6	18	32	11	7.5	14
31	e10	---	17	37	---	3.8	---	19	---	47	12	---
TOTAL	369.0	1133.0	637	590.7	426.1	279.5	390.0	920.5	1430	630.1	872.7	277.1
MEAN	11.9	37.8	20.5	19.1	15.2	9.02	13.0	29.7	47.7	20.3	28.2	9.24
MAX	30	150	57	95	74	26	85	145	260	69	113	31
MIN	4.1	9.0	10	4.8	3.5	3.6	2.6	2.1	11	7.4	7.5	1.7
AC-FT	732	2250	1260	1170	845	554	774	1830	2840	1250	1730	550

CAL YR 1986 TOTAL 7588.9 MEAN 20.8 MAX 270 MIN 4.1 AC-FT 15050
WTR YR 1987 TOTAL 7955.7 MEAN 21.8 MAX 260 MIN 1.7 AC-FT 15780

e Estimated

RIO GRANDE DE LOIZA BASIN

50053050 RIO TURABO AT BORINQUEN, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 14	1531	12.3	158	24.5	JUN, 12	0919	12.2	152	25.5
FEB, 13	0952	16.3	150	23.0	JUL, 17	1401	12.3	152	30.0
MAR, 16	1454	12.6	157	25.0	AUG, 21	1340	20.4	152	31.5
APR, 09	1508	7.25	168	31.5	SEP, 10	1333	11.1	152	30.0
MAY, 15	1338	8.02	164	29.5					

RIO GRANDE DE LOIZA BASIN

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR

LOCATION.--Lat 18°14'33", long 66°00'34", Hydrologic Unit 21010005, on right bank 250 ft (76 m) upstream from bridge on Highway 189, 1.2 mi (1.9 km) downstream from Rio Turabo, and 1.8 mi (2.9 km) east of Plaza de Caguas.

DRAINAGE AREA.--89.8 mi² (232.6 km²).

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. Elevation of gage is 143.28 ft (43.672 m) above mean sea level.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGES.--27 years (1961-87), 222 ft³/s (6.287 m³/s), 33.57 in/yr (853 mm/yr), 160,800 acre-ft/yr (198 hm³/yr); median of yearly mean discharges, 210 ft³/s (5.95 m³/s), 152,000 acre-ft/yr (187 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft³/s (2,020 m³/s), Sept. 6, 1960, gage height, 31.17 ft (9.501 m), from rating curve extended above 6,000 ft³/s (170 m³/s) on basis of slope-area measurement; minimum daily discharge, 10 ft³/s (0.283 m³/s), Apr. 5, 10, 29, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 21	1830	*17,200 487	*16.92 5.157	June 22	0230	11,100 314	14.48 4.414

Minimum discharge, 15 ft³/s (0.425 m³/s), Apr. 2, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	76	119	84	174	70	20	24	80	213	269	180
2	55	86	121	80	118	68	19	43	71	202	145	141
3	49	86	156	78	100	84	22	55	134	210	452	110
4	49	85	155	81	88	173	21	76	173	201	222	81
5	44	164	150	223	88	205	40	52	97	467	198	100
6	44	232	124	179	95	97	111	208	82	221	166	64
7	49	239	189	336	85	76	157	71	95	204	116	58
8	50	330	132	232	74	63	48	34	85	201	100	90
9	185	198	140	206	71	59	31	31	100	172	100	69
10	169	191	152	119	69	58	22	29	80	185	95	85
11	89	412	333	109	732	54	37	76	100	168	84	84
12	96	2860	220	100	163	132	595	180	60	148	76	64
13	64	887	169	89	638	68	366	70	95	139	74	50
14	82	340	215	89	350	57	315	51	80	134	82	104
15	85	374	160	140	315	55	207	31	290	394	124	65
16	319	655	185	100	152	90	125	25	270	206	143	56
17	159	954	139	86	126	166	109	22	95	155	103	119
18	105	446	131	92	113	104	91	27	100	130	117	176
19	80	248	112	83	98	60	71	338	270	120	136	415
20	64	198	116	79	88	45	54	379	2340	107	154	148
21	59	177	121	81	80	42	45	1360	3240	436	120	58
22	176	170	100	74	69	40	42	544	4000	e165	89	144
23	99	158	91	158	70	35	41	277	690	e115	81	92
24	142	140	86	150	70	29	37	206	384	e95	75	106
25	311	167	108	102	69	47	28	225	319	e130	70	70
26	219	167	99	88	66	35	28	471	254	135	89	45
27	162	269	100	78	94	27	24	276	334	136	69	35
28	120	159	171	72	80	24	24	162	284	156	60	32
29	e88	150	112	72	---	24	24	124	333	120	60	97
30	e86	143	95	483	---	21	23	102	314	115	59	118
31	83	---	96	202	---	20	---	89	---	272	101	---
TOTAL	3442	10761	4397	4145	4335	2128	2777	5658	14849	5852	3829	3056
MEAN	111	359	142	134	155	68.6	92.6	183	495	189	124	102
MAX	319	2860	333	483	732	205	595	1360	4000	467	452	415
MIN	44	76	86	72	66	20	19	22	60	95	59	32
AC-FT	6820	21340	8720	8220	8600	4220	5510	11220	29450	11610	7590	6060
CFSM	1.24	3.99	1.58	1.49	1.72	.76	1.03	2.03	5.51	2.10	1.38	1.13
IN.	1.43	4.46	1.82	1.72	1.80	.88	1.15	2.34	6.15	2.42	1.59	1.27

CAL YR 1986 TOTAL 67681 MEAN 185 MAX 2940 MIN 28 AC-FT 134200 CFSM 2.06 IN. 28.04
WTR YR 1987 TOTAL 65227 MEAN 179 MAX 4000 MIN 19 AC-FT 129400 CFSM 1.99 IN. 27.02

e Estimated

RIO GRANDE DE LOIZA BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
28...	1235	121	203	7.65	27.5	47	7.6	97	31	20000	2500
DEC											
05...	1105	164	192	7.35	25.5	--	7.5	93	--	39000	K11000
FEB 1987											
23...	1035	71	240	7.00	25.0	15	7.2	88	<10	K8600	430
APR											
13...	1310	224	150	7.00	25.5	38	7.4	91	<10	K13000	K14000
JUN											
08...	1058	81	199	7.40	29.5	9.5	7.0	--	<10	K9700	400
AUG											
10...	0950	97	225	7.80	30.0	24	5.8	--	<10	K13000	760

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
28...	69	3	18	5.8	18	1	2.8	66	<0.5	13	13
DEC											
05...	--	--	--	--	--	--	--	63	--	--	--
FEB 1987											
23...	--	--	--	--	--	--	--	77	--	--	--
APR											
13...	39	3	9.5	3.8	12	0.9	3.1	36	<0.5	11	12
JUN											
08...	--	--	--	--	--	--	--	70	--	--	--
AUG											
10...	62	0	15	5.9	19	1	1.8	66	--	14	14

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
28...	0.1	29	139	45.5	62	0.53	0.07	0.60	0.26	0.06
DEC										
05...	--	--	--	--	--	0.41	0.09	0.50	0.33	1.4
FEB 1987										
23...	--	--	--	--	<1	0.45	0.05	0.50	0.25	1.7
APR										
13...	0.1	19	92	55.6	80	0.65	0.05	0.70	0.16	0.74
JUN										
08...	--	--	--	--	14	0.43	0.07	0.50	0.16	0.64
AUG										
10...	0.1	32	140	36.7	22	0.36	0.04	0.40	0.07	0.63

K = non-ideal count

RIO GRANDE DE LOIZA BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 28...	0.2	0.8	--	0.19	<1	<100	<10	<1	<1	10
DEC 05...	1.7	2.2	9.7	0.38	--	--	--	--	--	--
FEB 1987 23...	2.0	2.5	11	0.25	--	--	--	--	--	--
APR 13...	0.9	1.6	7.1	0.19	<1	100	10	--	2	30
JUN 08...	0.8	1.3	5.8	0.30	--	--	--	--	--	--
AUG 10...	0.7	0.1	--	0.06	--	--	--	--	--	--

[illegible]

RIO GRANDE DE LOIZA BASIN

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50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR

WATER-QUALITY RECORDS

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

DRAINAGE AREA.--14.1 sq mi (36.5 sq km).

PERIOD OF RECORD.--Water years 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR, (COLS. PER 100 ML)
NOV 1986											
10...	1350	81	317	7.05	28.0	52	4.8	62	68	3900000	3400000
DEC											
15...	1205	33	539	7.30	26.0	--	3.5	44	--	K85000	30000
FEB 1987											
13...	1200	42	414	7.20	26.0	50	6.2	77	25	K6000	K1000
APR											
14...	1315	49	445	7.40	27.0	--	4.0	51	--	K680000	K110000
JUN											
15...	1120	21	500	7.60	29.5	4.7	4.8	--	22	K9200	K1600
AUG											
17...	1120	25	537	7.40	30.0	4.7	1.4	--	42	K880000	K150000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
10...	130	12	35	11	33	1	5.2	121	<0.5	48	28
DEC											
15...	--	--	--	--	--	--	--	145	--	--	--
FEB 1987											
13...	--	--	--	--	--	--	--	120	--	--	--
APR											
14...	120	0	33	10	34	1	5.2	120	<0.5	39	28
JUN											
15...	--	--	--	--	--	--	--	150	--	--	--
AUG											
17...	140	0	35	12	40	1	6.0	140	--	51	39

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
10...	0.3	27	260	57.2	85	0.83	0.17	1.00	4.80	0.5
DEC										
15...	--	--	--	--	--	1.42	0.18	1.60	6.90	6.1
FEB 1987										
13...	--	--	--	--	60	1.03	0.17	1.20	4.80	6.2
APR										
14...	0.3	25	250	33.1	33	1.04	0.16	1.20	5.90	5.0
JUN										
15...	--	--	--	--	23	1.03	0.27	1.30	6.00	7.0
AUG										
17...	0.2	31	300	20.2	4	0.62	0.18	0.80	8.80	8.2

K = non-ideal count

RIO GRANDE DE LOIZA BASIN

50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
10...	5.3	6.3	--	1.70	1	100	20	2	7	220
DEC										
15...	13	15	65	0.48	--	--	--	--	--	--
FEB 1987										
13...	11	12	54	1.40	--	--	--	--	--	--
APR										
14...	13	14	--	1.50	1	100	60	1	9	100
JUN										
15...	13	14	63	2.70	--	--	--	--	--	--
AUG										
17...	17	18	--	0.54	--	--	--	--	--	--

[illegible]

RIO GRANDE DE LOIZA BASIN

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50055400 RIO BAIROA NEAR CAGUAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'28", long 66°02'13", at bridge on Highway 1, about 2.5 mi (4.0 km) upstream from Rio Grande de Loiza, and 1.4 mi (2.3 km) north of Caguas plaza.

DRAINAGE AREA.--5.4 sq mi (14.0 sq km).

PERIOD OF RECORD.--Water years 1958, 1962-66, 1973-74, 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
10...	1110	5.5	395	7.35	26.0	13	5.2	65	80	K1600000	K130000
DEC 15...	0920	6.4	475	7.30	23.5	--	6.9	82	--	21000	10000
FEB 1987											
17...	0950	6.1	468	7.10	23.0	7.8	2.0	24	71	K1200000	660000
APR 14...	1045	8.6	308	7.40	24.5	17	7.8	95	22	24000	6100
JUN 15...	0905	5.8	370	7.60	26.5	1.9	7.2	--	12	21000	K180000
AUG 24...	0855	3.7	412	7.80	26.0	1.5	5.2	--	10	220000	22000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
10...	130	0	31	12	26	1	5.0	133	<0.5	25	26
DEC 15...	--	--	--	--	--	--	--	128	--	--	--
FEB 1987											
17...	--	--	--	--	--	--	--	150	--	--	--
APR 14...	120	18	28	11	18	0.8	4.3	97	<0.5	20	32
JUN 15...	--	--	--	--	--	--	--	140	--	--	--
AUG 17...	150	19	35	15	25	0.9	3.9	130	--	21	31

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SCLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
10...	0.2	25	230	3.39	42	0.94	0.06	1.00	6.20	--
DEC 15...	--	--	--	--	--	1.48	0.02	1.50	0.05	0.35
FEB 1987										
17...	--	--	--	--	26	0.98	0.12	1.10	7.10	6.9
APR 14...	0.3	25	197	4.57	26	0.97	0.03	1.00	0.11	0.89
JUN 15...	--	--	--	--	<1	1.28	0.02	1.30	0.19	0.51
AUG 17...	0.3	30	240	2.40	<1	1.27	0.03	1.30	0.15	0.35

K = non-ideal count

RIO GRANDE DE LOIZA BASIN

50055400 RIO BAIROA NEAR CAGUAS, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
10...	--	--	--	1.60	2	<100	<10	<1	5	20
DEC										
15...	0.4	1.9	8.4	0.36	--	--	--	--	--	--
FEB 1987										
17...	14	15	67	1.60	--	--	--	--	--	--
APR										
14...	1.0	2.0	8.9	0.39	2	<100	10	<1	6	<10
JUN										
15...	0.7	2.0	8.9	0.39	--	--	--	--	--	--
AUG										
17...	0.5	1.8	--	0.03	--	--	--	--	--	--

[illegible]

RIO GRANDE DE LOIZA BASIN

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50055650 QUEBRADA CAIMITO NEAR JUNCOS, PR

LOCATION.--Lat 18°14'08", long 65°52'12", Hydrologic Unit 21010005, at upstream side of bridge on Highway 31, 0.5 mi (0.8 km) upstream from Rio Gurabo, and 3.5 mi (5.6 km) east of Juncos.

DRAINAGE AREA.--0.82 mi² (2.12 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1984 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 310 ft (95 m), from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 992 ft³/s (28.1 m³/s), Oct. 6, 1985, gage height, 13.37 ft (4.075 m), from floodmark, from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-backwater analysis; minimum discharge, no flow many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s (4.25 m³/s) and maximum (*):

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)
Nov. 12	unknown	185	5.24	9.77	2.978	June 22	0115	*252	7.14	*10.12	3.084

No flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.02	.08	.00	.07	.00	.00	.00	.29	.76	.07	.67
2	.00	.02	.08	.00	.01	.00	.00	.00	3.9	.74	.04	.25
3	.00	.02	.12	.00	.00	.00	.00	.00	3.1	.59	.32	.12
4	.00	.03	.07	.00	.00	.05	.00	.00	1.3	.92	.10	.10
5	.00	e.14	.06	.06	.00	.03	.00	2.1	.29	.74	.16	.14
6	.00	e.25	.05	.12	.00	.00	.00	4.7	.17	.54	.07	.10
7	.58	e.40	.06	.30	.00	.00	.00	.22	.10	.49	.01	.09
8	.02	e.70	.04	.05	.00	.00	.00	.02	.18	.45	.01	.23
9	.00	e.25	.04	.02	.00	.00	.00	.00	.38	.56	.15	.12
10	.00	e.15	.05	.01	.00	.00	.56	.00	.34	.38	.02	.31
11	.00	e.50	.40	.00	.56	.00	.05	.80	.24	.36	.06	.15
12	.00	e20	.08	.00	.04	.00	.04	.89	.25	.30	.14	.10
13	.00	e2.0	.07	.00	.01	.00	.68	.93	.24	.29	.14	.09
14	.00	e.80	.07	.00	.01	.00	2.7	.88	.20	.30	.13	.10
15	.00	e.50	.06	.00	.02	.00	.91	.13	2.1	.34	.16	.10
16	.13	e1.0	.05	.00	.00	.00	.03	.08	.97	.27	.13	.09
17	.01	e.60	.04	.00	.00	.00	2.6	.03	.44	.23	.11	.11
18	.00	e.40	.03	.00	.00	.00	.12	.02	.14	.23	.11	.35
19	.00	e.30	.03	.00	.00	.00	.01	.57	5.2	.21	.32	1.0
20	.00	e.20	.04	.00	.00	.00	.00	5.6	22	.22	.12	.37
21	.00	e.15	.03	.00	.00	.00	.00	4.7	19	.30	.09	.11
22	3.2	.12	.01	.00	.00	.00	.00	5.2	31	.17	.08	.12
23	.19	.06	.01	.00	.00	.00	.00	2.9	8.4	.14	.07	.09
24	.11	.05	.01	.00	.00	.00	.00	1.3	4.3	.11	.10	.19
25	.08	.11	.26	.00	.00	.00	.00	.81	2.8	.10	.10	.08
26	.04	.44	.05	.00	.00	.00	.00	6.9	2.0	.10	.14	.06
27	.16	.28	.24	.00	.00	.00	.00	5.9	1.4	.09	.08	.04
28	.07	.12	.08	.00	.00	.00	.00	3.7	1.1	.15	.08	.02
29	.03	.11	.03	.00	---	.00	.00	2.4	.99	.08	.09	.18
30	.02	.10	.02	.76	---	.00	.00	1.1	1.0	.03	.08	.36
31	.02	---	.01	.15	---	.00	---	.18	---	.09	.26	---
TOTAL	4.66	29.82	2.27	1.47	0.72	0.08	7.70	52.06	113.82	10.28	3.54	5.84
MEAN	.15	.99	.073	.047	.026	.003	.26	1.68	3.79	.33	.11	.19
MAX	3.2	20	.40	.76	.56	.05	2.7	6.9	31	.92	.32	1.0
MIN	.00	.02	.01	.00	.00	.00	.00	.00	.10	.03	.01	.02
AC-FT	9.2	59	4.5	2.9	1.4	.2	15	103	226	20	7.0	12

CAL YR 1986 TOTAL 237.65 MEAN .65 MAX 32 MIN .00 AC-FT 471
WTR YR 1987 TOTAL 232.26 MEAN .64 MAX 31 MIN .00 AC-FT 461

e Estimated

RIO GRANDE DE LOIZA BASIN

50055650 QUEBRADA CAIMITO NR JUNCOS, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
APR, 13	1219	1.60	272	25.5	JUL, 01	1323	0.82	327	30.0
MAY, 13	1521	0.50	286	28.5	AUG, 18	1343	0.12	363	33.0
JUN, 08	1422	0.35	323	30.0	SEP, 14	1416	0.10	390	32.0

50056400 RIO VALENCIANO NEAR JUNCOS, PR

LOCATION.--Lat 18°12'58", long 65°55'34", Hydrologic Unit 21010005, on left bank at Highway 919, 0.5 mi (0.8 km) upstream from Quebrada Don Victor, 1.7 mi (2.7 km) upstream from Rio Gurabo and 1.0 mi (1.6 km) south of Juncos.

DRAINAGE AREA.--16.4 mi² (42.5 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 320 ft (98 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--16 years (1972-87), 50.3 ft³/s (1.424 m³/s), 41.65 in/yr (1,058 mm/yr), 36,440 acre-ft/yr (44.9 hm³/yr); median of yearly mean discharges, 51 ft³/s (1.44 m³/s), 36,950 acre-ft/yr (46 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s (728 m³/s), May 18, 1985, gage height, 21.30 ft (6.492 m), from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of slope-area measurement and step-backwater analysis; minimum discharge, 2.0 ft³/s (0.057 m³/s), May 11, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges (no stages were recorded) of major floods are as follows: Sept. 6, 1960, 37,100 ft³/s (1,050 m³/s); Oct. 9, 1970, 18,200 ft³/s (515 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,400 ft³/s (96.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 22	0830	*5,060 143	*9.25 2.819

Minimum discharge, 3.5 ft³/s (0.099 m³/s), Nov. 4, Sept. 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	20	25	14	17	9.2	6.3	5.8	12	43	20	21
2	10	23	28	13	14	9.0	6.3	9.1	17	38	17	22
3	9.7	19	26	13	12	11	6.3	10	249	37	178	17
4	9.7	23	24	16	11	39	11	10	56	42	84	13
5	9.6	25	27	39	13	74	7.2	16	25	46	80	17
6	10	24	21	38	15	17	16	55	20	31	66	11
7	11	33	42	61	12	13	12	12	17	29	52	9.6
8	11	53	22	33	11	11	7.2	7.9	15	34	48	9.5
9	20	30	29	25	11	10	6.9	6.6	16	26	52	11
10	18	39	26	18	9.5	10	7.5	6.3	21	25	46	25
11	12	91	79	16	27	19	27	12	19	23	42	13
12	13	587	32	15	11	25	159	15	17	22	40	8.4
13	11	149	29	15	90	11	40	7.5	36	21	39	6.0
14	17	70	36	16	44	10	23	6.5	39	21	35	5.4
15	35	61	34	22	36	10	19	6.0	195	71	48	6.1
16	75	149	32	16	18	19	12	5.6	90	33	38	5.4
17	23	63	24	15	16	54	78	5.5	45	26	32	7.5
18	19	44	21	14	14	20	20	5.3	37	23	29	18
19	15	37	20	14	13	12	16	16	127	31	31	14
20	13	33	22	14	12	11	11	41	481	35	34	5.9
21	13	30	20	13	12	9.5	9.2	133	579	47	26	4.8
22	77	29	17	13	11	8.7	8.6	40	1210	30	23	9.4
23	28	26	16	27	11	8.2	8.0	21	94	24	21	6.8
24	35	25	15	19	10	7.9	7.9	17	59	24	21	14
25	126	45	19	14	9.7	12	6.6	62	51	22	20	7.1
26	48	48	16	13	9.4	9.1	6.3	146	50	27	27	5.2
27	77	46	19	12	10	7.6	5.9	71	171	27	19	4.1
28	40	32	19	12	9.7	6.8	5.8	27	84	34	17	4.5
29	28	30	15	12	---	6.9	5.5	19	81	22	16	6.0
30	25	26	14	49	---	6.5	5.3	16	56	21	15	17
31	22	---	16	22	---	6.2	---	14	---	21	25	---
TOTAL	872.0	1910	785	633	489.3	183.6	560.8	825.1	3969	956	1241	324.7
MEAN	28.1	63.7	25.3	20.4	17.5	15.6	18.7	26.6	132	30.8	40.0	10.8
MAX	126	587	79	61	90	74	159	146	1210	71	178	25
MIN	9.6	19	14	12	9.4	6.2	5.3	5.3	12	21	15	4.1
AC-FT	1730	3790	1560	1260	971	959	1110	1640	7870	1900	2460	644
CFSM	1.72	3.88	1.54	1.25	1.07	.95	1.14	1.62	8.07	1.88	2.44	.66
IN.	1.98	4.33	1.78	1.44	1.11	1.10	1.27	1.87	9.00	2.17	2.81	.74

CAL YR 1986	TOTAL	13184.6	MEAN	36.1	MAX	851	MIN	7.1	AC-FT	26150	CFSM	2.20	IN	29.91
WTR YR 1987	TOTAL	13049.5	MEAN	35.8	MAX	1210	MIN	4.1	AC-FT	25880	CFSM	2.18	IN	29.60

RIO GRANDE DE LOIZA BASIN

50056400 RIO VALENCIANO NEAR JUNCOS, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 13	1200	16	272	25.0	JUN, 08	1248	15.7	253	29.0
FEB, 09	1246	11.4	258	28.0	JUL, 01	1105	45.2	218	26.0
APR, 10	1208	5.69	278	28.0	SEP, 14	1243	5.81	248	29.5
MAY, 14	1158	6.90	274	28.0					

RIO GRANDE DE LOIZA BASIN

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50056900 QUEBRADA MAMEY NEAR GURABO, PR

LOCATION.--Lat 18°14'57", long 65°56'44", Hydrologic Unit 21010005, at left downstream side of bridge on Highway 189, 1.9 mi (3.0 km) southeast of Gurabo plaza, and 2.1 mi (3.4 km) northwest of Juncos plaza.

DRAINAGE AREA.--2.30 mi² (5.96 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 180 ft (55 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,690 ft³/s (47.9 m³/s), May 15, 1985, gage height, 9.42 ft (2.871 m), from floodmark, from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of indirect measurement of peak flow and step-backwater analysis; minimum discharge, 0.20 ft³/s (0.006 m³/s), Feb. 10, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
June 22	0830	*621	17.6	*7.11	2.167

Minimum discharge, 0.20 ft³/s (0.006 m³/s), Feb. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	e.50	e.80	.68	.40	.25	.46	.31	1.1	1.6	1.6	2.0
2	.50	e.60	e.80	.70	.29	.24	.47	.30	1.5	1.7	1.5	1.9
3	.48	e.50	e.70	.71	.26	.24	.54	.36	8.1	1.6	2.0	1.2
4	.41	e.60	e.60	.70	.25	.69	.60	.33	2.2	1.8	1.7	1.0
5	.40	e.90	e.70	1.1	.24	5.5	.84	.58	1.2	2.0	1.6	.96
6	.42	1.1	.85	.99	.26	.41	1.1	2.4	1.0	1.7	1.5	.91
7	.51	2.6	1.2	1.5	.24	.33	1.0	.84	.95	1.6	1.4	.90
8	.44	1.9	.99	.79	.22	.31	.98	.67	.92	1.9	1.3	1.3
9	.45	1.2	.91	.76	.21	.30	.91	.64	1.5	1.8	1.3	1.3
10	.45	1.1	.90	.70	.22	.31	5.0	.98	1.2	2.0	1.3	1.1
11	.43	1.0	.92	.66	19	.34	2.1	2.1	1.3	1.9	1.2	1.1
12	.45	40	e.70	.64	.56	.50	17	2.6	.95	1.8	1.2	.95
13	.42	4.7	e.60	.64	6.4	.45	3.0	3.2	1.0	1.8	1.0	.91
14	.44	1.7	e.60	.64	12	.43	1.3	2.1	.94	1.9	1.1	1.6
15	e.90	1.6	e.80	.69	1.0	.46	1.2	.97	30	2.0	1.1	2.6
16	e3.0	2.3	.95	.64	.45	.52	.68	.76	3.9	2.2	1.1	1.8
17	e1.0	1.5	.92	.59	.35	.69	.88	.73	1.7	2.1	.98	1.1
18	e.70	1.3	.82	.58	.31	.61	.56	.70	1.4	2.2	.95	1.1
19	e.60	1.1	.83	.58	.29	.41	.49	.74	38	2.1	.95	2.3
20	e.50	1.0	.88	.57	.27	.38	.49	1.5	34	2.1	.94	1.3
21	e.50	.92	.84	.53	.27	.37	.43	3.2	80	3.2	.92	.67
22	e5.0	1.2	.79	.55	.26	.52	.43	1.7	107	2.8	.84	1.1
23	e2.0	1.1	.73	.79	.24	.47	.43	1.1	5.5	2.3	.79	.75
24	e3.0	.93	.74	.65	.25	.43	.41	1.1	2.6	2.1	.78	.84
25	e9.0	.96	1.0	.56	.24	.43	.38	7.8	2.1	2.1	.77	.65
26	e3.0	1.3	.85	.55	.28	.46	.37	9.5	1.9	1.9	.82	.43
27	e6.0	1.6	.85	.57	.32	.46	.39	5.0	1.8	1.9	.87	.36
28	e2.0	1.4	.87	.53	.27	.46	.38	2.0	1.8	1.8	.87	.32
29	e1.0	e1.2	.79	.55	---	.47	.36	1.2	1.8	1.7	.95	.32
30	e.70	e.90	.72	2.7	---	.53	.37	1.0	1.7	1.7	.90	.33
31	e.60	---	.67	.46	---	.44	---	.91	---	1.6	1.1	---
TOTAL	45.80	78.71	25.32	23.30	45.35	18.41	43.55	57.32	339.06	60.9	35.33	33.10
MEAN	1.48	2.62	.82	.75	1.62	.59	1.45	1.85	11.3	1.96	1.14	1.10
MAX	9.0	40	1.2	2.7	19	5.5	17	9.5	107	3.2	2.0	2.6
MIN	.40	.50	.60	.46	.21	.24	.36	.30	.92	1.6	.77	.32
AC-FT	91	156	50	46	90	37	86	114	673	121	70	66

CAL YR 1986 TOTAL 925.68 MEAN 2.54 MAX 173 MIN .40 AC-FT 1840
WTR YR 1987 TOTAL 806.15 MEAN 2.21 MAX 107 MIN .21 AC-FT 1600

e Estimated

RIO GRANDE DE LOIZA BASIN
50056900 QUEBRADA MAMEY NEAR GURABO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 15	1125	0.70	656	24.5	JUN, 09	1411	1.63	377	26.0
MAR, 23	1336	0.46	637	27.5	JUL, 16	1509	2.11	627	30.0
APR, 13	1406	2.48	369	25.0	AUG, 20	1343	0.95	686	28.0
MAY, 14	1342	1.67	475	27.0	SEP, 29	0855	0.32	570	27.5

50057000 RIO GURABO AT GURABO, PR

LOCATION.--Lat 18°15'30", long 65°58'05", Hydrologic Unit 21010005, 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 Rio Grande de Loiza.

DRAINAGE AREA.--60.2 mi² (155.9 km²).

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 and crest-stage gage. Elevation of gage is 136.58 ft (41.63 m) above mean sea level.

REMARKS.--Records fair. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--28 years (1960-87), 134 ft³/s (3.795 m³/s), 30.23 in/yr (768 mm/yr), 97,080 acre-ft/yr (120 hm³/yr); median of yearly mean discharges, 130 ft³/s (3.68 m³/s), 94,200 acre-ft/yr (120 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,600 ft³/s (2,133 m³/s), Sept. 6, 1960, gage height, 27.7 ft (8.44 m), from floodmark, from rating curve extended above 8,000 ft³/s (227 m³/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 Rio Gurabo and Rio Valenciano, 7.0 mi (11.3 km) upstream, adjusted for channel storage and flow from intervening area; minimum discharge, 4.5 ft³/s (0.127 m³/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 CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 26	2100	4,730 134	10.83 3.301	June 21	2215	6,840 194	13.32 4.060
June 20	1100	3,610 102	9.31 2.838	June 22	1115	*8,790 249	*14.85 4.526

Minimum daily discharge, 17 ft³/s (0.481 m³/s), Apr. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	59	72	54	70	44	18	29	57	109	36	54
2	25	71	70	53	44	42	17	30	169	97	43	86
3	23	72	79	50	38	41	18	47	310	103	51	46
4	23	51	72	51	35	76	22	44	176	90	211	37
5	23	101	67	88	35	174	21	51	72	153	65	36
6	22	113	62	119	39	61	21	348	59	85	64	31
7	26	211	93	187	38	49	30	71	53	84	56	28
8	27	291	69	66	35	45	19	48	47	105	48	30
9	30	131	65	71	31	42	18	40	50	72	46	28
10	46	199	69	47	29	42	78	46	64	69	54	35
11	33	197	174	44	192	42	83	63	54	53	43	43
12	27	1530	99	41	73	73	222	136	45	50	40	28
13	24	527	92	39	136	47	210	57	78	48	45	24
14	31	244	107	39	154	42	177	45	80	47	37	24
15	51	209	84	45	101	42	128	39	612	95	34	26
16	120	280	95	38	64	95	58	36	316	64	40	24
17	66	186	73	35	56	152	341	34	128	39	31	21
18	39	120	70	34	52	77	88	33	98	43	31	30
19	29	93	61	33	50	37	55	72	360	55	32	45
20	25	93	65	33	48	31	49	379	1640	71	40	39
21	22	76	63	31	48	27	44	367	2050	79	38	25
22	218	75	56	31	46	26	41	167	3950	68	32	30
23	63	68	55	49	44	25	38	109	393	45	29	28
24	87	64	54	54	41	22	36	68	204	46	28	29
25	164	96	86	37	42	24	34	155	160	37	27	32
26	116	181	65	35	43	24	33	1060	140	38	33	24
27	176	218	84	33	47	22	32	474	233	43	37	21
28	146	115	102	32	45	21	31	187	205	53	27	20
29	66	95	65	33	---	20	30	87	164	48	26	21
30	61	96	57	145	---	20	29	81	138	48	25	85
31	61	---	57	74	---	18	---	57	---	34	35	---
TOTAL	1897	5862	2382	1721	1676	1503	2021	4460	12105	2071	1384	1030
MEAN	61.2	195	76.8	55.5	59.9	48.5	67.4	144	403	66.8	44.6	34.3
MAX	218	1530	174	187	192	174	341	1060	3950	153	211	86
MIN	22	51	54	31	29	18	17	29	45	34	25	20
AC-FT	3760	11630	4720	3410	3320	2980	4010	8850	24010	4110	2750	2040
CFSM	1.02	3.25	1.28	.92	.99	.81	1.12	2.39	6.70	1.11	.74	.57
IN.	1.17	3.62	1.47	1.06	1.04	.93	1.25	2.76	7.48	1.28	.86	.64

CAL YR 1986 TOTAL 37351 MEAN 102 MAX 3090 MIN 13 AC-FT 74090 CFSM 1.70 IN. 23.08
WTR YR 1987 TOTAL 38112 MEAN 104 MAX 3950 MIN 17 AC-FT 75600 CFSM 1.73 IN. 23.55

RIO GRANDE DE LOIZA BASIN
50057000 RIO GURABO AT GURAGO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
JAN, 15	1505	46.7	325	25.0	JUN, 11	1219	56	313	30.5
FEB, 11	1236	21.9	226	24.5	JUL, 20	1622	89	294	28.0
MAR, 24	1055	20.4	352	28.0	AUG, 21	1130	37.3	328	30.5
APR, 13	1735	158	184	26.5	SEP, 14	1031	22.6	326	28.5
MAY, 20	1430	58.3	255	30.0					

RIO GRANDE DE LOIZA BASIN
50057025 RIO GURABO NEAR GURABO, PR
WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'56", long 65°59'04", at bridge on Highway 941, 1.2 mi (1.9 km) west-northwest from gaging station 50057000, and 1.0 mi (1.6 km) northwest of Gurabo plaza.

DRAINAGE AREA.--62.8 sq mi (162.7 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
14...	1035	118	256	7.40	24.5	49	6.2	75	39	K14000	9000
DEC											
24...	1220	E50	377	7.40	27.0	5.4	4.9	61	43	K1000	<1000
FEB 1987											
13...	0900	E43	326	7.05	26.0	21	4.2	52	15	5600	3300
APR											
22...	0850	E40	368	7.40	28.5	4.0	3.2	42	17	K180	K100
JUN											
19...	0830	E200	183	7.40	26.0	500	6.0	--	33	K150000	K140000
AUG											
24...	1140	E20	398	7.40	30.0	2.1	2.6	--	17	K1300	K82

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
14...	75	5	18	7.3	19	1	4.7	70	<0.5	20	16
DEC											
24...	--	--	--	--	--	--	--	110	--	--	--
FEB 1987											
13...	--	--	--	--	--	--	--	105	--	--	--
APR											
22...	120	1	27	13	29	1	4.9	120	<0.5	21	29
JUN											
19...	--	--	--	--	--	--	--	58	--	--	--
AUG											
24...	120	0	26	13	32	1	4.7	130	--	23	29

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
14...	0.1	24	151	48.1	46	0.88	0.12	1.00	0.44	0.04
DEC										
24...	--	--	--	--	16	0.81	0.09	0.90	0.20	0.40
FEB 1987										
13...	--	--	--	--	47	1.12	0.08	1.20	0.56	0.74
APR										
22...	0.2	33	229	--	23	1.39	0.11	1.50	0.26	0.14
JUN										
19...	--	--	--	--	745	0.53	0.07	0.60	0.13	0.67
AUG										
24...	0.2	36	240	--	5	0.66	0.14	0.80	0.82	0.68

K = non-ideal count
E = estimate

RIO GRANDE DE LOIZA BASIN

50057025 RIO GURABO NEAR GURABO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
14...	0.4	1.4	--	2.20	1	100	<10	<1	2	20
DEC										
24...	0.6	1.5	--	0.24	--	--	--	--	--	--
FEB 1987										
13...	1.3	2.5	11	0.58	--	--	--	--	--	--
APR										
22...	0.4	1.9	8.4	0.59	2	100	20	<1	13	<10
JUN										
19...	0.8	1.4	--	0.29	--	--	--	--	--	--
AUG										
24...	1.5	2.3	--	0.99	--	--	--	--	--	--

[illegible]

RIO GRANDE DE LOIZA BASIN
50059000 LAGO LOIZA AT DAMSITE, PR

WATER-QUALITY RECORDS

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.--208 sq mi (539 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986										
28...	1535	124	254	7.25	29.0	2.2	29	33	750	800
DEC										
05...	1410	124	221	7.05	28.0	1.9	25	--	K130	50
FEB 1987										
23...	1305	--	244	6.40	28.0	0.9	12	11	40	40
APR										
23...	1205	--	274	7.00	28.5	0.9	12	--	<10	K20
JUN										
08...	1315	--	197	6.80	28.0	0.6	--	<10	K790	510
AUG										
10...	1240	15	935	7.20	30.5	3.0	--	20	30	360

DATE	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)
OCT 1986										
28...	85	<0.5	2	0.15	0.05	0.20	2.50	0.5	3.0	3.2
DEC										
05...	70	--	--	0.57	0.03	0.60	0.16	0.94	1.1	1.7
FEB 1987										
23...	75	--	7	0.46	0.04	0.50	0.15	1.2	1.4	1.9
APR										
23...	84	<0.5	--	0.15	0.05	0.20	0.18	0.52	0.7	0.9
JUN										
08...	67	--	8	0.07	0.03	<0.10	0.51	0.99	1.5	--
AUG										
10...	88	--	18	0.09	0.01	0.10	0.12	1.2	1.3	1.4

DATE	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT 1986										
28...	14	0.20	<10	20	1100	440	50	<0.01	<1	0.04
DEC										
05...	7.5	0.17	--	--	--	--	--	--	--	--
FEB 1987										
23...	8.4	0.17	--	--	--	--	--	--	--	--
APR										
23...	4.0	0.19	50	10	330	209	90	0.01	4	0.04
JUN										
08...	--	0.33	--	--	--	--	--	--	--	--
AUG										
10...	6.2	0.29	--	--	--	--	--	--	--	--

K = non-ideal count
E = estimate

RIO GRANDE DE LOIZA BASIN

50059050 RIO GRANDE DE LOIZA BELOW DAMSITE, PR

LOCATION.--Lat 18°20'33", Long 66°00'20", Hydrologic Unit 21010005, on left bank of Highway 175; 1.1 mi (1.8 Km) downstream of Lago Loiza Dam.

DRAINAGE AREA.--209 mi² (541 Km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to September 1987.

GAGE.--Water-stage recorder. Elevation of gage is 32 ft (10 m), from topographic map.

REMARKS.--No estimated daily discharges during the period of record. Records fair. National Weather Service gage-height telemeter at station. Flow regulated by Lago Loiza Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,400 ft³/s (861 m³/s), June 21, 1987, gage height, 23.62 ft (7.20 m), from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-back water analysis; minimum discharge, 4.9 ft³/s (0.139 m³/s), February 15-17, 1987.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 30,400 ft³/s (861 m³/s), June 21, 1987, gage height, 23.62 ft (7.20 m), from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-back water analysis; minimum discharge, 4.9 ft³/s (0.139 m³/s), February 15-17, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	12	27	6.8	5.8	6.4	10	66	94	333
2	---	---	---	12	341	6.6	5.8	6.4	330	468	58	55
3	---	---	---	12	7.0	6.3	5.8	7.2	348	65	367	73
4	---	---	---	13	7.0	6.5	5.8	6.5	463	65	60	56
5	---	---	---	368	7.2	356	6.2	6.3	10	445	254	54
6	---	---	---	9.8	7.0	6.5	5.9	6.4	9.6	71	57	52
7	---	---	---	450	7.0	6.4	5.8	118	10	270	58	53
8	---	---	---	9.5	6.7	6.1	5.8	6.1	181	62	59	53
9	---	---	---	300	6.6	6.2	5.8	6.4	10	66	57	58
10	---	---	---	9.8	6.8	6.1	5.8	6.4	235	228	56	61
11	---	---	---	9.4	1290	6.1	20	9.7	11	64	56	72
12	---	---	---	9.1	307	6.1	1840	207	9.6	66	55	61
13	---	---	---	9.0	584	6.4	504	5.9	10	67	55	61
14	---	---	---	9.9	421	6.4	450	5.9	18	67	55	60
15	---	---	---	11	5.5	6.9	28	5.7	675	368	56	60
16	---	---	---	365	4.9	7.6	8.8	5.6	452	68	55	62
17	---	---	---	7.6	5.0	14	378	5.6	9.8	67	56	60
18	---	---	---	7.5	5.5	229	6.5	5.8	28	71	56	61
19	---	---	---	7.5	5.7	6.5	6.4	5.9	1070	81	55	61
20	---	---	---	7.6	6.0	6.3	6.3	936	3500	86	54	62
21	---	---	---	7.6	6.3	6.1	6.3	1830	4180	535	53	60
22	---	---	---	7.6	6.3	6.1	6.2	495	9050	60	61	61
23	---	---	---	7.6	6.2	5.8	6.2	383	882	59	52	60
24	---	---	---	7.9	6.1	5.8	6.2	5.3	434	61	51	59
25	---	---	20	8.0	6.1	5.8	6.3	377	394	64	60	58
26	---	---	394	8.0	6.6	6.0	6.3	1570	48	64	60	58
27	---	---	12	8.3	6.9	6.1	6.1	1320	394	63	51	59
28	---	---	12	8.3	6.7	5.8	6.1	13	237	63	53	59
29	---	---	12	8.4	---	5.8	6.2	488	40	63	54	59
30	---	---	12	484	---	5.8	6.4	9.2	461	63	53	60
31	---	---	12	9.3	---	5.8	---	12	---	61	53	---
TOTAL	---	---	---	2204.7	3109.1	773.7	3368.8	7871.7	23510.0	3967	2274	2061
MEAN	---	---	---	71.1	111	25.0	112	254	784	128	73.4	68.8
MAX	---	---	---	484	1290	356	1840	1830	9050	535	367	333
MIN	---	---	---	7.5	4.9	5.8	5.8	5.3	9.6	59	51	52
AC-FT	---	---	---	4370	6170	1530	6680	15610	46630	7870	4510	4090

50059100 RIO GRANDE DE LOIZA BELOW TRUJILLO ALTO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°21'35", long 66°00'15", 100 ft (30 m) downstream of Highway 181 bridge, 0.4 mi (0.6 km) northwest of Trujillo Alto plaza, and 2.2 mi (3.5 km) northeast of Lago Loiza Reservoir.

DRAINAGE AREA.--213 sq mi (552 sq km).

PERIOD OF RECORD.--Water years 1981 to current year.

REMARKS: Flow controlled by Lago Loiza reservoir.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
14...	1400	E350	167	6.95	24.5	270	8.0	96	50	K8400	6900
DEC											
19...	1015	10	339	7.50	26.0	1.0	6.2	77	10	K1500	68
FEB 1987											
17...	1310	12	357	7.40	28.0	1.5	7.5	97	12	K160	K110
APR											
22...	1145	14	407	8.20	29.0	1.8	7.9	104	11	K71000	28000
JUN											
19...	0950	E15	252	7.20	28.0	12	4.4	--	<10	2800	3800
AUG											
21...	1005	E15	288	8.40	30.0	1.3	6.8	--	16	K1000	410

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
14...	42	3	10	4.1	10	0.7	3.5	39	<0.5	12	11
DEC											
19...	--	--	--	--	--	--	--	116	--	--	--
FEB 1987											
17...	--	--	--	--	--	--	--	110	--	--	--
APR											
22...	150	0	37	15	30	1	2.8	280	<0.5	26	29
JUN											
19...	--	--	--	--	--	--	--	87	--	--	--
AUG											
21...	95	0	23	9.1	22	1	3.2	97	--	14	19

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
14...	0.1	16	90	--	238	0.92	0.08	1.00	1.00	0.50
DEC										
19...	--	--	--	--	4	--	<0.01	1.00	0.12	1.1
FEB 1987										
17...	--	--	--	--	6	--	<0.01	1.30	0.02	0.78
APR										
22...	0.2	27	335	12.3	<1	0.49	0.01	0.50	0.13	0.47
JUN										
19...	--	--	--	--	1	0.87	0.13	1.00	1.00	0.90
AUG										
21...	0.2	20	170	--	1	0.29	0.01	0.30	0.04	0.56

K = non-ideal count
E = estimate

RIO GRANDE DE LOIZA BASIN

50059100 RIO GRANDE DE LOIZA BELOW TRUJILLO ALTO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
14...	1.5	2.5	--	0.20	1	200	<10	<1	<1	40
DEC										
19...	1.2	2.2	9.7	0.25	--	--	--	--	--	--
FEB 1987										
17...	0.8	2.1	9.3	0.29	--	--	--	--	--	--
APR										
22...	0.6	1.1	4.9	0.21	1	<100	30	<1	13	<10
JUN										
19...	1.9	2.9	--	0.36	--	--	--	--	--	--
AUG										
21...	0.6	0.9	--	0.25	--	--	--	--	--	--

[illegible]

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR

LOCATION.--Lat 18°19'08", long 65°53'21", Hydrologic Unit 21010005, 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 Loiza.

DRAINAGE AREA.--9.84 mi² (25.48 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 225 ft (68 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--20 years (1968-87), 28.2 ft³/s (0.799 m³/s), 38.92 in/yr (988 mm/yr), 20,430 acre-ft/yr (25.2 hm³/yr); median of yearly mean discharges, 25 ft³/s (0.71 m³/s), 18,100 acre-ft/yr (22 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s (425 m³/s), Sept. 13, 1982, gage height, 13.1 ft (3.99 m), from floodmarks, from rating curve extended above 350 ft³/s (9.91 m³/s) on basis of slope-area measurements and step-backwater analysis made in 1981; minimum daily discharge, 0.80 ft³/s (0.023 m³/s), July 24, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 12	1915	*2,070 58.6	*5.88 1.792

Minimum discharge, 3.5 ft³/s (0.099 m³/s), Apr. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	11	21	10	21	6.6	4.2	7.1	20	24	12	11
2	6.3	13	20	9.7	12	6.4	4.0	7.0	77	25	10	19
3	5.7	9.8	24	9.6	9.7	6.3	4.0	8.6	38	26	30	10
4	5.2	39	19	10	8.6	11	3.7	8.9	25	29	19	8.3
5	5.0	54	17	15	8.1	14	3.8	21	20	28	19	7.7
6	4.9	29	15	22	7.8	8.2	4.3	96	18	22	13	7.1
7	6.9	47	16	33	8.7	7.0	4.4	13	17	23	11	6.7
8	10	57	15	14	8.1	6.0	4.4	8.7	16	22	10	6.7
9	14	33	14	11	7.1	6.4	3.7	7.5	18	19	13	7.0
10	11	41	16	10	6.4	6.2	e28	e63	17	19	14	8.5
11	7.3	29	26	10	126	5.8	e20	59	15	17	10	15
12	6.1	262	17	9.5	57	8.1	283	74	15	16	9.3	10
13	6.6	55	22	9.6	17	6.2	114	21	18	15	8.9	7.8
14	10	40	22	9.8	18	5.5	42	14	14	15	8.3	7.2
15	13	49	18	10	14	5.4	25	12	63	16	8.8	7.9
16	12	105	16	9.4	10	7.6	16	11	40	15	8.6	7.3
17	16	68	14	9.0	9.1	24	23	10	20	14	8.1	7.9
18	9.0	39	13	8.6	8.7	12	16	e16	18	14	8.5	22
19	7.3	31	13	8.6	8.3	7.7	12	37	133	13	9.3	21
20	6.4	28	14	8.4	8.0	6.4	11	114	333	13	10	19
21	6.3	21	13	8.4	8.0	6.2	10	98	224	14	9.6	8.9
22	60	19	12	8.3	7.8	5.8	9.3	86	400	14	8.3	11
23	13	17	11	9.6	7.1	5.3	8.8	42	74	12	8.2	8.1
24	9.7	16	11	12	7.1	5.0	8.3	26	47	12	7.6	7.6
25	7.4	29	15	9.0	6.8	5.3	8.3	e156	38	13	8.6	8.6
26	18	35	13	8.3	6.8	5.1	7.6	e113	33	13	23	7.3
27	14	41	19	6.8	8.8	4.4	7.6	120	31	13	9.1	6.5
28	13	25	22	6.1	7.9	4.2	7.3	53	34	16	8.3	5.9
29	7.4	32	13	5.9	---	4.3	7.0	33	28	12	7.8	20
30	6.0	33	12	87	---	4.3	6.9	28	27	12	8.9	74
31	5.5	---	11	33	---	4.2	---	24	---	14	8.2	---
TOTAL	329.2	1307.8	504	431.6	433.9	220.9	707.6	1387.8	1871	530	348.4	375.0
MEAN	10.6	43.6	16.3	13.9	15.5	7.13	23.5	44.8	62.4	17.1	11.2	12.5
MAX	60	262	26	87	126	24	279	156	400	29	30	74
MIN	4.9	9.8	11	5.9	6.4	4.2	3.7	7.0	14	12	7.6	5.9
AC-FT	653	2590	1000	856	861	438	1400	2750	3710	1050	691	744
CFSM	1.08	4.43	1.65	1.41	1.57	.72	2.38	4.55	6.34	1.74	1.14	1.27
IN.	1.24	4.94	1.91	1.63	1.64	.84	2.66	5.25	7.07	2.00	1.32	1.42

CAL YR 1986 TOTAL 7284.4 MEAN 20.0 MAX 571 MIN 4.0 AC-FT 14450 CFSM 2.03 IN. 27.54
WTR YR 1987 TOTAL 8443.2 MEAN 23.1 MAX 400 MIN 3.7 AC-FT 16750 CFSM 2.35 IN. 31.92

e Estimated

RIO GRANDE DE LOIZA BASIN

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 14	1413	32.5	103	24.5	MAY, 22	1425	98.7	117	24.0
DEC, 23	1206	10.7	202	22.0	JUN, 10	1442	17.7	210	28.0
JAN, 26	1514	7.33	217	24.5	JUL, 16	1207	15.4	214	26.0
FEB, 12	1625	31	149	23.5	AUG, 17	1612	8.19	236	30.0
MAR, 03	1000	5.97	236	22.0	SEP, 09	1518	7.3	232	30.0
APR, 15	1117	24	157	23.0					

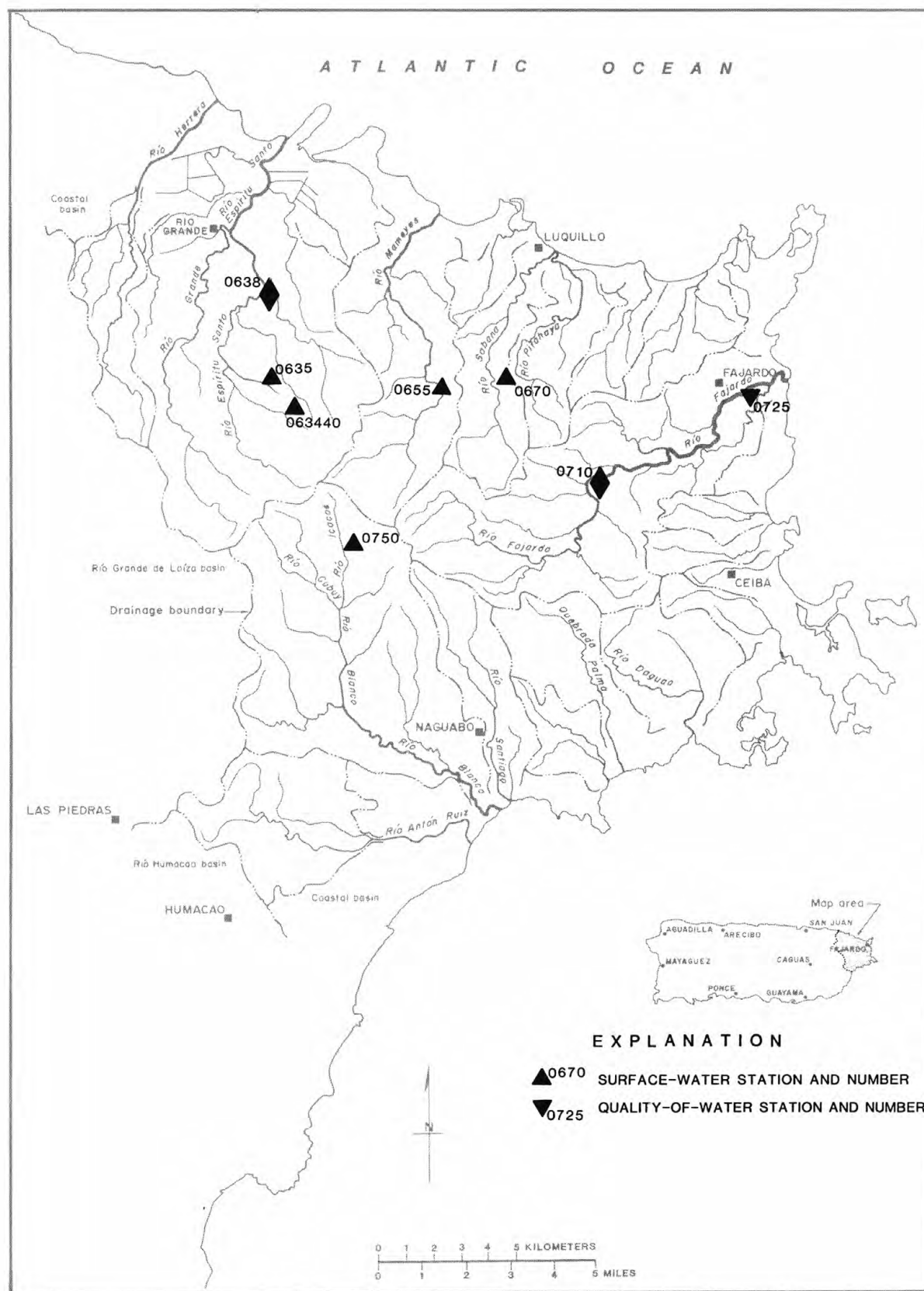


Figure 19.--Northeastern river basins--Río Herrera to Río Antón Ruíz basins.

RIO ESPIRITU SANTO BASIN

50063440 QUEBRADA SONADORA NEAR EL VERDE, PR

LOCATION.--Lat 18°19'24", Long 65°49'03", Hydrologic Unit 21010005, in Caribbean National Forest, at El Yunque, 0.6 mi (1.0 km) upstream from Rio Espiritu Santo, 0.2 mi (0.3 km) upstream from Highway 186, and about 1.2 mi (1.9 km) south of El Verde.

DRAINAGE AREA.--1.01 mi² (2.62 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,230 ft (375 m), from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,160 ft³/s (61.2 m³/s), May 14, 1985, gage height, 9.36 ft (2.853 m) from rating curve extended above 20 ft³/s (0.57 m³/s) on basis of step-backwater analysis; minimum discharge, 0.20 ft³/s (0.006 m³/s), July 14, 15, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 7	1915	535 15.2	7.16 2.182	Apr. 12	1245	*645 18.3	*7.41 2.258

Minimum discharge, 0.84 ft³/s (0.024 m³/s), Apr. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	7.6	9.1	3.8	4.1	1.6	1.5	1.2	5.0	4.4	e3.2	e9.8
2	1.7	7.1	9.8	3.6	2.4	1.4	1.3	1.6	8.0	6.8	e29	e11
3	1.5	7.4	24	3.4	1.9	1.9	1.3	2.5	5.7	8.7	e8.5	e6.5
4	1.2	24	9.3	4.0	1.6	8.2	1.2	2.6	4.5	e14	e10	e2.6
5	1.1	14	12	5.9	1.6	3.8	2.3	5.4	3.7	e8.6	e3.1	e2.5
6	1.1	9.6	7.5	9.2	1.8	1.8	2.9	13	3.5	e6.2	e2.8	e2.3
7	50	25	13	9.7	3.3	1.6	1.7	2.3	3.2	e9.1	e2.9	e2.3
8	27	24	7.6	4.9	1.6	1.4	1.5	1.6	2.9	e7.8	e2.9	e2.2
9	38	11	11	3.9	1.3	1.3	1.1	1.4	5.9	e8.4	e2.8	e2.2
10	9.3	18	17	3.4	1.2	1.2	1.3	1.3	5.2	e10	e2.9	e2.3
11	5.0	9.0	23	3.2	22	1.0	8.0	12	3.6	e5.1	e2.9	e7.6
12	3.5	39	8.9	3.0	23	1.3	145	22	e5.5	e4.1	e3.2	11
13	8.4	16	11	2.9	3.5	1.0	52	7.7	e5.6	e3.4	e3.5	3.3
14	16	14	14	3.3	8.1	.89	27	7.6	e4.3	e2.9	e4.8	2.4
15	7.7	28	13	3.8	4.8	11	9.1	5.9	e6.0	e2.6	e6.8	2.8
16	8.9	29	8.2	3.7	2.8	26	5.8	2.9	e5.3	e2.3	e4.1	2.1
17	9.0	20	7.1	2.9	2.3	78	5.6	9.6	e3.7	1.9	e3.8	6.4
18	4.1	9.4	6.3	2.6	2.0	7.1	4.2	38	e20	1.8	e4.8	6.7
19	3.3	7.8	6.0	2.5	1.8	4.3	3.7	33	e50	2.5	e9.3	2.7
20	2.9	6.8	6.1	2.7	1.7	3.4	3.3	76	e47	1.5	e8.8	2.4
21	2.6	5.4	5.6	2.5	1.8	2.9	2.9	42	e58	4.5	e2.9	1.7
22	7.0	5.0	5.1	2.3	1.5	2.6	2.7	e43	e82	2.4	e2.8	15
23	3.2	4.6	4.7	8.0	1.4	2.4	2.4	e10	e26	1.3	e2.7	4.0
24	2.7	5.7	5.2	4.1	1.3	2.2	2.2	e8.6	e10	1.1	e2.6	2.3
25	5.7	15	18	2.8	1.2	3.1	2.0	e17	e6.2	1.5	e6.6	2.2
26	3.4	32	11	2.6	1.4	2.6	1.8	e13	e5.6	2.0	e14	1.6
27	4.9	37	8.9	2.2	9.4	2.0	1.7	12	5.3	e9.7	e3.6	1.3
28	4.4	14	8.1	2.0	3.1	1.7	1.5	8.4	7.0	e3.0	e2.9	1.3
29	2.9	16	5.3	2.0	---	1.7	1.4	6.5	5.9	e2.0	e2.8	25
30	4.5	13	4.6	27	---	1.6	1.3	5.8	6.3	e2.0	e2.8	32
31	4.3	---	4.1	15	---	1.5	---	5.5	---	e2.1	e14	---
TOTAL	247.7	474.4	304.5	152.9	113.9	182.49	299.7	419.4	410.9	143.7	177.8	177.5
MEAN	7.99	15.8	9.82	4.93	4.07	5.89	9.99	13.5	13.7	4.64	5.74	5.92
MAX	50	39	24	27	23	78	145	76	82	14	29	32
MIN	1.1	4.6	4.1	2.0	1.2	.89	1.1	1.2	2.9	1.1	2.6	1.3
AC-FT	491	941	604	303	226	362	594	832	815	285	353	352
CFSM	7.91	15.7	9.73	4.88	4.03	5.83	9.89	13.4	13.6	4.59	5.68	5.86
IN.	9.12	17.47	11.22	5.63	4.20	6.72	11.04	15.45	15.13	5.29	6.55	6.54

CAL YR 1986 TOTAL 2454.70 MEAN 6.73 MAX 72 MIN .49 AC-FT 4870 CFSM 6.66 IN. 90.41
WTR YR 1987 TOTAL 3104.89 MEAN 8.51 MAX 145 MIN .89 AC-FT 6160 CFSM 8.42 IN. 114.36

e Estimated

RIO ESPIRITU SANTO BASIN

50063440 QUEBRADA SONADORA NEAR EL VERDE, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 13	1128	10.2	51	21.5	MAY, 26	1439	9.69	41	23.0
DEC, 15	1208	14.7	45	20.5	JUN, 10	1200	5.78	49	23.0
JAN, 22	1027	2.27	65	25.0	JUL, 16	0932	2.42	54	22.5
FEB, 10	1020	1.15	60	20.0	AUG, 19	1054	17.8	38	22.0
MAR, 06	0929	1.76	59	19.5	SEP, 17	1042	1.93	56	23.0
APR, 16	1116	5.93	48	21.5					

RIO ESPIRITU SANTO BASIN

50063500 QUEBRADA TORONJA AT EL VERDE, PR

LOCATION.--Lat 18°19'43", long 65°49'14", Hydrologic Unit 21010005, in Caribbean National Forest, at downstream side of culvert on Highway 186, 0.2 mi (0.3 km) upstream from Rio Espiritu Santo, and about 0.9 mi (1.4 km) south of El Verde.

DRAINAGE AREA.--0.064 mi² (0.166 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1983 to current year.

GAGE.--Water-stage recorder and concrete broad-V-notch crested weir. Elevation of gage is 876 ft (267 m), from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33 ft³/s (0.93 m³/s), March 15, 1987, gage height, 1.94 ft (0.591 m), from rating curve extended above 1.0 ft³/s (0.03 m³/s) on basis of step-backwater analysis; minimum discharge, no flow for part of each day Apr. 10, 17, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13 ft³/s (0.37 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 15	2300	*33 0.93	*1.94 0.591	Apr. 13	1645	14 0.40	1.66 0.506
Apr. 12	1530	22 0.62	1.77 0.539				

Minimum discharge, 0.03 ft³/s (0.001 m³/s), Mar. 11, Jul. 29, Aug. 07.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.16	.66	e.18	.13	.05	e.07	.12	.29	.29	.04	.33
2	.04	.23	.65	e.17	.09	.05	e.07	.12	.37	.38	.04	.49
3	.04	.20	1.2	e.16	.08	.06	e.06	.10	.28	.37	.37	.36
4	.04	.91	.62	e.19	.08	.11	.11	.07	.24	.51	.17	.20
5	.04	.46	.64	e.30	.07	.06	.15	.09	.25	.36	.12	.14
6	.05	.75	.63	e.45	.06	.05	.14	.14	.25	.27	.05	.13
7	1.1	1.1	.76	e.46	.06	.04	.11	.05	.26	.33	.05	.11
8	.95	1.1	.60	e.24	.05	.04	.09	.05	.24	.35	.06	.09
9	1.2	.70	.64	e.18	.05	.04	.09	.05	.37	.28	.08	.10
10	.53	1.7	.76	e.16	.05	.04	.13	.05	.29	.29	.06	.12
11	.19	.83	1.3	e.15	.15	.04	.47	.11	.17	.18	.08	.29
12	.14	2.2	.72	e.14	.47	.04	5.8	.20	.23	.16	.08	.32
13	.37	1.0	1.3	e.13	.08	.04	4.2	.15	.24	.14	.07	.13
14	.43	.92	1.3	e.16	.18	.04	2.0	.08	.17	.13	.11	.12
15	.18	1.7	e.90	e.18	.11	.88	.95	.05	.26	.15	.14	.12
16	.40	2.0	e.42	e.17	.08	1.1	.62	.04	.22	.12	.11	.08
17	.25	1.6	e.36	e.14	.07	3.6	.51	.31	.14	.11	.10	.44
18	.16	1.0	e.32	e.12	.07	.49	.40	1.2	1.7	.10	.13	.29
19	.14	.82	e.30	e.15	.07	.27	.34	1.0	1.7	.09	.39	.12
20	.12	.71	e.30	e.13	.06	.21	.30	1.9	1.7	.09	.26	.10
21	.11	.61	e.27	e.10	.07	.19	.27	1.2	2.0	.09	.09	.11
22	.15	.56	e.26	e.08	.06	.15	.21	1.3	3.0	.06	.07	.51
23	.11	.57	e.22	.16	.05	.14	.18	.53	1.0	.06	.07	.16
24	.09	.59	e.25	.12	.05	.13	.16	.42	.62	.06	.06	.12
25	.11	.71	e.1.1	.12	.05	.14	.15	1.0	.49	.06	.27	.10
26	.11	1.4	e.60	.12	.06	.12	.15	.70	.40	.06	.35	.08
27	.32	1.2	e.42	.10	.13	e.09	.14	.67	.37	.08	.09	.06
28	.15	1.0	e.40	.09	.06	e.09	.13	.45	.41	.08	.07	.06
29	.14	1.0	e.26	.09	---	e.08	.12	.35	.37	.04	.08	.50
30	.18	.91	e.22	.29	---	e.08	.12	.29	.40	.04	.14	1.1
31	.15	---	e.20	.35	---	e.08	---	.32	---	.05	.52	---
TOTAL	8.04	28.64	18.58	5.58	2.59	8.54	18.24	13.11	18.43	5.38	4.32	6.88
MEAN	.26	.95	.60	.18	.092	.28	.61	.42	.61	.17	.14	.23
MAX	1.2	2.2	1.3	.46	.47	3.6	5.8	1.9	3.0	.51	.52	1.1
MIN	.04	.16	.20	.08	.05	.04	.06	.04	.14	.04	.04	.06
AC-FT	16	57	37	11	5.1	17	36	26	37	11	8.6	14
CFSM	4.32	15.9	9.99	3.00	1.54	4.59	10.1	7.05	10.2	2.89	2.32	3.82
IN.	4.98	17.76	11.52	3.46	1.61	5.29	11.31	8.13	11.43	3.34	2.68	4.27

CAL YR 1986 TOTAL 115.88 MEAN .32 MAX 2.9 MIN .04 AC-FT 230 CFSM 5.29 IN. 71.85
WTR YR 1987 TOTAL 138.33 MEAN .38 MAX 5.8 MIN .04 AC-FT 274 CFSM 6.32 IN. 85.76

e Estimated

RIO ESPIRITU SANTO BASIN

50063500 QUEBRADA TORONJA AT EL VERDE, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 13	1400	1.04	102	22.5	MAY, 20	1040	3.32	50	24.0
DEC, 15	1556	1.02	101	22.5	JUN, 10	0958	0.56	96	23.0
JAN, 22	1220	0.13	123	24.5	JUL, 16	0744	0.13	110	24.0
FEB, 10	1217	0.05	129	21.5	AUG, 19	1251	0.27	94	23.5
MAR, 06	1101	0.04	124	21.0	SEP, 17	1219	0.08	115	23.5
APR, 16	1307	0.62	87	22.5					

RIO ESPIRITU SANTO BASIN

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR

LOCATION.--Lat 18°21'37", long 65°48'49", Hydrologic Unit 21010005, 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 Rio Grande.

DRAINAGE AREA.--8.62 mi² (22.33 km²).

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 and crest-stage gage. Elevation of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--21 years (1967-87), 57.9 ft³/s (1.640 m³/s), 91.22 in/yr (2,317 mm/yr), 41,950 acre-ft/yr (51.7 hm³/yr); median of yearly mean discharges, 52.7 ft³/s (1.49 m³/s), 38,200 acre-ft/yr (47 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s), Dec. 2, 1983, gage height, 12.07 ft (3.679 m), from rating curve extended above 600 ft³/s (17.0 m³/s) on basis of step-backwater analysis; minimum discharge, 4.0 ft³/s (0.113 m³/s), July 3-5, 1975, Apr. 14, 15, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 9	0830	3,140 88.9	7.32 2.231	May 18	2130	4,700 133	8.44 2.572
Jan. 30	0700	3,260 92.3	7.41 2.258	May 20	0615	3,100 87.8	7.28 2.219
Apr. 12	1345	*7,960 225	*10.21 3.112				

Minimum discharge, 7.7 ft³/s (0.218 m³/s), Mar. 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	41	46	19	33	12	15	13	38	44	26	61
2	15	42	50	18	18	10	16	13	57	79	e22	120
3	14	41	135	18	16	11	17	16	46	97	196	82
4	13	162	49	19	14	41	17	16	34	140	74	33
5	13	107	63	22	14	21	21	15	27	95	67	22
6	12	68	37	48	15	12	27	94	26	42	27	19
7	257	172	66	53	24	11	19	17	25	79	22	18
8	230	188	35	23	14	10	17	14	23	75	20	18
9	382	98	45	18	13	9.3	15	14	47	51	26	19
10	84	166	77	17	12	9.1	48	13	40	99	22	45
11	34	66	138	16	128	8.6	57	83	25	42	18	54
12	24	346	44	15	217	11	1330	137	30	32	17	96
13	48	123	52	15	25	8.8	439	32	49	29	16	22
14	112	133	84	15	54	8.0	315	36	26	29	16	18
15	60	214	79	19	36	52	80	30	80	32	31	20
16	58	289	44	17	19	288	45	17	82	29	24	e17
17	59	143	36	14	16	881	42	16	35	25	16	e14
18	27	76	31	14	15	52	32	346	330	25	62	68
19	21	65	29	13	14	24	28	317	338	26	150	23
20	19	50	33	13	14	18	25	699	357	24	82	23
21	18	39	29	13	15	15	22	337	430	37	26	17
22	54	36	24	12	13	14	21	284	563	29	19	93
23	22	32	22	24	11	15	19	112	150	22	17	32
24	19	36	23	17	11	17	18	69	82	20	16	19
25	35	127	105	13	10	19	16	284	65	21	18	19
26	24	222	57	12	11	19	16	164	57	24	124	17
27	35	223	46	11	46	16	14	141	60	23	25	16
28	34	101	42	11	20	15	14	79	78	65	19	16
29	26	88	26	11	---	15	13	51	59	21	21	164
30	32	82	22	176	---	16	13	45	65	21	37	337
31	27	---	21	98	---	15	---	45	---	32	76	---
TOTAL	1829	3576	1590	804	848	1673.8	2771	3549	3324	1409	1332	1522
MEAN	59.0	119	51.3	25.9	30.3	54.0	92.4	114	111	45.5	43.0	50.7
MAX	382	346	138	176	217	881	1330	699	563	140	196	337
MIN	12	32	21	11	10	8.0	13	13	23	20	16	14
AC-FT	3630	7090	3150	1590	1680	3320	5500	7040	6590	2790	2640	3020
CFSM	6.84	13.8	5.95	3.01	3.51	6.26	10.7	13.3	12.9	5.27	4.98	5.89
IN.	7.89	15.43	6.86	3.47	3.66	7.22	11.96	15.32	14.34	6.08	5.75	6.57

CAL YR 1986 TOTAL 19508.3 MEAN 53.4 MAX 741 MIN 8.4 AC-FT 38690 CFSM 6.20 IN. 84.19
WTR YR 1987 TOTAL 24227.8 MEAN 66.4 MAX 1330 MIN 8.0 AC-FT 48060 CFSM 7.70 IN. 104.56

e Estimated

RIO ESPIRITU SANTO BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958, 1961-66, 1968 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
17...	1105	61	55	6.65	24.5	6.0	8.4	101	12	3600	680
DEC											
04...	1010	50	76	6.70	20.0	1.9	8.2	91	15	430	690
FEB 1987											
10...	0950	12	113	7.20	23.0	0.6	9.2	108	<10	K640	690
APR											
15...	1015	E75	72	7.00	22.5	7.0	8.9	103	15	2900	3000
JUN											
09...	0945	25	109	7.80	26.5	1.5	8.2	--	130	K910	2900
AUG											
12...	1050	16	139	7.80	28.0	0.6	8.0	--	10	K1100	K99000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD WH WAT MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
17...	16	1	3.3	2.0	5.4	0.6	1.0	15	<0.5	6.8	7.4
DEC											
04...	--	--	--	--	--	--	--	25	--	--	--
FEB 1987											
10...	--	--	--	--	--	--	--	37	--	--	--
APR											
15...	24	6	5.4	2.6	6.6	0.6	0.7	18	<0.5	4.6	8.4
JUN											
09...	--	--	--	--	--	--	--	43	--	--	--
AUG											
12...	39	0	8.3	4.5	8.5	0.6	0.5	42	--	5.2	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
17...	0.1	12	47	7.79	6	--	<0.01	0.10	0.05	0.45
DEC										
04...	--	--	--	--	1	--	<0.01	0.10	0.05	0.65
FEB 1987										
10...	--	--	--	--	2	--	<0.01	0.10	0.03	0.47
APR										
15...	<0.1	14	53	--	4	--	<0.01	0.10	0.01	0.49
JUN										
09...	--	--	--	--	<1	--	<0.01	0.10	0.05	0.45
AUG										
12...	0.1	23	86	3.72	1	0.09	0.01	0.10	0.02	0.48

K = non-ideal count
E = estimate

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 17...	0.5	0.6	--	0.03	<1	<100	30	<1	5	<10
DEC 04...	0.7	0.8	3.5	0.02	--	--	--	--	--	--
FEB 1987 10...	0.5	0.6	--	0.01	--	--	--	--	--	--
APR 15...	0.5	0.6	2.7	0.02	<1	<100	<10	<1	2	<10
JUN 09...	0.2	0.3	--	0.05	--	--	--	--	--	--
AUG 12...	0.5	0.6	--	0.08	--	--	--	--	--	--

[illegible]

RIO MAMEYES BASIN

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50065500 RIO MAMEYES NEAR SABANA, PR

LOCATION.--Lat 18°19'46", long 65°45'04", on left bank, at bridge on Highway 988, 1.4 mi (2.3 km) west of Sabana, 2.0 mi (3.2 km) downstream from Rio de la Mina, and 3.2 mi (5.1 km) southeast of Mameyes.

DRAINAGE AREA.--6.88 mi² (17.82 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1967 to December 1973. June 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 275 ft (84 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--10 years (1968-73, 1984-87), 57.4 ft³/s (1.626 m³/s), 113.30 in/yr (2,878 mm/yr), 41,590 acre-ft/yr (51.3 hm³/yr); median of yearly mean discharges, 59 ft³/s (1.67 m³/s), 42,700 acre-ft/yr (53 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,800 ft³/s (561 m³/s), Sept. 4, 1973, gage height, 13.02 ft (3.968 m), from rating curve extended above 1,800 ft³/s (51.0 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 5.1 ft³/s (0.144 m³/s), Apr. 8, 9, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 9	0800	5,780 164	8.41 2.563	May 20	0630	4,830 137	7.91 2.411
Apr. 12	1530	*6,320 179	*8.67 2.643				

Minimum daily discharge, 6.4 ft³/s (0.181 m³/s), Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	28	e40	26	31	13	23	11	23	23	e25	34
2	11	41	e43	23	15	12	23	14	33	43	e130	86
3	10	27	e120	21	12	15	24	12	30	48	e70	43
4	10	83	e50	28	11	58	19	11	29	76	e64	25
5	10	93	e62	50	11	28	20	11	24	59	e30	22
6	11	46	e35	70	15	20	31	50	21	36	e21	20
7	124	132	e70	50	22	23	22	14	21	45	e18	19
8	105	145	e30	40	13	21	21	12	21	45	20	19
9	257	74	e50	35	11	20	17	12	32	43	45	22
10	53	109	e120	35	10	22	16	11	31	65	25	33
11	23	e50	e90	34	69	40	82	138	49	33	21	40
12	20	e170	e50	32	205	59	565	90	35	e32	20	129
13	56	e70	e62	30	56	30	163	17	41	e31	20	29
14	118	e76	e100	57	58	26	212	18	39	e31	20	24
15	46	e120	e98	54	39	75	45	18	27	e34	95	28
16	57	e150	e56	36	17	422	21	15	21	e30	30	21
17	65	e90	e45	29	15	667	19	14	48	e22	20	22
18	24	e50	e40	27	13	112	14	302	53	e21	57	e40
19	17	e40	e37	26	12	59	14	130	58	e27	145	e29
20	12	e30	e42	30	11	42	14	478	40	31	56	e28
21	11	e23	40	26	12	32	13	220	35	26	30	e22
22	99	e21	33	24	11	32	13	205	e50	e22	25	e120
23	17	e19	29	48	9.9	26	13	72	e290	e30	22	e50
24	13	e21	31	29	10	25	13	59	e150	e41	20	e26
25	52	e60	133	24	9.6	63	14	145	e80	e42	22	e25
26	17	e140	102	22	14	22	14	179	69	e37	40	e22
27	16	e150	82	21	63	23	13	115	57	37	20	e21
28	14	e80	74	20	19	26	12	57	57	52	18	e21
29	13	e70	41	23	---	25	12	58	37	e25	22	e150
30	12	e60	33	178	---	24	11	38	31	e22	27	e200
31	15	---	29	93	---	23	---	43	---	e23	55	---
TOTAL	1323	2268	1867	1241	794.5	2085	1493	2569	1532	1132	1233	1370
MEAN	42.7	75.6	60.2	40.0	28.4	67.3	49.8	82.9	51.1	36.5	39.8	45.7
MAX	257	170	133	178	205	667	565	478	290	76	145	200
MIN	10	19	29	20	9.6	12	11	11	21	21	18	19
AC-FT	2620	4500	3700	2460	1580	4140	2960	5100	3040	2250	2450	2720
CFSM	6.20	11.0	8.75	5.82	4.12	9.78	7.23	12.0	7.42	5.31	5.78	6.64
IN.	7.15	12.26	10.09	6.71	4.30	11.27	8.07	13.89	8.28	6.12	6.67	7.41

CAL YR 1986 TOTAL 18541.4 MEAN 50.8 MAX 675 MIN 9.6 AC-FT 36780 CFSM 7.38 IN. 100.25
WTR YR 1987 TOTAL 18907.5 MEAN 51.8 MAX 667 MIN 9.6 AC-FT 37500 CFSM 7.53 IN. 102.23

e Estimated

RIO MAMEYES BASIN

50065500 RIO MAMEYES NEAR SABANA, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 10	1040	108	52	23.0	MAY, 20	1440	206	50	22.0
DEC, 20	1443	42.9	101	22.0	JUN, 09	1118	30.8	100	25.0
JAN, 26	1131	21.4	111	24.5	JUL, 07	0947	58	93	24.0
FEB, 11	1153	43.7	100	22.0	AUG, 07	1101	19.5	102	24.5
MAR, 05	1007	27.5	91	21.0	SEP, 18	1238	26.8	84	24.5
APR, 14	1321	140	64	23.0					

RIO SABANA BASIN

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50067000 RIO SABANA AT SABANA, PR

LOCATION.--Lat 18°19'52", long 65°43'52", Hydrologic Unit 21010005, on right bank along Highway 988, 0.3 mi (0.5 km) north of junction of Highways 988 and 983 in Sabana, and 3.3 mi (5.3 km) south of Luquillo.

DRAINAGE AREA.--3.96 mi² (10.26 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 260 ft (80 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--8 years (1980-87), 19.1 ft³/s (0.541 m³/s), 65.50 in/yr (1,664 mm/yr), 13,840 acre-ft/yr (17.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,010 ft³/s (255 m³/s), Apr. 21, 1983, gage height, 19.35 ft (5.898 m), from floodmark, from rating curve extended above 200 ft³/s (5.66 m³/s) on basis of step-backwater analysis and slope-area measurement; minimum discharge, 0.86 ft³/s (0.024 m³/s), Apr. 17, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s (42.5 m³/s) and maximum (*):

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)
Jan. 30	0530	1,690	47.9	12.44	3.792	May 18	2100	2,840	80.4	14.01	4.270
Mar. 16	0045	1,540	43.6	12.19	3.716	May 25	1845	*2,970	84.1	*14.16	4.316
Mar. 17	0330	2,480	70.2	13.56	4.133	May 26	1630	2,050	58.0	12.97	3.953

Minimum discharge, 1.1 ft³/s (0.031 m³/s), May 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	5.5	51	12	9.2	3.0	3.0	2.8	16	20	6.5	7.0
2	1.9	9.9	51	11	5.3	2.8	2.8	2.4	16	20	6.0	32
3	1.7	5.3	90	11	4.4	3.3	3.1	2.4	39	21	14	13
4	1.5	6.9	41	17	3.8	31	2.7	2.3	17	22	9.7	4.8
5	1.4	17	39	29	6.4	7.4	2.6	2.4	13	20	7.8	7.7
6	1.9	9.5	33	26	18	3.8	3.2	5.1	12	16	5.8	3.6
7	29	25	60	20	6.8	4.2	2.4	3.3	11	18	5.4	3.4
8	44	48	33	13	3.8	2.9	2.3	1.7	10	19	5.4	4.6
9	146	19	38	11	3.2	3.0	2.0	1.6	11	16	7.7	4.3
10	24	26	36	10	3.0	2.5	1.7	1.4	11	18	5.5	8.1
11	7.1	11	91	9.5	32	9.5	40	20	9.8	14	5.0	11
12	3.7	70	36	9.1	20	25	163	12	12	13	4.7	46
13	8.8	29	32	8.9	7.5	3.3	42	3.3	10	12	4.2	4.6
14	12	42	40	9.3	8.5	2.8	74	2.1	8.4	12	4.0	3.6
15	8.4	37	45	9.6	7.5	82	16	1.9	43	11	74	4.9
16	4.7	147	37	8.5	4.2	301	7.9	1.3	22	11	8.9	3.5
17	10	26	32	7.5	3.5	508	6.4	2.0	10	10	5.0	3.0
18	4.6	17	28	7.2	3.5	31	5.2	345	12	10	6.0	3.4
19	3.0	14	30	6.9	3.3	16	5.0	148	112	11	27	2.9
20	11	12	29	7.9	3.4	12	4.3	321	269	15	11	2.7
21	8.7	11	26	6.5	3.6	9.2	3.8	61	207	14	5.4	2.7
22	101	12	23	6.2	3.3	7.5	3.9	77	342	9.8	4.3	4.1
23	22	9.4	22	9.1	3.2	6.5	3.2	23	59	8.7	3.9	3.0
24	13	9.9	21	5.3	3.2	6.4	3.0	25	37	8.1	3.6	3.1
25	9.6	148	45	4.5	2.9	7.7	2.8	206	31	8.1	5.1	2.7
26	6.6	169	30	4.4	3.7	5.6	2.6	182	62	7.7	4.7	2.6
27	5.8	113	29	4.1	7.6	4.6	2.5	65	38	7.9	3.8	2.4
28	5.2	70	44	4.4	3.7	4.3	2.5	31	27	8.8	3.6	2.3
29	7.5	55	18	5.9	---	3.9	4.3	34	27	7.1	4.0	10
30	5.4	44	14	94	---	3.5	5.8	24	23	6.8	6.6	10
31	4.7	---	13	22	---	3.2	---	18	---	7.0	11	---
TOTAL	516.7	1218.4	1157	410.8	188.5	1116.9	424.0	1628.0	1517.2	403.0	279.6	217.0
MEAN	16.7	40.6	37.3	13.3	6.73	36.0	14.1	52.5	50.6	13.0	9.02	7.23
MAX	146	169	91	94	32	508	163	345	342	22	74	46
MIN	1.4	5.3	13	4.1	2.9	2.5	1.7	1.3	8.4	6.8	3.6	2.3
AC-FT	1020	2420	2290	815	374	2220	841	3230	3010	799	555	430
CFSM	4.21	10.3	9.42	3.35	1.70	9.10	3.57	13.3	12.8	3.28	2.28	1.83
IN.	4.85	11.45	10.87	3.86	1.77	10.49	3.98	15.29	14.25	3.79	2.63	2.04

CAL YR 1986 TOTAL 7075.2 MEAN 19.4 MAX 195 MIN 1.4 AC-FT 14030 CFSM 4.89 IN. 66.46
WTR YR 1987 TOTAL 9077.1 MEAN 24.9 MAX 508 MIN 1.3 AC-FT 18000 CFSM 6.28 IN. 85.27

RIO SABANA BASIN

50067000 RIO SABANA AT SABANA, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 10	1331	29.2	103	24.0	MAY, 22	1425	74.7	58	23.5
DEC, 18	1225	28.2	101	22.0	JUN, 11	1340	9.7	103	27.0
JAN, 23	1419	13.8	111	24.5	JUL, 06	0947	15	101	26.0
FEB, 11	1505	10.5	90	23.0	AUG, 07	1440	5.0	122	26.0
MAR, 05	1216	5.96	103	24.0	SEP, 08	1447	5.6	111	27.0
APR, 14	1526	34.6	78	23.0					

50071000 RIO FAJARDO NEAR FAJARDO, PR

LOCATION.--Lat 18°17'56", long 65°41'42", Hydrologic Unit 21010005, on left bank off Highway 976, 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 Paraiso, and 3.3 mi (5.3 km) southwest of Fajardo.

DRAINAGE AREA.--14.9 mi² (38.6 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 137.60 ft (41.940 m) above mean sea level. Due to flood damage, gage datum has had 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 Mar 25, 1975, 138.60 ft (42.245 m).

REMARKS.--Records fair, except those for estimated daily discharges which are poor. National Weather Service gage-height telemeter at station. Low flow affected by diversions for water supply about 400 m upstream from gaging station (estimated mean daily discharges is 9.0 ft³/s (0.255 m³/s).

AVERAGE DISCHARGE.--26 years (1962-87), 68.1 ft³/s (1.928 m³/s), 62.07 in/yr (1,576 mm/yr), 49,340 acre-ft/yr (60.8 hm³/yr); median of yearly mean discharges, 69 ft³/s (1.95 m³/s), 50,000 acre-ft/yr (62 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft³/s (555 m³/s), Oct. 24, 1974, gage height, 13.62 ft (4.151 m), datum then in use, from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-backwater analysis and slope-area measurements of peak discharges; minimum discharge, 0.86 ft³/s (0.024 m³/s), May 3, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s (99.1 m³/s) and maximum (*):

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)
Mar. 16	0100	4,700	133	8.89	2.710	May 25	1915	*10,800	306	*12.79	3.898
May 18	1545	6,540	185	10.26	3.127	May 26	1715	5,940	168	9.84	2.999
May 18	2100	6,670	189	10.35	3.155						

Minimum discharge, 7.9 ft³/s (0.224 m³/s), Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	27	81	28	28	11	18	19	69	61	23	20
2	12	48	88	26	18	10	17	17	79	59	21	42
3	11	26	182	25	16	11	17	22	75	83	83	20
4	9.5	27	66	26	19	79	16	23	57	76	31	17
5	8.8	79	70	67	19	20	15	24	47	71	32	15
6	11	57	49	102	38	13	17	77	49	48	19	13
7	163	118	142	58	34	12	16	72	43	54	20	12
8	113	129	50	30	16	10	15	19	39	50	18	30
9	439	69	58	26	13	11	14	16	38	67	24	17
10	70	189	84	24	20	9.9	13	15	44	69	20	90
11	32	50	238	22	227	16	23	84	37	43	17	62
12	25	374	57	21	60	42	598	86	55	38	15	116
13	22	113	57	20	31	11	158	24	44	35	14	21
14	79	181	79	26	23	9.2	137	43	41	39	15	19
15	43	109	69	27	29	106	56	24	179	36	129	41
16	72	164	58	19	17	935	33	18	106	33	30	18
17	52	78	53	19	15	1370	45	19	55	31	21	14
18	25	56	39	16	14	156	27	1100	90	30	20	24
19	20	73	64	16	13	120	33	333	456	31	87	15
20	21	42	60	17	13	74	25	771	653	33	38	13
21	e33	33	44	16	14	45	22	298	710	36	23	14
22	e380	35	35	14	12	38	23	292	936	30	19	41
23	e80	28	31	36	12	32	20	99	199	25	16	23
24	e49	32	29	20	11	29	19	232	110	23	15	15
25	e36	452	172	15	10	65	17	872	81	23	15	15
26	e25	398	80	15	13	32	16	734	97	28	17	17
27	e22	148	84	13	30	24	15	347	89	30	16	14
28	e20	101	77	13	16	22	15	161	68	30	13	14
29	e29	130	41	16	---	21	54	157	79	23	14	86
30	33	84	34	190	---	20	52	117	74	22	17	110
31	26	---	31	69	---	18	---	87	---	24	19	---
TOTAL	1985.3	3450	2302	1032	781	3372.1	1546	6202	4699	1281	861	968
MEAN	64.0	115	74.3	33.3	27.9	109	51.5	200	157	41.3	27.8	32.3
MAX	439	452	238	190	227	1370	598	1100	936	83	129	116
MIN	8.8	26	29	13	10	9.2	13	15	37	22	13	12
AC-FT	3940	6840	4570	2050	1550	6690	3070	12300	9320	2540	1710	1920
CFSM	4.30	7.72	4.98	2.23	1.87	7.30	3.46	13.4	10.5	2.77	1.86	2.17
IN.	4.96	8.61	5.75	2.58	1.95	8.42	3.86	15.48	11.73	3.20	2.15	2.42

CAL YR 1986 TOTAL 20358.9 MEAN 55.8 MAX 575 MIN 4.4 AC-FT 40380 CFSM 3.74 IN. 50.83
WTR YR 1987 TOTAL 28479.4 MEAN 78.0 MAX 1370 MIN 8.8 AC-FT 56490 CFSM 5.24 IN. 71.10

e Estimated

RIO FAJARDO BASIN

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
29...	1030	38	106	7.40	26.0	8.7	8.0	99	16	200	500
DEC											
16...	1040	43	110	7.25	23.5	--	8.7	103	--	200	430
FEB 1987											
18...	1020	15	130	7.00	24.0	2.5	9.2	110	27	K150	K1800
APR											
16...	1055	35	112	6.40	25.0	1.5	8.4	103	<10	260	570
JUN											
01...	1015	70	111	7.40	25.0	4.4	8.0	--	<10	570	2300
AUG											
03...	0850	60	115	7.60	27.0	--	7.4	--	--	K1300	K1500

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
29...	29	0	6.2	3.2	9.4	0.8	1.4	31	<0.5	5.9	10
DEC											
16...	--	--	--	--	--	--	--	33	--	--	--
FEB 1987											
18...	--	--	--	--	--	--	--	37	--	--	--
APR											
16...	34	1	8.0	3.4	11	0.8	1.5	33	<0.5	6.4	10
JUN											
01...	--	--	--	--	--	--	--	34	--	--	--
AUG											
03...	33	0	7.1	3.6	11	0.8	1.4	35	--	4.3	12

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
29...	<0.1	24	79	8.24	<1	0.29	0.01	0.30	0.04	0.76
DEC										
16...	--	--	--	--	--	0.29	0.01	0.20	0.01	0.29
FEB 1987										
18...	--	--	--	--	11	0.39	0.01	0.40	0.02	0.48
APR										
16...	0.1	25	85	7.98	4	0.19	0.01	0.20	0.02	0.28
JUN										
01...	--	--	--	--	10	0.09	0.01	0.10	0.03	0.39
AUG										
03...	--	--	--	--	--	0.09	0.01	0.10	0.01	0.69

K = non-ideal count

RIO FAJARDO BASIN

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986 29...	0.8	1.1	4.9	0.02	<1	<100	<10	<1	<1	10
DEC 16...	0.3	0.5	2.2	0.02	--	--	--	--	--	--
FEB 1987 18...	0.5	0.9	4.0	0.02	--	--	--	--	--	--
APR 16...	0.3	0.5	2.2	0.02	<1	<100	<10	<1	7	<10
JUN 01...	0.3	0.4	--	0.02	--	--	--	--	--	--
AUG 03...	0.7	0.8	--	0.06	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT 1986 29...	630	<5	50	1.3	<1	<1	20	<0.01	<1	0.01
DEC 16...	--	--	--	--	--	--	--	--	--	--
FEB 1987 18...	--	--	--	--	--	--	--	--	--	--
APR 16...	240	<5	20	0.1	<1	<1	<10	<0.01	7	0.01
JUN 01...	--	--	--	--	--	--	--	--	--	--
AUG 03...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 24...	0920	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 24...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 24...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01

RIO FAJARDO BASIN

50072500 RIO FAJARDO BELOW FAJARDO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°19'35", long 65°38'47", 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 sq mi (60.6 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
29...	1320	56	138	7.40	28.5	9.3	8.1	105	96	K1100	K190
DEC											
16...	1340	52	148	7.20	25.5	--	9.3	114	--	410	K200
FEB 1987											
18...	1350	22	173	7.00	26.5	4.0	8.3	104	<10	210	210
APR											
16...	1425	73	155	6.30	28.0	50	6.1	79	21	K6000	5800
JUN											
24...	1205	147	143	7.30	27.5	7.8	7.2	--	<10	K13000	5000
AUG											
03...	1150	68	153	7.80	28.5	3.5	7.0	--	26	6000	24000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
29...	36	0	8.2	3.7	11	0.8	1.4	37	<0.5	6.5	14
DEC											
16...	--	--	--	--	--	--	--	38	--	--	--
FEB 1987											
18...	--	--	--	--	--	--	--	41	--	--	--
APR											
16...	46	5	12	4.0	13	0.9	2.8	41	<0.5	11	18
JUN											
24...	--	--	--	--	--	--	--	35	--	--	--
AUG											
03...	40	0	8.5	4.5	14	1.0	1.3	43	--	5.5	16

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
29...	<0.1	23	90	13.5	3	0.19	0.01	0.20	0.18	1.3
DEC										
16...	--	--	--	--	--	0.19	0.01	0.20	0.06	0.34
FEB 1987										
18...	--	--	--	--	10	0.19	0.01	0.20	0.04	0.86
APR										
16...	0.2	20	106	21.0	54	0.18	0.02	0.20	0.04	0.56
JUN										
24...	--	--	--	--	7	0.09	0.01	0.10	0.03	0.17
AUG										
03...	--	--	--	6.14	--	0.09	0.01	0.10	0.01	0.29

K = non-ideal count

50072500 RIO FAJARDO BELOW FAJARDO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
29...	1.5	1.7	7.5	0.04	<1	<100	<10	<1	<1	<10
DEC										
16...	0.4	0.6	2.7	0.03	--	--	--	--	--	--
FEB 1987										
18...	0.9	1.1	4.9	0.04	--	--	--	--	--	--
APR										
16...	0.6	0.8	3.5	0.17	<1	100	<10	<1	5	30
JUN										
24...	0.2	0.3	--	0.02	--	--	--	--	--	--
AUG										
03...	0.3	0.4	--	0.03	--	--	--	--	--	--

[illegible]

RIO BLANCO BASIN

50075000 RIO ICACOS NEAR NAGUABO, PR

LOCATION.--Lat 18°16'38", long 65°47'09". Hydrologic Unit 21010001, in Caribbean National Forest, off Highway 191, at El Yunque, 1.6 mi (2.6 km) upstream from confluence with Rio Cubuy, 2.8 mi (4.5 km) north of Florida, and 5.3 mi (8.5 km) northwest of Naguabo Plaza.

DRAINAGE AREA.--1.26 mi² (3.26 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to March 1953 (operated by Puerto Rico Water Resources Authority), annual maximum, water years 1953-62, annual low-flow measurements 1962-66, October 1979 to current year.

GAGE.--Water-stage recorder, crest-stage gage and sharp-crested weir. Elevation of gage is 2,020 ft (616 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharge, which are poor.

AVERAGE DISCHARGE.--15 years (1946-52, 1980-87), 14.9 ft³/s (0.422 m³/s), 160.6 in/yr (4,079 mm/yr), 10,800 acre-ft/yr (13.3 hm³/yr); median of yearly mean discharges, 14 ft³/s (0.40 m³/s), 10,100 acre-ft/yr (12 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,860 ft³/s (81.0 m³/s), Apr. 21, 1983, gage height, 8.96 ft (2.731 m), from rating curve extended above 30 ft³/s (0.850 m³/s) on basis of step-backwater analysis; minimum daily discharge, 1.5 ft³/s (0.042 m³/s), Mar. 22, Apr. 10, 1946.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft³/s (13.4 m³/s) and maximum (*):

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. 9	0800	668	18.9	5.35	1.631	Apr. 12	1330	*893	25.3	*5.94	1.810

Minimum daily discharge, 3.9 ft³/s (0.110 m³/s), Dec. 22, 23 and Apr. 4-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	11	5.3	4.6	8.0	5.7	4.1	e4.2	e10	12	6.8	12
2	5.3	11	8.3	4.6	6.7	5.5	4.1	e4.5	e14	16	5.8	12
3	5.0	9.3	25	4.5	6.3	5.8	4.1	e5.8	e11	18	33	7.1
4	4.9	27	5.4	4.9	6.1	13	3.9	e6.0	e9.4	20	10	5.7
5	4.8	30	16	14	5.9	6.7	3.9	e10	e8.4	13	8.1	5.7
6	5.0	14	4.2	8.9	6.1	5.2	3.9	e7.6	e8.2	13	6.5	5.6
7	18	24	15	9.9	9.1	5.1	4.4	e6.0	e7.8	13	6.4	5.5
8	14	31	4.7	5.4	6.2	4.8	4.2	e5.0	e7.4	12	6.4	5.8
9	74	13	6.0	5.1	6.0	4.8	4.2	e4.5	e11	13	9.9	e6.6
10	10	27	10	4.8	6.0	4.6	4.9	e4.3	e10	12	6.4	e6.7
11	6.4	11	25	4.8	28	5.0	6.0	e18	e8.2	11	6.0	e13
12	5.8	56	4.3	4.9	25	5.9	147	e31	11	9.9	5.6	e17
13	9.6	25	6.1	4.8	8.2	4.7	42	e14	9.5	9.4	5.0	e5.6
14	23	32	10	7.4	14	4.5	27	e13	8.8	9.8	5.7	e5.0
15	8.6	26	6.6	6.1	9.6	5.0	e14	e11	25	9.5	16	e5.4
16	20	24	7.2	5.5	7.2	25	e11	e7.5	19	9.0	5.8	e4.7
17	11	16	5.4	5.2	6.8	80	e9.0	e15	10	8.6	5.3	e12
18	6.8	12	4.5	5.4	6.6	8.2	e7.2	e54	56	8.8	16	e12
19	6.0	19	7.5	5.3	6.2	6.1	e7.0	e46	52	9.6	20	e7.2
20	5.6	11	4.9	5.5	6.0	5.5	e6.6	e110	59	9.6	10	e4.4
21	5.3	10	4.2	5.2	6.0	5.2	e5.8	e59	70	11	5.8	e6.1
22	40	10	3.9	5.3	5.7	4.9	e5.4	e60	71	8.2	5.4	e22
23	7.0	9.3	3.9	9.2	5.6	4.7	e5.2	e16	17	7.4	5.2	e6.0
24	6.1	11	4.6	5.9	5.4	4.6	e5.0	e14	14	6.8	5.2	e4.3
25	26	39	19	6.0	5.2	8.6	e4.8	e24	12	7.0	6.7	e4.3
26	13	44	18	5.6	8.5	4.9	e4.5	e19	13	9.8	9.8	e5.0
27	16	28	11	5.4	15	4.5	e4.3	e18	23	8.6	5.3	e4.0
28	8.7	17	6.4	5.2	6.5	4.5	e4.2	e14	14	9.8	5.2	e4.0
29	6.9	17	5.0	5.8	---	4.2	e4.2	e12	13	7.0	5.8	e35
30	8.5	8.1	4.6	44	---	4.2	e4.3	e11	12	6.9	5.7	e44
31	6.5	---	4.5	20	---	4.2	---	e10	---	7.2	7.6	---
TOTAL	394.5	622.7	266.5	239.2	241.9	265.6	366.2	634.4	614.7	326.9	262.4	293.7
MEAN	12.7	20.8	8.60	7.72	8.64	8.57	12.2	20.5	20.5	10.5	8.46	9.79
MAX	74	56	25	44	28	80	147	110	71	20	33	44
MIN	4.8	8.1	3.9	4.5	5.2	4.2	3.9	4.2	7.4	6.8	5.0	4.0
AC-FT	782	1240	529	474	480	527	726	1260	1220	648	520	583
CFSM	10.1	16.5	6.82	6.12	6.86	6.80	9.69	16.2	16.3	8.37	6.72	7.77
IN.	11.65	18.38	7.87	7.06	7.14	7.84	10.81	18.73	18.15	9.65	7.75	8.67

CAL YR 1986 TOTAL 4270.6 MEAN 11.7 MAX 107 MIN 3.9 AC-FT 8470 CFSM 9.29 IN. 126.08
WTR YR 1987 TOTAL 4528.7 MEAN 12.4 MAX 147 MIN 3.9 AC-FT 8980 CFSM 9.85 IN. 133.70

e Estimated

RIO BLANCO BASIN

50075000 RIO ICACOS NEAR NAGUABO, PR-Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
DEC, 05	1130	--	45	21.0	MAY, 26	1134	136	48	21.5
JAN, 26	1125	--	74	19.5	JUN, 11	1125	8.45	59	21.5
FEB, 12	1130	12.2	50	20.0	JUL, 07	1224	12.2	56	21.5
MAR, 04	1430	10	55	19.5	AUG, 17	1214	5.17	63	21.0
APR, 15	1420	9.27	49	20.5	SEP, 09	1101	6.1	64	21.5

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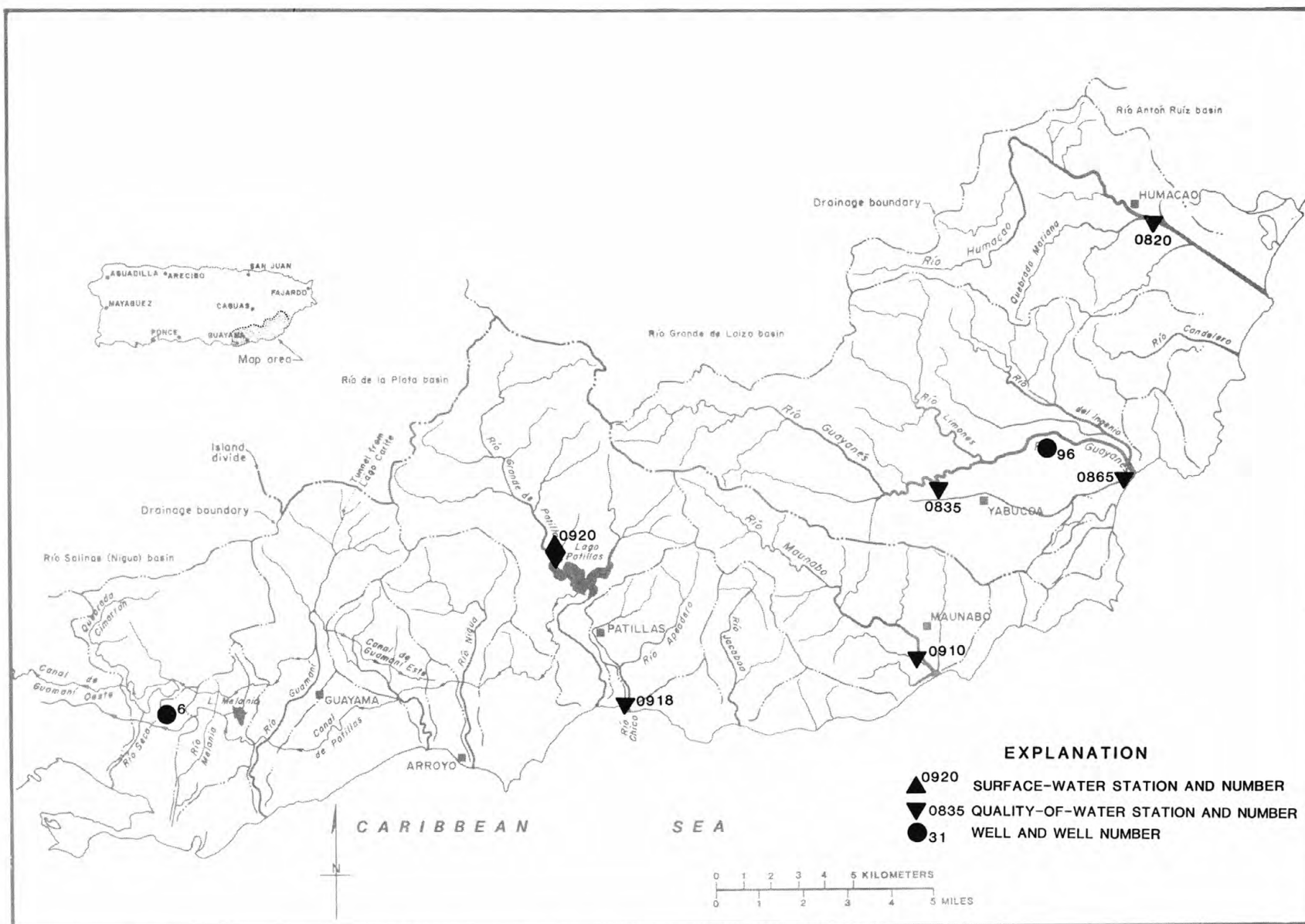


Figure 20.--Southeastern river basins--Río Humacao to Río Seco basins.

RIO HUMACAO BASIN

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR

WATER-QUALITY RECORDS

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 sq mi (44.8 sq km).

PERIOD OF RECORD.--Water years 1958-66, 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
OCT 1986											
31...	0945	21	266	7.45	27.0	14	8.2	104	17	4600	K1000
DEC											
17...	0945	35	239	7.25	23.5	6.2	7.8	92	12	270000	67000
FEB 1987											
12...	1235	21	279	7.05	26.0	4.7	7.1	88	<10	K110000	39000
APR											
27...	1325	13	308	7.20	32.0	2.0	6.7	93	13	K75000	35000
JUN											
11...	1150	24	274	7.60	29.5	9.0	7.0	--	11	K100000	30000
AUG											
13...	1100	26	272	7.60	29.5	4.0	4.4	--	11	K1000	K1700

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
31...	78	0	21	6.2	23	1	2.3	78	<0.5	10	24
DEC											
17...	--	--	--	--	--	--	--	80	--	--	--
FEB 1987											
12...	--	--	--	--	--	--	--	84	--	--	--
APR											
27...	90	0	24	7.2	28	1	2.3	92	<0.5	14	26
JUN											
11...	--	--	--	--	--	--	--	90	--	--	--
AUG											
13...	83	0	22	6.7	24	1	2.1	85	--	12	25

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
31...	0.1	37	170	9.66	25	0.87	0.03	0.90	0.84	0.16
DEC										
17...	--	--	--	--	33	0.78	0.02	0.80	0.45	0.75
FEB 1987										
12...	--	--	--	--	9	0.87	0.03	0.90	0.66	0.44
APR										
27...	0.1	42	199	6.82	18	0.88	0.02	0.90	0.57	0.53
JUN										
11...	--	--	--	--	32	0.87	0.03	0.90	0.73	0.77
AUG										
13...	0.1	41	184	12.9	8	0.77	0.03	0.80	0.07	0.83

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
31...	1.0	1.9	8.4	0.17	<1	100	<10	<1	<1	<10
DEC										
17...	1.2	2.0	8.9	0.26	--	--	--	--	--	--
FEB 1987										
12...	1.1	2.0	8.9	0.30	--	--	--	--	--	--
APR										
27...	1.1	2.0	8.9	0.47	<1	100	20	<1	19	<10
JUN										
11...	1.5	2.4	--	0.41	--	--	--	--	--	--
AUG										
13...	0.9	1.7	7.5	0.02	--	--	--	--	--	--

[illegible]

RIO GUAYANES BASIN

50083500 RIO GUAYANES AT YABUCOA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'33", long 65°54'03", at bridge on Highway 182, 1.4 mi (2.2 km) west-northwest of Yabucoa plaza.

DRAINAGE AREA.--17.2 sq mi (44.6 sq km).

PERIOD OF RECORD.--Water years 1958-62, 1968-70, 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
12...	1435	2680	255	6.95	23.5	530	8.9	105	170	K60000	96000
DEC 18...	1330	58	159	7.05	23.5	9.2	7.7	91	<10	K1900	3700
FEB 1987											
11...	0950	53	156	6.85	23.0	16	8.4	98	11	3300	4600
APR 28...	1230	28	168	7.00	26.5	10	7.9	39	10	K1700	3300
JUN 22...	1020	706	116	7.00	24.5	80	6.2	--	83	4500	5000
AUG 18...	1135	33	154	7.40	27.0	8.7	6.8	--	--	3600	9100

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
12...	9	0	2.2	0.8	4.1	0.6	1.3	20	<0.5	15	4.4
DEC 18...	--	--	--	--	--	--	--	55	--	--	--
FEB 1987											
11...	--	--	--	--	--	--	--	53	--	--	--
APR 28...	49	0	12	4.7	16	1.0	1.5	62	<0.5	5.1	17
JUN 22...	--	--	--	--	--	--	--	12	--	--	--
AUG 18...	45	0	11	4.3	14	0.9	1.1	60	--	5.3	12

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
12...	<0.1	6.9	47	338	1660	0.56	0.04	0.60	0.15	1.5
DEC 18...	--	--	--	--	26	0.39	0.01	0.40	0.02	0.48
FEB 1987										
11...	--	--	--	--	21	0.29	0.01	0.30	0.04	0.46
APR 28...	<0.1	39	130	9.83	23	0.19	0.01	0.20	0.05	0.45
JUN 22...	--	--	--	--	156	0.37	0.03	0.40	0.08	0.62
AUG 18...	<0.1	36	120	10.7	18	0.19	0.01	0.20	0.02	0.48

K = non-ideal count

RIO GUAYANES BASIN

50083500 RIO GUAYANES AT YABUCOA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 12...	1.7	2.3	--	0.22	1	400	<10	21	<1	140
DEC 18...	0.5	0.9	4.0	0.07	--	--	--	--	--	--
FEB 1987 11...	0.5	0.8	3.5	0.03	--	--	--	--	--	--
APR 28...	0.5	0.7	3.1	0.07	1	100	30	1	12	20
JUN 22...	0.7	1.1	--	0.14	--	--	--	--	--	--
AUG 18...	0.5	0.7	--	0.06	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986 12...	46000	21	1500	0.2	1	<1	110	<0.01	3	0.04
DEC 18...	--	--	--	--	--	--	--	--	--	--
FEB 1987 11...	--	--	--	--	--	--	--	--	--	--
APR 28...	1600	5	130	0.1	1	<1	10	<0.01	3	0.01
JUN 22...	--	--	--	--	--	--	--	--	--	--
AUG 18...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 22...	1300	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 22...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 22...	<0.01	<0.1	<0.1	<1	<0.01	0.01	<0.01	<0.01	<0.01

RIO GUAYANES BASIN

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR

WATER-QUALITY RECORDS

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 sq mi (88.1 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
31...	1310	75	165	7.55	28.0	2.3	8.1	104	79	2000	750
DEC											
17...	1305	97	185	7.25	25.5	16	7.9	97	10	K1500	790
FEB 1987											
12...	0935	47	182	7.25	24.0	12	7.6	91	<10	21000	8500
APR											
27...	1025	41	205	6.70	27.0	5.0	6.8	86	<10	K1500	420
JUN											
11...	0900	27	192	7.80	26.5	24	7.4	--	10	2500	2200
AUG											
13...	0825	71	204	7.80	27.0	18	5.0	--	13	2600	2500

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FLD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
31...	48	0	12	4.5	16	1	2.2	57	<0.5	8.7	12
DEC											
17...	--	--	--	--	--	--	--	59	--	--	--
FEB 1987											
12...	--	--	--	--	--	--	--	62	--	--	--
APR											
27...	52	0	13	4.8	18	1	2.0	62	<0.5	8.5	16
JUN											
11...	--	--	--	--	--	--	--	60	--	--	--
AUG											
13...	51	0	13	4.6	17	1	1.6	60	--	7.8	13

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
31...	0.1	35	125	25.2	33	0.39	0.01	0.40	0.96	0.94
DEC										
17...	--	--	--	--	34	0.49	0.01	0.50	0.16	1.9
FEB 1987										
12...	--	--	--	--	12	0.39	0.01	0.40	0.11	1.1
APR										
27...	0.1	36	136	14.9	14	0.29	0.01	0.30	0.03	0.47
JUN										
11...	--	--	--	--	42	0.39	0.01	0.40	0.08	0.72
AUG										
13...	0.1	38	131	25.0	11	0.38	0.02	0.40	0.02	0.58

K = non-ideal count

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
31...	1.9	2.3	10	0.06	<1	<100	<10	<1	<1	10
DEC										
17...	2.1	2.6	12	0.09	--	--	--	--	--	--
FEB 1987										
12...	1.2	1.6	7.1	0.07	--	--	--	--	--	--
APR										
27...	0.5	0.8	3.5	0.05	<1	100	20	<1	12	<10
JUN										
11...	0.8	1.2	--	0.13	--	--	--	--	--	--
AUG										
13...	0.6	1.0	4.4	0.06	--	--	--	--	--	--

[illegible]

RIO MAUNABO BASIN

50091000 RIO MAUNABO AT MAUNABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo plaza, and 1.3 mi (2.1 km) upstream from mouth.

DRAINAGE AREA.--12.4 sq mi (32.1 sq km).

PERIOD OF RECORD.--Water years 1958-66, 1975 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
12...	1015	267	120	7.15	24.0	140	7.4	88	160	K22000	950000
DEC 18...	1000	29	222	7.25	23.5	11	7.3	86	<10	--	--
FEB 1987											
11...	1240	18	224	7.25	27.0	14	7.7	97	<10	2000	710
APR 28...	0945	12	233	7.30	27.5	24	7.3	93	10	K1800	2800
JUN 22...	1020	200	162	7.00	24.5	53	7.0	--	<10	K19000	7500
AUG 18...	0845	15	234	7.60	26.0	6.4	7.4	--	<10	K1800	2300

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
12...	36	2	8.9	3.3	12	0.9	1.6	34	<0.5	11	12
DEC 18...	--	--	--	--	--	--	--	72	--	--	--
FEB 1987											
11...	--	--	--	--	--	--	--	80	--	--	--
APR 28...	74	0	18	7.1	20	1	1.4	84	<0.5	10	21
JUN 22...	--	--	--	--	--	--	--	25	--	--	--
AUG 18...	72	0	17	7.2	20	1	1.1	30	--	12	17

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
12...	0.2	22	91	65.9	368	0.27	0.03	0.30	0.07	1.9
DEC 18...	--	--	--	--	49	0.39	0.01	0.40	0.02	0.68
FEB 1987										
11...	--	--	--	--	46	0.19	0.01	0.20	0.03	0.37
APR 28...	0.2	39	170	5.51	60	0.09	0.01	0.10	0.03	0.57
JUN 22...	--	--	--	--	220	0.69	0.01	0.70	0.07	0.13
AUG 18...	0.1	40	162	6.66	38	0.19	0.01	0.20	0.01	0.39

K = non-ideal count

RIO MAUNABO BASIN

50091000 RIO MAUNABO AT MAUNABO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
12...	2.0	2.3	--	0.57	1	<100	<10	1	<1	60
DEC										
18...	0.7	1.1	4.9	0.06	--	--	--	--	--	--
FEB 1987										
11...	0.4	0.6	2.7	0.05	--	--	--	--	--	--
APR										
28...	0.6	0.7	3.1	0.05	1	<100	30	1	1	10
JUN										
22...	0.2	0.4	--	0.09	--	--	--	--	--	--
AUG										
18...	0.4	0.6	2.7	0.10	--	--	--	--	--	--

[illegible]

RIO CHICO BASIN

50091800 RIO CHICO AT PROVIDENCIA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°59'16", long 66°00'18", at flat low bridge 200 ft (61 m) south of Highway 3, 0.5 mi (0.8 km) above mouth, and 1.5 mi (2.4 km) southeast of Patillas plaza.

DRAINAGE AREA.--4.9 sq mi (12.8 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 1986											
30...	1250	6.0	342	7.50	27.0	1.6	6.2	78	45	480000	48000
DEC											
24...	0930	3.0	420	7.40	22.5	2.8	2.4	28	41	420000	31000
FEB 1987											
09...	1205	0.82	667	7.20	28.0	16	0.0	0	120	2900000	380000
APR											
20...	1105	0.81	618	7.10	28.0	3.0	0.9	12	38	K86000	K140000
JUN											
12...	0925	0.47	736	7.20	29.0	100	0.0	0	110	2800000	69000
AUG											
24...	0835	0.47	819	7.50	30.0	2.3	0.0	0	160	K7900000	660000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 1986											
30...	96	0	22	10	31	1	2.2	116	<0.5	16	25
DEC											
24...	--	--	--	--	--	--	--	154	--	--	--
FEB 1987											
09...	--	--	--	--	--	--	--	220	--	--	--
APR											
20...	160	0	39	15	58	2	4.4	220	<0.5	19	49
JUN											
12...	--	--	--	--	--	--	--	230	--	--	--
AUG											
24...	150	0	34	15	67	2	10	250	--	40	71

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
OCT 1986										
30...	0.2	32	208	3.36	2	0.39	0.01	0.40	2.00	0.6
DEC										
24...	--	--	--	--	10	0.18	0.02	0.20	4.20	1.3
FEB 1987										
09...	--	--	--	--	22	0.07	0.03	0.10	20.0	10
APR										
20...	0.3	32	349	0.75	<1	0.09	0.01	0.10	9.90	0.1
JUN										
12...	--	--	--	--	167	0.07	0.03	0.10	20.0	2.0
AUG										
24...	0.2	33	420	0.45	34	0.07	0.03	0.10	26.0	24

K = non-ideal count

50091800 RIO CHICO AT PROVIDENCIA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
OCT 1986										
30...	2.6	3.0	13	0.48	<1	<100	<10	<1	<1	10
DEC										
24...	5.5	5.7	25	0.95	--	--	--	--	--	--
FEB 1987										
09...	30	30	--	4.40	--	--	--	--	--	--
APR										
20...	10	10	--	0.41	<1	100	50	<1	3	20
JUN										
12...	22	22	--	13.0	--	--	--	--	--	--
AUG										
24...	50	50	--	11.0	--	--	--	--	--	--

[illegible]

RIO GRANDE DE PATILLAS BASIN

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR

LOCATION.--Lat 18°02'04", long 66°01'58", Hydrologic Unit 21010004, on left bank, at foot bridge, off Highway 184, 1.2 mi (1.9 km) upstream from Lago Patillas Dam and 2.2 mi (3.5 km) northwest of Patillas.

DRAINAGE AREA.--18.3 mi² (47.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to October 1965 (annual low-flow and occasional measurements only), January 1966 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 235 ft (72 m), from topographic map.

REMARKS.--Records fair. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--21 years (1967-87), 59.9 ft³/s (1.696 m³/s), 44.45 in/yr (1,129 mm/yr), 43,400 acre-ft/yr (53.5 hm³/yr); median of yearly mean discharges, 61 ft³/s (1.73 m³/s), 44,200 acre-ft/yr (54 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft³/s (419 m³/s), Sept. 16, 1975, gage height, 12.45 ft (3.795 m), from rating curve extended above 250 ft³/s (7.08 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 4.6 ft³/s (0.130 m³/s), May 13-16, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s (70.8 m³/s) and maximum (*):

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)
Nov. 12	1600	2,510	71.1	8.51	2.594	June 21	1730	*3,700	105	*9.54	2.908

Minimum discharge, 8.3 ft³/s (0.235 m³/s), Apr. 2, 3, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	22	36	27	37	15	10	14	21	50	44	27
2	17	27	34	25	28	16	8.5	17	18	53	28	37
3	16	21	78	24	24	20	10	18	33	57	78	41
4	16	21	55	25	21	29	11	31	24	120	83	24
5	15	35	68	39	21	37	13	21	18	122	145	20
6	16	28	45	55	21	24	50	52	17	62	67	17
7	18	96	93	131	20	21	32	21	21	50	45	16
8	17	164	57	50	20	18	17	16	17	45	35	16
9	25	84	56	38	19	17	15	13	18	39	35	21
10	28	57	69	33	18	16	13	13	20	52	31	29
11	19	88	151	31	37	17	12	12	18	44	28	25
12	16	854	89	28	23	21	107	26	18	35	25	21
13	16	277	68	26	31	15	93	15	21	31	24	18
14	16	147	61	26	40	14	110	12	17	31	22	15
15	16	132	50	33	40	15	41	11	43	46	22	15
16	40	252	46	28	24	18	27	10	62	35	28	15
17	26	190	45	25	21	17	27	10	29	29	24	16
18	20	117	42	24	21	18	21	9.7	38	26	21	83
19	16	82	39	23	19	14	20	133	123	25	23	40
20	14	67	37	24	18	13	19	48	395	24	41	26
21	16	58	36	22	18	13	17	117	492	124	27	19
22	161	53	32	22	17	12	17	39	528	55	21	23
23	26	48	30	46	16	12	16	25	185	35	18	20
24	28	43	29	51	16	12	15	51	100	28	20	18
25	235	53	32	30	16	12	14	94	71	24	19	19
26	100	53	29	27	16	11	14	107	56	25	20	16
27	50	80	37	24	17	11	16	49	51	26	18	14
28	34	50	62	24	17	10	17	36	57	28	16	15
29	25	42	34	23	---	11	15	33	96	23	16	79
30	21	40	30	67	---	9.9	13	35	79	22	19	62
31	22	---	28	47	---	9.8	---	24	---	95	30	---
TOTAL	1103	3281	1598	1098	636	498.7	810.5	1112.7	2686	1461	1073	807
MEAN	35.6	109	51.5	35.4	22.7	16.1	27.0	35.9	89.5	47.1	34.6	26.9
MAX	235	854	151	131	40	37	110	133	528	124	145	83
MIN	14	21	28	22	16	9.8	8.5	9.7	17	22	16	14
AC-FT	2190	6510	3170	2180	1260	989	1610	2210	5330	2900	2130	1600
CFSM	1.94	5.98	2.82	1.94	1.24	.88	1.48	1.96	4.89	2.58	1.89	1.47
IN.	2.24	6.67	3.25	2.23	1.29	1.01	1.65	2.26	5.46	2.97	2.18	1.64

CAL YR 1986 TOTAL 16789.4 MEAN 46.0 MAX 854 MIN 7.0 AC-FT 33300 CFSM 2.51 IN. 34.13
WTR YR 1987 TOTAL 16164.9 MEAN 44.3 MAX 854 MIN 8.5 AC-FT 32060 CFSM 2.42 IN. 32.86

RIO GRANDE DE PATILLAS BASIN

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50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
OCT 1986 30...	1025	51	162	7.60	25.5	1.2	8.4	104	K1300	640	51
JAN 1987 09...	1140	38	130	7.60	27.0	1.7	7.8	99	K380	400	45
APR 21...	1125	17	164	7.90	26.0	0.6	7.9	99	K880	320	53
JUL 10...	1040	41	154	7.80	26.0	0.8	6.2	77	2400	680	45

DATE	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 1986 30...	0	12	5.1	15	0.9	0.7	51	11	11	<0.1	26
JAN 1987 09...	0	9.9	4.9	13	0.9	0.7	46	10	12	<0.1	22
APR 21...	0	12	5.6	14	0.9	0.5	55	12	11	0.1	26
JUL 10...	0	10	4.8	13	0.9	0.7	48	11	10	0.3	24

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)
OCT 1986 30...	121	113	16.8	0.27	0.04	0.05	0.8	0.03	0.01	0.02	0.06
JAN 1987 09...	97	101	9.95	0.13	0.12	0.15	0.6	<0.01	0.02	0.01	0.03
APR 21...	110	115	5.11	0.17	0.04	0.05	0.7	0.03	0.03	0.02	0.06
JUL 10...	102	103	11.3	<0.10	0.07	0.09	0.7	0.06	0.06	0.03	0.09

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 1986 30...	30	<1	17	<0.5	1	<1	<3	1	33	<5
JAN 1987 09...	40	<1	15	<0.5	<1	<1	<3	2	53	<5
APR 21...	<10	<1	14	<0.5	<1	<1	<3	<1	24	<5
JUL 10...	10	<1	15	<0.5	2	<1	<3	4	41	10

K = non-ideal count

RIO GRANDE DE PATILLAS BASIN

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 1986 30...	4	11	0.1	<10	<1	<1	<1	40	<6	8
JAN 1987 09...	4	7	0.1	<10	2	<1	<1	36	<6	9
APR 21...	<4	10	0.1	<10	2	<1	<1	38	<6	8
JUL 10...	<4	18	<0.1	<10	<1	<1	<1	40	<6	12

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .062 MM
OCT 1986 30...	1025	51	7	0.96	58
JAN 1987 09...	1140	38	8	0.82	59
APR 21...	1125	17	8	0.37	24
JUL 10...	1040	41	13	1.44	45

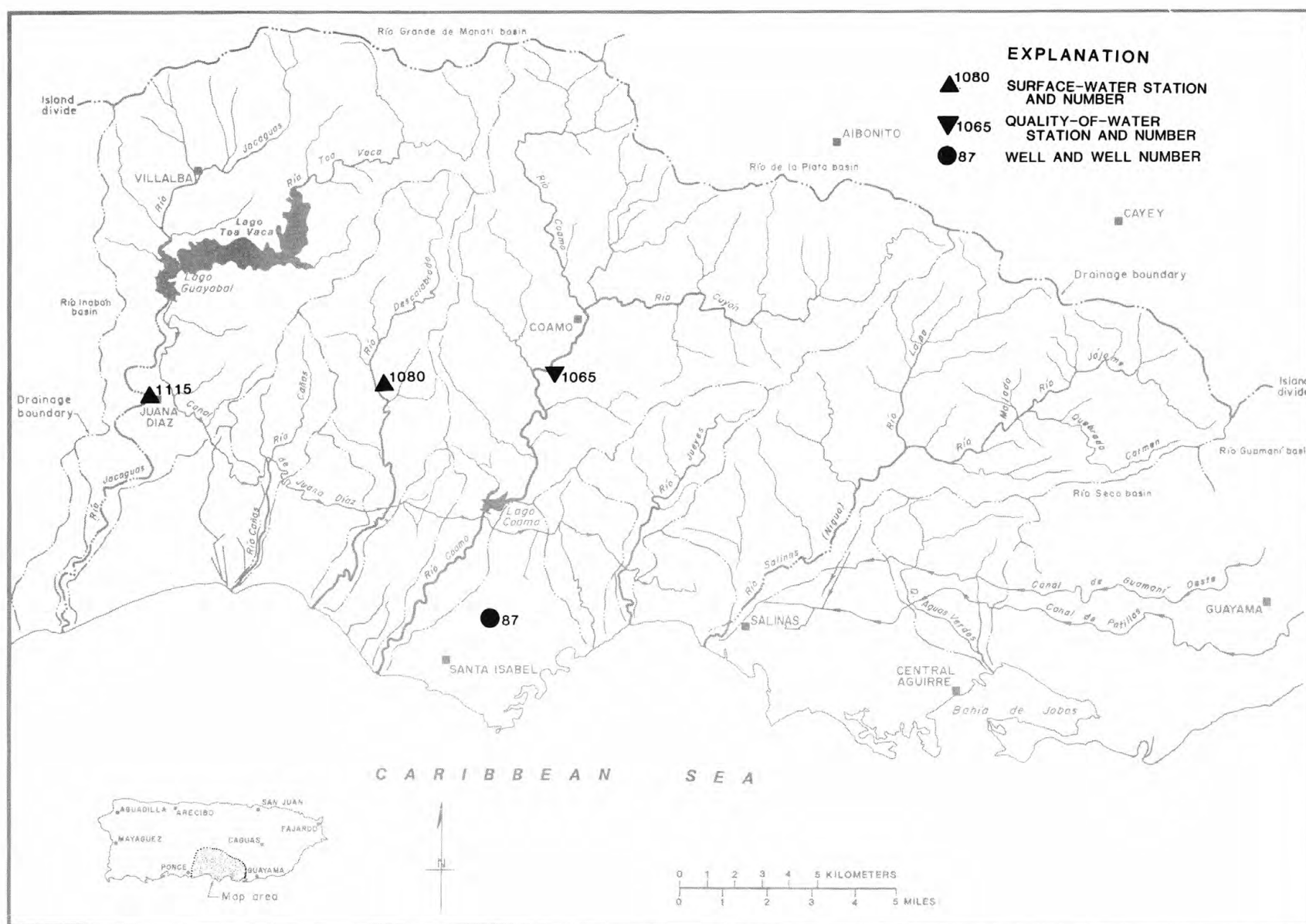


Figure 21.--South coast river basins--Río Salinas to Río Jacaguas basins.

RIO COAMO BASIN

50106500 RIO COAMO NEAR COAMO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18 03'52", long 66 22'10", Hydrologic Unit 21010004, on Highway 153 bridge, 0.4 mi (0.6 km) above Rio de la Mina, and 1.8 mi (2.9 km) south of Coamo plaza.

DRAINAGE AREA.--46.0 sq mi (119.1 sq km).

PERIOD OF RECORD.--Water years 1978 to current year.

WATER-QUALITY RECORDS, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
13...	1450	40	472	7.75	27.5	12	6.9	89	27	K6500	K1900
DEC 22...	1305	9.0	733	7.75	25.5	1.5	7.9	98	10	380	620
FEB 1987											
20...	1250	7.7	658	7.60	28.0	2.0	7.7	100	10	220	410
APR 29...	1210	6.2	602	7.90	32.0	68	6.7	93	44	K1700	68000
JUN 17...	1225	17	528	8.40	31.0	1.3	10.0	--	35	240	K91
AUG 19...	1115	9.8	621	8.00	30.0	--	5.2	--	--	K1100	260

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
13...	190	20	49	17	7.3	0.2	2.7	173	<0.5	26	26
DEC 22...	--	--	--	--	--	--	--	249	--	--	--
FEB 1987											
20...	--	--	--	--	--	--	--	240	--	--	--
APR 29...	240	0	63	19	37	1	3.6	230	<0.5	31	39
JUN 17...	--	--	--	--	--	--	--	210	--	--	--
AUG 19...	270	0	71	23	44	1	4.0	230	--	--	--

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
13...	0.2	5.6	238	25.9	32	0.96	0.24	1.20	2.00	0.20
DEC 22...	--	--	--	--	9	1.82	0.38	2.20	0.70	0.40
FEB 1987										
20...	--	--	--	--	26	1.90	0.30	2.20	0.75	0.75
APR 29...	0.2	32	360	6.02	328	1.24	0.26	1.50	0.40	2.2
JUN 17...	--	--	--	--	7	1.06	0.19	1.30	0.60	1.2
AUG 19...	0.2	35	413	10.9	4	1.11	0.19	1.30	0.60	1.2

K = non-ideal count

50106500 RIO COAMO NEAR COAMO, PR--Continued

WATER-QUALITY RECORDS, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
13...	2.2	3.4	--	0.75	1	<100	<10	1	<1	10
DEC										
22...	1.1	3.3	15	0.87	--	--	--	--	--	--
FEB 1987										
20...	1.5	3.7	16	0.93	--	--	--	--	--	--
APR										
29...	2.6	4.1	18	1.10	1	<100	80	1	32	50
JUN										
17...	1.3	2.6	--	0.59	--	--	--	--	--	--
AUG										
19...	1.8	3.1	--	0.76	--	--	--	--	--	--

[illegible]

RIO DESCALABRADO BASIN

50108000 RIO DESCALABRADO NEAR LOS LLANOS, PR

LOCATION.--Lat 18°03'00", long 66°25'34", Hydrologic Unit 21010004, at bridge on Highway 14, 1.5 mi (2.4 km) west of Los Llanos, and 5.3 mi (8.5 km) east of Juana Diaz.

DRAINAGE AREA.--12.9 mi² (33.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1959-65 (annual low-flow measurements only), 1965 (annual maximum discharge), January 1966 to June 1969, July to December 1969 (maximum discharge only), February 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 220 ft (67 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s (850 m³/s), Oct. 7, 1985, gage height, 24.37 ft (7.43 m), from rating curve extended above 10,000 ft³/s (283 m³/s) on basis of step-backwater analysis; no flow many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 3	1845	*1,420 40.2	*7.58 2.310				

Minimum daily discharge, 0.28 ft³/s (0.008 m³/s), Apr. 3-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.4	e.95	e.78	e1.0	e.34	.33	.55	3.1	e10	2.5	e.86
2	1.3	1.3	e.90	e.76	e.90	e.33	.30	.55	180	e7.0	1.8	e.84
3	1.1	1.3	e1.6	e.75	e.85	e.32	.28	.56	116	e5.0	2.6	e.82
4	1.1	1.3	e1.4	e1.0	e.80	e.31	.28	.55	e20	e4.5	2.1	.80
5	39	1.3	e1.3	e1.5	.79	e.30	.51	1.5	e9.0	e4.0	2.4	.80
6	6.8	14	e1.1	e2.0	.76	e.30	47	1.2	e7.5	e3.7	1.8	.80
7	3.3	2.3	e1.0	e1.8	e.72	.34	2.3	.90	e6.0	e4.0	1.7	.86
8	e2.8	1.5	e.95	e1.6	e.70	.33	1.0	3.7	e5.5	e4.3	1.6	1.4
9	e2.6	1.4	e.90	e1.5	e.67	.33	.96	1.9	e28	e3.7	1.6	1.3
10	e2.4	1.4	e.85	e1.4	e.65	.33	.88	5.5	e7.0	e3.4	1.6	1.1
11	e2.2	1.3	e.82	e1.4	.73	.32	2.5	1.5	e6.0	e3.2	1.4	1.0
12	e2.1	34	e.80	e1.3	.66	.31	4.0	1.0	e5.5	3.1	1.3	1.0
13	e2.0	3.5	e.78	e1.3	2.5	.31	.90	.65	e5.0	2.8	1.3	1.0
14	e2.0	2.6	e.76	e1.2	5.6	.30	.77	.65	e5.0	2.6	1.9	1.1
15	e2.2	1.6	e.74	e1.2	1.5	.36	.67	.65	e15	2.6	2.7	1.7
16	e2.0	20	e.72	e1.1	.74	.34	.65	.58	e6.0	2.4	1.7	2.0
17	e1.9	3.7	e.71	e1.1	e.65	.33	.83	20	e5.0	2.3	1.2	1.5
18	e1.8	2.0	e.70	e1.0	e.57	.31	.69	3.4	e20	2.3	3.9	1.6
19	e1.7	3.5	e1.5	e1.0	e.52	.29	.62	9.2	e7.0	2.3	2.1	1.9
20	e1.7	1.3	e2.0	e.95	e.48	.30	.60	2.3	40	2.3	1.5	1.4
21	e1.8	.93	e1.5	e.92	e.45	.30	.57	1.3	123	3.7	1.2	1.2
22	4.1	15	e1.3	e.90	e.43	.30	.58	1.9	79	3.1	1.0	1.3
23	e3.0	2.2	e1.2	e1.5	e.41	.30	.56	2.3	e11	2.5	.97	1.4
24	e2.7	1.3	e1.1	e1.4	e.39	.36	.55	4.1	e8.0	2.4	.94	1.2
25	6.4	2.9	e1.0	e1.2	e.38	.33	.55	4.1	e6.0	2.1	.97	.92
26	3.5	1.3	e.95	e1.0	e.37	.31	.55	1.6	e5.0	2.0	e.90	.72
27	97	3.5	e.90	e.95	e.36	.30	.55	1.2	e4.5	1.8	e.86	.69
28	5.5	e1.5	e.87	e.90	e.35	.31	.54	1.2	e4.0	1.9	e.84	.65
29	e6.0	e1.2	e.84	e1.0	---	.31	.52	19	e13	1.7	e.82	.65
30	2.3	e1.0	e.82	e1.5	---	.31	.53	8.1	e7.0	1.6	e.80	.67
31	1.7	---	e.80	e1.2	---	.30	---	3.4	---	2.7	.96	---
TOTAL	215.3	131.53	31.76	37.11	24.93	9.83	71.57	105.04	757.1	101.0	48.96	33.18
MEAN	6.95	4.38	1.02	1.20	.89	.32	2.39	3.39	25.2	3.26	1.58	1.11
MAX	97	34	2.0	2.0	5.6	.36	.47	20	180	10	3.9	2.0
MIN	1.1	.93	.70	.75	.35	.29	.28	.55	3.1	1.6	.80	.65
AC-FT	427	261	63	74	49	19	142	208	1500	200	97	66
CFSM	.54	.34	.08	.09	.07	.02	.18	.26	1.96	.25	.12	.09
IN.	.62	.38	.09	.11	.07	.03	.21	.30	2.18	.29	.14	.10

CAL YR 1986 TOTAL 2406.29 MEAN 6.59 MAX 686 MIN .70 AC-FT 4770 CFSM .51 IN. 6.94
WTR YR 1987 TOTAL 1567.31 MEAN 4.29 MAX 180 MIN .28 AC-FT 3110 CFSM .33 IN. 4.52

e Estimated

RIO JACAGUAS BASIN

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50111500 RIO JACAGUAS AT JUANA DIAZ, PR

LOCATION.--Lat 18°03'16", long 66°30'40", Hydrologic Unit 21010004, on Highway 14 bridge, 0.4 mi (0.6 km) west of Juana Diaz plaza, and 4.0 mi (6.4 km) downstream from Lago Guayabal.

DRAINAGE AREA.--49.8 mi² (129.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 131 ft (40 m), from topographic map.

REMARKS.--Records fair. Flow regulation from Lago Guayabal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s (1,130 m³/s), Oct. 7, 1985, gage height, 29.42 ft (8.967 m) from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of step-backwater analysis and logarithmic extension; minimum daily discharge, 1.2 ft³/s (0.034 m³/s), May 18, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,920 ft³/s (139 m³/s), June 3, gage height, 13.52 ft (4.121 m) from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of step-backwater analysis and logarithmic extension; minimum daily discharge 3.6 ft³/s (0.102 m³/s), Mar. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	9.9	19	5.3	7.4	e5.6	4.0	7.8	70	151	16	11
2	6.6	9.5	36	4.9	6.6	e5.6	4.0	7.8	173	117	8.5	7.4
3	6.7	9.5	14	4.9	4.6	e5.7	4.2	7.8	499	109	7.0	7.1
4	6.6	9.4	11	4.9	5.1	e6.1	4.2	8.0	221	106	31	7.1
5	6.6	9.0	10	5.2	5.0	6.4	4.2	8.6	169	94	54	6.3
6	6.6	9.2	e9.6	5.3	4.9	6.2	7.4	8.7	145	69	45	6.1
7	6.6	9.5	e9.4	5.3	4.9	6.1	11	8.8	87	96	129	5.8
8	6.6	9.5	e9.3	4.9	4.9	6.1	8.0	14	44	109	11	5.2
9	6.6	9.3	e9.2	4.6	4.9	5.8	6.5	11	149	71	10	5.8
10	6.6	9.0	e9.1	4.5	5.4	5.2	5.4	9.9	126	118	47	5.8
11	6.6	9.0	e9.0	4.4	6.3	4.8	4.9	13	120	31	11	5.8
12	6.6	31	e9.0	4.4	6.5	5.2	6.5	9.5	81	75	8.4	5.9
13	6.6	13	e9.0	4.4	10	4.9	6.5	8.8	84	192	8.5	5.8
14	6.6	8.5	e8.9	5.4	25	4.8	6.4	8.6	72	101	52	13
15	6.7	7.1	e8.9	5.5	11	4.7	5.9	9.5	46	93	11	14
16	6.7	26	e8.9	5.3	6.7	4.7	5.7	11	128	160	9.5	9.0
17	6.7	10	e8.8	5.6	5.5	4.7	5.9	10	88	17	8.9	6.6
18	6.6	9.0	e8.8	7.0	5.5	4.7	6.1	12	121	13	8.8	7.4
19	6.6	8.6	e8.8	6.7	5.5	4.3	6.1	296	128	25	22	8.3
20	6.6	7.8	e9.2	5.9	5.6	4.2	6.5	201	402	61	9.5	7.1
21	6.6	7.1	e9.6	6.1	6.1	4.2	8.1	142	595	123	8.4	7.1
22	6.7	12	e9.8	6.1	e5.9	4.0	8.0	140	904	121	7.4	24
23	9.3	9.4	10	6.3	e5.8	4.0	8.2	127	315	103	7.3	23
24	13	8.2	10	6.4	e5.8	4.3	8.2	564	299	32	7.0	18
25	14	10	9.2	6.4	e5.7	4.7	8.2	507	285	60	6.7	8.7
26	13	11	8.6	7.1	e5.7	4.3	8.2	326	209	28	6.8	7.0
27	19	8.9	8.4	8.1	e5.6	4.1	8.1	184	170	35	7.1	6.1
28	17	8.6	7.5	8.2	e5.6	4.1	8.1	135	103	80	7.1	6.4
29	16	8.6	5.9	8.0	---	3.6	8.2	120	74	38	8.7	6.4
30	11	8.6	5.6	7.7	---	3.7	7.8	201	37	56	14	9.9
31	10	---	5.5	7.4	---	3.8	---	66	---	70	13	---
TOTAL	268.0	316.2	316.0	182.2	187.5	150.6	200.5	3183.8	5944	2554	601.6	267.1
MEAN	8.65	10.5	10.2	5.88	6.70	4.86	6.68	103	198	82.4	19.4	8.90
MAX	19	31	36	8.2	25	6.4	11	564	904	192	129	24
MIN	6.6	7.1	5.5	4.4	4.6	3.6	4.0	7.8	37	13	6.7	5.2
AC-FT	532	627	627	361	372	299	398	6320	11790	5070	1190	530

CAL YR 1986 TOTAL 10571.3 MEAN 29.0 MAX 2150 MIN 1.6 AC-FT 20970
WTR YR 1987 TOTAL 14171.5 MEAN 38.8 MAX 904 MIN 3.6 AC-FT 28110

e Estimated

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RIO INABON BASIN

50112500 RIO INABON AT REAL ABAJO, PR

LOCATION.--Lat 18°05'10", long 66°33'46", Hydrologic Unit 21010004, 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 mi² (25.12 km²).

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, April 1971 to current year.

GAGE.--Water-stage recorder. Elevation 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 estimated daily discharges, which are poor. National Weather Service gage-height at station.

AVERAGE DISCHARGE.--21 years (1965-69, 1972-87), 18.8 ft³/s (0.532 m³/s), 26.32 in/yr (669 mm/yr), 13,620 acre-ft/yr (16.8 hm³/yr); median of yearly mean discharges, 18 ft³/s (0.51 m³/s), 13,000 acre-ft/yr (16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,000 ft³/s (538 m³/s), Oct. 7, 1985, gage height, 25.3 ft (7.71 m), datum then in use, from floodmark, from rating curve extended above 30 ft³/s (0.850 m³/s) on basis of contracted opening and flow-over-road measurements of peak flow; minimum daily discharge, 0.80 ft³/s (0.023 m³/s), July 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s (14.2 m³/s), and maximum (*):

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	1630	*1,080	30.6	*11.44	3.487	May 17	1630	736	20.8	8.63	2.630
Nov. 17	1645	579	16.4	7.26	2.213	June 18	1500	659	18.7	7.96	2.426

Minimum discharge, 2.8 ft³/s (0.079 m³/s), Mar. 29-31, Apr. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	19	45	7.2	6.7	5.0	2.8	9.5	44	21	6.6	9.4
2	30	15	28	7.2	6.4	5.0	2.9	3.9	47	20	5.3	7.6
3	28	27	21	7.8	5.9	4.8	3.1	3.6	56	20	6.6	7.0
4	18	20	17	7.8	5.9	4.8	3.3	3.6	50	18	8.3	6.7
5	13	14	15	13	5.9	4.8	3.3	4.5	38	17	7.7	6.0
6	36	17	14	20	5.9	4.8	17	5.4	34	15	6.8	5.4
7	29	16	13	14	5.9	4.8	8.2	4.3	32	15	6.1	23
8	19	13	12	8.5	5.9	4.6	4.4	7.3	30	15	5.9	20
9	15	12	12	7.5	5.9	4.1	3.8	31	46	15	6.0	13
10	12	11	11	7.1	7.1	4.0	5.0	36	42	15	7.6	10
11	12	9.6	11	6.7	9.7	4.0	16	17	37	15	6.3	12
12	11	44	10	6.5	8.4	4.6	22	9.9	36	15	6.6	13
13	11	29	9.9	6.2	14	3.9	7.7	8.4	35	15	8.7	9.1
14	11	19	9.9	6.2	14	3.7	6.0	6.8	33	14	9.9	16
15	12	15	9.9	6.2	9.1	3.7	7.3	4.8	46	14	14	11
16	11	54	9.3	6.2	6.7	3.9	4.8	5.3	44	13	11	8.2
17	10	76	8.9	6.1	5.9	3.8	4.4	46	39	12	11	6.4
18	12	45	8.5	5.9	5.4	3.6	4.0	55	66	14	15	6.7
19	12	37	9.4	5.9	5.4	3.7	3.6	49	40	12	12	7.7
20	12	33	10	5.9	5.8	3.7	3.7	37	83	10	9.9	12
21	9.9	27	10	5.9	5.3	3.6	3.5	28	66	12	7.7	13
22	10	27	9.5	5.9	5.0	3.3	3.3	25	110	9.3	6.8	21
23	10	24	9.0	7.2	5.0	3.0	3.2	28	44	8.2	6.1	14
24	18	20	8.5	7.4	5.0	3.2	3.0	36	30	7.8	5.3	11
25	21	23	8.2	6.1	5.0	3.7	e3.5	51	24	7.1	5.8	21
26	23	20	8.1	5.9	5.0	3.4	e4.0	42	21	6.2	5.7	13
27	54	33	8.1	5.9	5.0	3.0	e4.0	36	21	6.6	5.0	9.8
28	114	24	8.1	5.9	5.0	3.0	e3.7	30	22	6.5	4.5	7.9
29	67	20	8.0	5.9	---	3.0	3.3	39	24	6.3	4.8	6.8
30	37	31	7.8	7.2	---	2.8	9.1	45	22	6.0	4.9	8.6
31	25	---	7.7	6.6	---	2.8	---	33	---	7.3	15	---
TOTAL	708.9	774.6	377.8	231.8	186.2	120.1	173.9	741.3	1262	388.3	242.9	336.3
MEAN	22.9	25.8	12.2	7.48	6.65	3.87	5.80	23.9	42.1	12.5	7.84	11.2
MAX	114	76	45	20	14	5.0	22	55	110	21	15	23
MIN	6.0	9.6	7.7	5.9	5.0	2.8	2.8	3.6	21	6.0	4.5	5.4
AC-FT	1410	1540	749	460	369	238	345	1470	2500	770	482	667
CFSM	2.36	2.66	1.26	.77	.69	.40	.60	2.47	4.34	1.29	.81	1.16
IN.	2.72	2.97	1.45	.89	.71	.46	.67	2.84	4.84	1.49	.93	1.29

CAL YR 1986 TOTAL 4799.6 MEAN 13.1 MAX 325 MIN 2.4 AC-FT 9520 CFSM 1.36 IN. 18.41
WTR YR 1987 TOTAL 5544.1 MEAN 15.2 MAX 114 MIN 2.8 AC-FT 11000 CFSM 1.57 IN. 21.26

e Estimated

RIO INABON BASIN

50112500 RIO INABON AT REAL ABAJO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
DEC, 29	1329	8.22	252	25.5	MAY, 13	1521	0.50	286	28.5
JAN, 27	1139	5.90	290	25.0	JUL, 02	1104	19.4	248	30.0
FEB, 24	1233	5.14	256	25.5	AUG, 26	1134	6.15	245	29.5
MAR, 26	1137	3.53	279	27.0					

RIO BUCANA BASIN

50114000 RIO CERRILLOS NEAR PONCE, PR

Location.--Lat 18°04'15", long 66°34'51", Hydrologic unit 21010004, on right bank off Highway 139, 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 sq mi (46.1 sq km)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
07...	1150	35	257	7.95	24.5	6.9	8.8	107	13	K10	350
DEC 12...	1220	24	279	8.00	23.5	--	9.6	114	--	90	50
FEB 1987											
06...	1210	11	242	8.30	24.5	3.7	11.6	141	<10	K22	42
APR 10...	1315	7.6	294	8.20	29.0	18	7.8	103	20	230	K1000
JUN 05...	1130	68	252	8.30	25.5	12	7.6	--	<10	41000	960
AUG 07...	1140	9.2	320	8.70	30.5	16	7.6	--	16	K110	180

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
07...	120	10	37	6.1	9.1	0.4	1.1	108	<0.5	33	6.5
DEC 12...	--	--	--	--	--	--	--	--	--	--	--
FEB 1987											
06...	--	--	--	--	--	--	--	98	--	--	--
APR 10...	130	5	41	6.6	13	0.5	2.0	125	<0.5	19	9.4
JUN 05...	--	--	--	--	--	--	--	110	--	--	--
AUG 07...	110	2	34	6.6	12	0.5	1.4	110	--	18	8.6

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
07...	<0.1	22	180	17.0	23	0.89	0.01	0.90	0.01	0.29
DEC 12...	--	--	--	--	--	--	<0.01	0.50	<0.01	--
FEB 1987										
06...	--	--	--	--	9	--	<0.01	0.20	<0.01	--
APR 10...	0.2	21	187	3.84	116	0.69	0.01	0.70	0.04	0.56
JUN 05...	--	--	--	--	36	0.86	0.04	0.90	0.07	0.63
AUG 07...	0.1	22	170	4.22	9	0.09	0.01	0.10	0.05	0.35

K = non-ideal count

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
07...	0.3	1.2	--	0.07	<1	<100	<10	<1	<1	10
DEC										
12...	1.1	1.6	7.1	0.03	--	--	--	--	--	--
FEB 1987										
06...	0.5	0.7	3.1	0.02	--	--	--	--	--	--
APR										
10...	0.6	1.3	5.8	0.15	<1	100	20	<1	2	10
JUN										
05...	0.7	1.6	--	0.04	--	--	--	--	--	--
AUG										
07...	0.4	0.5	--	0.03	--	--	--	--	--	--

[illegible]

RIO PORTUGUES BASIN

50115000 RIO PORTUGUES NEAR PONCE, PR

LOCATION.--Lat 18°04'45", long 66°38'01", Hydrologic Unit 21010004, on right bank 30 ft (9 m) upstream from bridge on Highway 504, 0.2 mi (0.3 km) upstream from small unnamed tributary, 4.4 mi (7.1 km) upstream from Rio Chiquito, and 4.7 mi (7.6 km) north of Plaza Degetau in Ponce.

DRAINAGE AREA.--8.82 mi² (22.84 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1964 (monthly measurements only), July 1964 to current year.

GAGE.--Water-stage recorder. Elevation 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. National Weather Service gage-height telemeter at station. Some low-flow regulation due to unknown activity upstream.

AVERAGE DISCHARGE.--23 years (1965-87), 18.7 ft³/s (0.530 m³/s), 28.79 in/yr (731 mm/yr), 13,550 acre-ft/yr (16.7 hm³/yr); median of yearly mean discharges, 18 ft³/s (0.52 m³/s), 13,300 acre-ft/yr (16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s (595 m³/s), Oct. 7, 1985, gage height, 20.2 ft (6.16 m), from floodmarks at downstream side of bridge, from rating curve extended above 150 ft³/s (4.25 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 1.0 ft³/s (0.028 m³/s), May 29, 1973.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s (22.6 m³/s) and maximum (*):

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. 23	2015	971	27.5	6.24	1.902	Nov. 16	1545	1,330	37.7	6.97	2.124
Oct. 27	1500	*1,510	42.8	*7.33	2.234						

Minimum discharge, 1.8 ft³/s (0.051 m³/s), Aug. 28, 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	30	59	8.4	6.8	4.6	2.3	5.7	66	7.9	e5.4	67
2	32	23	49	8.4	6.2	4.6	2.4	5.2	143	7.3	e7.0	37
3	14	40	31	8.3	6.1	4.7	2.2	5.8	113	6.5	e10	18
4	8.0	26	22	8.4	6.2	4.6	2.1	4.3	126	e7.2	e6.4	11
5	7.8	17	18	18	6.0	4.3	2.1	4.8	38	e6.6	e5.4	8.8
6	7.1	27	15	49	5.8	4.2	6.7	e4.0	23	e6.0	e5.2	8.4
7	7.4	26	14	26	5.7	4.2	7.7	e4.5	20	e9.4	e5.0	9.3
8	6.7	19	12	10	5.5	4.1	4.4	e5.0	17	e13	e8.0	22
9	28	17	11	8.6	5.4	4.1	4.1	e10	22	e7.0	5.7	29
10	14	16	10	8.1	8.0	4.1	3.8	e70	13	e6.0	5.4	46
11	9.2	13	9.7	7.6	14	4.2	5.9	e60	10	e5.6	4.8	19
12	7.4	65	12	7.5	11	4.0	32	e54	8.5	e5.4	4.6	9.0
13	13	43	11	7.2	34	3.6	21	51	7.5	e6.0	6.0	6.0
14	9.4	20	11	7.1	22	3.1	26	55	7.9	9.1	4.2	16
15	9.7	15	9.7	7.3	9.9	3.5	14	35	9.8	10	5.2	89
16	8.1	116	9.2	7.0	6.9	4.3	8.9	25	8.2	e7.0	4.8	64
17	7.4	107	9.0	6.7	6.3	3.2	10	52	6.9	e6.6	8.3	29
18	6.4	92	11	6.9	5.9	3.2	7.3	60	6.4	e6.8	13	19
19	16	67	10	6.9	5.5	3.5	6.9	43	7.0	e6.8	8.0	15
20	12	61	8.4	6.9	5.1	2.9	7.4	33	84	e6.8	5.2	18
21	10	54	8.5	6.5	5.0	2.7	7.0	26	92	e7.0	4.4	14
22	18	55	8.2	6.3	4.9	2.7	7.3	24	182	e6.4	3.9	48
23	75	44	8.3	11	5.1	2.6	7.7	21	66	e6.0	3.8	28
24	53	30	9.4	8.6	5.1	2.8	7.9	33	40	e6.2	12	17
25	24	33	9.4	6.6	5.0	2.8	8.7	51	24	e11	15	15
26	26	25	9.0	6.5	5.0	2.5	8.3	49	18	e7.0	5.7	12
27	112	25	10	7.2	5.2	2.5	7.0	37	15	e6.4	2.7	11
28	87	18	9.7	6.4	4.7	2.4	7.4	33	12	e5.8	2.0	20
29	103	15	9.1	6.6	---	2.3	6.9	55	11	e5.2	3.1	14
30	70	47	8.9	9.9	---	2.2	6.4	97	9.6	e9.0	16	12
31	45	---	8.5	7.6	---	2.2	---	43	---	e9.0	62	---
TOTAL	852.2	1186	441.0	307.5	222.3	106.7	251.8	1056.3	1206.8	226.0	258.2	731.5
MEAN	27.5	39.5	14.2	9.92	7.94	3.44	8.39	34.1	40.2	7.29	8.33	24.4
MAX	112	116	59	49	34	4.7	32	97	182	13	62	89
MIN	5.6	13	8.2	6.3	4.7	2.2	2.1	4.0	6.4	5.2	2.0	6.0
AC-FT	1690	2350	875	610	441	212	499	2100	2390	448	512	1450
CFSM	3.12	4.48	1.61	1.12	.90	.39	.95	3.86	4.56	.83	.94	2.76
IN.	3.59	5.00	1.86	1.30	.94	.45	1.06	4.46	5.09	.95	1.09	3.09

CAL YR 1986 TOTAL 7361.7 MEAN 20.2 MAX 500 MIN 3.0 AC-FT 14600 CFSM 2.29 IN. 31.05
WTR YR 1987 TOTAL 6846.3 MEAN 18.8 MAX 182 MIN 2.0 AC-FT 13580 CFSM 2.13 IN. 28.88

e Estimated

RIO PORTUGUES BASIN

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FT/1)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
07...	0910	22	211	7.95	22.5	6.3	9.0	106	<10	K91	520
DEC											
12...	0905	14	290	7.95	21.0	--	8.8	100	--	98	K150
FEB 1987											
06...	0905	5.7	297	7.80	20.0	0.4	9.9	111	<10	44	K150
APR											
10...	0930	3.8	301	8.20	23.5	0.6	9.1	110	<10	96	620
JUN											
05...	0825	37	250	8.40	23.0	2.3	8.2	--	<10	K890	830
AUG											
07...	0855	5.7	390	8.6	25.0	10	6.4	--	12	240	K140

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
07...	96	3	30	5.2	7.3	0.3	1.2	93	<0.5	7.6	6.3
DEC											
12...	--	--	--	--	--	--	--	132	--	--	--
FEB 1987											
06...	--	--	--	--	--	--	--	140	--	--	--
APR											
10...	140	0	42	7.9	11	0.4	1.3	140	<0.5	11	9.1
JUN											
05...	--	--	--	--	--	--	--	110	--	--	10
AUG											
07...	150	0	46	8.3	13	0.5	1.6	150	--	9.3	10

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TOMS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
07...	<0.1	19	132	7.86	11	1.09	0.01	1.10	0.01	0.19
DEC										
12...	--	--	--	--	--	0.99	0.01	1.00	0.01	0.29
FEB 1987										
06...	--	--	--	--	6	0.89	0.01	0.90	0.01	0.59
APR										
10...	0.2	21	187	1.92	<1	0.89	0.01	0.90	0.01	0.29
JUN										
05...	--	--	--	--	9	1.39	0.01	1.40	0.02	0.18
AUG										
07...	0.1	22	200	3.08	18	0.59	0.01	0.60	0.03	0.27

K = non-ideal count

RIO PORTUGUES BASIN

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 07...	0.2	1.3	--	0.05	<1	<100	<10	<1	<1	<10
DEC 12...	0.3	1.3	5.8	0.05	--	--	--	--	--	--
FEB 1987 06...	0.6	1.5	6.6	0.04	--	--	--	--	--	--
APR 10...	0.3	1.2	5.3	0.05	<1	<100	<10	<1	5	<10
JUN 05...	0.2	1.6	--	0.03	--	--	--	--	--	--
AUG 07...	0.3	0.9	--	0.19	--	--	--	--	--	--

[illegible]

RIO PORTUGUES BASIN

50116200 RIO PORTUGUES AT PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'20", long 66°36'28", 1,300 ft (400 m) south of Las Americas Avenue Bridge, 1.2 mi (1.9 km) south of CSC 50115900, 0.8 mi (1.3 km) west of Highways 1 and 2 junction, and 0.7 mi (1.1 km) southeast of Ponce.

DRAINAGE AREA.--18.9 sq mi (49.0 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, K _r AGAR (COLS. PER 100 ML)
NOV 1986											
13...	1125	59	326	8.00	26.0	310	7.9	98	49	56000	26000
DEC											
22...	1020	11	439	7.80	24.0	3.1	7.7	91	83	K9800	2000
FEB 1987											
20...	1005	4.6	457	7.40	22.5	7.5	7.5	87	<10	K6500	980
APR											
29...	0930	3.2	518	8.10	25.5	1.8	7.9	97	<10	5800	220
JUN											
17...	0925	16	347	8.30	26.5	46	7.6	--	<10	3700	2300
AUG											
19...	0845	16	318	8.10	26.0	38	6.0	--	15	K18000	K48000

DATE	HARD- MESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
13...	110	0	33	6.9	14	0.6	1.6	131	<0.5	16	11
DEC											
22...	--	--	--	--	--	--	--	180	--	--	--
FEB 1987											
20...	--	--	--	--	--	--	--	160	--	--	--
APR											
29...	190	16	53	13	42	1	2.2	170	<0.5	59	36
JUN											
17...	--	--	--	--	--	--	--	150	--	--	--
AUG											
19...	130	0	37	8.3	18	0.7	1.8	130	--	23	13

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
13...	0.2	19	180	28.8	708	0.90	0.10	1.00	0.26	0.44
DEC										
22...	--	--	--	--	5	1.08	0.02	1.10	0.41	0.16
FEB 1987										
20...	--	--	--	--	32	0.58	0.02	0.60	0.06	0.84
APR										
29...	0.3	20	330	2.85	3	0.47	0.03	0.50	0.11	2.2
JUN										
17...	--	--	--	--	101	0.66	0.04	0.70	0.09	0.31
AUG										
19...	0.2	21	200	8.64	73	0.67	0.03	0.70	0.06	0.94

K = non-ideal count

50116200 RIO PORTUGUES AT PONCE, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
13...	0.7	1.7	--	0.17	1	100	<10	<1	3	70
DEC										
22...	0.2	1.3	--	0.06	--	--	--	--	--	--
FEB 1987										
20...	0.9	1.5	6.6	0.07	--	--	--	--	--	--
APR										
29...	2.3	2.8	12	0.06	1	100	90	<1	1	10
JUN										
17...	0.4	1.1	--	0.07	--	--	--	--	--	--
AUG										
19...	1.0	1.7	--	0.15	--	--	--	--	--	--

[illegible]

50124200 RIO GUAYANILLA NEAR GUAYANILLA, PR

LOCATION.--Lat 18°02'40", long 66°47'53", Hydrologic Unit 21010004, on left bank, 0.7 mi (1.1 km) north of junction of Highways 2 and 132, 0.6 mi (1.0 km) downstream from Quebrada Consejo, 1.8 mi (2.9 km) north-northwest from Plaza de Guayanilla.

DRAINAGE AREA.--18.9 mi² (49.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 80 ft (24 m) from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1, Oct. 30 to Nov. 14. Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--6 years (1982-87), 23.6 ft³/s (0.668 m³/s), 16.96 in/yr (431 mm/yr), 17,100 acre-ft/yr (21.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,700 ft³/s (416 m³/s), Sept. 12, 1982, gage height, 20.4 ft (6.21 m), from floodmarks, from rating curve extended above 100 ft³/s (2.83 m³/s) on basis of step-backwater analysis and indirect measurement of peak flow; minimum discharge, 1.8 ft³/s (0.051 m³/s), Apr. 17-19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s (22.7 m³/s) and maximum (*):

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. 2	1630	*1,210	34.3	*10.17	3.100	Nov. 25	1430	885	25.1	9.48	2.890
Oct. 27	1645	876	24.8	9.46	2.883	May 25	1915	1,170	33.1	10.09	3.075
Oct. 29	1445	836	23.7	9.36	2.853	Sept. 14	1300	944	26.7	9.62	2.932
Nov. 16	1615	1,190	33.7	10.14	3.091	Sept. 15	1645	824	23.3	9.33	2.844
Nov. 17	1845	880	24.9	9.47	2.886						

Minimum discharge, 3.8 ft³/s (0.108 m³/s), Aug. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	40	66	13	7.9	6.5	4.8	5.6	80	14	8.7	110
2	178	35	56	13	7.4	6.6	4.9	7.3	125	13	6.0	31
3	44	70	44	12	7.1	6.5	4.6	6.4	115	12	8.1	17
4	28	50	38	11	6.7	6.6	4.4	6.1	136	12	9.8	10
5	37	40	35	15	6.7	6.4	6.8	5.3	51	14	6.4	8.3
6	32	45	31	68	6.7	6.2	134	5.7	35	12	5.4	7.1
7	25	35	32	30	6.3	5.9	34	5.4	30	14	5.2	6.5
8	19	30	28	16	6.3	5.9	11	5.9	29	19	5.0	8.9
9	14	25	26	14	6.2	5.9	7.9	9.1	32	14	7.3	8.7
10	12	20	24	13	6.7	5.9	6.9	54	23	12	5.8	19
11	16	15	24	13	22	6.0	12	48	19	11	5.1	15
12	14	150	22	13	13	6.2	17	41	18	11	4.7	8.0
13	12	90	21	13	44	5.5	14	41	17	11	5.5	7.1
14	12	60	21	12	40	5.6	15	28	22	9.6	5.1	100
15	10	34	19	11	19	5.5	42	15	30	11	5.2	122
16	9.3	258	51	10	12	5.8	26	12	17	11	5.8	48
17	8.0	317	28	10	10	6.0	19	9.4	13	8.7	5.7	17
18	7.5	214	30	9.6	9.4	5.6	12	64	12	8.1	8.0	13
19	7.4	123	28	9.4	8.5	5.5	10	34	12	8.2	10	10
20	7.3	119	20	9.8	8.0	5.2	9.0	17	94	8.2	7.8	17
21	7.2	90	18	9.5	7.7	5.1	7.7	16	35	8.3	6.3	11
22	15	76	17	9.0	7.5	5.2	7.2	30	100	8.3	5.0	40
23	7.4	118	16	12	7.4	5.2	6.8	12	44	7.1	4.4	26
24	9.3	98	15	11	7.1	5.0	6.5	18	27	7.0	4.0	15
25	18	237	15	9.2	7.0	19	6.2	228	23	7.3	9.8	15
26	16	99	15	9.2	7.0	7.1	5.9	121	21	10	12	9.8
27	174	138	14	11	7.2	5.2	6.1	34	18	7.5	5.3	8.5
28	112	83	14	9.3	6.9	4.8	5.9	22	16	6.8	8.2	7.8
29	222	57	13	9.1	---	4.9	5.6	17	16	6.0	87	9.1
30	90	94	13	9.4	---	4.8	5.5	19	19	5.6	32	13
31	60	---	14	8.0	---	4.5	---	27	---	8.7	19	---
TOTAL	1243.4	2860	808	422.5	311.7	190.1	458.7	964.2	1229	316.4	323.6	738.8
MEAN	40.1	95.3	26.1	13.6	11.1	6.13	15.3	31.1	41.0	10.2	10.4	24.6
MAX	222	317	66	68	44	19	134	228	136	19	87	122
MIN	7.2	16	13	8.0	6.2	4.5	4.4	5.3	12	5.6	4.0	6.5
AC-FT	2470	5670	1600	838	618	377	910	1910	2440	628	642	1470
CFSM	2.12	5.04	1.38	.72	.59	.32	.81	1.65	2.17	.54	.55	1.30
IN.	2.45	5.63	1.59	.83	.61	.37	.90	1.90	2.42	.62	.64	1.45

CAL YR 1986 TOTAL 9512.1 MEAN 26.1 MAX 468 MIN 4.0 AC-FT 18870 CFSM 1.38 IN. 18.72
WTR YR 1987 TOTAL 9866.4 MEAN 27.0 MAX 317 MIN 4.0 AC-FT 19570 CFSM 1.43 IN. 19.42

RIO GUAYANILLA BASIN

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'40", long 66°46'49", at dirt road 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 sq mi (59.1 sq km).

PERIOD OF RECORD.--Water years 1960-65, 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
04...	1100	9.9	404	7.75	27.5	24	7.8	100	13	210000	96000
DEC											
09...	1025	22	440	7.85	25.0	--	8.7	106	--	K1700	K640
FEB 1987											
03...	1030	1.6	850	7.60	25.0	6.9	2.2	27	62	K1800	K13000
APR											
07...	1050	29	333	7.70	26.0	1.5	7.4	92	19	K17000	4200
JUN											
04...	1425	73	279	8.20	30.0	7.5	7.2	--	19	K7500	860
AUG											
04...	0830	3.0	771	7.40	28.0	20	0.2	--	72	280000	35000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
04...	170	18	47	13	18	0.6	2.6	153	<0.5	41	19
DEC											
09...	--	--	--	--	--	--	--	171	--	--	--
FEB 1987											
03...	--	--	--	--	--	--	--	290	--	--	--
APR											
07...	140	23	39	11	13	0.5	2.6	120	<0.5	30	15
JUN											
04...	--	--	--	--	--	--	--	100	--	--	--
AUG											
04...	280	7	76	21	46	1	4.0	270	--	55	51

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
04...	<0.1	18	250	6.71	35	0.78	0.02	0.80	0.58	0.22
DEC										
09...	--	--	--	--	--	0.57	0.03	0.60	0.78	0.92
FEB 1987										
03...	--	--	--	--	17	0.22	0.08	0.30	14.0	4.0
APR										
07...	0.2	17	200	15.7	33	1.47	0.03	1.50	1.10	1.1
JUN										
04...	--	--	--	--	27	1.28	0.02	1.30	0.25	0.75
AUG										
04...	0.2	24	439	3.56	5	0.08	0.02	<0.10	7.90	8.1

K = non-ideal count

RIO GUAYANILLA BASIN

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 04...	0.8	1.6	--	0.16	1	<100	30	<1	<1	10
DEC 09...	1.7	2.3	10	0.22	--	--	--	--	--	--
FEB 1987 03...	18	18	81	2.40	--	--	--	--	--	--
APR 07...	2.2	3.7	16	0.37	1	100	30	<1	9	<10
JUN 04...	1.0	2.3	--	0.22	--	--	--	--	--	--
AUG 04...	16	16	--	1.90	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986 04...	2100	9	100	<0.1	<1	<1	20	<0.01	2	0.07
DEC 09...	--	--	--	--	--	--	--	--	--	--
FEB 1987 03...	--	--	--	--	--	--	--	--	--	--
APR 07...	1400	13	70	<0.1	<1	<1	<10	<0.01	7	0.11
JUN 04...	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 04...	1425	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 04...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 04...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01

RIO LOCO BASIN

50129700 RIO LOCO AT GUANICA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°58'33", long 66°54'52", 0.6 mi (1.0 km) northwest of Guanica and 1.2 mi (1.9 km) northeast of Ensenada.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1975 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
04...	1330	E0.0	6000	7.50	28.5	2.3	2.6	33	38	2000	400
DEC 09...	1240	E140	279	7.75	25.5	--	8.8	118	--	2100	9600
FEB 1987											
03...	1255	0.0	1000	7.50	26.0	7.0	6.0	74	19	5200	2400
APR 07...	1315	E5.0	672	7.60	27.0	8.0	4.5	57	23	3400	2900
JUN 02...	1125	0.0	418	7.80	28.5	3.5	5.5	71	<10	22000	K1600
AUG 06...	1400	E0.0	3146	7.60	29.0	20	2.0	--	35	K690	460

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
04...	539	319	60	93	810	15	28	221	<0.5	240	1400
DEC 09...	--	--	--	--	--	--	--	120	--	--	--
FEB 1987											
03...	--	--	--	--	--	--	--	140	--	--	--
APR 07...	200	0	38	25	64	2	2.5	200	<0.5	48	63
JUN 02...	--	--	--	--	--	--	--	200	--	--	--
AUG 06...	400	170	56	63	300	7	10	230	--	95	500

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
04...	0.2	20	2800	--	5	0.36	0.04	0.40	0.18	0.42
DEC 1986										
09...	--	--	--	--	--	0.59	0.21	0.80	0.82	1.3
FEB 1987										
03...	--	--	--	--	14	--	<0.01	0.60	0.03	0.47
APR 07...	0.2	27	388	--	22	0.48	0.02	0.50	0.03	0.57
JUN 02...	--	--	--	--	<1	0.48	0.02	0.50	0.18	0.02
AUG 06...	0.21	28	1200	--	2	0.19	0.01	0.20	0.05	0.55

K = non-ideal count
E = estimate

RIO LOCO BASIN

50129700 RIO LOCO AT GUANICA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
04...	0.6	1.0	--	0.17	1	200	390	1	1	10
DEC										
09...	2.1	2.9	13	0.41	--	--	--	--	--	--
FEB 1987										
03...	0.5	1.1	4.9	0.05	--	--	--	--	--	--
APR										
07...	0.6	1.1	4.9	0.15	2	100	130	<1	2	20
JUN										
02...	0.2	0.7	--	0.12	--	--	--	--	--	--
AUG										
06...	0.6	0.8	--	0.13	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986										
04...	250	<5	50	<0.1	<1	1	20	<0.01	1	0.24
DEC										
09...	--	--	--	--	--	--	--	--	--	--
FEB 1987										
03...	--	--	--	--	--	--	--	--	--	--
APR										
07...	770	<5	60	<0.1	<1	1	10	<0.01	4	0.05
JUN										
02...	--	--	--	--	--	--	--	--	--	--
AUG										
06...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN										
02...	1125	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN										
02...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
02...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01

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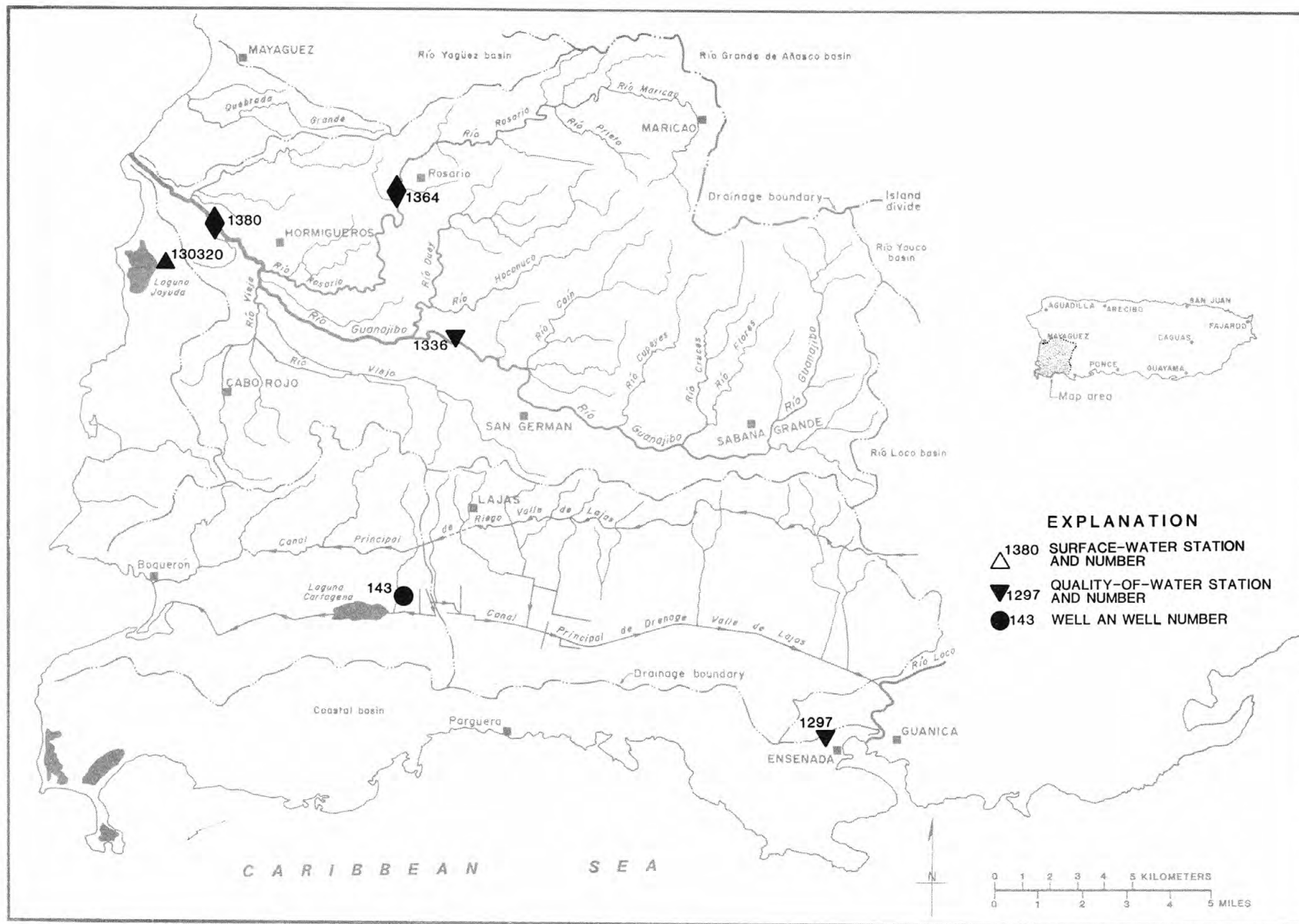


Figure 23.--Río Guanajibo basin.

LAGUNA JOYUDA BASIN

50130320 QUEBRADA MAMEY AT JOYUDA, PR

LOCATION.--Lat 18°07'51", long 67°10'09", Hydrologic Unit 21010003, 1.1 mi (1.8 km) northeast of Joyuda and 0.3 mi (0.5 km) upstream from Laguna Joyuda.

DRAINAGE AREA.--0.38 mi² (0.98 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5.77 ft (1.75 m) above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR CURRENT PERIOD.--Peak discharges greater than base discharge of 12 ft³/s (.340 m³/s) and maximum (*):

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	1530	16	0.453	15.10	4.602	Nov. 27	1730	12	0.340	14.96	4.560
Oct. 22	0215	57	1.61	16.02	4.883	Dec. 25	2000	12	0.340	14.96	4.560
Oct. 26	1700	59	1.67	16.06	4.895	Apr. 12	1600	22	0.623	15.29	4.660
Nov. 12	0815	15	0.425	15.06	4.590	June 12	1615	19	0.538	15.20	4.633
Nov. 13	1445	60	1.70	16.07	4.898	July 2	1900	12	0.340	14.96	4.560
Nov. 14	1430	23	0.651	15.31	4.666	July 25	1600	28	0.793	15.44	4.706
Nov. 16	1700	44	1.25	15.79	4.813	Aug. 4	1415	41	1.16	15.72	4.791
Nov. 17	1730	35	0.991	15.60	4.755	Aug. 30	1645	23	0.651	15.30	4.663
Nov. 18	1715	*71	2.01	*16.25	4.953	Sept. 22	1730	18	0.510	15.16	4.621
Nov. 25	1900	12	0.340	14.96	4.560	Sept. 28	1430	38	1.08	15.66	4.773

No flow parts or all day Mar. 18-26, Apr. 26-30, May. 5-8, 30, 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	.35	.80	.21	.19	.18	.05	.02	.09	.03	.06	.09
2	.66	.29	.65	.19	.13	.27	.05	.03	.04	1.8	.05	.07
3	.25	.20	.58	.19	.11	.22	.04	.03	.04	.17	.05	.08
4	.23	.22	.51	.21	.10	.07	.04	.03	.05	.07	4.2	.07
5	.19	.27	.43	.23	.11	.06	1.2	.02	.83	.07	.26	.36
6	.16	1.1	.37	.85	.11	.06	.27	.01	.06	.07	.10	.08
7	.17	.34	.41	.25	.10	.06	.12	.0	.04	1.1	.08	.04
8	1.9	.93	.41	.19	.10	.06	.08	.01	.03	.22	.13	.04
9	.29	1.5	.41	.22	.10	.06	.06	.02	.04	.11	.10	.05
10	.20	.57	.39	.18	.32	.06	.05	.03	.04	.08	.08	.06
11	.18	.39	.41	.20	.99	.04	.05	.03	.03	.07	.07	.06
12	.16	2.6	.41	.20	.36	.03	2.3	.03	2.0	.06	.08	.05
13	.41	5.2	.41	.20	.17	.02	.21	.03	.14	.06	.08	.04
14	.19	2.9	.42	.24	.13	.02	.14	.34	.06	.05	.07	.04
15	.15	.88	.50	.22	.11	.05	.13	.03	.05	.07	.11	.32
16	.13	4.2	.51	.19	.09	.02	.09	.02	.04	.06	.09	.06
17	.11	3.8	.46	.16	.08	.02	.06	.01	.04	.05	.07	.04
18	.11	5.9	.43	.15	.07	.01	.05	.01	.05	.05	.08	.04
19	.17	2.6	.44	.14	.07	.01	.04	.08	.04	.07	.10	.24
20	.13	1.6	.46	.13	.07	.01	.03	.02	.06	.08	.08	.06
21	.12	1.1	.44	.12	.08	.01	.03	.02	.05	.08	.07	1.1
22	5.2	1.1	.40	.11	.07	.01	.03	.01	2.0	.07	.06	3.7
23	.29	.97	.39	.11	.06	.01	.03	.01	.36	.06	.06	.59
24	.39	1.2	.36	.12	.05	.0	.02	.01	.09	.06	.07	.13
25	.23	1.9	1.2	.10	.05	.01	.02	.02	.07	3.0	.12	.10
26	5.0	1.4	.39	.10	.06	.01	.01	.01	.05	.25	.10	.08
27	1.3	2.9	.27	.10	.09	.02	.01	.02	.04	.13	.08	.08
28	1.1	1.6	.27	.10	.12	.02	.01	.02	.05	.09	.07	4.6
29	.58	.88	.24	.12	---	.03	.01	.02	.05	.06	.08	.30
30	.53	.82	.23	.11	---	.03	.01	.01	.04	.14	2.8	.14
31	.43	---	.22	.13	---	.04	---	.04	---	.08	.17	---
TOTAL	21.64	49.71	13.82	5.77	4.09	1.52	5.24	0.99	6.57	8.36	9.62	12.71
MEAN	.70	1.66	.45	.19	.15	.049	.17	.032	.22	.27	.31	.42
MAX	5.2	5.9	1.2	.85	.99	.27	2.3	.34	2.0	3.0	4.2	4.6
MIN	.11	.20	.22	.10	.05	.00	.01	.00	.03	.03	.05	.04
AC-FT	43	99	27	11	8.1	3.0	10	2.0	13	17	19	25
CFSM	1.84	4.36	1.17	.49	.38	.13	.46	.08	.58	.71	.82	1.11
IN.	2.12	4.87	1.35	.56	.40	.15	.51	.10	.64	.82	.94	1.24

CAL YR 1986 TOTAL 165.57 MEAN .45 MAX 16 MIN .00 AC-FT 328 CFSM 1.19 IN. 16.21
WTR YR 1987 TOTAL 140.04 MEAN .38 MAX 5.9 MIN .00 AC-FT 278 CFSM 1.01 IN. 13.71

RIO GUANAJIBO BASIN

50133600 RIO GUANAJIBO NEAR SAN GERMAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°07'18", long 67°03'56", at bridge on Highway 347, 2.2 mi (3.5 km) northwest of San German.

DRAINAGE AREA.--45.5 sq mi (117.8 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
06...	1220	33	436	7.70	26.5	8.7	6.4	81	<10	K11000	5000
DEC											
11...	1335	50	556	7.75	26.0	--	6.4	79	--	5100	4400
FEB 1987											
05...	1245	E5.0	682	7.35	27.0	3.9	1.7	22	31	K180000	38000
APR											
09...	1410	17	552	7.50	29.0	2.5	4.8	63	12	2500	430
JUN											
04...	1215	350	302	7.80	28.0	13	6.8	--	21	24000	6800
AUG											
06...	1220	16	553	7.80	28.5	20	2.8	--	27	K11000	610

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
06...	210	9	22	37	14	0.4	2.0	198	<0.5	19	17
DEC											
11...	--	--	--	--	--	--	--	236	--	--	--
FEB 1987											
05...	--	--	--	--	--	--	--	270	--	--	--
APR											
09...	230	11	23	42	23	0.7	2.3	220	<0.5	29	22
JUN											
04...	--	--	--	--	--	--	--	130	--	--	--
AUG											
06...	180	7	28	26	13	0.4	2.5	170	--	15	13

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TOMS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
06...	0.2	34	264	23.5	31	0.54	0.06	0.60	0.14	0.3
DEC										
11...	--	--	--	--	--	0.47	0.13	0.60	0.85	0.5
FEB 1987										
05...	--	--	--	--	9	--	0.02	<0.10	4.80	3.3
APR										
09...	0.5	35	309	14.0	16	0.52	0.18	0.70	1.40	0.5
JUN										
04...	--	--	--	--	66	0.47	0.03	0.50	0.21	0.0
AUG										
06...	0.2	30	230	9.94	5	0.84	0.06	0.90	0.30	0.7

K = non-ideal count
E = estimate

RIO GUANAJIBO BASIN

50133600 RIO GUANAJIBO NEAR SAN GERMAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 06...	0.4	0.6	--	0.14	1	100	80	<1	10	10
DEC 11...	1.4	2.0	8.9	0.23	--	--	--	--	--	--
FEB 1987 05...	8.1	8.1	--	0.73	--	--	--	--	--	--
APR 09...	1.9	2.6	12	0.58	1	100	170	<1	9	<10
JUN 04...	0.2	0.7	--	0.22	--	--	--	--	--	--
AUG 06...	1.0	1.9	--	0.53	--	--	--	--	--	--

[illegible]

RIO GUANAJIBO BASIN

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50136400 RIO ROSARIO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°09'36", long 67°05'08", at bridge on Highway 348, 0.5 mi (0.8 km) southwest of Rosario plaza.

DRAINAGE AREA.--18.3 mi² (47.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50.0 ft (15.2 m), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,880 ft³/s (166 m³/s), Oct. 7, 1985, gage height, 12.67 ft (3.862 m), from floodmarks, from rating curve extended above 150 ft³/s (4.25 m³/s) on basis of step-backwater analysis; minimum discharge 7.8 ft³/s (0.221 m³/s), Apr. 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s (42.5 m³/s) and maximum (*):

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)
Nov. 20	1930	2,350	66.6	9.03	2.752	Sept. 12	1415	*3,020	85.5	*9.91	3.020
June 18	1745	2,150	60.9	8.74	2.664	Sept. 15	1530	1,850	52.4	8.28	2.524
Aug. 18	1830	2,060	58.3	8.60	2.621						

Minimum discharge recorded, 7.8 ft³/s (0.221 m³/s), Apr. 29, but may have been less during period of no gage-height record Apr. 22-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	56	63	25	e19	e13	14	8.9	45	17	43	179
2	167	48	60	25	e22	e13	18	11	30	25	32	132
3	169	67	56	25	e19	e14	16	10	87	23	27	71
4	95	55	52	24	e18	e14	15	17	75	27	49	50
5	54	40	47	25	e17	e13	39	10	59	24	42	43
6	52	42	46	29	e16	e13	93	11	48	19	31	35
7	54	38	45	55	e16	e12	40	9.0	35	140	27	32
8	85	41	43	29	e15	e12	19	24	28	82	25	48
9	77	39	40	25	e14	e12	14	19	24	70	23	39
10	47	36	38	24	e14	e12	12	29	23	35	22	30
11	48	34	37	25	e28	e12	12	21	79	28	21	37
12	84	46	37	25	e66	13	21	138	54	25	25	222
13	84	70	36	23	e21	12	23	70	45	62	40	117
14	60	130	36	23	e28	12	21	29	29	38	26	76
15	68	107	34	22	e26	14	51	21	26	68	32	226
16	55	124	35	23	e20	16	45	19	25	37	25	104
17	43	178	40	21	e17	16	24	17	25	27	35	57
18	39	323	34	21	e17	13	16	18	182	37	169	43
19	79	248	33	20	e16	12	13	72	61	31	87	86
20	60	375	30	20	e15	12	11	57	34	56	40	68
21	42	244	30	20	e14	12	10	57	27	37	29	62
22	149	130	29	20	e14	12	e8.8	29	49	27	25	149
23	54	106	28	20	e14	12	e8.6	22	54	24	22	82
24	77	102	26	20	e14	11	e8.2	20	33	23	85	54
25	60	91	32	19	e14	13	e7.8	49	26	23	209	43
26	96	99	44	18	e13	11	e7.6	46	23	42	121	37
27	138	101	28	17	e14	11	e7.8	31	22	33	62	35
28	142	81	28	e18	e13	10	e8.0	28	21	42	51	48
29	111	66	37	e18	---	10	e8.0	23	20	31	51	38
30	96	65	27	e18	---	11	11	20	18	97	237	31
31	69	---	26	e19	---	10	---	98	---	72	129	---
TOTAL	2535	3182	1177	716	534	383	602.8	1033.9	1307	1322	1842	2274
MEAN	81.8	106	38.0	23.1	19.1	12.4	20.1	33.4	43.6	42.6	59.4	75.8
MAX	169	375	63	55	66	16	93	138	182	140	237	226
MIN	39	34	26	17	13	10	7.6	8.9	18	17	21	30
AC-FT	5030	6310	2330	1420	1060	760	1200	2050	2590	2620	3650	4510

CAL YR 1986 TOTAL 18114.4 MEAN 49.6 MAX 500 MIN 9.4 AC-FT 35930
WTR YR 1987 TOTAL 16908.7 MEAN 46.3 MAX 375 MIN 7.6 AC-FT 33540

e Estimated

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--WATER YEARS 1979 TO CURRENT YEAR.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: OCTOBER 1985 TO SEPTEMBER 1986

INSTRUMENTATION.--US D-49 SEDIMENT SAMPLER SINCE OCTOBER 1985. AUTOMATIC SEDIMENT SAMPLER SINCE 1986

REMARKS.--sediment samples were collected by a local observer once daily during low flow and more than once daily during high flow events for concentration and particle size analyses. Sediment samples are collected periodically by survey staff. Automatic sediment sampler set to collect samples above 200 cfs.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,150 mg/L October 7, 1985; Minimum daily mean, 2 mg/L several days.

SEDIMENT LOADS: Maximum daily, 74,700 tons (67,800 tonnes) October 7, 1985; Minimum daily, 0.05 ton (0.04 Tonne) several days.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,640 mg/L November 20, 1986; Minimum daily mean, 2.0 mg/L several days.

SEDIMENT LOADS: Maximum daily, 4,700 tons (4,263 tonnes) September 12, 1987; Minimum daily 0.04 ton (0.04 tonne) several days.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
05...	1015	44	254	7.95	25.0	6.8	9.0	110	13	290	440
DEC											
10...	1005	39	272	7.95	22.0	--	9.5	--	--	230	340
FEB 1987											
04...	1025	18	270	7.85	22.0	3.6	9.8	113	<10	320	550
APR											
08...	1010	20	234	8.10	24.5	2.0	8.4	102	14	K1300	2500
JUN											
03...	1005	44	219	8.20	25.0	16	8.3	--	<10	K9200	4600
AUG											
05...	0935	43	210	8.00	25.0	78	5.2	--	<10	23000	34000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FLD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
05...	120	3	23	16	7.5	0.3	1.3	120	<0.5	23	7.2
DEC											
10...	--	--	--	--	--	--	--	121	--	--	--
FEB 1987											
04...	--	--	--	--	--	--	--	130	--	--	--
APR											
08...	110	0	20	14	7.5	0.3	1.3	110	<0.5	8.7	7.3
JUN											
03...	--	--	--	--	--	--	--	99	--	--	--
AUG											
05...	95	4	20	11	6.6	0.3	1.7	91	--	9.6	6.3

K = non-ideal count

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. PERCENT FINER THAN .002 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .004 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .008 MM
OCT 1986							
02...	1710	958	7200	18600	13	20	28
02...	1722	882	9000	21400	9	15	22
NOV							
14...	1545	380	4080	4190	12	21	31
14...	1630	475	3190	4090	14	22	31
17...	2000	926	4510	11300	11	16	26
18...	1850	949	3730	9560	12	21	30
20...	1915	1140	2990	9200	11	20	31
20...	1930	2370	2660	17000	19	26	37
20...	1945	2300	2580	16000	15	25	31
MAY 1987							
12...	1715	869	5250	12300	12	23	31
12...	1745	788	6740	14300	10	19	27
12...	1800	716	5580	10800	6	17	25
12...	1815	643	4360	7570	13	23	34
12...	1845	528	3980	5670	13	20	33
12...	1930	394	5840	6210	16	26	34
12...	2000	341	4470	4120	10	27	41
12...	2015	311	3780	3170	12	26	38
12...	2145	220	1320	784	22	29	46
JUN							
18...	1715	506	3960	5410	8	10	21
18...	1730	1010	1770	4830	23	24	28
18...	1732	2080	8700	48900	12	18	27
18...	1745	2150	1440	8360	19	29	39
18...	1830	1060	6960	19900	14	25	34
18...	1845	944	1640	4200	24	25	45
18...	2030	364	1620	1590	27	34	40
18...	2045	327	1680	1480	23	30	47
18...	2145	230	3420	2120	30	48	70
SEP							
01...	1900	1160	8560	26800	11	18	28
01...	1915	967	5260	13700	14	34	43

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1986 TO SEPTEMBER 1987

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	SED. SUSP. FALL DIAM. PERCENT FINER THAN .016 MM	SED. SUSP. FALL DIAM. PERCENT FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN 1.00 MM
OCT 1986							
02...	38	52	67	71	78	83	88
02...	31	40	51	65	75	84	92
NOV							
14...	44	62	76	87	96	99	99
14...	43	58	67	85	96	99	99
17...	38	56	58	73	93	98	99
18...	42	58	72	86	96	99	99
20...	47	61	75	88	98	99	99
20...	53	72	81	92	98	99	99
20...	49	63	77	89	98	99	99
MAY 1987							
12...	42	58	75	89	98	99	99
12...	39	55	66	83	98	99	99
12...	31	48	67	82	95	99	99
12...	45	55	71	88	96	99	99
12...	45	58	79	90	98	99	99
12...	57	75	85	90	96	99	99
12...	59	75	86	94	98	99	99
12...	55	78	87	90	96	99	99
12...	70	84	89	96	99	99	100
JUN							
18...	29	53	70	84	91	97	99
18...	62	80	84	96	98	99	99
18...	36	47	55	73	88	90	93
18...	51	74	83	96	98	99	99
18...	46	59	76	89	96	98	99
18...	65	72	88	96	99	99	99
18...	58	80	87	95	98	99	100
18...	60	78	82	98	99	100	100
18...	83	89	93	96	99	99	100
SEP							
01...	38	48	63	77	91	97	99
01...	62	80	88	94	97	99	100

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	81	175	100	56	18	2.7	63	4	.68
2	167	608	1040	48	15	1.9	60	3	.49
3	169	408	433	67	80	31	56	3	.45
4	95	155	40	55	100	15	52	2	.28
5	54	80	12	40	10	1.1	47	2	.25
6	52	61	16	42	20	2.3	46	2	.25
7	54	46	8.7	38	8	.82	45	4	.49
8	85	157	136	41	20	2.2	43	2	.23
9	77	80	21	39	8	.84	40	2	.22
10	47	20	2.5	36	5	.49	38	2	.21
11	48	20	2.6	34	5	.46	37	3	.30
12	84	163	87	46	30	3.7	37	3	.30
13	84	151	42	70	90	27	36	2	.19
14	60	58	9.4	130	234	167	36	2	.19
15	68	99	26	107	162	64	34	2	.18
16	55	70	10	124	252	163	35	2	.19
17	43	40	4.6	178	398	538	40	3	.39
18	39	25	2.6	323	998	1650	34	4	.37
19	79	215	151	248	346	321	33	4	.36
20	60	128	26	375	1640	3630	30	4	.32
21	42	45	5.1	244	143	147	30	4	.32
22	149	334	343	130	110	48	29	5	.39
23	54	30	4.4	106	70	25	28	6	.45
24	77	110	56	102	20	5.5	26	6	.42
25	60	73	17	91	56	16	32	21	6.8
26	96	208	139	99	80	21	44	20	2.4
27	138	309	182	101	129	47	28	6	.45
28	142	327	221	81	110	24	28	5	.38
29	111	70	21	66	25	4.5	37	20	2.0
30	96	20	5.2	65	7	1.2	27	11	.80
31	69	18	3.4	---	---	---	26	4	.28
TOTAL	2535	---	3167.5	3182	---	6961.71	1177	---	21.03

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	25	6	.41	19	5	.26	13	2	.07
2	25	7	.47	22	8	.48	13	13	.46
3	25	9	.61	19	5	.26	14	3	.11
4	24	10	.65	18	5	.24	14	11	.42
5	25	11	.74	17	4	.18	13	11	.39
6	29	28	3.7	16	4	.17	13	9	.32
7	55	49	11	16	4	.17	12	8	.26
8	29	6	.47	15	12	.49	12	10	.32
9	25	6	.41	14	11	.42	12	14	.45
10	24	7	.45	14	19	.72	12	12	.39
11	25	7	.47	28	33	2.5	12	13	.42
12	25	7	.47	66	85	15	13	11	.39
13	23	6	.37	21	7	.40	12	9	.29
14	23	6	.37	28	16	1.2	12	7	.23
15	22	6	.36	26	13	.91	14	6	.23
16	23	6	.37	20	56	3.0	16	4	.17
17	21	6	.34	17	8	.37	16	6	.26
18	21	6	.34	17	12	.55	13	7	.25
19	20	6	.32	16	5	.22	12	7	.23
20	20	6	.32	15	7	.28	12	8	.26
21	20	6	.32	14	3	.11	12	8	.26
22	20	6	.32	14	5	.19	12	7	.23
23	20	6	.32	14	4	.15	12	8	.26
24	20	5	.27	14	7	.26	11	8	.24
25	19	5	.26	14	7	.26	13	8	.28
26	18	4	.19	13	12	.42	11	8	.24
27	17	4	.18	14	3	.11	11	6	.18
28	18	4	.19	13	2	.07	10	6	.16
29	18	5	.24	---	---	---	10	6	.16
30	18	5	.24	---	---	---	11	6	.18
31	19	5	.26	---	---	---	10	4	.11
TOTAL	716	---	25.43	534	---	29.39	383	---	8.22

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	14	4	.15	8.9	7	.17	45	30	3.6
2	18	4	.19	11	8	.24	30	20	1.6
3	16	4	.17	10	4	.11	87	110	68
4	15	4	.16	17	10	.46	75	350	71
5	39	44	9.4	10	7	.19	59	50	8.0
6	93	187	79	11	12	.36	48	50	6.5
7	40	40	4.3	9.0	16	.39	35	25	2.4
8	19	6	.31	24	32	5.0	28	18	1.4
9	14	2	.08	19	10	.51	24	12	.78
10	12	2	.06	29	15	1.2	23	10	.62
11	12	2	.06	21	9	.51	79	281	298
12	21	8	.45	138	870	1480	54	70	14
13	23	8	.50	70	100	19	45	50	6.1
14	21	7	.40	29	7	.55	29	16	1.3
15	51	52	9.5	21	4	.23	26	13	.91
16	45	15	1.8	19	4	.21	25	12	.81
17	24	3	.19	17	4	.18	25	12	.81
18	16	2	.09	18	4	.19	182	642	2180
19	13	2	.07	72	414	459	61	50	8.2
20	11	2	.06	57	135	55	34	15	1.4
21	10	2	.05	57	150	23	27	10	.73
22	8.8	2	.05	29	20	1.6	49	50	6.6
23	8.6	2	.05	22	15	.89	54	20	2.9
24	8.2	2	.04	20	5	.27	33	9	.80
25	7.8	2	.04	49	87	48	26	9	.63
26	7.6	2	.04	46	50	6.2	23	10	.62
27	7.8	2	.04	31	18	1.5	22	10	.59
28	8.0	2	.04	28	18	1.4	21	9	.51
29	8.0	8	.17	23	10	.62	20	5	.27
30	11	6	.18	20	10	.54	18	5	.24
31	---	---	---	98	475	678	---	---	---
TOTAL	602.8	---	107.64	1033.9	---	2785.52	1307	---	2689.32

RIO GUANAJIBO BASIN

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

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	17	5	.23	43	35	4.1	179	651	1580
2	25	10	.68	32	20	1.7	132	298	150
3	23	7	.43	27	12	.87	71	70	13
4	27	15	1.1	49	70	25	50	30	4.1
5	24	7	.45	42	35	4.0	43	15	1.7
6	19	10	.51	31	15	1.3	35	10	.95
7	140	640	1480	27	10	.73	32	10	.86
8	82	330	166	25	9	.61	48	40	5.2
9	70	90	17	23	5	.31	39	40	4.2
10	35	22	2.1	22	4	.24	30	10	.81
11	28	15	1.1	21	5	.28	37	30	3.0
12	25	12	.81	25	10	.68	222	1170	4700
13	62	131	125	40	15	1.6	117	208	90
14	38	20	2.1	26	10	.70	76	90	18
15	68	128	128	32	12	1.0	226	759	2700
16	37	40	4.0	25	15	1.0	104	120	34
17	27	20	1.5	35	20	1.9	57	60	9.2
18	37	50	5.0	169	312	724	43	30	3.5
19	31	25	2.1	87	100	23	86	246	246
20	56	88	66	40	30	3.2	68	139	47
21	37	12	1.2	29	15	1.2	62	101	25
22	27	12	.87	25	10	.68	149	445	646
23	24	20	1.3	22	9	.53	82	90	20
24	23	18	1.1	85	184	233	54	50	7.3
25	23	11	.68	209	681	1680	43	30	3.5
26	42	40	14	121	216	130	37	25	2.5
27	33	20	1.8	62	60	10	35	22	2.1
28	42	20	2.3	51	50	6.9	48	60	7.8
29	31	10	.84	51	55	7.6	38	30	3.1
30	97	218	258	237	716	1860	31	20	1.7
31	72	140	27	129	219	99	---	---	---
TOTAL	1322	---	2313.20	1842	---	4825.13	2274	---	10330.52
YEAR	16908.7		33264.61						

RIO GUANAJIBO BASIN

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°08'36", long 67°08'57", Hydrologic Unit 21010003, at bridge on Highway 100, 1.4 mi (2.3 km) west of Hormigueros, and 2.0 mi (3.2 km) downstream from Rio Rosario.

DRAINAGE AREA.--120 mi² (311 km²).

WATER-DISCHARGE RECORDS

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 at mean sea level. Previous to Nov. 7, 1980, at site 0.3 mi (0.5 km) upstream at datum 7.36 ft (2.243 m) higher.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--14 years (1974-87), 216 ft³/s (6.117 m³/s), 24.44 in/yr (621 mm/yr), 156,500 acre-ft/yr (193 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.66 m³/s), 145,000 acre-ft/yr (179 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 128,000 ft³/s (3,620 m³/s), Sept. 16, 1975, gage height, 28.50 ft (8.687 m), site and datum then in use, from rating curve extended above 100 ft³/s (2.83 m³/s) on the basis of contracted-opening measurement of peak flow; minimum discharge, 4.6 ft³/s (0.130 m³/s), June 22, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov.18	0730	*3,410 96.6	*20.67 6.300	Nov.21	0545	2,390 67.7	19.50 5.944

Minimum discharge, 20 ft³/s (0.566 m³/s), May. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	224	344	86	46	29	e29	27	130	76	108	271
2	352	178	324	86	46	29	e37	28	301	79	76	312
3	459	164	300	88	41	29	e34	26	408	90	65	188
4	320	198	293	88	39	28	e32	30	629	69	106	136
5	186	145	261	89	37	27	e90	25	260	76	128	109
6	217	409	232	108	35	26	e350	23	216	61	81	99
7	158	312	217	165	34	26	e130	22	184	162	58	86
8	159	372	204	e94	33	26	e60	22	127	281	60	82
9	222	424	186	e89	32	25	e50	39	106	164	62	107
10	141	344	171	e84	32	25	42	108	101	94	51	78
11	141	251	157	e82	57	e26	39	176	111	75	48	81
12	154	466	145	e77	84	e27	72	190	151	66	93	214
13	194	414	134	e72	55	e25	70	283	128	66	e70	239
14	230	684	130	e72	139	e25	84	301	82	96	e62	186
15	192	e794	135	e70	93	e29	317	171	70	80	e74	384
16	172	1040	165	72	54	e33	295	83	64	79	e60	409
17	147	2620	161	69	45	e34	143	67	57	57	e84	177
18	136	2810	126	66	39	e30	96	152	128	56	e350	131
19	159	2270	126	64	37	e27	77	203	166	70	e300	218
20	171	1460	118	61	34	e27	67	142	100	69	153	193
21	138	1840	117	58	33	e26	58	166	90	94	106	249
22	505	816	109	57	34	e25	53	97	292	59	86	515
23	170	624	102	55	32	e25	48	91	336	52	74	835
24	280	532	99	56	31	e23	44	68	207	50	97	263
25	202	713	106	53	30	e27	39	66	158	111	266	194
26	263	647	132	51	30	e23	36	113	132	119	290	158
27	387	753	96	49	30	e23	32	87	114	86	138	139
28	559	769	92	48	30	e22	30	76	101	69	120	188
29	652	433	98	48	---	e22	28	58	93	71	184	157
30	507	369	87	49	---	e23	29	54	83	128	426	121
31	303	---	85	48	---	e22	---	134	---	185	529	---
TOTAL	8048	23075	5052	2254	1262	814	2511	3128	5125	2890	4405	6519
MEAN	260	769	163	72.7	45.1	26.3	83.7	101	171	93.2	142	217
MAX	652	2810	344	165	139	34	350	301	629	281	529	835
MIN	136	145	85	48	30	22	28	22	57	50	48	78
AC-FT	15960	45770	10020	4470	2500	1610	4980	6200	10170	5730	8740	12930
CFSM	2.16	6.41	1.36	.61	.38	.22	.70	.84	1.42	.78	1.18	1.81
IN.	2.49	7.16	1.57	.70	.39	.25	.78	.97	1.59	.90	1.37	2.02

CAL YR 1986 TOTAL 74303.6 MEAN 204 MAX 4890 MIN 8.2 AC-FT 147400 CFSM 1.70 IN. 23.03
WTR YR 1987 TOTAL 65083 MEAN 178 MAX 2810 MIN 22 AC-FT 129100 CFSM 1.49 IN. 20.18

e Estimated

RIO GUANAJIBO BASIN

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50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
06...	0925	138	399	7.75	24.5	28	6.5	79	14	21000	K820
DEC											
11...	1015	161	440	7.65	24.0	--	6.1	73	--	K9000	3500
FEB 1987											
05...	1005	38	442	7.45	25.0	5.6	5.6	68	14	K9000	2000
APR											
09...	1030	51	417	7.10	26.5	6.6	5.0	63	16	K86000	K1300
JUN											
04...	1005	588	321	7.50	25.0	150	7.0	--	31	K94000	52000
AUG											
06...	0940	68	393	7.90	27.5	20	2.8	--	27	K79000	29000

DATE	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CAC03	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
06...	180	2	28	27	13	0.4	2.3	179	<0.5	16	15
DEC											
11...	--	--	--	--	--	--	--	203	--	--	--
FEB 1987											
05...	--	--	--	--	--	--	--	210	--	--	--
APR											
09...	200	38	28	31	16	0.5	2.7	160	<0.5	21	16
JUN											
04...	--	--	--	--	--	--	--	220	--	--	--
AUG											
06...	180	7	28	26	13	0.4	2.5	170	--	15	13

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
06...	0.2	30	239	89.0	75	0.79	0.01	0.80	0.03	0.47
DEC										
11...	--	--	--	--	--	0.61	0.09	0.70	0.18	0.02
FEB 1987										
05...	--	--	--	--	14	0.93	0.07	1.00	0.63	0.47
APR										
09...	0.3	34	245	33.4	19	1.10	0.10	1.20	0.40	0.70
JUN										
04...	--	--	--	--	314	0.93	0.07	1.00	0.07	0.38
AUG										
06...	0.2	30	230	42.2	5	0.84	0.06	0.90	0.30	0.70

K = non-ideal count

RIO GUANAJIBO BASIN

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 06...	0.5	0.85	--	0.22	<1	100	40	<1	20	10
DEC 11...	0.2	--	--	0.18	--	--	--	--	--	--
FEB 1987 05...	1.1	2.1	9.3	0.47	--	--	--	--	--	--
APR 09...	1.1	2.3	10	0.51	<1	<100	30	<1	5	<10
JUN 04...	0.6	1.6	--	0.40	--	--	--	--	--	--
AUG 06...	1.0	1.9	--	0.53	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986 06...	3600	<5	220	<0.1	<1	<1	20	<0.01	2	0.06
DEC 11...	--	--	--	--	--	--	--	--	--	--
FEB 1987 05...	--	--	--	--	--	--	--	--	--	--
APR 09...	900	<5	140	<0.1	<1	<1	<10	<0.01	4	0.07
JUN 04...	--	--	--	--	--	--	--	--	--	--
AUG 06...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
JUN 04...	1005	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.02	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 04...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 04...	<0.01	<0.1	<0.1	<1	<0.01	--	--	--	--

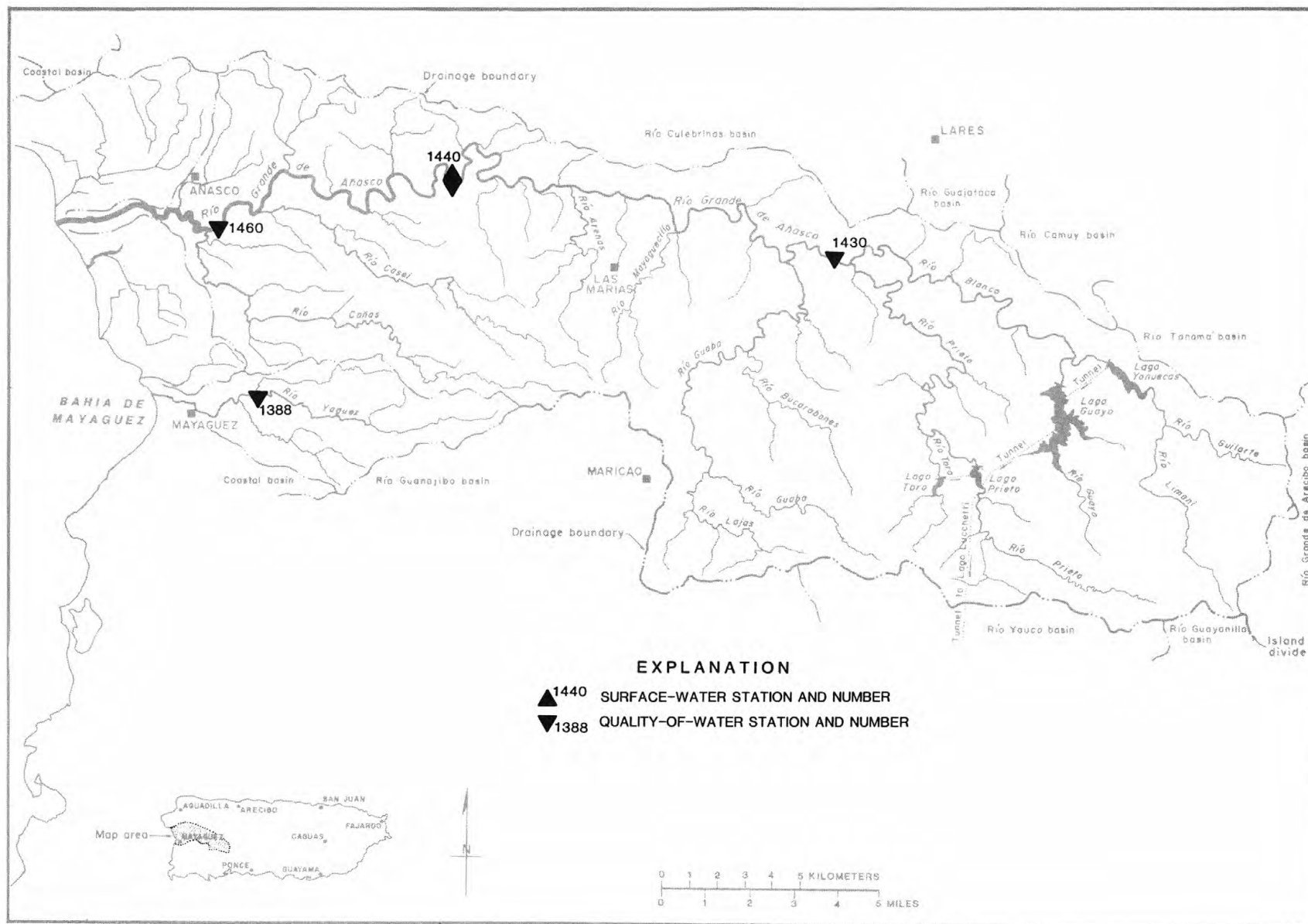


Figure 24.--Río Yagüez and Río Grande de Añasco basins.

RIO YAGÜEZ BASIN

50138800 RIO YAGÜEZ NEAR MAYAGÜEZ, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°12'31", long 67°07'07", at steel-truss bridge on unnumbered paved road about 800 ft (244 m) south of Highway 106, 1.8 mi (2.9 km) west of Highways 106 and 352 junction, and 1.4 mi (2.3 km) east-northeast from Mayagüez plaza.

DRAINAGE AREA.--6.7 sq mi (17.3 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
05...	1330	21	274	7.95	25.0	7.4	8.4	103	<10	K2400	2300
DEC											
10...	1355	12	292	7.85	23.0	--	8.7	102	--	320	870
FEB 1987											
04...	1350	7.1	267	8.00	27.0	2.9	10.1	128	<10	240	740
APR											
08...	1355	2.3	294	8.20	26.0	0.8	8.6	107	12	590	880
JUN											
03...	1350	2.7	226	8.40	29.5	2.2	8.8	--	<10	2100	2700
AUG											
05...	1230	8.8	254	8.30	27.0	28	6.0	--	24	3300	4700

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
05...	120	4	34	9.6	9.8	0.4	1.9	121	<0.5	7.3	8.7
DEC											
10...	--	--	--	--	--	--	--	130	--	--	--
FEB 1987											
04...	--	--	--	--	--	--	--	130	--	--	--
APR											
08...	130	0	35	9.8	12	0.5	2.3	130	<0.5	10	10
JUN											
03...	--	--	--	--	--	--	--	110	--	--	--
AUG											
05...	110	4	30	9.4	9.9	0.4	2.4	110	--	8.1	7.9

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
05...	<0.1	31	175	9.73	6	0.39	0.01	0.40	0.01	0.39
DEC										
10...	--	--	--	--	--	0.89	0.01	0.90	0.01	0.19
FEB 1987										
04...	--	--	--	--	6	0.59	0.01	0.60	0.01	0.69
APR										
08...	0.1	31	188	1.17	3	0.49	0.01	0.50	0.01	0.49
JUN										
03...	--	--	--	--	3	0.47	0.03	0.50	0.05	0.15
AUG										
05...	0.1	28	160	3.80	3	0.59	0.01	0.60	0.03	0.77

K = non-ideal count

RIO GRANDE DE ANASCO BASIN

50143000 RIO GRANDE DE ANASCO NEAR LARES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'26", long 66°55'00", at bridge on Highway 124, 0.7 mi (1.1 km) downstream from confluence of Rio Blanco and Rio Prieto, and 3.7 mi (6.0 km) southwest of Lares plaza.

DRAINAGE AREA.--26.3 sq mi (68.1 sq km) this does not include 36.2 sq mi (93.8 sq km) which contributes only during high floods, and 3.5 sq mi (9.1 sq km) which contributes only part of its storm runoff.

PERIOD OF RECORD.--Water years 1959-68, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
05...	1050	42	312	7.80	25.5	7.7	8.7	109	51	K910	2100
DEC											
11...	1255	39	326	8.30	24.0	--	10.8	130	--	K80	200
FEB 1987											
05...	1250	19	343	8.50	26.0	0.4	9.7	122	<10	<10	530
APR											
09...	1405	16	295	8.30	30.0	6.2	7.9	107	<10	100	230
JUN											
11...	1225	28	300	8.60	29.0	1.2	8.4	111	<10	K91	K91
AUG											
06...	1235	17	283	8.40	30.5	11	9.0	120	23	2300	K82

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
05...	120	6	32	8.8	11	0.5	2.0	110	<0.5	20	9.4
DEC											
11...	--	--	--	--	--	--	--	120	--	--	--
FEB 1987											
05...	--	--	--	--	--	--	--	120	--	--	--
APR											
09...	120	11	33	9.3	13	0.5	1.8	110	<0.5	22	11
JUN											
11...	--	--	--	--	--	--	--	110	--	--	--
AUG											
06...	130	19	35	10	14	0.5	1.7	110	--	23	10

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDEO (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
05...	<0.1	29	178	20.2	1	0.49	0.01	0.50	0.01	0.39
DEC										
11...	--	--	--	--	--	0.99	0.01	1.00	<0.01	--
FEB 1987										
05...	--	--	--	--	6	0.69	0.01	0.70	0.02	0.58
APR										
09...	0.1	31	187	8.03	8	0.79	0.01	0.80	0.01	0.59
JUN										
11...	--	--	--	--	<1	--	<0.01	0.80	0.02	1.3
AUG										
06...	0.1	33	190	8.72	8	0.29	0.01	0.30	0.01	0.29

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO GRANDE DE ANASCO BASIN

50144000 RIO GRANDE DE ANASCO NEAR SAN SEBASTIAN, PR

LOCATION.--Lat 18°17'05", long 67°03'05", Hydrologic Unit 21010003, on right bank, at downstream side of bridge on Highway 108, 0.4 mi (0.6 km) downstream from Quebrada La Zumbadora, 4.4 mi (7.1 km) northwest of Las Marias, 5.4 mi (8.7 km) southwest of San Sebastián.

DRAINAGE AREA.--94.3 mi² (244.2 km²), does not include 36.2 mi² (93.8 km²) which contributes only during high floods, and 3.5 mi² (9.1 km²) which contributes only part of its storm runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--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). Previous to Oct. 30, 1975, a site 600 ft (180 m) upstream at same datum.

REMARKS.--Records fair. Transbasin diversion (except during floods) to Rio Yauco basin for hydroelectric power and irrigation above Lago Guayo, Yahuecas, and Prieto, combined usable storage 17,300 acre-ft (21.3 hm³). Limited storm runoff is contributed to basin by 3.5 mi² (9.1 km²) above Rio Toro Diversion dam.

AVERAGE DISCHARGE.--24 years (1964-87), 310 ft³/s (8.779 m³/s), 44.64 in/yr (1,134 mm/yr), 224,600 acre-ft/yr (277 hm³/yr); median of yearly mean discharges, 302 ft³/s (8.55 m³/s), 219,000 acre-ft/yr (270 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 ft³/s (3,960 m³/s), Sept. 16, 1975, gage height, 33.9 ft (10.33 m), from rating curve extended above 4,000 ft³/s (113 m³/s) on basis of slope-area measurement; minimum discharge, 31 ft³/s (0.878 m³/s), Apr. 19, 20, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s (170 m³/s) and maximum (*):

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.18	1900	*5,950	168	*7.23	2.204						

Minimum discharge, 58 ft³/s (1.642 m³/s), Mar. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	364	640	153	120	88	64	292	422	121	207	444
2	226	321	485	150	119	86	64	279	729	113	139	421
3	343	471	326	148	106	86	64	123	764	123	147	249
4	205	367	300	146	103	88	63	138	403	131	245	205
5	170	283	282	142	102	88	101	93	451	163	210	257
6	203	263	267	167	100	86	198	80	443	113	128	135
7	477	282	260	234	99	83	266	79	244	110	111	407
8	690	249	255	160	96	83	107	117	177	213	102	210
9	466	232	245	157	93	80	79	134	152	266	97	329
10	216	223	240	141	96	80	67	334	146	139	91	277
11	363	213	233	135	217	79	107	329	341	122	89	400
12	321	257	225	132	415	77	272	561	201	118	94	546
13	667	287	220	139	175	74	187	515	152	130	179	781
14	603	243	222	141	213	72	242	246	121	155	467	436
15	291	275	216	135	201	84	361	144	183	130	543	480
16	223	437	207	129	124	83	343	105	184	165	336	446
17	196	1090	205	121	109	103	200	94	165	116	221	213
18	486	1780	199	118	102	81	130	114	339	205	961	188
19	524	1540	230	114	98	82	104	344	303	237	613	175
20	412	1080	202	115	95	76	92	275	160	178	195	230
21	239	879	196	112	94	72	85	453	150	225	132	417
22	289	555	187	110	97	76	79	200	223	137	106	313
23	265	457	179	110	95	68	77	143	236	134	107	350
24	303	400	173	114	91	62	72	122	189	141	126	250
25	416	382	173	109	91	69	69	447	145	114	181	220
26	843	489	170	107	90	66	66	234	127	327	197	203
27	1350	416	168	107	95	62	67	123	118	674	123	194
28	1610	379	173	109	94	60	66	115	263	361	104	302
29	868	351	192	118	---	61	90	102	211	221	96	334
30	731	461	159	150	---	61	203	106	135	151	304	201
31	472	---	154	134	---	61	---	577	---	182	569	---
TOTAL	14559	15026	7383	4157	3530	2377	3985	7018	7877	5715	7220	9613
MEAN	470	501	238	134	126	76.7	133	226	263	184	233	320
MAX	1610	1780	640	234	415	103	361	577	764	674	961	781
MIN	91	213	154	107	90	60	63	79	118	110	89	135
AC-FT	28880	29800	14640	8250	7000	4710	7900	13920	15620	11340	14320	19070
CFSM	4.98	5.31	2.53	1.42	1.34	.81	1.41	2.40	2.78	1.95	2.47	3.40
IN.	5.74	5.93	2.91	1.64	1.39	.94	1.57	2.77	3.11	2.25	2.85	3.79

CAL YR 1986	TOTAL 124577	MEAN 341	MAX 4170	MIN 45	AC-FT 247100	CFSM 3.62	IN. 49.14
WTR YR 1987	TOTAL 88460	MEAN 242	MAX 1780	MIN 60	AC-FT 175500	CFSM 2.57	IN. 34.90

RIO GRANDE DE ANASCO BASIN

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50144000 RIO GRANDE DE ANASCO NEAR SAN SEBASTIAN, PR--Continued

(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV 1986 04...	1130	350	220	7.60	25.0	47	8.2	100	K6800	8600	87
JAN 1987 15...	1020	133	270	7.90	23.0	1.1	8.6	101	100	K150	110
APR 08...	1120	108	235	7.80	26.5	4.4	8.2	102	350	320	100
JUL 09...	1410	80	173	7.90	27.5	94	7.4	94	K7100	23000	74

DATE	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 1986 04...	7	22	7.8	8.0	0.4	1.9	80	9.7	6.0	<0.1	28
JAN 1987 15...	0	27	9.6	9.5	0.4	1.3	110	11	8.0	0.1	30
APR 08...	6	25	9.0	8.5	0.4	1.8	89	9.2	7.4	0.1	28
JUL 09...	6	19	6.4	6.4	0.3	1.7	68	10	5.8	0.1	21

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)
NOV 1986 04...	130	136	123	0.96	0.03	0.04	1.3	0.05	0.12	0.13	0.4
JAN 1987 15...	159	167	57.1	0.84	0.06	0.08	0.2	0.06	0.04	0.03	0.09
APR 08...	146	151	42.6	1.10	0.04	0.05	0.5	0.05	0.05	0.03	0.09
JUL 09...	117	110	23.8	0.94	0.08	0.1	0.3	0.16	0.03	0.03	0.09

DATE	ALUM- INIUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 1986 04...	90	<1	35	<0.5	1	<1	<3	7	150	<5
JAN 1987 15...	<10	<1	35	2	<1	<1	<3	2	6	<5
APR 08...	60	<1	35	<0.5	<1	<1	<3	3	48	<5
JUL 09...	70	<1	29	<0.5	1	<1	<3	4	67	<5

K = non-ideal count

RIO GRANDE DE ANASCO BASIN

50144000 RIO GRANDE DE ANASCO NEAR SAN SEBASTIAN, PR--Continued

(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 1986 04...	4	20	0.4	<10	3	<1	<1	110	<6	18
JAN 1987 15...	6	13	0.3	<10	4	<1	<1	140	<6	6
APR 08...	<4	13	<0.1	<10	1	<1	<1	120	6	4
JUL 09...	4	21	0.3	<10	1	<1	<1	98	6	12

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. PERCENT FINER THAN .062 MM
NOV 1986 04...	1130	350	107	101	52
JAN 1987 15...	1020	133	10	3.6	51

RIO GRANDE DE ANASCO BASIN

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50146000 RIO GRANDE DE ANASCO NEAR ANASCO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°16'00", long 67°08'05", at bridge on Highway 430, 0.2 mi (0.3 km) south of Highway 109 at El Espino and 1.4 mi (2.3 km) east-southeast from Anasco plaza.

DRAINAGE AREA.--139 sq mi (360 sq km) this does not include 39.7 sq mi (102.8 sq km), flow is diverted to south coast.

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
06...	1440	E550	248	7.20	25.5	7.4	8.0	98	<10	K380	760
DEC											
10...	1430	304	260	7.70	26.0	--	9.1	112	--	K150	K36
FEB 1987											
04...	1320	135	265	8.20	26.0	1.1	9.9	122	<10	K64	K54
APR											
07...	1415	297	178	7.20	26.0	55	7.0	87	26	5400	32000
JUN											
10...	1200	211	245	7.90	27.0	7.8	7.7	96	10	640	K230
AUG											
05...	1215	314	174	7.20	28.0	--	7.2	86	--	K11000	30000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
06...	92	0	23	8.3	8.8	0.4	1.7	93	<0.5	9.1	6.9
DEC											
10...	--	--	--	--	--	--	--	100	--	--	--
FEB 1987											
04...	--	--	--	--	--	--	--	100	--	--	--
APR											
07...	73	9	19	6.2	6.9	0.4	2.2	64	<0.5	10	5.1
JUN											
10...	--	--	--	--	--	--	--	100	--	--	--
AUG											
05...	75	68	19	6.8	7.1	0.4	2.2	7	--	11	6.3

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
06...	<0.1	31	145	--	3	0.69	0.01	0.70	0.04	0.26
DEC										
10...	--	--	--	--	--	0.69	0.01	0.70	<0.01	--
FEB 1987										
04...	--	--	--	--	10	0.49	0.01	0.50	0.02	0.18
APR										
07...	0.1	19	107	85.7	192	1.04	0.06	1.10	0.10	0.7
JUN										
10...	--	--	--	--	29	0.09	0.01	0.10	0.02	0.18
AUG										
06...	0.1	23	80	67.8	89	0.58	0.02	0.60	0.04	0.56

K = non-ideal count
E = estimate

RIO GRANDE DE ANASCO BASIN

50146000 RIO GRANDE DE ANASCO NEAR ANASCO, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986 06...	0.3	1.0	--	0.04	<1	<100	<10	<1	<1	<10
DEC 10...	0.5	1.2	5.3	0.03	--	--	--	--	--	--
FEB 1987 04...	0.2	0.7	3.1	0.07	--	--	--	--	--	--
APR 07...	0.8	1.9	8.4	0.24	<1	100	<10	<1	10	20
JUN 10...	0.2	0.30	--	0.20	--	--	--	--	--	--
AUG 05...	0.6	1.2	--	0.14	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986 06...	610	<5	60	<0.1	<1	<1	10	<0.01	<1	0.04
DEC 10...	--	--	--	--	--	--	--	--	--	--
FEB 1987 04...	--	--	--	--	--	--	--	--	--	--
APR 07...	6300	<5	320	<0.1	<1	<1	20	<0.01	9	0.02
JUN 10...	--	--	--	--	--	--	--	--	--	--
AUG 06...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
NOV 1986 06...	1440	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
APR 07...	1415	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
NOV 1986 06...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
APR 07...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV 1986 06...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01
APR 07...	<0.01	<0.1	<0.1	<1	<0.01	0.04	<0.01	<0.01	<0.01

RIO CULEBRINAS BASIN

50147600 RIO CULEBRINAS NEAR SAN SEBASTIAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'51", long 67°02'40", at bridge on Highway 423, 1.3 mi (2.1 km) south of Quebrada El Salto Bridge on Highway 111, and 2.1 mi (3.4 km) west of Central La Plata.

DRAINAGE AREA.--58.2 sq mi (150.7 sq km).

PERIOD OF RECORD.--Water years 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
07...	0940	123	287	7.50	24.0	5.9	7.6	91	<10	3500	5500
DEC											
11...	0940	87	304	7.80	23.0	--	7.9	92	--	K6400	K1100
FEB 1987											
05...	0915	35	338	7.70	22.0	3.2	7.6	87	20	K1100	580
APR											
08...	1155	49	346	7.50	26.5	--	6.7	84	--	23000	K11200
JUN											
11...	0900	74	306	7.90	25.5	12	7.1	86	10	K11000	K1200
AUG											
06...	0910	73	279	7.60	26.5	3.3	6.9	85	19	K6000	K1000

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
07...	100	3	33	4.9	12	0.5	2.2	100	<0.5	10	9.7
DEC											
11...	--	--	--	--	--	--	--	110	--	--	--
FEB 1987											
05...	--	--	--	--	--	--	--	120	--	--	--
APR											
08...	150	0	48	7.9	20	0.7	8.8	110	<0.5	10	12
JUN											
11...	--	--	--	--	--	--	--	120	--	--	--
AUG											
06...	120	12	40	5.4	12	0.5	2.6	110	--	10	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
07...	<0.1	33	165	54.8	11	1.28	0.02	1.30	0.05	0.25
DEC										
11...	--	--	--	--	--	1.42	0.08	1.50	0.05	0.25
FEB 1987										
05...	--	--	--	--	10	1.14	0.06	1.20	0.02	0.88
APR										
08...	0.2	34	240	31.8	36	1.38	0.12	1.50	0.17	0.93
JUN										
11...	--	--	--	--	21	1.03	0.07	1.10	0.12	0.58
AUG										
06...	0.1	30	180	35.5	1	1.04	0.06	1.10	0.07	0.53

K = non-ideal count

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

RIO CULEBRINAS BASIN

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR

LOCATION.--Lat 18°21'42", long 67°05'33", Hydrologic Unit 21010003, 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 mi² (184.4 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 45 ft (14 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--20 years (1968-87), 306 ft³/s (8.666 m³/s), 58.36 in/yr (1,482 mm/yr), 221,700 acre-ft/yr (273 hm³/yr); median of yearly mean discharges, 290 ft³/s (8.21 m³/s), 210,000 acre-ft/yr (260 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,000 ft³/s (1,950 m³/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 ft³/s (73.6 m³/s) on basis of slope-area and contracted-opening measurements of peak flow; minimum discharge, 16 ft³/s (0.453 m³/s), Apr. 17-19, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,300 ft³/s (320 m³/s) and maximum (*):

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. 18	2100	23,700	671	27.17	8.281	Dec. 1	2100	22,400	634	26.76	8.156
Oct. 19	1900	23,300	660	27.02	8.236	Sept. 11	2100	*26,800	759	*28.08	8.559

Minimum discharge, 30 ft³/s (0.850 m³/s), Mar. 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	237	4220	84	65	52	37	144	135	144	120	159
2	87	209	998	83	81	51	36	1150	112	131	105	140
3	148	310	200	81	66	51	34	242	220	312	487	886
4	197	209	159	80	60	50	37	125	231	189	183	751
5	164	181	138	80	58	51	42	101	183	150	122	305
6	113	171	126	87	59	48	58	105	744	125	106	272
7	401	164	118	103	57	49	97	101	411	114	100	179
8	224	161	110	85	55	48	125	147	209	276	95	157
9	501	157	104	80	53	45	50	169	139	185	92	1710
10	203	147	98	85	55	47	42	95	121	134	89	1320
11	198	143	95	84	310	45	69	157	110	262	88	5490
12	194	158	92	77	390	44	177	136	101	191	88	928
13	131	156	91	76	185	42	149	110	159	122	103	464
14	167	135	90	74	123	43	1160	98	243	109	112	269
15	185	129	88	76	161	45	456	94	368	109	492	213
16	160	186	85	79	93	50	957	91	494	107	199	196
17	287	158	82	71	78	60	321	87	209	98	133	180
18	4330	642	81	71	73	46	128	177	1430	98	885	159
19	5210	768	79	67	66	44	93	172	446	242	739	149
20	583	273	79	67	63	42	77	156	220	166	260	229
21	383	160	76	66	62	41	70	98	186	112	177	202
22	290	143	80	64	61	41	62	98	259	195	154	164
23	783	134	73	65	57	39	58	106	312	583	162	143
24	554	127	72	62	56	38	55	93	252	271	167	130
25	257	121	72	63	56	39	52	265	189	134	135	130
26	2000	120	70	61	52	36	49	226	164	139	136	120
27	1560	129	74	62	57	34	47	107	144	387	144	115
28	474	113	85	59	55	33	47	101	340	318	138	114
29	315	111	139	63	---	32	43	92	298	207	128	119
30	570	110	92	78	---	34	124	102	180	130	128	117
31	318	---	86	67	---	34	---	163	---	121	297	---
TOTAL	21077	5962	8052	2300	2607	1354	4752	5108	8609	5861	6364	15510
MEAN	680	199	260	74.2	93.1	43.7	158	165	287	189	205	517
MAX	5210	768	4220	103	390	60	1160	1150	1430	583	885	5490
MIN	87	110	70	59	52	32	34	87	101	98	88	114
AC-FT	41810	11830	15970	4560	5170	2690	9430	10130	17080	11630	12620	30760
CFSM	9.55	2.79	3.65	1.04	1.31	.61	2.22	2.31	4.03	2.66	2.88	7.26
IN.	11.01	3.11	4.21	1.20	1.36	.71	2.48	2.67	4.50	3.06	3.33	8.10

CAL YR 1986 TOTAL 150316 MEAN 412 MAX 11700 MIN 34 AC-FT 298200 CFSM 5.78 IN. 78.54
WTR YR 1987 TOTAL 87556 MEAN 240 MAX 5490 MIN 32 AC-FT 173700 CFSM 3.37 IN. 45.75

RIO CULEBRINAS BASIN

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.-- OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)	DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CON- DUCTANCE (UMHOS)	TEMPERA- TURE (DEG C)
NOV, 06	1032	169	206	25.0	MAY, 07	0842	87.7	332	26.0
DEC, 10	1330	99.1	252	25.0	JUN, 04	0914	190	211	25.0
JAN, 15	0859	72.1	257	23.0	JUL, 14	1135	110	291	29.0
FEB, 05	1007	58.1	255	23.5	AUG, 05	0908	124	254	25.5
MAR, 12	1229	48.0	279	25.5	SEP, 04	1008	231	221	25.0
APR, 08	0857	117	225	25.0					

RIO CULEBRINAS BASIN

50149100 RIO CULEBRINAS NEAR AGUADA, PR

WATER-QUALITY RECORDS

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 Sq mi (251.2 sq km).

PERIOD OF RECORD.--Water years 1958, 1970 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 1986											
06...	1020	440	330	7.30	25.5	29	7.9	97	34	K6900	5000
DEC											
10...	1045	185	352	7.60	24.0	--	8.0	95	--	4000	680
FEB 1987											
04...	1010	86	369	7.40	24.5	4.9	5.4	65	29	K90000	K200000
APR											
07...	1130	76	418	7.20	27.5	14	4.2	53	26	K1100	290
JUN											
0910	0910	201	342	7.90	25.5	27	6.6	80	10	K1600	920
AUG											
05...	0910	199	259	7.40	27.0	65	6.5	82	14	33000	4400

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFIDE TOTAL (MG/L AS S)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1986											
06...	120	4	41	5.2	11	0.4	2.2	120	<0.5	10	12
DEC											
10...	--	--	--	--	--	--	--	130	--	--	--
FEB 1987											
04...	--	--	--	--	--	--	--	130	--	--	--
APR											
07...	150	0	49	7.9	21	0.8	8.8	170	<0.5	10	12
JUN											
10...	--	--	--	--	--	--	--	130	--	--	--
AUG											
05...	120	8	39	5.0	9.8	0.4	3.0	110	--	11	11

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 1986										
06...	<0.1	31	184	219	15	0.88	0.02	0.90	0.04	0.36
DEC										
10...	--	--	--	--	--	0.98	0.02	1.00	0.05	0.15
FEB 1987										
04...	--	--	--	--	14	0.56	0.04	0.60	0.13	0.67
APR										
07...	0.2	34	245	50.2	37	0.54	0.06	0.60	0.28	1.6
JUN										
10...	--	--	--	--	53	0.88	0.02	0.90	0.10	0.60
AUG										
05...	0.1	20	165	88.6	65	0.68	0.02	0.70	0.04	0.86

K = non-ideal count

50149100 RIO CULEBRINAS NEAR AGUADA, PR--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
NOV 1986										
06...	0.4	1.3	--	0.07	1	<100	<10	<1	<1	10
DEC										
10...	0.2	1.2	5.3	0.08	--	--	--	--	--	--
FEB 1987										
04...	0.8	1.4	6.2	0.18	--	--	--	--	--	--
APR										
07...	1.9	2.5	11	0.74	2	100	20	<1	9	10
JUN										
10...	0.7	1.6	--	0.20	--	--	--	--	--	--
AUG										
05...	0.9	1.6	7.1	0.16	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)	PHENOLS TOTAL (UG/L)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
NOV 1986										
06...	1200	<5	70	0.1	<1	1	20	<0.01	1	0.05
DEC										
10...	--	--	--	--	--	--	--	--	--	--
FEB 1987										
04...	--	--	--	--	--	--	--	--	--	--
APR										
07...	1800	5	260	<0.1	<1	<1	20	<0.01	5	0.04
JUN										
10...	--	--	--	--	--	--	--	--	--	--
AUG										
05...	--	--	--	--	--	--	--	--	--	--

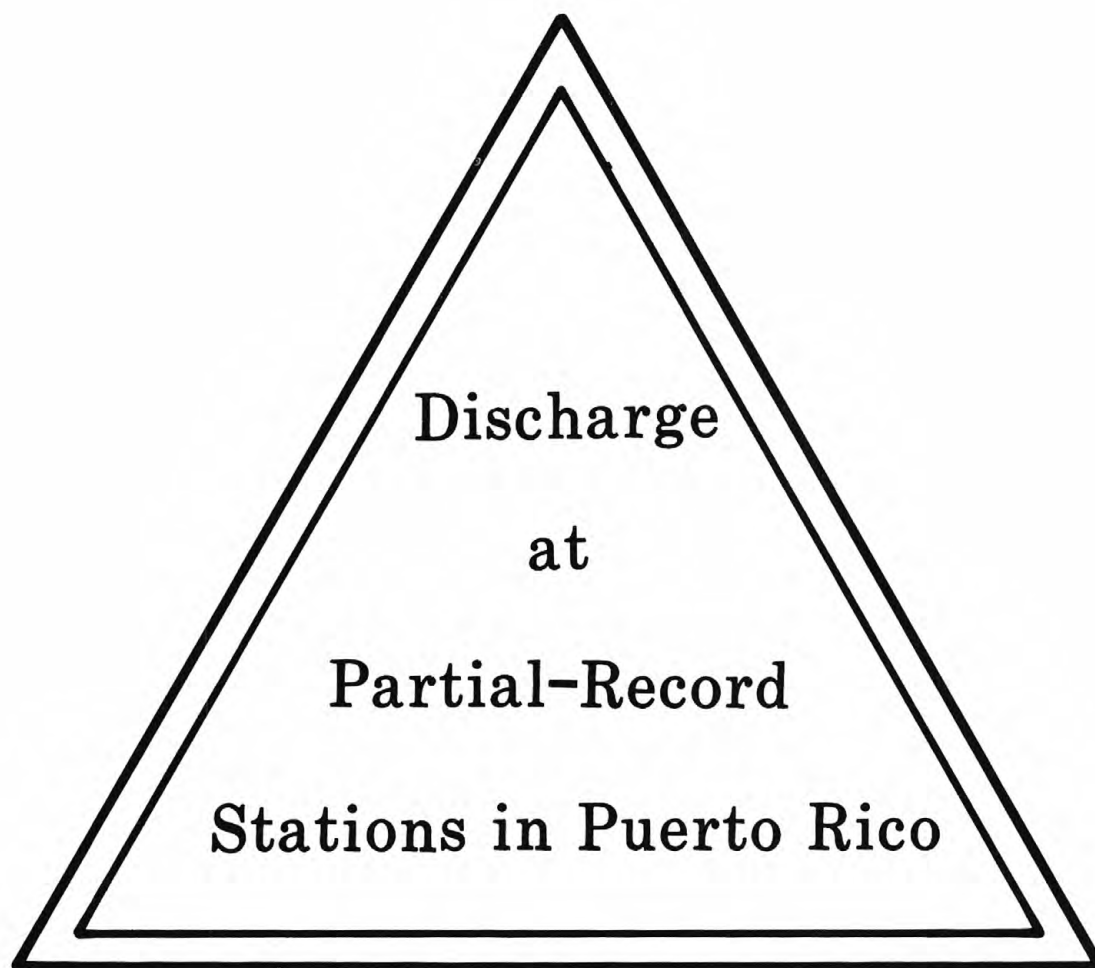
PESTICIDE ANALYSES

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
NOV 1986										
06...	1020	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
APR										
07...	1055	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
NOV 1986										
06...	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
APR										
07...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV 1986									
06...	<0.01	<0.1	<0.1	<1	<0.01	<0.01	<0.01	<0.01	<0.01
APR									
07...	<0.01	<0.1	<0.1	<1	<0.01	0.13	<0.01	<0.01	<0.01

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DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS

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 1986

Station number	Station name	Location	Drainage area mi ² (km ²)	Period of record	Date	Annual maximum	Dis-charge ft ³ /s (m ³ /s)
						Gage height ft (m)	
Rio Puerto Nuevo Basin							
50049000	Rio Piedras at Rio Piedras, PR	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 Rio Piedras, and 0.4 mi (0.6 km) downstream from diversion for water supply.	12.5 (32.4)	1987	04/12/87	15.10 (4.602)	7,850 (222)

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Water-Quality at
Partial-Record
Stations in
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ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systematically over a period of years for use in hydrological analysis. The data are collected usually less than quarterly.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (IN)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
RIO GUAJATACA BASIN									
50010720	LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS, PR (LAT 18°22'35"N LONG 066°54'36"W)								
NOV 1986 26...	0930	1.00	266	8.10	26.0	117	7.1	90	K4
MAR 1987 11...	0945	1.00	257	8.00	26.0	107	7.2	91	K2
JUL 09...	0810	1.00	221	8.20	29.5	49.1	7.8	104	K1
RIO GRANDE DE ARECIBO BASIN									
50025110	LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO, PR (LAT 18°19'15"N LONG 066°40'11"W)								
NOV 1986 25...	0900	1.00	211	8.00	26.0	46.0	7.6	95	31
MAR 1987 10...	0850	1.00	238	8.00	26.0	72.0	7.9	98	K8
JUL 08...	1230	1.00	219	8.50	30.5	43.0	8.2	110	42
RIO DE LA PLATA BASIN									
50039900	LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY, PR (LAT 18°05'04"N LONG 066°06'03"W)								
DEC 1986 01...	1240	1.00	95	7.50	24.5	78.0	8.7	110	K13
MAR 1987 05...	1145	1.00	106	7.50	23.5	60.0	7.0	88	K8
JUL 06...	1015	1.00	93	8.00	26.5	68.0	7.2	95	K11
50044400	LAGO LA PLATA NO.5 NR MOUTH NR NARANJITO, PR (LAT 18°19'33"N LONG 066°12'28"W)								
DEC 1986 02...	1220	1.00	331	7.60	26.5	33.8	6.8	84	280
MAR 1987 04...	1120	1.00	310	8.00	25.5	45.0	8.6	106	K6
JUL 01...	0955	1.00	365	8.20	28.5	30.6	8.1	105	K150
RIO GRANDE DE LOIZA BASIN									
50057500	LAGO LOIZA NO.4 NR MOUTH NR CAGUAS, PR (LAT 18°16'51"N LONG 066°00'35"W)								
NOV 1986 21...	1130	1.00	258	7.50	28.0	7.20	4.8	62	11400
MAR 1987 03...	1050	1.00	315	7.10	25.5	23.0	3.7	46	K1000
JUL 02...	0905	1.00	241	7.45	29.5	16.8	8.9	117	K1900

K = non-ideal count

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINIT WAT WH TOT FET FIELD MG/L AS CAC03	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
RIO GUAJATACA BASIN--CONTINUED								
50010720	LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS, PR (LAT 18°22'05"N LONG 066°54'36"W)							
NOV 1986 26...	K19	122	4	0.09	<0.01	<0.01	<0.01	0.82
MAR 1987 11...	K1	120	1	0.09	<0.01	<0.10	0.01	0.79
JUL 09...	K15	110	<1	0.09	<0.01	<0.10	<0.01	0.79
RIO GRANDE DE ARECIBO BASIN--CONTINUED								
50025110	LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO, PR (LAT 18°19'15"N LONG 066°40'11"W)							
NOV 1986 25...	46	79	7	0.39	0.01	0.40	0.01	0.39
MAR 1987 10...	K18	84	1	0.18	0.02	0.20	0.02	0.88
JUL 08...	K15	81	<1	0.28	0.02	0.30	<0.01	0.69
RIO DE LA PLATA BASIN--CONTINUED								
50039900	LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY, PR (LAT 18°05'04"N LONG 066°06'03"W)							
DEC 1986 01...	K5	30	9	0.09	<0.01	<0.10	0.02	0.28
MAR 1987 05...	K11	35	5	0.09	<0.01	<0.10	<0.01	0.79
JUL 06...	39	33	<1	0.09	<0.01	<0.10	0.02	0.18
50044400	LAGO LA PLATA NO.5 NR MOUTH NR NARANJITO, PR (LAT 18°19'33"N LONG 066°12'28"W)							
DEC 1986 02...	69	150	13	0.17	0.03	0.20	0.02	0.26
MAR 1987 04...	66	110	4	0.44	0.06	0.50	0.04	1.2
JUL 01...	K38	130	10	0.88	0.02	0.90	0.04	1.1
RIO GRANDE DE LOIZA BASIN--CONTINUED								
50057500	LAGO LOIZA NO.4 NR MOUTH NR CAGUAS, PR (LAT 18°16'51"N LONG 066°00'35"W)							
NOV 1986 21...	K150	80	28	0.43	0.07	0.50	0.60	0.0
MAR 1987 03...	58	98	11	0.60	0.10	0.70	1.10	1.2
JUL 02...	K1300	79	18	0.44	0.06	0.50	0.29	1.0

K = non-ideal count

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	PLANK- TON BIOMASS ASH WT (MG/L)	PLANK- TON BIOMASS DRY WT (MG/L)
RIO GUAJATACA BASIN--CONTINUED								
50010720	LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS, PR (LAT 18°22'05"N LONG 066°54'36"W)							
NOV 1986 26...	0.1	--	--	0.04	9.10	0.70	2.4	230
MAR 1987 11...	0.8	--	--	0.01	4.20	0.10	4.8	260
JUL 09...	0.8	--	--	0.04	25.0	--	10	250
RIO GRANDE DE ARECIBO BASIN--CONTINUED								
50025110	LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO, PR (LAT 18°19'15"N LONG 066°40'11"W)							
NOV 1986 25...	0.4	0.8	--	0.02	23.0	3.40	3.5	230
MAR 1987 10...	0.9	1.1	4.9	0.02	12.0	0.40	6.7	270
JUL 08...	0.7	1.0	4.4	0.05	13.0	--	12	270
RIO DE LA PLATA BASIN--CONTINUED								
50039900	LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY, PR (LAT 18°05'04"N LONG 066°06'03"W)							
DEC 1986 01...	0.3	--	--	0.02	16.0	2.20	5.5	230
MAR 1987 05...	0.8	--	--	0.01	7.70	--	7.5	270
JUL 06...	<0.2	--	--	0.01	6.20	--	6.0	250
50044400	LAGO LA PLATA NO.5 NR MOUTH NR NARANJITO, PR (LAT 18°19'33"N LONG 066°12'28"W)							
DEC 1986 02...	0.3	0.5	--	0.16	11.0	1.90	8.8	280
MAR 1987 04...	1.2	1.7	7.5	0.15	28.0	2.00	8.4	270
JUL 01...	1.1	2.0	8.9	0.33	2.50	--	4.4	240
RIO GRANDE DE LOIZA BASIN--CONTINUED								
50057500	LAGO LOIZA NO.4 NR MOUTH NR CAGUAS, PR (LAT 18°16'51"N LONG 066°00'35"W)							
NOV 1986 21...	0.6	1.1	--	0.33	0.80	--	5.5	260
MAR 1987 03...	2.3	3.0	13	0.50	7.70	0.60	7.1	280
JUL 02...	1.3	1.8	8.0	0.05	12.0	2.40	11	270

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (IN)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
RIO GUAJATACA BASIN--CONTINUED										
50010790 LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)										
NOV 1986										
26...	0850	1.00	260	7.95	26.0	218	8.3	106	K1	K5
26...	0900	69.0	291	7.10	24.0	--	0.0	0	--	--
MAR 1987										
11...	0900	1.00	254	8.10	26.5	118	7.6	97	K1	K2
11...	0915	67.0	310	7.00	24.5	--	0.0	0	--	--
JUL										
09...	0910	1.00	211	8.70	29.5	50.2	9.1	122	K1	K3
09...	0850	64.0	318	7.20	25.0	--	0.0	0	--	--
RIO GRANDE DE ARECIBO BASIN--CONTINUED										
50020050 LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)										
NOV 1986										
24...	1410	1.00	136	7.20	22.0	69.5	4.9	61	38	K19
24...	1430	106.0	119	7.00	20.5	--	2.2	28	--	--
MAR 1987										
09...	1325	1.00	158	8.00	23.5	103	8.2	104	K2	K2
09...	1335	79.0	162	6.80	20.0	--	0.0	0	--	--
JUL										
08...	0800	1.00	146	8.60	25.0	70.5	10.3	135	124	104
08...	0810	74.0	180	6.70	20.0	--	0.0	0	--	--
50027090 LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)										
NOV 1986										
25...	1010	1.00	213	8.00	26.0	52.0	7.0	88	K6	K8
25...	1015	82.0	204	7.25	24.5	--	4.1	51	--	--
MAR 1987										
10...	0935	1.00	226	7.90	26.5	69.0	7.9	99	K2	K14
10...	0940	76.0	221	6.60	24.0	--	0.0	0	--	--
JUL										
08...	1330	1.00	202	8.70	30.5	30.6	8.3	112	50	K3
08...	1325	77.0	195	7.10	26.5	--	0.0	0	--	--
RIO DE LA PLATA BASIN--CONTINUED										
50039950 LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)										
DEC 1986										
01...	1200	1.00	95	7.20	24.5	69.5	7.6	96	K3	K10
01...	1210	72.0	146	6.15	22.0	--	0.0	0	--	--
MAR 1987										
05...	1040	1.00	108	7.50	23.5	66.0	6.8	86	K7	K5
05...	1025	70.0	135	6.70	22.0	--	0.0	0	--	--
JUL										
06...	0925	1.00	94	7.90	27.0	63.0	7.3	97	45	47
06...	0940	64.0	133	6.40	22.5	--	0.0	0	--	--
50044950 LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)										
DEC 1986										
02...	1115	1.00	213	7.60	26.5	25.0	8.4	107	20	28
02...	1125	49.0	175	6.60	23.0	--	0.0	0	--	--
MAR 1987										
04...	1015	1.00	282	7.90	25.5	59.0	8.0	99	K2	61
04...	1020	21.0	271	7.00	24.5	--	0.2	2	--	--
JUL										
01...	0915	1.00	237	8.20	29.5	25.0	9.5	125	K2	K4
01...	0900	20.0	179	7.00	24.5	--	0.1	1	--	--
RIO GRANDE DE LOIZA BASIN--CONTINUED										
50058800 LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)										
NOV 1986										
21...	1055	1.00	188	7.25	26.5	7.2	3.2	40	K1300	130
21...	1045	22.0	160	7.20	24.5	--	0.4	5	--	--
MAR 1987										
03...	1020	1.00	262	7.20	25.5	34.0	2.2	27	K31	180
03...	1050	44.0	266	6.60	25.0	--	0.3	4	--	--
JUL										
02...	0830	1.00	190	7.35	28.5	19.2	8.3	108	92	K26
02...	0840	24.0	178	7.05	27.0	--	0.2	3	--	--

K = non-ideal count

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
RIO GUAJATACA BASIN--CONTINUED									
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18°23'56"N LONG 066°55'23"W)								
NOV 1986									
26...	130	9	46	3.6	5.2	0.2	1.2	121	11
26...	150	0	55	3.0	4.3	0.2	1.6	151	8.4
MAR 1987									
11...	120	14	44	3.4	5.4	0.2	1.6	110	9.7
11...	150	7	53	3.4	5.4	0.2	1.6	140	10
JUL									
09...	160	15	60	3.6	5.1	0.2	1.8	150	12
09...	99	10	34	3.4	5.3	0.2	1.8	89	12
RIO GRANDE DE ARECIBO BASIN--CONTINUED									
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18°08'21"N LONG 066°44'35"W)								
NOV 1986									
24...	63	0	17	4.5	6.3	0.3	1.2	56	3.8
24...	56	0	16	4.0	5.7	0.3	1.0	59	3.4
MAR 1987									
09...	66	0	19	4.5	6.1	0.3	1.1	67	4.2
09...	57	0	16	4.1	5.3	0.3	1.2	70	4.0
JUL									
08...	58	0	16	4.4	6.1	0.4	1.2	64	4.9
08...	55	0	15	4.2	6.2	0.4	1.4	87	4.4
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18°20'09"N LONG 066°40'04"W)								
NOV 1986									
25...	86	0	23	7.0	11	0.5	2.1	77	16
25...	85	0	22	7.2	9.8	0.5	2.4	77	11
MAR 1987									
10...	89	9	24	7.0	12	0.6	2.2	80	17
10...	81	1	22	6.4	10	0.5	2.0	80	15
JUL									
08...	74	2	20	5.8	9.1	0.5	1.9	72	12
08...	78	2	21	6.3	9.9	0.5	2.0	76	15
RIO DE LA PLATA BASIN--CONTINUED									
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18°04'39"N LONG 066°06'19"W)								
DEC 1986									
01...	30	0	6.2	3.6	8.4	0.7	1.5	32	3.7
01...	32	0	6.9	3.7	6.2	0.5	1.4	47	4.7
MAR 1987									
05...	34	0	7.3	3.9	7.8	0.6	1.1	49	15
05...	31	0	6.2	3.7	8.1	0.7	0.9	35	3.3
JUL									
06...	28	0	5.3	3.6	8.2	0.7	1.0	32	5.3
06...	37	0	8.0	4.1	8.1	0.6	1.0	52	2.9
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)								
DEC 1986									
02...	120	11	27	13	24	0.9	2.4	69	14
02...	100	0	24	10	18	0.8	1.9	66	15
MAR 1987									
04...	100	4	24	10	17	0.8	2.6	97	15
04...	96	0	23	9.4	15	0.7	2.6	100	14
JUL									
01...	85	1	20	8.6	13	0.6	2.1	85	12
01...	64	0	14	5.9	9.5	0.5	2.8	64	13
RIO GRANDE DE LOIZA BASIN--CONTINUED									
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)								
NOV 1986									
21...	54	2	13	5.3	13	0.8	3.8	57	19
21...	53	2	12	5.3	12	0.8	3.6	51	17
MAR 1987									
03...	79	0	19	7.7	20	1	2.5	87	20
03...	79	0	19	7.7	20	1	3.0	83	19
JUL									
02...	59	0	14	5.9	13	0.8	2.7	80	12
02...	54	0	13	5.3	11	0.7	2.6	56	11

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
RIO GUAJATACA BASIN--CONTINUED									
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)								
NOV 1986									
26...	7.4	0.1	6.6	154	2	0.09	<0.01	<0.10	<0.01
26...	5.5	0.1	8.0	176	--	--	--	--	--
MAR 1987									
11...	7.5	0.1	7.0	145	1	0.09	<0.01	<0.10	<0.01
11...	11	0.1	7.2	176	--	--	--	--	--
JUL									
09...	7.6	0.1	7.0	187	18	0.09	<0.01	<0.10	<0.01
09...	7.8	0.1	2.4	120	--	--	--	--	--
RIO GRANDE DE ARECIBO BASIN--CONTINUED									
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)								
NOV 1986									
24...	5.3	0.1	20	98	2	0.09	<0.01	<0.10	0.02
24...	5.0	0.1	17	90	--	--	--	--	--
MAR 1987									
09...	5.1	<0.1	21	103	2	0.09	0.01	0.10	0.02
09...	5.2	0.1	17	95	--	--	--	--	--
JUL									
08...	5.4	0.1	18	94	<1	0.09	<0.01	<0.10	<0.01
08...	6.3	0.1	16	89	--	--	--	--	--
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)								
NOV 1986									
25...	11	0.2	21	140	1	0.43	0.07	0.50	0.01
25...	9.8	0.2	22	132	--	--	--	--	--
MAR 1987									
10...	11	0.1	23	144	1	0.18	0.02	0.20	0.02
10...	13	0.1	21	137	--	--	--	--	--
JUL									
08...	8.6	0.2	22	123	14	0.18	0.02	0.50	0.01
08...	9.6	0.1	23	132	--	--	--	--	--
RIO DE LA PLATA BASIN--CONTINUED									
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)								
DEC 1986									
01...	11	<0.1	17	71	4	0.09	<0.01	<0.10	0.01
01...	8.4	<0.1	15	74	--	--	--	--	--
MAR 1987									
05...	9.7	<0.1	19	93	15	0.09	<0.01	<0.10	0.02
05...	11	<0.1	19	73	--	--	--	--	--
JUL									
06...	8.9	<0.1	18	69	2	0.09	<0.01	<0.10	0.02
06...	9.4	<0.1	20	85	--	--	--	--	--
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)								
DEC 1986									
02...	21	0.2	18	190	1	0.09	0.01	0.10	0.05
02...	18	0.1	20	168	--	--	--	--	--
MAR 1987									
04...	22	0.1	15	164	5	0.09	<0.01	<0.10	<0.01
04...	20	0.1	19	163	--	--	--	--	--
JUL									
01...	12	0.9	18	138	16	0.18	0.02	0.20	0.01
01...	15	0.2	17	120	--	--	--	--	--
RIO GRANDE DE LOIZA BASIN--CONTINUED									
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)								
NOV 1986									
21...	14	0.1	18	117	5	0.43	0.07	0.50	0.21
21...	14	0.1	17	120	--	--	--	--	--
MAR 1987									
03...	17	0.2	25	164	5	0.54	0.06	0.60	0.10
03...	17	0.1	24	160	--	--	--	--	--
JUL									
02...	19	0.1	23	138	12	0.50	0.20	0.70	0.08
02...	20	<0.1	21	117	--	--	--	--	--

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	PLANK- TON BIOMASS ASH WT (MG/L)	PLANK- TON BIOMASS DRY WT (MG/L)
------	--	--	---	---	---	---	---	--	--

50010790 LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18°23'56"N LONG 066°55'23"W)

RIO GRANDE DE ARECIBO BASIN-CONTINUED

50020050 LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18°08'21"N LONG 066°44'35"W)

50027090 LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18-20'09"N LONG 066-40'04"W)RIO DE LA PLATA BASIN--CONTINUED

50039950 LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18°04'39"N LONG 066°06'19"W)

50044950 LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18-20'18"N LONG 066-14'01"W)

RIO GRANDE DE LOIZA BASIN--CONTINUED

50058800 LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)

[illegible]

PESTICIDE ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
RIO GUAJATACA BASIN									
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)								
AUG 1986 22...	0930	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01
RIO GRANDE DE ARECIBO BASIN									
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)								
AUG 1986 20...	1230	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)								
AUG 1986 21...	1050	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
RIO DE LA PLATA BASIN									
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)								
AUG 1986 18...	1115	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)								
AUG 1986 15...	1300	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
RIO GRANDE DE LOIZA BASIN									
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)								
AUG 1986 19...	1000	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.04	<0.01

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PESTICIDE ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)
RIO GUAJATACA BASIN--CONTINUED								
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)							
AUG 1986 22...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO GRANDE DE ARECIBO BASIN--CONTINUED								
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)							
AUG 1986 20...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)							
AUG 1986 21...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO DE LA PLATA BASIN--CONTINUED								
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)							
AUG 1986 18...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)							
AUG 1986 15...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO GRANDE DE LOIZA BASIN--CONTINUED								
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)							
AUG 1986 19...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
RIO GUAJATACA BASIN									
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)								
JUL 1987 09...	0910	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01
RIO GRANDE DE ARECIBO BASIN									
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)								
JUL 1987 08...	0800	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)								
JUL 1987 08...	1330	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01
RIO DE LA PLATA BASIN									
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)								
JUL 1987 06...	0925	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066°14'01"W)								
JUL 1987 01...	0915	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01
RIO GRANDE DE LOIZA BASIN									
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)								
JUL 1987 02...	0830	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	0.01	<0.01

PESTICIDE ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

[illegible]

PESTICIDE ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)
RIO GUAJATACA BASIN--CONTINUED								
50010790	LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS, PR (LAT 18°23'56"N LONG 066°55'23"W)							
JUL 1987 09...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO GRANDE DE ARECIBO BASIN--CONTINUED								
50020050	LAGO GARZAS NO.1 NR DAM NR ADJUNTAS, PR (LAT 18°08'21"N LONG 066°44'35"W)							
JUL 1987 08...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
50027090	LAGO DOS BOCAS NO.1 NR DAM NR UTUADO, PR (LAT 18°20'09"N LONG 066°40'04"W)							
JUL 1987 08...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO DE LA PLATA BASIN--CONTINUED								
50039950	LAGO CARITE NO.1 NR DAM NR CAYEY, PR (LAT 18°04'39"N LONG 066°06'19"W)							
JUL 1987 06...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
50044950	LAGO LA PLATA NO.3 NR DAM NR NARANJITO, PR (LAT 18°20'18"N LONG 066 14'01"W)							
JUL 1987 01...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01
RIO GRANDE DE LOIZA BASIN--CONTINUED								
50058800	LAGO LOIZA NO.7 NR DAM NR TRUJILLO ALTO, PR (LAT 18°19'29"N LONG 066°00'47"W)							
JUL 1987 01...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<1	<0.01

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Ground-Water Records
for
Puerto Rico

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GROUND-WATER LEVELS

295

RIO GUAJATACA BASIN

182422067015100. Local number, 165.

LOCATION.--Lat 18°24'22", long 67°01'51".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Saltos # 1 (Mateo Perez).

AQUIFER.--Cibao Formation, Aguada Limestone.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 16 in (0.40 m), cased 16 in (0.40 m) 0-40 ft (0-12.2 m), cased 12 in (0.30 m) 40-200 ft (12.2-61.0 m). Depth 200 ft (61.0 m).

DATUM.--Elevation of land-surface datum is 689 ft (210 m) above mean sea level.

Measuring point: Hole on pump base, 0.80 ft (0.24 m) above land-surface datum. Prior November 1985, hole on top of pump base, 1.00 ft (0.30 m) above land-surface datum.

REMARKS.--Pumping discontinued. Observation well. Automatic recorder installed on November 14, 1985. Formerly published as 182421067015000.

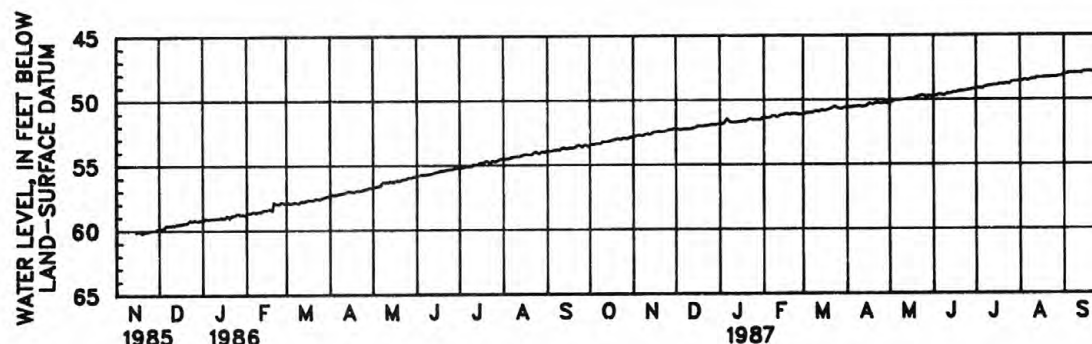
PERIOD OF RECORD.--January 1982 to March 1985. November 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 47.62 ft (14.51 m) below land-surface datum, Sept. 30, 1987; lowest water level recorded, 70.60 ft (21.52 m) below land-surface datum, June 18, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53.46	52.87	52.22	51.85	51.39	51.08	50.49	50.24	49.74	49.14	48.59	48.10
2	53.40	52.79	52.23	51.84	51.37	51.03	50.53	50.18	49.69	49.12	48.58	48.06
3	53.40	52.74	52.27	51.85	51.36	51.01	50.58	50.15	49.68	49.11	48.55	48.04
4	53.38	52.70	52.29	51.77	51.36	50.98	50.56	50.07	49.64	49.10	48.48	48.00
5	53.37	52.69	52.25	51.60	51.36	50.97	50.51	50.03	49.59	49.13	48.48	47.96
6	53.32	52.70	52.25	51.43	51.31	50.97	50.51	50.05	49.60	49.10	48.53	47.96
7	53.34	52.75	52.24	51.57	51.24	50.98	50.49	50.05	49.62	49.02	48.52	47.96
8	53.34	52.71	52.24	51.70	51.21	50.93	50.49	50.03	49.66	49.00	48.47	47.96
9	53.30	52.65	52.24	51.73	51.23	50.87	50.46	50.04	49.66	48.98	48.42	47.95
10	53.20	52.60	52.23	51.72	51.30	50.85	50.44	50.03	49.57	48.94	48.42	47.95
11	53.20	52.59	52.23	51.72	51.31	50.88	50.50	50.02	49.53	48.93	48.39	47.95
12	53.22	52.67	52.21	51.72	51.23	50.90	50.54	49.98	49.55	48.94	48.39	47.95
13	53.19	52.63	52.17	51.69	51.16	50.83	50.51	49.96	49.52	48.89	48.32	47.95
14	53.17	52.56	52.14	51.68	51.16	50.75	50.47	49.95	49.49	48.88	48.32	47.94
15	53.14	52.49	52.12	51.67	51.12	50.83	50.41	49.88	49.44	48.89	48.32	47.87
16	53.11	52.46	52.05	51.67	51.10	50.81	50.30	49.87	49.43	48.88	48.32	47.84
17	53.07	52.45	52.02	51.62	51.05	50.82	50.29	49.93	49.43	48.87	48.32	47.87
18	53.03	52.42	52.01	51.61	51.05	50.75	50.31	49.91	49.41	48.79	48.32	47.83
19	53.01	52.40	52.03	51.64	51.12	50.73	50.36	49.83	49.34	48.79	48.29	47.82
20	52.98	52.46	52.03	51.59	51.12	50.68	50.32	49.78	49.35	48.82	48.29	47.84
21	52.96	52.46	52.00	51.51	51.04	50.62	50.27	49.76	49.31	48.79	48.29	47.85
22	53.00	52.41	51.97	51.46	51.07	50.58	50.24	49.73	49.33	48.76	48.29	47.89
23	53.03	52.41	51.98	51.49	51.04	50.52	50.25	49.67	49.31	48.75	48.28	47.89
24	52.97	52.40	51.95	51.52	51.08	50.57	50.27	49.66	49.32	48.79	48.27	47.89
25	52.93	52.34	51.95	51.52	51.07	50.65	50.28	49.69	49.27	48.78	48.27	47.90
26	52.96	52.29	51.89	51.51	51.13	50.66	50.26	49.73	49.26	48.65	48.27	47.92
27	52.96	52.29	51.89	51.52	51.11	50.67	50.22	49.77	49.25	48.62	48.25	47.91
28	52.95	52.29	51.91	51.52	51.10	50.70	50.19	49.72	49.20	48.60	48.22	47.85
29	52.90	52.23	51.91	51.53	---	50.66	50.28	49.69	49.17	48.60	48.19	47.77
30	52.84	52.21	51.85	51.49	---	50.60	50.28	49.70	49.17	48.60	48.18	47.68
31	52.90	---	51.84	51.37	---	50.58	---	49.78	---	48.59	48.13	---
LOW	53.46	52.87	52.29	51.85	51.39	51.08	50.58	50.24	49.74	49.14	48.59	48.10
HIGH	52.84	52.21	51.84	51.37	51.04	50.52	50.19	49.66	49.17	48.59	48.13	47.68

WTR YR 1987 MEAN 50.5 LOW 53.46 HIGH 47.68



GROUND-WATER LEVELS

RIO GUAJATACA BASIN

182647066552400. Local number, 202.

LOCATION.--Lat 18°26'47", long 66°55'24".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Carmelo Barreto Garcia well.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 20 in (0.51 m), cased 20 in (0.51 m) 0-296 ft (0-90.2 m), diameter 13 in (0.33 m), cased 13 in (0.33 m) 0-550 ft (0-167.6 m), perforated 270-529 ft (82.3-161.2 m). Depth 550 ft (167.6 m).

DATUM.--Elevation of land-surface datum is about 475 ft (145 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.50 ft (0.46 m) above land-surface datum. Prior July 25, 1986, top of shelter floor, 3.30 ft (1.00 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on November 13, 1985.

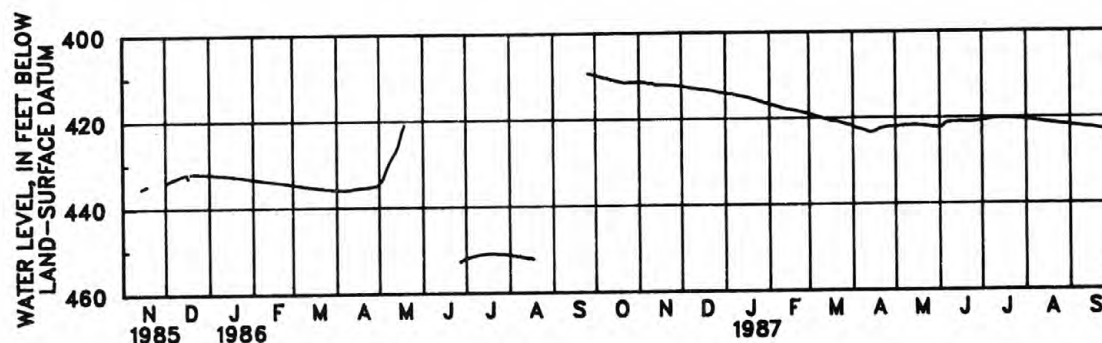
PERIOD OF RECORD.--November 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 409.64 ft (124.71 m) below land-surface datum, Sept. 25, 1986; lowest water level recorded, 452.80 ft (138.01 m) below land-surface datum, June 26, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	409.69	411.38	412.39	414.05	416.65	418.99	422.04	422.04	422.32	420.67	420.55	421.85
2	409.76	411.38	412.44	414.11	416.73	419.07	422.17	422.02	422.22	420.62	420.59	421.89
3	409.88	411.38	412.50	414.17	416.84	419.16	422.28	422.01	422.11	420.56	420.62	421.93
4	409.97	411.39	412.54	414.21	416.94	419.28	422.36	421.94	421.81	420.51	420.66	421.96
5	410.07	411.44	412.58	414.19	417.07	419.38	422.45	421.90	421.42	420.47	420.71	422.00
6	410.13	411.51	412.64	414.19	417.15	419.50	422.56	421.90	421.25	420.41	420.78	422.07
7	410.25	411.59	412.67	414.36	417.22	419.62	422.64	421.87	421.16	420.35	420.81	422.10
8	410.35	411.62	412.74	414.45	417.33	419.71	422.74	421.84	421.12	420.32	420.83	422.14
9	410.41	411.66	412.81	414.53	417.44	419.81	422.83	421.84	421.10	420.28	420.89	422.20
10	410.47	411.70	412.84	414.58	417.58	419.91	422.93	421.82	421.02	420.25	420.92	422.26
11	410.58	411.75	412.90	414.64	417.68	420.04	423.06	421.81	421.01	420.24	420.96	422.29
12	410.70	411.85	412.92	414.70	417.73	420.14	423.17	421.81	421.01	420.23	421.02	422.33
13	410.77	412.02	412.99	414.76	417.82	420.23	423.25	421.82	420.98	420.19	421.05	422.36
14	410.87	412.02	413.05	414.82	417.89	420.32	423.25	421.72	420.97	420.18	421.10	422.41
15	410.95	412.01	413.11	414.89	417.95	420.50	423.24	421.71	420.96	420.20	421.12	422.36
16	411.03	412.01	413.12	414.98	418.00	420.57	423.12	421.74	420.98	420.20	421.17	422.41
17	411.12	412.00	413.17	415.09	418.05	420.72	423.05	421.80	421.00	420.21	421.22	422.51
18	411.20	412.00	413.24	415.18	418.10	420.73	422.87	421.83	421.02	420.18	421.26	422.54
19	411.31	412.03	413.30	415.31	418.18	420.73	422.67	421.83	421.01	420.21	421.31	422.59
20	411.38	412.05	413.36	415.42	418.24	420.76	422.52	421.86	421.06	420.25	421.37	422.64
21	411.41	412.08	413.40	415.48	418.29	420.83	422.38	421.93	421.04	420.27	421.42	422.69
22	411.45	412.10	413.45	415.56	418.37	420.91	422.33	421.96	421.05	420.27	421.45	422.74
23	411.45	412.12	413.52	415.70	418.44	420.96	422.25	421.97	421.00	420.30	421.49	422.78
24	411.40	412.15	413.57	415.81	418.49	421.08	422.20	422.04	420.99	420.37	421.56	422.83
25	411.39	412.17	413.63	415.91	418.58	421.19	422.17	422.08	420.95	420.39	421.60	422.87
26	411.39	412.19	413.66	416.02	418.73	421.28	422.10	422.13	420.93	420.38	421.64	422.92
27	411.38	412.24	413.75	416.14	418.79	421.36	422.08	422.16	420.90	420.40	421.67	422.94
28	411.38	412.30	413.83	416.25	418.91	421.49	422.05	422.16	420.83	420.44	421.71	422.98
29	411.36	412.29	413.88	416.37	---	421.56	422.07	422.17	420.78	420.47	421.74	422.97
30	411.33	412.34	413.91	416.45	---	421.64	422.05	422.24	420.73	420.50	421.79	423.02
31	411.38	---	413.98	416.52	---	421.73	---	422.33	---	420.54	421.82	---
LOW	411.45	412.34	413.98	416.52	418.91	421.73	423.25	422.33	422.32	420.67	421.82	423.02
HIGH	409.69	411.38	412.39	414.05	416.65	418.99	422.04	421.71	420.73	420.18	420.55	421.85

WTR YR 1987 MEAN 418.23 LOW 423.25 HIGH 409.69



GROUND-WATER LEVELS

RIO CAMUY BASIN

182856066510900. Local number, 203.

LOCATION.--Lat 18°28'56", long 66°51'09".

Owner: P.R. Industrial Development Corporation.

Name: Vicente Amador Well.

AQUIFER.--Aymamon Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in (0.20 m), cased 8 in (0.20 m) 0-130 ft (0-39.6 m), perforated 110-130 (33.5-39.6 m); open hole 130-140 ft (39.6-42.7 m). Depth 140 ft (42.7 m).

DATUM.--Elevation of land-surface datum is about 116 ft (35.4 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 2.97 ft (0.90 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on November 14, 1985.

PERIOD OF RECORD.--November 1985 to April 1, 1987, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorder, 97.99 ft (29.87 m) below land-surface datum, June 27, 1986; lowest water level recorded, 99.70 ft (30.38 m) below land-surface datum, Dec. 6, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98.86	98.60	98.88	99.19	99.28	99.10	99.12	---	---	---	---	---
2	98.84	98.61	98.90	99.20	99.27	99.09	---	---	---	---	---	---
3	98.81	98.62	98.94	99.21	99.26	99.07	---	---	---	---	---	---
4	98.81	98.60	98.97	99.20	99.24	99.07	---	---	---	---	---	---
5	98.82	98.57	98.98	99.20	99.22	99.09	---	---	---	---	---	---
6	98.83	98.56	98.98	99.19	99.23	99.11	---	---	---	---	---	---
7	98.84	98.57	98.98	99.16	99.24	99.16	---	---	---	---	---	---
8	98.84	98.59	98.98	99.14	99.24	99.20	---	---	---	---	---	---
9	98.84	98.60	98.99	99.14	99.23	99.22	---	---	---	---	---	---
10	98.82	98.62	99.00	99.18	99.24	99.19	---	---	---	---	---	---
11	98.80	98.63	99.01	99.24	99.22	99.18	---	---	---	---	---	---
12	98.79	98.64	99.02	99.28	99.20	99.18	---	---	---	---	---	---
13	98.78	98.65	99.03	99.31	99.17	99.19	---	---	---	---	---	---
14	98.77	98.65	99.04	99.33	99.12	99.18	---	---	---	---	---	---
15	98.76	98.67	99.05	99.34	99.09	99.16	---	---	---	---	---	---
16	98.74	98.70	99.07	99.34	99.07	99.14	---	---	---	---	---	---
17	98.72	98.71	99.07	99.33	99.03	98.92	---	---	---	---	---	---
18	98.71	98.73	99.07	99.32	99.02	98.86	---	---	---	---	---	---
19	98.71	98.74	99.09	99.31	99.03	98.83	---	---	---	---	---	---
20	98.71	98.76	99.10	99.30	99.05	98.86	---	---	---	---	---	---
21	98.69	98.78	99.10	99.29	99.08	98.88	---	---	---	---	---	---
22	98.64	98.79	99.08	99.28	99.10	98.92	---	---	---	---	---	---
23	98.60	98.80	99.05	99.26	99.11	98.96	---	---	---	---	---	---
24	98.59	98.81	99.05	99.24	99.13	98.98	---	---	---	---	---	---
25	98.60	98.82	99.08	99.24	99.16	98.99	---	---	---	---	---	---
26	98.62	98.81	99.09	99.24	99.15	99.02	---	---	---	---	---	---
27	98.62	98.83	99.10	99.25	99.11	99.05	---	---	---	---	---	---
28	98.62	98.84	99.10	99.26	99.11	99.07	---	---	---	---	---	---
29	98.63	98.85	99.11	99.27	---	99.09	---	---	---	---	---	---
30	98.63	98.87	99.12	99.27	---	99.11	---	---	---	---	---	---
31	98.61	---	99.15	99.29	---	99.12	---	---	---	---	---	---
LOW	98.86	98.87	99.15	99.34	99.28	99.22	---	---	---	---	---	---
HIGH	98.59	98.56	98.88	99.14	99.02	98.83	---	---	---	---	---	---



GROUND-WATER LEVELS
RIO GRANDE DE ARECIBO BASIN

182737066370900. Local number, 204.

LOCATION.--Lat 18°27'37", long 66°37'09".

Owner: Sucesión Marquez.

Name: Gilberto Rivera well.

AQUIFER.--Aymamon Limestone.

WELL CHARACTERISTICS.--Abandoned unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

DATUM.--Elevation of land-surface datum is 48.0 ft (14.63 m) above mean sea level.

Measuring point: Air hole on pump base, 0.50 ft (0.15 m) above land-surface datum.

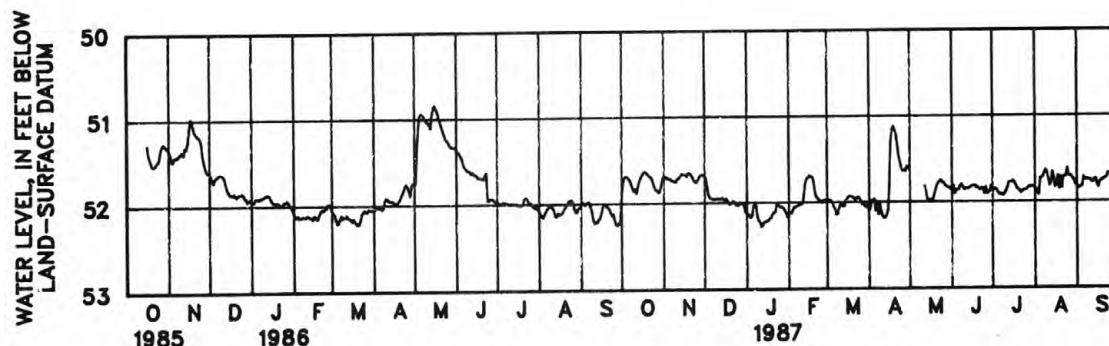
REMARKS.--Observation well. Automatic recorder installed on October 16, 1985.

PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 50.00 ft (15.24 m) below land-surface datum, May 14, 1986; lowest water level recorded, 52.40 ft (15.97 m) below land-surface datum, Jan. 13, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51.88	51.69	51.69	52.12	52.13	51.98	52.11	---	51.87	51.88	51.84	51.81
2	51.76	51.69	51.72	52.14	52.12	51.98	52.07	---	51.81	51.86	51.87	51.85
3	51.69	51.71	51.82	52.14	52.12	51.97	51.97	---	51.90	51.85	51.90	51.84
4	51.68	51.71	51.91	52.17	52.08	51.99	52.00	---	51.86	51.86	51.92	51.83
5	51.69	51.72	51.94	52.14	52.05	52.00	51.96	---	51.86	51.90	51.72	51.82
6	51.71	51.72	51.95	52.03	52.05	52.05	52.10	---	51.86	51.91	51.73	51.71
7	51.73	51.74	51.95	51.99	52.04	52.08	51.99	---	51.81	51.91	51.71	51.75
8	51.77	51.74	51.96	52.04	52.03	52.14	52.14	---	51.80	51.92	51.67	51.75
9	51.83	51.75	51.95	52.17	52.02	52.13	52.02	---	51.83	51.92	51.63	51.74
10	51.86	51.75	51.95	52.21	52.02	52.06	52.10	---	51.86	51.90	51.66	51.75
11	51.83	51.71	51.95	52.23	52.01	52.02	52.16	---	51.85	51.87	51.74	51.75
12	51.88	51.71	51.95	52.28	51.91	52.02	52.18	51.82	51.84	51.83	51.82	51.78
13	51.80	51.69	51.95	52.25	51.77	52.05	52.18	51.89	51.85	51.78	51.78	51.78
14	51.74	51.66	51.94	52.22	51.72	52.04	52.15	51.98	51.84	51.77	51.65	51.74
15	51.70	51.67	51.96	52.22	51.71	51.97	52.09	51.99	51.82	51.77	51.72	51.74
16	51.67	51.67	51.96	52.21	51.69	51.95	51.81	51.98	51.82	51.76	51.83	51.81
17	51.64	51.67	51.95	52.20	51.70	51.93	51.34	51.97	51.81	51.78	51.81	51.84
18	51.63	51.69	51.98	52.18	51.70	51.93	51.15	51.97	51.81	51.81	51.70	51.77
19	51.64	51.65	52.01	52.17	51.75	51.93	51.12	51.91	51.84	51.85	51.85	51.76
20	51.66	51.65	52.01	52.13	51.89	51.94	51.17	51.85	51.83	51.86	51.71	51.75
21	51.68	51.67	52.00	52.11	51.94	51.96	51.22	51.80	51.86	51.88	51.84	51.74
22	51.69	51.70	51.98	52.10	51.95	51.97	51.33	51.78	51.86	51.90	51.71	51.73
23	51.71	51.73	51.99	52.02	51.97	51.95	51.46	51.75	51.84	51.88	51.71	51.72
24	51.76	51.75	52.02	52.03	51.98	51.94	51.54	51.75	51.85	51.87	51.70	51.67
25	51.81	51.76	52.02	52.04	52.00	51.96	51.62	51.78	51.91	51.86	51.61	51.68
26	51.84	51.73	52.03	52.05	51.98	51.99	51.64	51.78	51.92	51.86	51.70	51.70
27	51.85	51.70	51.99	52.05	51.97	52.03	51.63	51.81	51.91	51.84	51.70	51.73
28	51.87	51.68	52.01	52.06	51.98	52.03	51.64	51.82	51.90	51.82	51.71	51.77
29	51.86	51.67	52.01	52.09	---	52.05	51.58	51.83	51.88	51.83	51.74	51.83
30	51.80	51.68	52.03	52.12	---	52.06	51.61	51.84	51.81	51.82	51.76	51.71
31	51.71	---	52.11	52.17	---	52.00	---	51.85	---	51.83	51.81	---
LOW	51.88	51.76	52.11	52.28	52.13	52.14	52.18	---	51.92	51.92	51.92	51.85
HIGH	51.63	51.65	51.69	51.99	51.69	51.93	51.12	---	51.80	51.76	51.61	51.67



GROUND-WATER LEVELS
RIO GRANDE DE MANATI BASIN

182621066343300. Local number, 135

LOCATION.--Lat 18°26'21", Long 66°34'33".

Owner: Puerto Rico Land Authority.

Name: Lederle.

AQUIFER.--Limestone of Tertiary Age.

WELL CHARACTERISTICS.--Drilled agricultural water-table well, diameter 24 in (0.61 m), cased 0-30 ft (0-9.1 m), diameter 16.62 in (0.42 m), cased to 0-450 ft (0-137.2 m). Depth 550 ft (167.6 m).

DATUM.--Elevation of land-surface datum is 287 ft (87.48 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 2.80 ft (0.85 m) above land-surface datum.

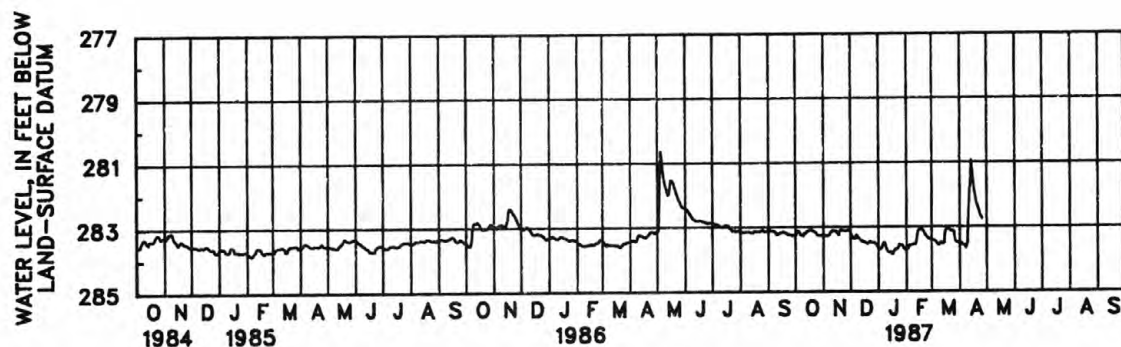
REMARKS.--Recording observation well.

PERIOD OF RECORD.--November 1979 to April 27, 1987, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 276.8 ft (84.38 m) below land-surface datum, Dec. 16, 1981; lowest water level recorded, 283.9 ft (86.55 m) below land-surface datum, May 3, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	283.25	283.24	283.17	283.68	283.69	283.42	283.50	---	---	---	---	---
2	283.24	283.25	283.26	283.70	283.67	283.41	283.50	---	---	---	---	---
3	283.13	283.26	283.30	283.69	283.66	283.41	283.50	---	---	---	---	---
4	283.11	283.27	283.34	283.69	283.58	283.42	283.53	---	---	---	---	---
5	283.12	283.27	283.36	283.64	283.56	283.43	283.56	---	---	---	---	---
6	283.17	283.27	283.36	283.55	283.56	283.46	283.56	---	---	---	---	---
7	283.24	283.25	283.36	283.48	283.55	283.51	283.57	---	---	---	---	---
8	283.25	283.24	283.35	283.49	283.55	283.55	283.66	---	---	---	---	---
9	283.25	283.15	283.33	283.57	283.53	283.56	283.56	---	---	---	---	---
10	283.26	283.14	283.34	283.70	283.54	283.54	283.47	---	---	---	---	---
11	283.18	283.11	283.36	283.75	283.54	283.49	282.74	---	---	---	---	---
12	283.18	283.11	283.40	283.78	283.46	283.48	281.85	---	---	---	---	---
13	283.16	283.12	283.43	283.79	283.24	283.51	281.69	---	---	---	---	---
14	283.12	283.11	283.43	283.79	283.11	283.52	280.93	---	---	---	---	---
15	283.11	283.12	283.45	283.78	283.09	283.48	281.27	---	---	---	---	---
16	283.11	283.16	283.47	283.85	283.08	283.14	281.56	---	---	---	---	---
17	283.10	283.17	283.47	283.84	283.08	283.09	281.88	---	---	---	---	---
18	283.10	283.24	283.48	283.76	283.08	283.06	281.99	---	---	---	---	---
19	283.10	283.12	283.50	283.72	283.09	283.03	282.15	---	---	---	---	---
20	283.11	283.09	283.51	283.69	283.14	283.06	282.30	---	---	---	---	---
21	283.12	283.09	283.49	283.68	283.21	283.09	282.36	---	---	---	---	---
22	283.14	283.10	283.47	283.67	283.25	283.11	282.45	---	---	---	---	---
23	283.15	283.11	283.45	283.65	283.30	283.12	282.54	---	---	---	---	---
24	283.18	283.11	283.48	283.54	283.32	283.12	282.65	---	---	---	---	---
25	283.24	283.11	283.48	283.55	283.35	283.13	282.69	---	---	---	---	---
26	283.25	283.11	283.48	283.56	283.37	283.17	282.74	---	---	---	---	---
27	283.26	283.11	283.48	283.57	283.38	283.43	282.77	---	---	---	---	---
28	283.26	283.10	283.49	283.58	283.41	283.46	---	---	---	---	---	---
29	283.26	283.10	283.52	283.66	---	283.48	---	---	---	---	---	---
30	283.26	283.12	283.55	283.68	---	283.49	---	---	---	---	---	---
31	283.24	---	283.59	283.71	---	283.50	---	---	---	---	---	---
LOW	283.26	283.27	283.59	283.85	283.69	283.56	---	---	---	---	---	---
HIGH	283.10	283.09	283.17	283.48	283.08	283.03	---	---	---	---	---	---



GROUND-WATER LEVELS
RIO GRANDE DE MANATI BASIN

182544066341500. Local number, 205.

LOCATION.--Lat 18°25'44", long 66°34'15".

Owner: U.S. Geological Survey.

Name: NC-05 Barceloneta near Cruce Davila.

AQUIFER.--Montebello Limestone.

WELL CHARACTERISTICS.--Artesian observation well, diameter 6 in (0.15 m), 0-2,564 ft (0-782 m), cased 2.5 in (0.06 m), iron pipe 0-1,075 in (0-328 m), open hole 1,075-2,564 ft (328-782 m). Depth 2,564 ft (782 m) measured.

DATUM.--Elevation of land surface datum is 312 ft (95.1 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 6.65 ft (2.03 m) above land-surface datum.

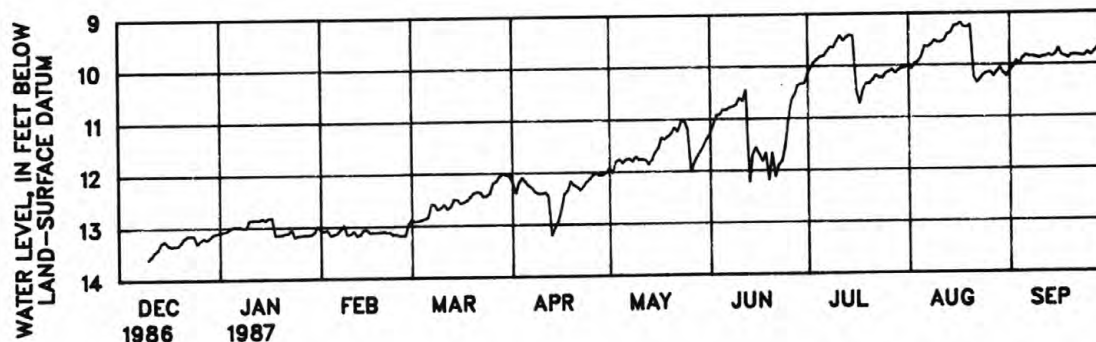
REMARKS.--Automatic recorder installed on December 1986.

PERIOD OF RECORDS.--December 1986 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.16 ft (2.79 m) below land-surface datum, Aug. 18, 1987; lowest water level recorded, 13.65 ft (4.16 m) below land-surface datum, Dec. 9, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	13.09	13.06	12.87	12.18	11.91	11.26	10.13	10.02	10.13
2	---	---	---	13.08	13.08	12.91	12.38	12.02	11.10	10.02	10.06	10.04
3	---	---	---	13.06	13.06	12.90	12.17	11.79	10.91	9.92	9.95	9.93
4	---	---	---	13.02	13.17	12.88	12.09	11.76	10.91	9.86	9.93	9.99
5	---	---	---	12.98	13.14	12.86	12.17	11.82	10.81	9.81	9.83	9.87
6	---	---	---	12.98	13.12	12.83	12.25	11.76	10.82	9.80	9.62	9.82
7	---	---	---	12.98	13.05	12.58	12.29	11.74	10.77	9.71	9.65	9.84
8	---	---	---	13.00	12.96	12.59	12.37	11.79	10.76	9.63	9.60	9.84
9	---	---	---	13.00	13.16	12.70	12.40	11.71	10.72	9.64	9.52	9.86
10	---	---	13.60	12.86	13.14	12.65	12.40	11.76	10.59	9.52	9.56	9.88
11	---	---	13.54	12.85	13.09	12.59	12.38	11.76	10.66	9.41	9.55	9.85
12	---	---	13.45	12.85	13.17	12.68	12.45	11.77	10.44	9.52	9.52	9.85
13	---	---	13.41	12.85	13.15	12.63	13.21	11.85	12.23	9.44	9.39	9.82
14	---	---	13.27	12.83	13.06	12.48	13.06	11.77	11.68	9.40	9.37	9.85
15	---	---	13.25	12.86	13.06	12.50	12.94	11.63	11.56	9.43	9.24	9.81
16	---	---	13.32	12.82	13.12	12.57	12.72	11.54	11.68	10.49	9.23	9.69
17	---	---	13.35	12.81	13.11	12.55	12.40	11.34	11.81	10.73	9.19	9.83
18	---	---	13.34	13.15	13.11	12.52	12.35	11.38	11.66	10.46	9.27	9.85
19	---	---	13.34	13.15	13.11	12.45	12.16	11.32	12.18	10.34	9.27	9.88
20	---	---	13.28	13.14	13.10	12.38	12.25	11.27	11.66	10.33	9.23	9.82
21	---	---	13.19	13.12	13.11	12.35	12.28	11.15	12.12	10.27	10.27	9.82
22	---	---	13.15	13.11	13.11	12.36	12.34	11.23	11.89	10.19	10.35	9.83
23	---	---	13.15	13.04	13.16	12.44	12.26	11.05	11.82	10.22	10.26	9.84
24	---	---	13.15	13.20	13.15	12.43	12.17	11.01	11.56	10.23	10.18	9.84
25	---	---	13.31	13.16	13.18	12.38	12.12	11.19	11.04	10.14	10.15	9.77
26	---	---	13.24	13.16	13.18	12.19	12.03	12.01	10.63	10.11	10.14	9.83
27	---	---	13.20	13.15	13.18	12.15	12.02	11.83	10.54	10.08	10.21	9.76
28	---	---	13.23	13.15	12.94	12.06	12.06	11.71	10.35	10.14	10.13	9.69
29	---	---	13.18	13.14	---	12.01	12.05	11.61	10.33	10.08	10.06	9.61
30	---	---	13.12	13.10	---	12.03	12.00	11.50	10.32	10.04	10.16	9.59
31	---	---	13.10	12.98	---	12.05	---	11.37	---	10.03	10.21	---
LOW	---	---	---	13.20	13.18	12.91	13.21	12.02	12.23	10.73	10.35	10.13
HIGH	---	---	---	12.81	12.94	12.01	12.00	11.01	10.32	9.40	9.19	9.59



GROUND-WATER LEVELS
RIO GRANDE DE MANATI BASIN

182757066325600. Local number, 206.

LOCATION.--Lat 18°27'57", long 66°32'56".

Owner: P.R. Department of Agriculture.

Name: Plazuela No. 2.

AQUIFER.--Aymamon Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m), cased 16 in (0.41 m) 0-85 ft (0-25.9 m), open hole 85-101 ft (25.9-30.8 m). Depth 101 ft (30.8 m).

DATUM.--Elevation of land-surface datum is about 7.0 ft (2.1 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.30 ft (0.40 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on August 15, 1985. Estimated noon values:

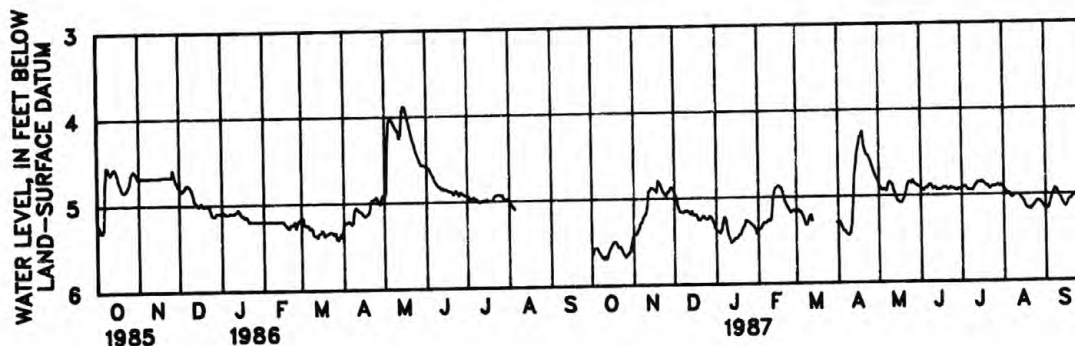
Jan. 5-8, Feb. 16-19.

PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 3.86 ft (1.18 m) below land-surface datum, May 16, 1986; lowest water level recorded, 5.72 ft (1.76 m) below land-surface datum, Oct. 8-9, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.69	5.42	4.92	5.37	5.38	5.16	5.29	4.87	4.91	4.93	4.92	5.16
2	5.62	5.41	4.97	5.39	5.36	5.16	5.29	4.90	4.93	4.91	4.95	5.15
3	5.56	5.40	5.04	5.39	5.36	5.15	5.32	4.92	4.94	4.90	4.97	5.16
4	5.56	5.37	5.11	5.41	5.33	5.17	5.36	4.93	4.92	4.90	4.98	5.12
5	5.56	5.34	5.15	5.37	5.30	5.19	5.40	4.92	4.91	4.93	4.98	5.05
6	5.60	5.28	5.16	5.28	5.29	5.22	5.40	4.93	4.91	4.94	5.02	4.99
7	5.63	5.27	5.16	5.22	5.29	5.27	5.43	4.94	4.88	4.94	5.03	4.96
8	5.65	5.22	5.16	5.26	5.27	5.32	5.00	4.85	4.87	4.94	5.02	4.93
9	5.68	5.19	5.14	5.36	5.26	5.32	5.45	4.84	4.89	4.94	5.00	4.94
10	5.69	5.17	5.14	5.44	5.27	5.27	5.42	4.85	4.92	4.92	5.00	4.97
11	5.66	5.10	5.15	5.48	5.22	5.22	5.33	4.87	4.91	4.89	5.00	5.01
12	5.69	4.91	5.16	5.52	5.00	5.21	5.08	4.93	4.91	4.87	5.00	5.03
13	5.64	4.90	5.18	5.51	4.92	5.28	4.75	4.97	4.93	4.85	5.01	5.07
14	5.59	4.87	5.15	5.49	4.88	---	4.62	5.03	4.93	4.85	5.04	5.10
15	5.56	4.88	5.19	5.47	4.88	---	4.47	5.06	4.93	4.85	5.06	5.13
16	5.53	4.89	5.19	5.47	4.87	---	4.41	5.07	4.93	4.84	5.08	5.14
17	5.50	4.90	5.19	5.46	4.88	---	4.30	5.08	4.92	4.86	5.12	5.11
18	5.49	4.92	5.22	5.43	4.89	---	4.28	5.08	4.91	4.87	5.15	5.07
19	5.50	4.79	5.25	5.42	4.94	---	4.35	5.05	4.91	4.89	5.16	5.05
20	5.53	4.81	5.25	5.38	5.01	---	4.42	5.01	4.91	4.89	5.15	5.05
21	5.56	4.85	5.23	5.34	5.06	---	4.48	4.95	4.93	4.91	5.17	5.02
22	5.55	4.90	5.21	5.32	5.09	---	4.52	4.88	4.93	4.93	5.15	5.02
23	5.58	4.93	5.21	5.26	5.12	---	4.53	4.84	4.91	4.91	5.13	5.01
24	5.62	4.95	5.24	5.27	5.15	---	4.56	4.84	4.92	4.90	5.11	4.97
25	5.65	4.97	5.24	5.28	5.18	---	4.60	4.86	4.92	4.90	5.09	4.97
26	5.67	4.93	5.24	5.30	5.16	---	4.66	4.82	4.93	4.90	5.07	4.98
27	5.65	4.91	5.21	5.31	5.15	---	4.71	4.86	4.94	4.89	5.07	5.03
28	5.63	4.88	5.22	5.32	5.16	---	4.75	4.87	4.94	4.88	5.08	5.07
29	5.61	4.87	5.25	5.34	---	---	4.79	4.88	4.92	4.90	5.10	5.11
30	5.55	4.90	5.28	5.37	---	---	4.82	4.89	4.93	4.89	5.12	5.09
31	5.47	---	5.34	5.42	---	5.30	---	4.90	---	4.90	5.15	---
LOW	5.69	5.42	5.34	5.52	5.38	---	5.45	5.08	4.94	4.94	5.17	5.16
HIGH	5.47	4.79	4.92	5.22	4.87	---	4.28	4.82	4.87	4.84	4.92	4.93



GROUND-WATER LEVELS
RIO GRANDE DE MANATI BASIN

182710066303700. Local number, 207.

LOCATION.--Lat 18°27'10", long 66°30'37".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Cantito La Luisa.

AQUIFER.--Aymamon Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m), cased 20 in (0.51 m) 0-30 ft (0-9.14 m), cased 10 in (0.25 m) 0-126 ft (0-38.4 m), perforated 80-126 ft (24.4-38.4 m). Depth 126 ft (38.4 m).

DATUM.--Elevation of land-surface datum is about 59.0 ft (18.0 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on September 17, 1985.

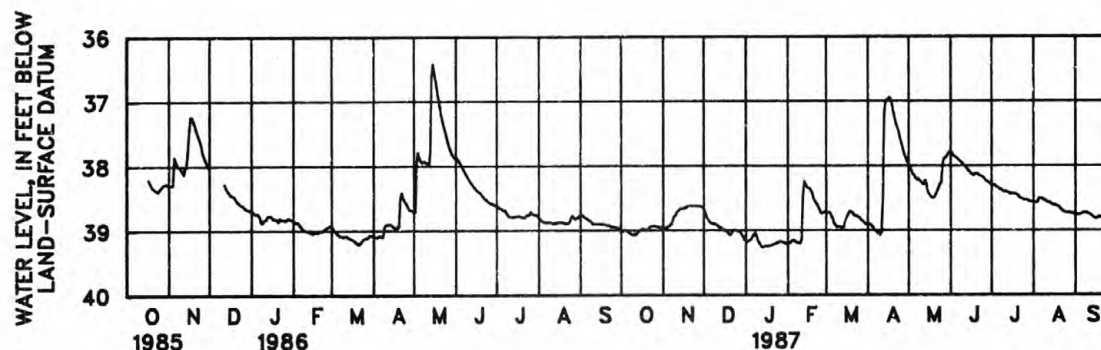
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 36.38 ft (11.09 m) below land-surface datum, May 15, 1986; lowest water level recorded, 89.83 ft (27.38 m) below land-surface datum, Oct. 5, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39.02	38.95	38.67	39.17	39.20	38.72	38.91	37.98	37.78	38.30	38.57	38.76
2	39.02	38.96	38.72	39.18	39.19	38.72	38.90	38.03	37.81	38.30	38.57	38.76
3	38.99	38.96	38.78	39.16	39.18	38.72	38.91	38.07	37.85	38.30	38.57	38.76
4	38.99	38.95	38.83	39.15	39.16	38.73	38.93	38.13	37.85	38.31	38.57	38.76
5	39.00	38.93	38.86	39.13	39.15	38.78	38.96	38.15	37.87	38.33	38.50	38.75
6	39.02	38.92	38.88	39.09	39.16	38.82	38.99	38.19	37.89	38.34	38.51	38.74
7	39.03	38.90	38.89	39.06	39.18	38.89	39.01	38.22	37.91	38.36	38.51	38.73
8	39.05	38.85	38.90	39.04	39.19	38.92	39.03	38.20	37.93	38.37	38.52	38.73
9	39.06	38.78	38.89	39.09	39.19	38.94	39.06	38.23	37.95	38.38	38.53	38.73
10	39.07	38.76	38.91	39.17	39.20	38.94	39.07	38.25	37.97	38.40	38.54	38.74
11	39.05	38.72	38.92	39.20	39.14	38.94	39.02	38.28	38.00	38.40	38.56	38.75
12	39.06	38.70	38.94	39.23	38.45	38.95	38.46	38.29	38.02	38.40	38.57	38.76
13	39.04	38.68	38.96	39.26	38.23	38.95	37.20	38.32	38.05	38.41	38.57	38.78
14	39.01	38.66	38.96	39.26	38.30	38.94	37.01	38.37	38.08	38.42	38.59	38.79
15	38.99	38.66	38.98	39.25	38.33	38.87	36.97	38.41	38.10	38.44	38.60	38.81
16	38.98	38.66	39.00	39.24	38.34	38.82	36.97	38.44	38.12	38.43	38.61	38.82
17	38.97	38.64	38.99	39.24	38.35	38.77	36.94	38.47	38.14	38.43	38.61	38.81
18	38.98	38.65	39.01	39.24	38.39	38.72	36.99	38.49	38.15	38.44	38.62	38.80
19	38.98	38.62	39.04	39.23	38.44	38.70	37.08	38.50	38.12	38.44	38.63	38.79
20	38.99	38.62	39.06	39.23	38.52	38.72	37.19	38.49	38.12	38.45	38.64	38.80
21	38.98	38.62	39.06	39.22	38.56	38.73	37.28	38.44	38.13	38.47	38.67	38.79
22	38.95	38.62	39.01	39.21	38.59	38.77	37.37	38.39	38.15	38.50	38.69	38.79
23	38.94	38.62	38.99	39.20	38.63	38.77	37.43	38.33	38.16	38.51	38.71	38.82
24	38.93	38.62	38.99	39.19	38.67	38.78	37.51	38.28	38.17	38.52	38.72	38.81
25	38.93	38.62	39.00	39.18	38.73	38.80	37.60	38.26	38.18	38.53	38.73	38.81
26	38.93	38.62	39.01	39.17	38.74	38.81	37.67	37.97	38.21	38.53	38.73	38.81
27	38.94	38.62	39.01	39.17	38.72	38.84	37.75	37.89	38.23	38.53	38.73	38.85
28	38.94	38.62	39.03	39.18	38.72	38.85	37.83	37.87	38.25	38.54	38.73	38.86
29	38.95	38.63	39.07	39.19	---	38.87	37.89	37.86	38.26	38.55	38.74	38.88
30	38.95	38.65	39.10	39.19	---	38.89	37.94	37.81	38.28	38.56	38.74	38.88
31	38.95	---	39.15	39.21	---	38.91	---	37.79	---	38.56	38.75	---
LOW	39.07	38.96	39.15	39.26	39.20	38.95	39.07	38.50	38.28	38.56	38.75	38.88
HIGH	38.93	38.62	38.67	39.04	38.23	38.70	36.94	37.79	37.78	38.30	38.50	38.73

WTR YR 1987 MEAN 38.63 LOW 39.26 HIGH 36.94



GROUND-WATER LEVELS

RIO GRANDE DE MANATI BASIN

182534066283000. Local number, 208.

LOCATION.--Lat 18°25'34", long 66°28'30".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Acropolis Manati.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 14 in (0.36 m), cased 14 in (0.36 m). Depth 235 ft (71.6 m).

DATUM.--Elevation of land-surface datum is about 254 ft (77.4 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 0.70 ft (0.21 m) above land-surface datum.

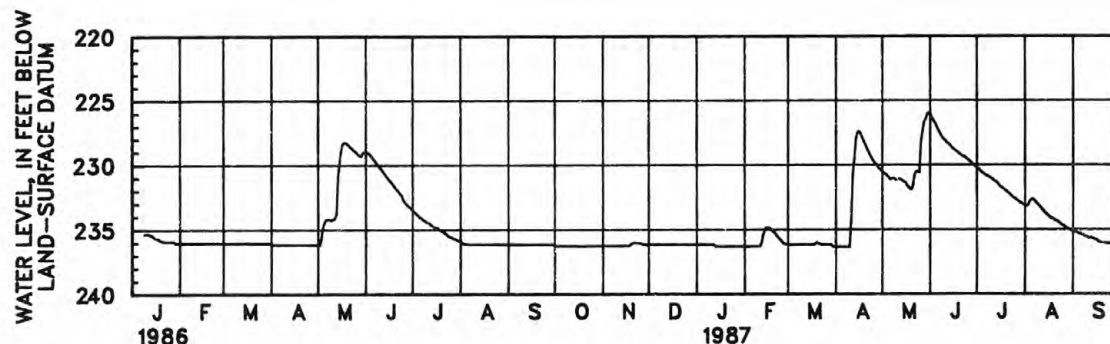
REMARKS.--Abandoned observation well. Automatic recorder installed on January 8, 1986. A datum correction of -2.00 ft should be applied to the published data from June 25, 1986 to September 30, 1986.

PERIOD OF RECORD.--January 1986 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 225.95 ft (68.81 m) below land-surface datum, May 31, 1987; lowest water level recorded, 238.33 ft (72.64 m) below land-surface datum, Mar. 30-31, Apr. 1-10, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236.26	236.26	236.15	236.15	236.30	236.16	236.33	230.52	226.09	230.19	233.13	235.13
2	236.26	236.26	236.15	236.15	236.30	236.17	236.33	230.64	226.30	230.30	233.17	235.18
3	236.26	236.26	236.15	236.15	236.30	236.17	236.33	230.69	226.51	230.41	233.15	235.21
4	236.26	236.26	236.15	236.15	236.30	236.17	236.33	230.82	226.75	230.54	232.81	235.25
5	236.26	236.26	236.15	236.15	236.30	236.17	236.33	230.95	226.95	230.65	232.69	235.33
6	236.26	236.26	236.15	236.15	236.30	236.17	236.33	231.09	227.22	230.72	232.63	235.35
7	236.26	236.26	236.15	236.15	236.30	236.17	236.33	231.08	227.46	230.81	232.74	235.40
8	236.26	236.26	236.15	236.15	236.30	236.17	236.33	231.01	227.70	230.85	232.86	235.45
9	236.26	236.26	236.15	236.15	236.30	236.17	236.33	231.08	227.89	230.94	233.01	235.52
10	236.26	236.26	236.15	236.15	236.30	236.17	236.33	231.16	228.02	231.01	233.15	235.55
11	236.26	236.26	236.15	236.15	236.30	236.17	234.43	---	228.14	231.10	233.27	235.63
12	236.26	236.27	236.15	236.15	236.00	236.17	230.74	231.08	228.28	231.21	233.43	235.69
13	236.26	236.26	236.15	236.30	235.34	236.17	229.53	231.12	228.36	231.28	233.55	235.64
14	236.26	236.26	236.15	236.30	235.03	236.17	227.93	231.22	228.52	231.35	233.72	235.71
15	236.26	236.25	236.15	236.30	234.83	236.17	227.47	231.29	228.66	231.53	233.82	235.75
16	236.26	236.23	236.15	236.30	234.83	236.17	227.38	231.36	228.75	231.66	233.92	235.77
17	236.26	236.24	236.15	236.30	234.87	236.17	227.56	231.57	228.87	231.74	234.02	235.85
18	236.26	236.26	236.15	236.30	235.01	236.17	227.86	231.74	228.95	231.84	234.12	235.96
19	236.26	236.21	236.15	236.30	235.11	236.06	228.14	231.86	229.06	231.93	234.16	236.00
20	236.26	236.07	236.15	236.30	235.23	236.00	228.40	231.85	229.14	232.02	234.27	236.02
21	236.26	236.02	236.15	236.30	235.32	236.09	228.68	231.49	229.24	232.15	234.31	236.04
22	236.26	236.01	236.15	236.30	235.49	236.13	228.98	230.69	229.33	232.22	234.36	236.05
23	236.26	236.01	236.15	236.30	235.64	236.17	229.21	230.51	229.36	232.35	234.48	236.06
24	236.26	236.02	236.15	236.30	235.77	236.17	229.45	230.48	229.47	232.49	234.56	236.07
25	236.26	236.03	236.15	236.30	235.90	236.17	229.65	230.55	229.55	232.55	234.68	236.07
26	236.26	236.07	236.15	236.30	236.05	236.17	229.82	228.15	229.68	232.63	234.71	236.09
27	236.26	236.10	236.15	236.30	236.11	236.17	229.98	227.38	229.76	232.74	234.82	236.10
28	236.26	236.14	236.15	236.30	236.14	236.17	230.14	226.68	229.90	232.83	234.91	236.11
29	236.26	236.14	236.15	236.30	---	236.17	230.28	226.39	229.99	232.93	234.95	236.12
30	236.26	236.15	236.15	236.30	---	236.33	230.39	226.03	230.10	233.00	235.02	236.12
31	236.26	---	236.15	236.30	---	236.33	---	225.96	---	233.07	235.10	---
LOW	236.26	236.27	236.15	236.30	236.30	236.33	236.33	---	230.10	233.07	235.10	236.12
HIGH	236.26	236.01	236.15	236.15	234.83	236.00	227.38	---	226.09	230.19	232.63	235.13



GROUND-WATER LEVELS
RIO GRANDE DE MANATI BASIN

182634066262500. Local number, 209.

LOCATION.--Lat 18°26'34", long 66°26'25".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Coto Norte No. 3.

AQUIFER.--Aymamon-Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m), cased 16 in (0.41 m) 0-495 ft (0-150.9 m), perforated 255-455 ft (77.7-138.7 m). Depth 495 FT (150.9 m).

DATUM.--Elevation of land-surface datum is about 99.0 ft (30.2 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 2.30 ft (0.70 m) above land-surface datum.

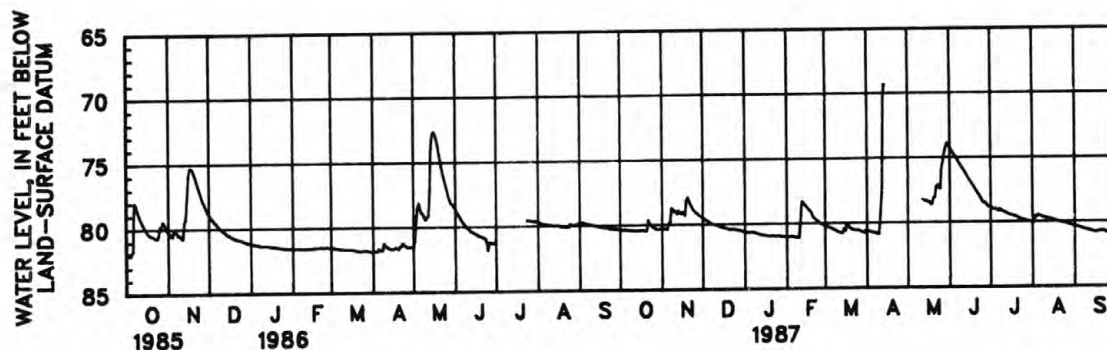
REMARKS.--Abandoned observation well. Automatic recorder installed on September 11, 1985.

PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 68.40 ft (20.84 m) below land-surface datum, Apr. 15, 1987; lowest water level recorded, 81.96 ft (24.98 m) below land-surface datum, June 24, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80.32	80.25	79.48	80.59	80.99	80.15	80.58	---	74.23	78.88	80.01	80.34
2	80.33	80.28	79.55	80.61	80.97	80.19	80.59	---	74.41	78.92	80.02	80.37
3	80.33	80.31	79.63	80.62	80.96	80.27	80.64	---	74.58	78.98	79.55	80.40
4	80.34	80.32	79.70	80.65	80.96	80.29	80.66	---	74.75	79.02	79.62	80.43
5	80.35	80.31	79.77	80.61	80.98	80.35	80.70	---	74.92	78.99	79.50	80.46
6	80.36	79.85	79.84	80.62	80.98	80.40	80.71	---	75.10	79.08	79.53	80.50
7	80.38	79.73	79.89	80.62	81.03	80.45	80.75	---	75.27	79.15	79.56	80.53
8	80.38	78.69	79.94	80.64	81.03	80.50	80.78	---	75.44	78.98	79.60	80.56
9	80.40	78.84	79.98	80.69	81.05	80.56	80.82	---	75.61	79.13	79.63	80.59
10	80.40	78.99	80.01	80.72	81.06	80.61	80.85	---	75.78	79.17	79.66	80.62
11	80.41	78.94	80.06	80.78	79.76	80.65	79.17	---	75.95	79.22	79.69	80.65
12	80.41	---	80.09	80.81	78.25	80.70	77.29	---	76.13	79.26	79.72	80.68
13	80.42	78.90	80.15	80.82	78.36	80.71	70.27	78.29	76.30	79.31	79.75	80.71
14	80.42	79.08	80.19	80.85	78.55	80.71	69.32	78.29	76.48	79.38	79.78	80.74
15	80.42	79.13	80.21	80.85	78.67	80.40	---	78.33	76.65	79.43	79.81	80.77
16	80.41	79.03	80.24	80.86	78.79	80.55	---	78.38	76.82	79.47	79.84	80.80
17	80.41	79.17	80.26	80.90	78.91	80.10	---	78.38	76.99	79.50	79.87	80.78
18	80.40	79.28	80.29	80.90	79.05	80.19	---	78.57	77.17	79.53	79.91	80.76
19	80.41	78.07	80.32	80.92	79.16	80.34	---	78.57	77.34	79.56	79.94	80.74
20	80.42	77.89	80.35	80.92	79.46	80.40	---	78.10	77.51	79.58	79.97	80.72
21	80.42	78.22	80.39	80.91	79.57	80.44	---	78.01	77.68	79.64	80.00	80.71
22	79.57	78.46	80.38	80.92	79.68	80.49	---	77.23	77.85	79.70	80.03	80.71
23	79.88	78.70	80.38	80.92	79.76	80.51	---	77.09	78.03	79.77	80.06	80.71
24	80.01	78.88	80.39	80.92	79.84	80.54	---	77.28	78.20	79.81	80.09	80.80
25	80.11	78.98	80.41	80.92	79.94	80.55	---	77.37	78.44	79.83	80.12	80.82
26	80.20	79.11	80.42	80.92	80.03	80.52	---	75.78	78.47	79.85	80.15	80.82
27	80.26	79.18	80.45	80.93	80.06	80.58	---	75.32	78.53	79.88	80.18	80.87
28	80.30	79.29	80.47	80.95	80.11	80.64	---	74.63	78.63	79.90	80.22	80.87
29	80.34	79.34	80.51	80.97	---	80.68	---	74.20	78.77	79.93	80.25	80.90
30	80.32	79.39	80.52	80.97	---	80.71	---	73.85	78.83	79.96	80.28	80.91
31	80.26	---	80.57	80.97	---	80.57	---	74.11	---	79.99	80.31	---
LOW	80.42	---	80.57	80.97	81.06	80.71	---	---	78.83	79.99	80.31	80.91
HIGH	79.57	---	79.48	80.59	78.25	80.10	---	---	74.23	78.88	79.50	80.34



GROUND-WATER LEVELS

RIO GRANDE DE MANATI BASIN

182308066260400. Local number, 210.

LOCATION.--Lat 18°23'08", long 66°26'04".

Owner: Gelo Martinez.

Name: Gelo Martinez well.

AQUIFER.--Lares Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in (0.20 m), cased 8 in (0.20 m).

DATUM.--Elevation of land-surface datum is about 574 ft (174.9 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on February 27, 1986.

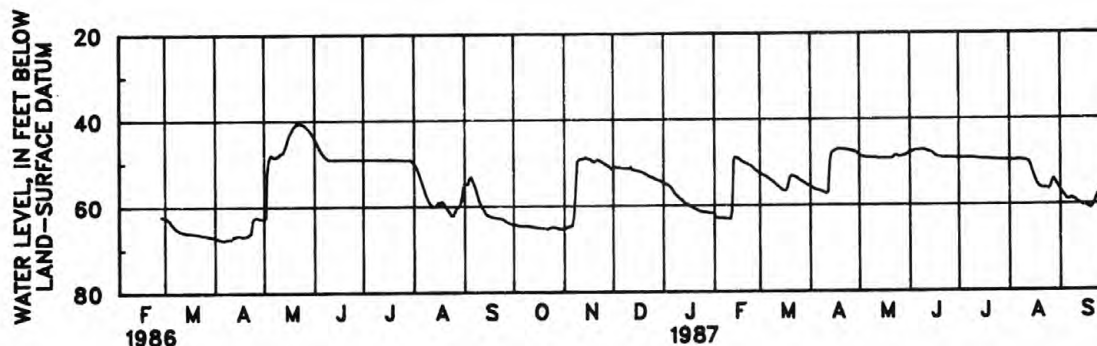
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 40.56 ft (12.36 m) below land-surface datum, May 22, 1986; lowest water level recorded, 67.67 ft (20.62 m) below land-surface datum, Apr. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64.14	65.21	51.73	54.70	61.78	52.57	55.70	48.44	47.86	49.18	49.68	56.66
2	64.26	65.18	50.92	54.89	62.81	52.77	55.95	48.67	47.71	49.18	49.68	57.24
3	64.40	64.96	51.04	55.09	62.84	52.97	56.16	48.80	47.53	49.18	49.69	57.76
4	64.55	64.79	51.12	55.31	62.86	53.16	56.32	48.92	47.36	49.19	49.77	58.28
5	64.55	64.66	51.16	55.60	62.88	53.39	56.49	48.96	47.31	49.19	49.71	58.78
6	64.58	64.57	51.21	56.03	62.90	53.66	56.64	48.98	47.30	49.19	49.60	58.93
7	64.68	62.70	51.24	56.63	62.91	53.95	56.71	49.00	47.26	49.19	49.59	58.73
8	64.59	56.35	51.28	57.27	62.95	54.23	56.80	49.04	47.22	49.19	49.65	58.65
9	64.57	49.58	51.29	57.65	62.98	54.54	56.98	49.03	47.22	49.19	49.72	58.84
10	64.58	49.26	51.31	58.01	63.04	54.88	57.18	49.04	47.27	49.20	49.79	59.01
11	64.67	49.12	51.36	58.36	62.99	55.25	57.31	49.04	47.41	49.22	49.85	59.31
12	64.77	49.06	51.08	58.68	61.34	55.59	56.88	49.18	47.57	49.25	49.91	59.64
13	64.86	49.00	51.67	59.06	49.41	55.89	49.82	49.19	47.69	49.30	50.23	59.85
14	64.91	48.81	51.77	59.41	48.69	56.18	47.88	49.18	47.79	49.33	51.00	60.02
15	64.98	49.00	51.83	59.66	48.94	56.49	47.63	49.18	48.02	49.36	52.27	60.22
16	65.05	49.12	51.88	59.73	49.18	56.59	47.35	49.18	48.39	49.39	53.44	60.17
17	65.09	49.19	51.97	60.00	49.45	56.59	47.15	49.18	48.70	49.40	54.45	60.38
18	65.15	49.52	52.10	60.26	49.76	55.92	47.07	49.18	48.87	49.41	55.28	60.57
19	65.19	49.76	52.26	60.48	49.96	54.18	47.08	49.18	48.96	49.45	55.86	60.87
20	65.22	49.55	52.46	60.67	50.15	53.20	47.09	49.18	49.06	49.46	56.08	60.93
21	65.31	49.31	52.68	60.87	50.31	53.11	47.10	49.13	49.09	49.51	56.25	60.35
22	65.30	49.38	52.90	61.08	50.53	53.25	47.10	48.86	49.11	49.52	56.25	59.55
23	65.18	49.61	53.12	61.25	50.70	53.48	47.14	48.54	49.07	49.54	56.20	58.68
24	64.99	49.84	53.30	61.37	50.95	53.73	47.19	48.60	49.09	49.58	56.27	57.75
25	64.95	50.05	53.47	61.45	51.32	54.06	47.26	48.81	49.12	49.60	56.42	57.15
26	64.98	50.30	53.62	61.51	51.72	54.32	47.40	48.79	49.14	49.62	55.94	56.88
27	65.07	50.55	53.86	61.57	52.03	54.54	47.52	48.73	49.15	49.63	54.58	56.74
28	65.20	50.80	54.00	61.61	52.29	54.79	47.62	48.70	49.15	49.64	54.15	56.74
29	65.32	51.08	54.12	61.68	---	54.99	47.77	48.52	49.15	49.65	54.72	56.88
30	65.33	51.39	54.25	61.72	---	55.22	48.07	48.28	49.18	49.66	55.41	57.16
31	65.27	---	54.45	61.75	---	55.47	---	48.09	---	49.69	56.04	---
LOW	65.33	65.21	54.45	61.75	63.04	56.59	57.31	49.19	49.18	49.69	56.42	60.93
HIGH	64.14	48.81	50.92	54.70	48.69	52.57	47.07	48.09	47.22	49.18	49.59	56.66

WTR YR 1987 MEAN 54.09 LOW 65.33 HIGH 47.07



GROUND-WATER LEVELS

RIO CIBUCO BASIN

182647066201700. 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 (0-27.43 m), perforated. Depth 90 ft (27.43 m).

DATUM.--Elevation of land-surface datum is about 49 ft (14.9 m) above mean sea level, from topographic map.

Measuring point: Top of casing wooden cover, 1.30 ft (0.40 m) above land-surface datum.

REMARKS.--Recording observation well.

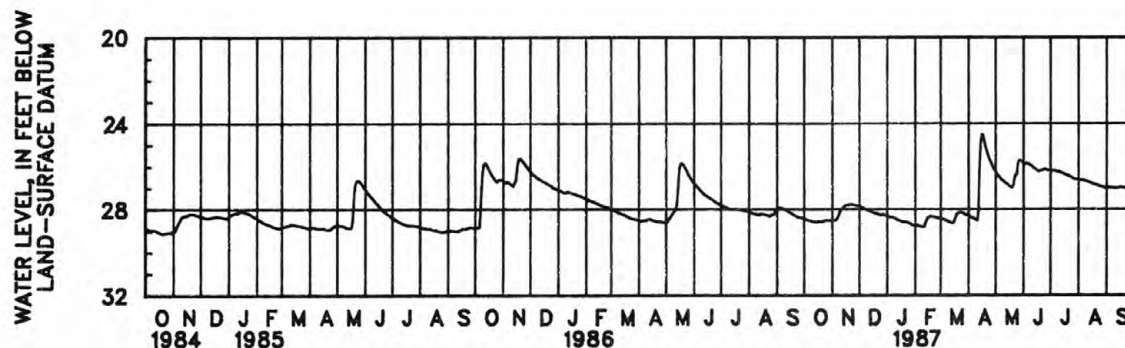
PERIOD OF RECORD.--February 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 21.33 ft (6.50 m) below land-surface datum, Oct. 26, 1976; lowest water level recorded, 31.10 ft (9.48 m) below land-surface datum, July 31, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.44	28.50	27.84	28.30	28.74	28.42	28.28	26.23	25.83	26.18	26.62	26.99
2	28.45	28.50	27.86	28.32	28.74	28.43	28.30	26.31	25.86	26.18	26.63	26.98
3	28.47	28.49	27.88	28.33	28.74	28.43	28.33	26.37	25.86	26.18	26.63	26.97
4	28.48	28.49	27.90	28.35	28.75	28.44	28.35	26.42	25.84	26.18	26.63	26.97
5	28.49	28.48	27.92	28.35	28.76	28.46	28.38	26.48	25.84	26.19	26.63	26.97
6	28.51	28.44	27.95	28.36	28.77	28.48	28.40	26.53	25.87	26.20	26.64	26.98
7	28.52	28.36	27.97	28.37	28.78	28.50	28.42	26.58	25.88	26.20	26.65	26.98
8	28.54	28.29	27.98	28.38	28.79	28.52	28.45	26.62	25.90	26.22	26.66	26.99
9	28.54	28.16	27.99	28.40	28.80	28.54	28.47	26.65	25.94	26.23	26.66	27.01
10	28.56	28.07	28.02	28.42	28.81	28.56	28.48	26.69	25.97	26.22	26.68	27.00
11	28.57	27.99	28.04	28.44	28.75	28.57	28.50	26.72	26.00	26.25	26.70	26.99
12	28.57	27.95	28.06	28.47	28.70	28.59	28.04	26.76	26.05	26.26	26.71	27.01
13	28.58	27.90	28.08	28.49	28.56	28.61	26.23	26.79	26.08	26.27	26.73	26.99
14	28.59	27.86	28.10	28.51	28.46	28.62	25.25	26.82	26.11	26.30	26.74	26.98
15	28.58	27.83	28.12	28.52	28.39	28.62	24.70	26.86	26.14	26.33	26.76	26.97
16	28.57	27.80	28.13	28.54	28.35	28.58	24.47	26.90	26.17	26.35	26.78	26.96
17	28.56	27.79	28.15	28.55	28.33	28.47	24.52	26.93	26.19	26.36	26.80	26.97
18	28.56	27.78	28.16	28.57	28.32	28.32	24.70	26.96	26.22	26.38	26.82	26.97
19	28.56	27.77	28.17	28.58	28.32	28.23	24.92	26.98	26.19	26.40	26.83	26.98
20	28.56	27.76	28.19	28.59	28.33	28.18	25.09	26.95	26.18	26.42	26.84	26.99
21	28.56	27.75	28.20	28.58	28.33	28.16	25.24	26.87	26.18	26.42	26.86	27.00
22	28.54	27.75	28.21	28.58	28.34	28.15	25.37	26.60	26.17	26.45	26.86	27.01
23	28.52	27.76	28.23	28.59	28.35	28.14	25.50	26.41	26.15	26.47	26.89	27.02
24	28.51	27.77	28.25	28.61	28.37	28.14	25.61	26.34	26.12	26.50	26.90	27.04
25	28.50	27.78	28.26	28.63	28.38	28.15	25.72	26.34	26.12	26.53	26.93	27.08
26	28.50	27.80	28.25	28.65	28.40	28.16	25.82	25.84	26.13	26.55	26.93	27.11
27	28.50	27.81	28.24	28.66	28.41	28.19	25.90	25.74	26.16	26.57	26.94	27.13
28	28.50	27.82	28.25	28.70	28.42	28.22	25.99	25.71	26.18	26.58	26.95	27.15
29	28.50	27.82	28.25	28.72	---	28.24	26.08	25.73	26.18	26.59	26.97	27.17
30	28.50	27.83	28.26	28.73	---	28.26	26.16	25.76	26.18	26.60	26.99	27.19
31	28.50	---	28.28	28.72	---	28.27	---	25.80	---	26.61	27.01	---
LOW	28.59	28.50	28.28	28.73	28.81	28.62	28.50	26.98	26.22	26.61	27.01	27.19
HIGH	28.44	27.75	27.84	28.30	28.32	28.14	24.47	25.71	25.83	26.18	26.62	26.96

WTR YR 1987 MEAN 27.4 LOW 28.81 HIGH 24.47



GROUND-WATER LEVELS

RIO CIBUCO BASIN

182615066235300. Local number, 211.

LOCATION.--Lat 18°26'15", long 66°23'53".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Rosario No. 2.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 14 in (0.36 m) 0-200 ft (0-61.0 m), diameter 12 in (0.30 m) 200-250 ft (61.0-76.2 m), cased 12 in (0.30 m) 0-250 ft (0-76.2 m), perforated 210-250 ft (64.0-76.2 m), diameter 10 in (0.25 m) 250-270 ft (76.2-82.3 m), open hole; concrete sealed 0-200 ft (0-61.0 m). Depth 270 ft (82.3 m).

DATUM.--Elevation of land-surface datum is about 215 ft (65.5 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.15 ft (0.35 m) above land-surface datum.

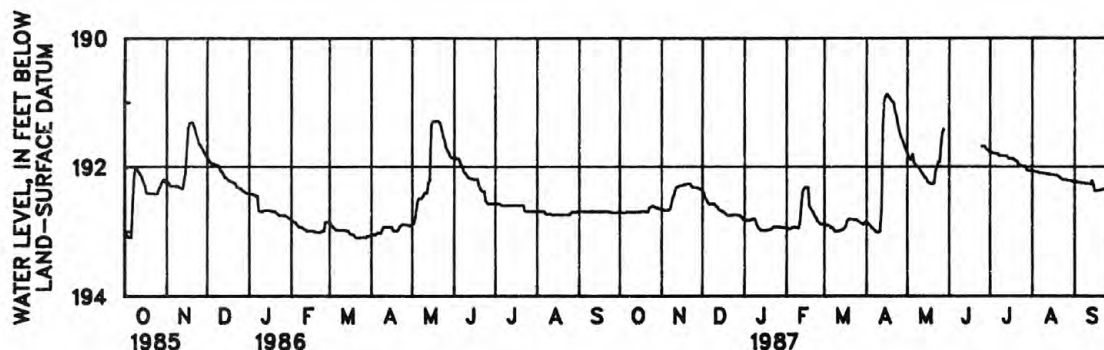
REMARKS.--Abandoned observation well. Automatic recorder installed on September 17, 1985.

PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 191.29 ft (58.30 m) below land-surface datum, May 16, 1986; lowest water level recorded, 193.10 ft (58.86 m) below land-surface datum, Mar. 21, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192.71	192.65	192.37	192.82	192.95	192.90	192.85	191.78	---	191.77	192.07	192.23
2	192.71	192.66	192.41	192.83	192.95	192.90	192.87	191.84	---	191.78	192.07	192.23
3	192.71	192.67	192.48	192.83	192.96	192.90	192.89	191.88	---	191.78	192.07	192.24
4	192.71	192.67	192.51	192.83	192.96	192.91	192.91	191.89	---	191.79	192.08	192.24
5	192.71	192.67	192.55	192.83	192.94	192.91	192.94	191.90	---	191.79	192.08	192.24
6	192.70	192.67	192.57	192.82	192.94	192.94	192.96	191.94	---	191.80	192.09	192.25
7	192.70	192.65	192.57	192.81	192.93	192.94	192.98	191.96	---	191.80	192.09	192.25
8	192.70	192.60	192.57	192.80	192.94	192.97	193.00	191.99	---	191.83	192.09	192.25
9	192.70	192.47	192.57	192.82	192.94	193.00	193.01	192.00	---	191.83	192.10	192.26
10	192.70	192.44	192.58	192.89	192.95	193.00	193.01	192.02	---	191.83	192.10	192.26
11	192.70	192.36	192.61	192.93	192.87	192.99	192.99	192.07	---	191.83	192.10	192.26
12	192.70	192.31	192.62	192.96	192.59	192.99	192.67	192.10	---	191.83	192.11	192.26
13	192.70	192.31	192.66	192.98	192.38	192.98	191.36	192.13	---	191.83	192.11	192.27
14	192.70	192.30	192.67	192.98	192.33	192.97	190.96	192.16	---	191.85	192.12	192.21
15	192.70	192.29	192.67	192.98	192.32	192.97	190.91	192.18	---	191.87	192.12	192.28
16	192.70	192.29	192.70	192.98	192.32	192.94	190.87	192.23	---	191.87	192.12	192.38
17	192.69	192.28	192.70	192.98	192.32	192.91	190.90	192.25	---	191.87	192.13	192.37
18	192.69	192.27	192.72	192.98	192.62	192.83	190.93	192.26	---	191.87	192.13	192.37
19	192.69	192.27	192.74	192.97	192.64	192.81	190.96	192.26	---	191.89	192.13	192.37
20	192.69	192.26	192.75	192.97	192.68	192.81	190.99	192.26	---	191.90	192.14	192.36
21	192.69	192.26	192.75	192.96	192.71	192.81	191.00	192.25	---	191.92	192.16	192.36
22	192.69	192.26	192.75	192.94	192.76	192.81	191.14	192.06	---	191.96	192.18	192.35
23	192.63	192.30	192.74	192.93	192.79	192.82	191.21	191.98	---	191.97	192.19	192.35
24	192.62	192.32	192.74	192.93	192.84	192.82	191.34	191.92	---	191.98	192.20	192.34
25	192.61	192.32	192.74	192.93	192.86	192.82	191.42	191.92	191.68	191.99	192.20	192.34
26	192.61	192.32	192.74	192.93	192.88	192.84	191.51	191.65	191.68	191.99	192.20	192.33
27	192.62	192.32	192.74	192.93	192.89	192.85	191.56	191.46	191.68	191.99	192.21	192.34
28	192.63	192.33	192.75	192.94	192.89	192.87	191.61	191.42	191.72	192.05	192.21	192.36
29	192.64	192.34	192.76	192.94	---	192.88	191.68	---	191.73	192.06	192.21	192.36
30	192.65	192.35	192.78	192.94	---	192.89	191.73	---	191.75	192.06	192.22	192.36
31	192.65	---	192.81	192.95	---	192.85	---	---	---	192.06	192.23	---
LOW	192.71	192.57	192.81	192.98	192.96	193.00	193.01	---	---	192.06	192.23	192.38
HIGH	192.61	192.26	192.37	192.80	192.32	192.81	190.87	---	---	191.77	192.07	192.21



GROUND-WATER LEVELS

RIO CIBUCO BASIN

182515066194000. Local number, 212.

LOCATION.--Lat 18°25'15", long 66°19'40".

Owner: U.S. Geological Survey.

Name: Ponderosa TW-1.

AQUIFER.--Aguada Limestone-Cibao Formation.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m), cased 4 in (0.10 m) 0-136 ft (0-41.1 m), perforated 121-131 ft (36.9-39.9 m); bentonite packed 0.5-121 ft (0.15-36.9 m).

Depth 136 ft (39.9 m).

DATUM.--Elevation of land-surface datum is about 98.0 ft (29.9 m) above mean sea level, from topographic map.

Measuring point: Shelter floor on top of 4 in (0.10 m) casing, 3.00 ft (0.91 m) above land-surface datum.

REMARKS.--Observation well. Automatic recorder installed on October 17, 1985.

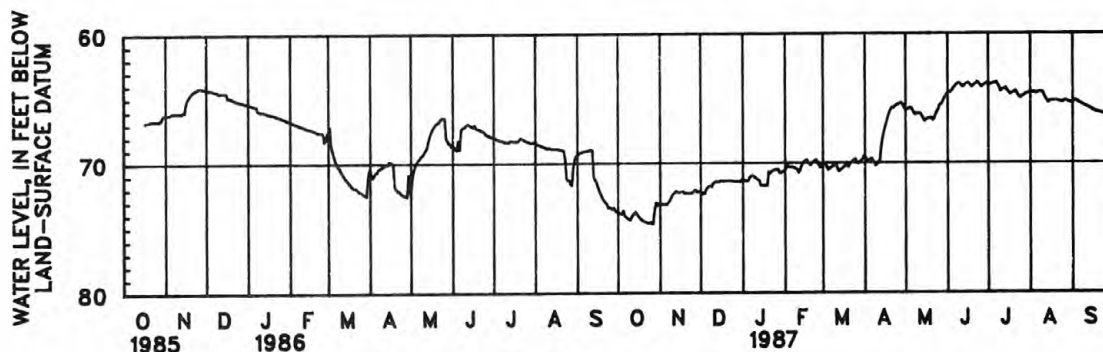
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 63.05 ft (19.22 m) below land-surface datum, July 15, 1987; lowest water level recorded, 74.63 ft (22.75 m) below land-surface datum, Oct. 27, 28, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73.77	73.10	72.20	71.28	70.58	70.10	69.46	65.93	64.62	64.01	64.59	65.32
2	73.83	73.13	72.41	71.31	70.36	70.06	69.71	65.85	64.54	63.98	64.59	65.25
3	73.87	73.16	72.30	71.36	70.21	70.04	69.89	65.79	64.57	63.93	64.57	65.20
4	73.90	73.16	72.34	71.38	70.29	70.32	69.79	65.73	64.43	63.88	64.56	65.22
5	73.62	73.16	72.03	71.36	70.34	70.51	69.72	65.72	64.25	63.86	64.64	65.29
6	74.07	73.16	71.88	71.12	70.31	70.42	69.65	65.93	64.14	63.83	64.59	65.37
7	74.15	73.05	71.77	71.00	70.33	70.35	69.87	66.11	64.00	63.79	64.56	65.42
8	74.22	72.91	71.77	70.95	70.38	70.27	70.06	66.27	63.90	63.98	64.54	65.49
9	74.31	72.67	71.81	71.02	70.41	70.20	70.20	66.19	63.84	64.15	64.54	65.55
10	74.36	72.49	71.56	71.12	70.49	70.15	70.08	66.14	63.94	64.51	64.56	65.60
11	74.12	72.33	71.50	71.20	70.75	70.15	69.98	66.20	64.05	64.37	64.81	65.64
12	73.96	72.24	71.44	71.27	70.55	70.46	69.73	66.19	64.15	64.32	65.01	65.70
13	73.85	72.14	71.44	71.36	70.26	70.66	68.74	66.42	64.05	64.31	65.18	65.75
14	73.73	72.23	71.42	71.70	70.06	70.51	68.04	66.60	63.95	64.21	65.33	65.79
15	73.91	72.26	71.40	71.73	69.92	70.44	67.59	66.74	63.88	64.46	65.26	65.82
16	74.09	72.23	71.38	71.72	69.79	70.36	67.19	66.64	63.83	64.58	65.21	65.95
17	74.21	72.21	71.37	71.72	69.73	70.27	66.86	66.59	63.95	64.70	65.20	65.99
18	74.31	72.19	71.36	71.72	69.95	70.09	66.40	66.54	64.07	64.65	65.18	66.03
19	74.40	72.33	71.36	71.72	70.07	70.23	66.09	66.53	64.16	64.60	65.19	66.08
20	74.46	72.33	71.36	70.66	70.18	70.30	65.84	66.51	64.06	64.57	65.20	66.09
21	74.52	72.33	71.36	70.78	69.98	70.08	65.69	66.67	63.94	64.46	65.23	66.11
22	74.54	72.33	71.36	70.66	69.88	69.94	65.77	66.58	63.87	64.62	65.25	66.15
23	74.58	72.33	71.36	70.57	69.79	69.84	65.64	66.24	63.78	64.83	65.27	66.17
24	74.59	72.34	71.37	70.54	69.74	69.75	65.53	66.02	63.91	64.94	65.31	66.22
25	74.54	72.25	71.40	70.50	69.97	69.70	65.46	65.85	64.02	64.97	65.28	66.25
26	74.61	72.16	71.40	70.49	70.18	69.92	65.43	65.55	64.12	64.88	65.22	66.29
27	74.62	72.03	71.41	70.47	70.33	70.06	65.38	65.47	64.05	64.81	65.20	66.33
28	73.49	72.23	71.41	70.78	70.19	69.93	65.36	65.37	63.97	64.73	65.26	66.36
29	73.00	72.18	71.42	70.75	---	69.83	65.59	65.08	63.91	64.66	65.29	66.38
30	73.26	72.21	71.43	70.69	---	69.75	65.78	64.89	63.86	64.64	65.34	66.40
31	73.14	---	71.29	70.61	---	69.49	---	64.76	---	64.61	65.37	---
LOW	74.62	73.16	72.41	71.73	70.75	70.66	70.20	66.74	64.62	64.97	65.37	66.40
HIGH	73.00	72.03	71.29	70.47	69.73	69.49	65.36	64.76	63.78	63.79	64.54	65.20

WTR YR 1987 MEAN 68.5 LOW 74.62 HIGH 63.78



GROUND-WATER LEVELS

RIO CIBUCO BASIN

182330066185700. Local number, 213.

LOCATION.--Lat 18°23'30", long 66°18'57".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Pampano No. 2.

AQUIFER.--Rio Indio Limestone-Lares Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m), cased 20 in (0.51 m) 0-130 ft (0-39.6 m), diameter 14 in (0.36 m), cased 12 in (0.30 m) 0-220 ft (0-67.1 m); open hole 220-330 ft (67.6-100.6 m). Depth 330 ft (100.6 m).

DATUM.--Elevation of land-surface datum is about 394 ft (120 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 2.95 ft (0.90 m) above land-surface datum.

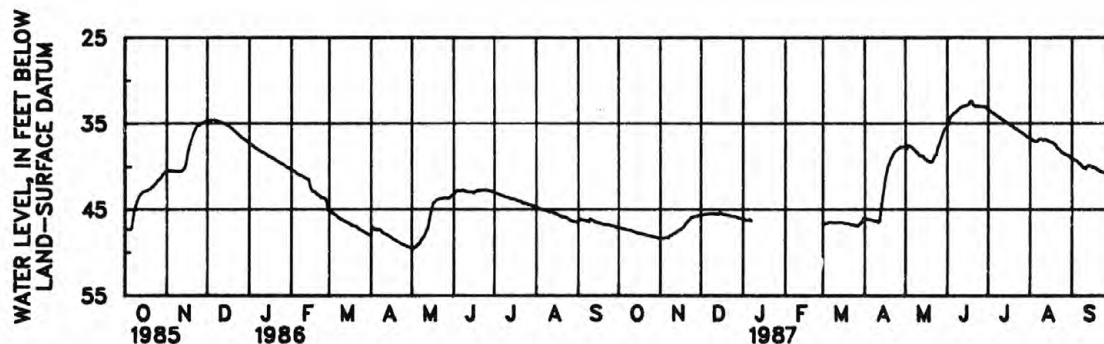
REMARKS.--Abandoned observation well. Automatic recorder installed on September 16, 1985.

PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 34.40 ft (10.50 m) below land-surface datum, Dec. 6, 1985; lowest water level recorded, 49.55 ft (15.10 m) below land-surface datum, May 1, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.11	48.38	45.60	46.10	---	46.75	46.01	37.70	35.37	33.35	36.72	38.97
2	47.11	48.34	45.59	46.15	---	46.67	46.06	37.96	35.02	33.48	36.83	39.10
3	47.15	48.32	45.58	46.24	---	46.57	46.13	37.52	34.34	33.59	36.94	39.24
4	47.21	48.29	45.56	46.24	---	46.56	46.13	37.56	34.10	33.69	37.03	39.28
5	47.25	48.25	45.52	46.20	---	46.52	46.15	37.67	33.97	33.78	37.06	39.41
6	47.27	48.24	45.50	46.14	---	46.48	46.20	37.81	33.75	33.91	37.07	39.60
7	47.34	48.29	45.49	46.29	---	46.48	46.26	37.96	33.70	34.03	36.95	39.68
8	47.38	48.00	45.49	---	---	46.52	46.30	38.12	33.54	34.13	36.83	39.87
9	47.37	47.98	45.49	---	---	46.51	46.32	38.30	33.39	34.24	36.81	40.00
10	47.39	47.86	45.50	---	---	46.51	46.36	38.46	33.18	34.35	36.86	40.14
11	47.48	47.77	45.49	---	---	46.51	46.48	38.65	33.09	34.46	36.91	40.25
12	47.56	47.73	45.49	---	---	46.50	46.30	38.74	33.01	34.56	36.83	39.98
13	47.60	47.60	45.51	---	---	46.51	44.81	38.77	32.96	34.67	36.85	39.91
14	47.65	47.47	45.54	---	---	46.49	43.56	38.77	32.90	34.79	36.99	39.90
15	47.72	47.38	45.28	---	---	46.49	42.45	39.04	32.87	34.90	37.05	39.95
16	47.75	47.29	45.49	---	---	46.54	41.41	39.16	32.83	35.00	37.13	40.02
17	47.78	47.16	45.53	---	---	46.59	40.64	39.31	32.71	35.11	37.17	40.04
18	47.80	47.03	45.57	---	---	46.61	39.99	39.40	32.35	35.22	37.23	40.11
19	47.86	46.80	45.60	---	---	46.61	39.58	39.44	32.35	35.33	37.35	40.21
20	47.87	46.57	45.62	---	---	46.63	39.14	39.50	32.81	35.43	37.53	40.38
21	47.92	46.38	45.65	---	---	46.68	38.80	39.38	32.86	35.54	37.83	40.40
22	48.00	46.21	45.68	---	---	46.75	38.51	39.01	32.99	35.65	37.95	40.52
23	48.03	46.08	45.73	---	---	46.77	38.29	38.66	32.91	35.75	38.09	40.63
24	48.03	45.85	45.76	---	---	46.77	38.12	38.58	32.97	35.86	38.27	40.66
25	48.06	45.86	45.80	---	---	46.87	38.00	37.71	32.99	35.97	38.41	40.71
26	48.12	45.79	45.80	---	---	46.91	37.85	37.40	33.00	36.08	38.50	40.76
27	48.16	45.75	45.85	---	---	46.91	37.73	36.86	33.01	36.18	38.59	40.84
28	48.19	45.73	45.94	---	---	46.70	37.71	36.45	33.04	36.29	38.64	40.86
29	48.24	45.65	46.00	---	---	46.54	37.73	36.04	33.05	36.40	38.66	40.85
30	48.26	45.63	46.02	---	---	46.38	37.73	35.71	33.16	36.51	38.75	40.90
31	48.36	---	46.05	---	---	46.02	---	35.49	---	36.61	39.00	---
LOW	48.36	48.38	46.05	---	---	46.91	46.48	39.50	35.37	36.61	39.00	40.90
HIGH	47.11	45.63	45.28	---	---	46.02	37.71	35.49	32.35	33.35	36.72	38.97



GROUND-WATER LEVELS
RIO DE LA PLATA BASIN

182746066170800. Local number, 214.

LOCATION.--Lat 18°27'46", long 66°17'08".

Owner: Dorado Beach Hotel.

Name: Dorado Beach No. 7.

AQUIFER.--Aymamon Limestone.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 18 in (0.46 m). Depth 100 ft (30.5 m).

DATUM.--Elevation of land-surface datum is about 39.0 ft (11.9 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.10 ft (0.34 m) above land-surface datum.

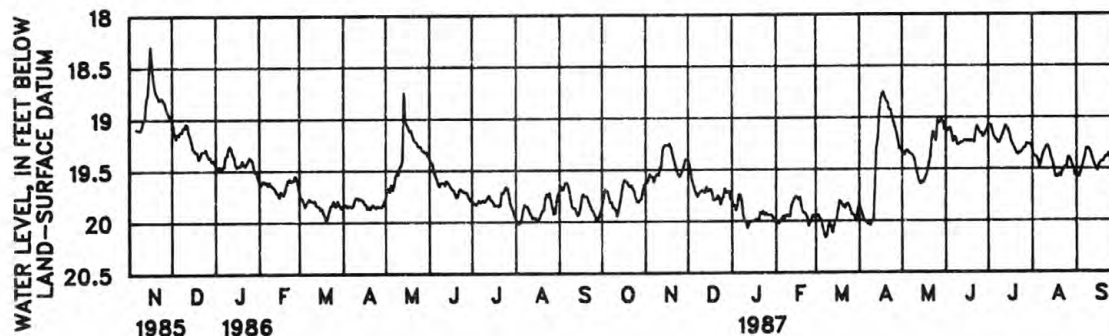
REMARKS.--Abandoned observation well. Automatic recorder installed on November 7, 1985. Water levels affected by nearby pumping well.

PERIOD OF RECORD.-- November 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 18.23 ft (5.56 m) below land-surface datum, Nov. 16, 1985; lowest water level recorded, 20.31 ft (6.19 m) below land-surface datum, Mar. 8, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.86	19.63	19.41	19.80	20.01	19.95	19.84	19.33	19.11	19.07	19.31	19.56
2	19.77	19.62	19.45	19.84	20.00	19.95	19.89	19.33	19.13	19.07	19.37	19.55
3	19.69	19.60	19.54	19.85	20.02	19.94	19.93	19.36	19.11	19.08	19.38	19.58
4	19.70	19.54	19.61	19.89	19.99	19.98	19.98	19.32	19.10	19.13	19.39	19.53
5	19.71	19.57	19.66	19.84	19.98	19.99	20.00	19.32	19.15	19.19	19.42	19.48
6	19.76	19.57	19.71	19.74	19.95	20.06	20.01	19.34	19.23	19.21	19.48	19.43
7	19.81	19.62	19.74	19.74	19.97	20.12	20.03	19.35	19.19	19.22	19.44	19.38
8	19.81	19.56	19.76	19.80	19.95	20.16	20.03	19.36	19.20	19.25	19.38	19.30
9	19.86	19.54	19.72	19.94	19.94	20.14	20.04	19.37	19.26	19.24	19.33	19.30
10	19.87	19.55	19.71	20.00	19.95	20.05	20.00	19.42	19.26	19.20	19.31	19.31
11	19.89	19.48	19.70	20.01	19.95	20.01	19.99	19.53	19.25	19.16	19.28	19.34
12	19.95	19.47	19.71	20.07	19.84	20.06	19.62	19.55	19.24	19.13	19.28	19.39
13	19.88	19.31	19.72	20.03	19.81	20.11	19.26	19.61	19.24	19.08	19.32	19.43
14	19.82	19.27	19.66	20.00	19.78	20.04	19.21	19.64	19.22	19.10	19.39	19.47
15	19.73	19.26	19.71	20.00	19.76	20.00	18.94	19.62	19.22	19.12	19.42	19.50
16	19.64	19.26	19.69	20.00	19.77	19.97	18.82	19.63	19.23	19.16	19.48	19.52
17	19.59	19.26	19.69	20.00	19.79	19.89	18.76	19.60	19.22	19.23	19.57	19.46
18	19.61	19.25	19.72	19.98	19.77	19.80	18.75	19.56	19.23	19.26	19.58	19.44
19	19.62	19.29	19.80	20.00	19.86	19.82	18.81	19.52	19.22	19.29	19.57	19.43
20	19.65	19.35	19.79	19.98	19.91	19.84	18.84	19.44	19.23	19.32	19.55	19.43
21	19.66	19.41	19.78	19.91	19.92	19.86	18.86	19.38	19.24	19.35	19.57	19.40
22	19.65	19.46	19.75	19.93	19.93	19.87	18.92	19.21	19.12	19.36	19.52	19.38
23	19.68	19.51	19.77	19.90	19.96	19.83	18.93	19.13	19.08	19.34	19.50	19.38
24	19.70	19.55	19.83	19.94	20.05	19.83	18.99	19.17	19.12	19.34	19.48	19.35
25	19.77	19.57	19.79	19.92	20.02	19.86	19.04	19.23	19.15	19.32	19.49	19.39
26	19.81	19.54	19.76	19.94	19.98	19.90	19.09	19.02	19.15	19.30	19.39	19.44
27	19.81	19.51	19.68	19.94	19.94	19.94	19.14	19.06	19.19	19.29	19.39	19.53
28	19.79	19.46	19.72	19.94	19.96	19.94	19.21	19.04	19.17	19.25	19.42	19.57
29	19.78	19.40	19.71	19.94	---	19.98	19.30	19.02	19.14	19.26	19.46	19.64
30	19.70	19.41	19.71	19.97	---	20.00	19.29	19.05	19.11	19.26	19.50	19.61
31	19.65	---	19.78	20.01	---	19.87	---	19.12	---	19.27	19.57	---
LOW	19.95	19.63	19.83	20.07	20.05	20.16	20.04	19.64	19.26	19.36	19.58	19.64
HIGH	19.59	19.25	19.41	19.74	19.76	19.80	18.75	19.02	19.08	19.07	19.28	19.30
WTR YR 1987	MEAN 19.6	LOW 20.16	HIGH 18.75									



GROUND-WATER LEVELS

RIO DE LA PLATA BASIN

182548066171200. Local number, 215.

LOCATION.--Lat 18°25'48", long 66°17'12".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Maguayo No. 5.

AQUIFER.--Aguada Limestone-Cibao Formation.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in (0.51 m) 0-95 ft (0-29.0 m), cased 20 in (0.51 m) 0-60 ft (0-18.3 m), diameter 16 in (0.41 m) 95-145 ft (29.0-44.2 m), cased 16 in (0.41 m) 0-145 ft (0-44.2 m), perforated 65-145 ft (19.8-44.2 m). Depth 145 ft (44.2 m).

DATUM.--Elevation of land-surface datum is about 66 ft (20.1 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.60 ft (0.49 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on August 13, 1985.

PERIOD OF RECORD.--October 1985 to May 10, 1987, discontinued.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 40.16 ft (12.24 m) below land-surface datum, Apr. 18, 1987; lowest water level recorded, 44.33 ft (13.51 m) below land-surface datum, Feb. 10, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43.96	43.98	43.27	43.76	44.21	43.93	43.79	41.64	---	---	---	---
2	43.97	43.99	43.28	43.77	44.22	43.95	43.82	41.71	---	---	---	---
3	43.99	43.99	43.31	43.78	44.23	43.97	43.85	41.76	---	---	---	---
4	44.00	43.99	43.34	43.80	44.24	43.98	43.87	41.82	---	---	---	---
5	44.01	43.98	43.36	43.81	44.26	43.99	43.90	41.89	---	---	---	---
6	44.03	43.92	43.39	43.82	44.28	44.01	43.94	41.93	---	---	---	---
7	44.04	43.82	43.41	43.84	44.29	44.03	43.96	41.98	---	---	---	---
8	44.05	43.71	43.43	43.86	44.30	44.05	43.97	42.03	---	---	---	---
9	44.06	43.60	43.46	43.87	44.31	44.06	43.98	42.06	---	---	---	---
10	44.07	43.52	43.48	43.90	44.32	44.08	44.00	42.09	---	---	---	---
11	44.08	43.45	43.50	43.92	44.28	44.09	44.03	---	---	---	---	---
12	44.09	43.40	43.52	43.95	44.16	44.12	43.78	---	---	---	---	---
13	44.10	43.30	43.54	43.97	44.10	44.13	42.94	---	---	---	---	---
14	44.11	43.27	43.56	43.99	44.03	44.15	42.17	---	---	---	---	---
15	44.10	43.22	43.57	44.00	43.96	44.14	41.24	---	---	---	---	---
16	44.08	43.19	43.59	44.01	43.93	44.12	40.62	---	---	---	---	---
17	44.08	43.18	43.61	44.02	43.91	43.97	40.26	---	---	---	---	---
18	44.08	43.15	43.62	44.04	43.90	43.86	40.16	---	---	---	---	---
19	44.07	43.14	43.64	44.05	43.90	43.76	40.27	---	---	---	---	---
20	44.07	43.14	43.66	44.06	43.90	43.70	40.42	---	---	---	---	---
21	44.07	43.15	43.67	44.07	43.90	43.68	40.58	---	---	---	---	---
22	44.02	43.16	43.69	44.08	43.89	43.67	40.72	---	---	---	---	---
23	44.01	43.18	43.70	44.09	43.90	43.66	40.85	---	---	---	---	---
24	44.00	43.20	43.72	44.11	43.91	43.67	40.97	---	---	---	---	---
25	43.99	43.23	43.73	44.13	43.92	43.67	41.07	---	---	---	---	---
26	43.99	43.24	43.72	44.14	43.94	43.68	41.19	---	---	---	---	---
27	44.00	43.25	43.71	44.17	43.94	43.69	41.29	---	---	---	---	---
28	43.99	43.25	43.71	44.19	43.95	43.70	41.39	---	---	---	---	---
29	43.99	43.26	43.72	44.19	---	43.71	41.48	---	---	---	---	---
30	44.00	43.26	43.73	44.20	---	43.73	41.57	---	---	---	---	---
31	43.99	---	43.75	44.20	---	43.77	---	---	---	---	---	---
LOW	44.11	43.99	43.75	44.20	44.32	44.15	44.03	---	---	---	---	---
HIGH	43.96	43.14	43.27	43.76	43.89	43.66	40.16	---	---	---	---	---



GROUND-WATER LEVELS
RIO DE LA PLATA BASIN

182530066135400. Local number, 216.

LOCATION.--Lat 18°25'30", long 66°13'54".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Pozo Navy-Campanillas.

AQUIFER.--Aguada Limestone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m) 0-106 ft (0-32.3 m), cased 16 in (0.41 m) 0-20 ft (0-6.10 m), cased 12 in (0.30 m) 0-106 ft (0-32.3 m), perforated 20-106 ft (6.10-32.3 m), diameter 10 in (0.25 m) 106-140 ft (32.3-42.7 m), cased 10 in (0.25 m) 106-140 ft (32.3-42.7 m), perforated 106-140 ft (32.3-42.7 m). Depth 140 ft (42.7 m).

DATUM.--Elevation of land-surface datum is about 13.0 ft (3.96 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 1.80 ft (0.55 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed on August 13, 1985.

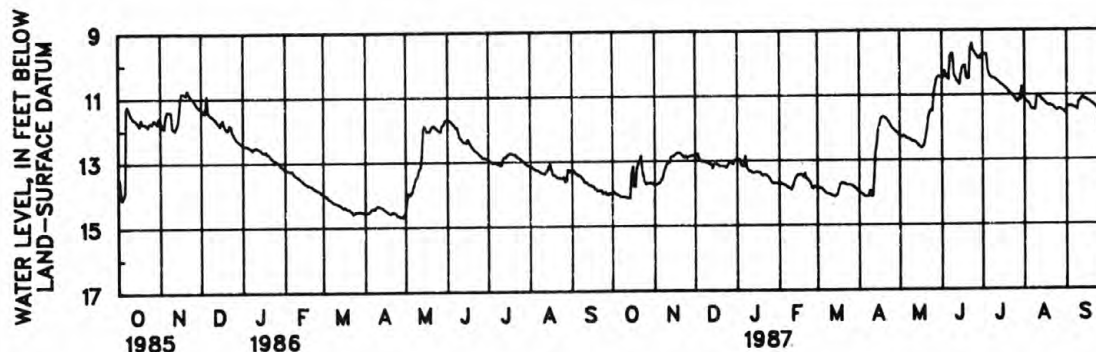
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 9.38 ft (2.86 m) below land-surface datum, June 23, 1987; lowest water level recorded, 14.72 ft (4.49 m) below land-surface datum, Apr. 28, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.98	13.72	12.84	12.95	13.70	13.84	13.97	12.25	10.43	9.74	11.13	11.41
2	13.93	13.72	12.88	12.95	13.69	13.84	14.01	12.26	10.47	9.74	11.18	11.37
3	13.98	13.71	12.77	12.97	13.72	13.85	14.03	12.28	10.23	9.75	11.22	11.35
4	14.01	13.67	12.93	13.14	13.74	13.86	14.07	12.25	10.38	9.74	11.26	11.36
5	14.03	13.65	12.98	13.16	13.75	13.89	14.11	12.28	10.48	10.23	11.30	11.35
6	14.05	13.57	13.02	13.16	13.77	13.94	14.12	12.31	10.51	10.37	11.44	11.38
7	14.08	13.50	13.02	12.86	13.81	13.99	14.12	12.34	9.78	10.44	11.44	11.40
8	14.08	13.30	13.02	13.21	13.84	14.01	14.10	12.34	9.72	10.48	11.45	11.42
9	14.09	13.19	13.04	13.27	13.85	14.03	13.93	12.38	9.72	10.48	11.46	11.45
10	14.09	13.10	13.05	13.32	13.89	14.04	14.13	12.41	10.38	10.50	11.07	11.21
11	14.10	13.05	13.08	13.32	13.80	14.06	14.11	12.42	10.47	10.53	11.05	11.17
12	14.12	13.03	13.10	13.36	13.63	14.08	13.49	12.43	10.56	10.57	11.06	11.11
13	14.12	12.85	13.10	13.37	13.53	14.10	12.75	12.45	10.61	10.60	11.10	11.08
14	14.12	12.85	13.23	13.36	13.47	14.12	12.52	12.51	10.66	10.65	11.16	11.13
15	13.34	12.85	13.11	13.35	13.43	14.07	12.05	12.56	10.36	10.68	11.20	11.14
16	13.16	12.80	13.09	13.35	13.43	14.04	11.91	12.59	10.16	10.71	11.23	11.16
17	13.77	12.77	13.10	13.36	13.42	13.88	11.70	12.63	10.10	10.75	11.28	11.20
18	13.77	12.74	13.12	13.36	13.46	13.73	11.67	12.61	10.09	10.78	11.32	11.21
19	13.20	12.74	13.16	13.43	13.51	13.71	11.65	12.54	10.46	10.82	11.34	11.24
20	13.08	12.76	13.17	13.46	13.39	13.69	11.68	12.30	10.50	10.87	11.31	11.28
21	12.96	12.81	13.16	13.43	13.55	13.71	11.72	12.05	10.48	10.92	11.34	11.31
22	12.83	12.86	13.16	13.44	13.59	13.73	11.78	11.67	9.56	10.96	11.36	11.35
23	13.32	12.89	13.18	13.46	13.64	13.75	11.83	11.51	9.40	11.00	11.41	11.40
24	13.48	12.85	13.21	13.49	13.70	13.76	11.91	11.47	9.62	11.07	11.45	11.44
25	13.66	12.90	13.13	13.56	13.84	13.76	11.99	11.48	9.68	11.10	11.48	11.93
26	13.72	12.86	13.07	13.64	13.87	13.77	12.03	10.90	9.75	11.18	11.44	12.05
27	13.67	12.85	13.05	13.69	13.79	13.79	12.07	10.71	9.82	11.21	11.44	12.11
28	13.68	12.84	13.07	13.70	13.82	13.82	12.12	10.51	9.88	11.12	11.45	12.15
29	13.66	12.82	13.11	13.70	---	13.85	12.15	10.43	9.87	11.14	11.49	12.19
30	13.68	12.84	12.98	13.70	---	13.89	12.20	10.42	9.76	10.75	11.52	12.24
31	13.71	---	12.96	13.70	---	13.94	---	10.45	---	11.05	11.56	---
LOW	14.12	13.72	13.23	13.70	13.89	14.12	14.13	12.63	10.66	11.21	11.56	12.24
HIGH	12.83	12.74	12.77	12.86	13.39	13.69	11.65	10.42	9.40	9.74	11.05	11.08

WTR YR 1987 MEAN 12.4 LOW 14.13 HIGH 9.40



GROUND-WATER LEVELS

RIO DE LA PLATA BASIN

182655066142400. Local number, 217.

LOCATION.--Lat 18°26'55", long 66°14'24".

Owner: U.S. Geological Survey.

Name: Monserrate TW-2.

AQUIFER.--Alluvial Deposits.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m), cased 4 in (0.10 m) 0-80 ft (0-24.4 m), perforated 10-80 ft (3.05-24.4 m). Depth 80 ft (24.4 m).

DATUM.--Elevation of land-surface datum is about 3.30 ft (1.00 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 3.50 ft (1.07 m) above land-surface datum.

REMARKS.--Observation well. Automatic recorder installed on August 20, 1985.

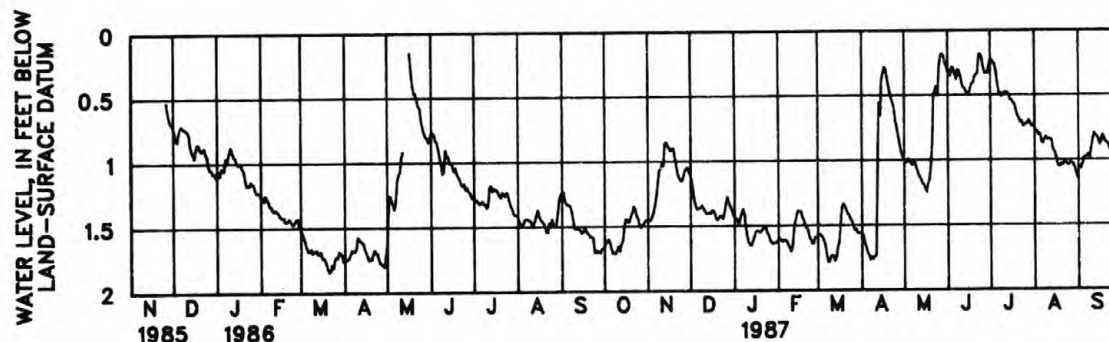
PERIOD OF RECORD.--November 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.02 ft (0.006 m) below land-surface datum, May 16, 1986; lowest water level recorded, 1.92 ft (0.58 m) below land-surface datum, Apr. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.65	1.45	1.11	1.43	1.61	1.58	1.56	1.00	.32	.23	.75	1.08
2	1.62	1.45	1.16	1.45	1.60	1.57	1.58	1.02	.31	.23	.78	1.05
3	1.61	1.45	1.25	1.45	1.61	1.57	1.63	1.02	.35	.25	.78	1.07
4	1.60	1.42	1.32	1.49	1.62	1.59	1.67	.99	.28	.26	.81	1.03
5	1.63	1.39	1.36	1.44	1.61	1.61	1.71	1.01	.29	.32	.80	.98
6	1.67	1.33	1.37	1.40	1.61	1.65	1.73	1.03	.34	.41	.86	.98
7	1.71	1.26	1.36	1.37	1.62	1.72	1.77	1.04	.38	.49	.87	.97
8	1.70	1.16	1.36	1.41	1.65	1.78	1.74	1.01	.30	.48	.84	.96
9	1.71	1.07	1.34	1.52	1.67	1.78	1.76	1.03	.31	.51	.82	.99
10	1.68	1.05	1.36	1.59	1.70	1.74	1.74	1.07	.35	.49	.84	.91
11	1.65	1.02	1.38	1.63	1.66	1.73	1.73	1.11	.41	.48	.84	.85
12	1.69	1.03	1.40	1.65	1.53	1.74	1.09	1.13	.44	.48	.84	.79
13	1.63	.86	1.40	1.65	1.46	1.77	.55	1.15	.45	.48	.85	.81
14	1.61	.85	1.40	1.61	1.41	1.75	.66	1.18	.47	.50	.92	.82
15	1.51	.88	1.40	1.58	1.38	1.66	.38	1.19	.50	.54	.94	.84
16	1.44	.90	1.38	1.54	1.39	1.63	.32	1.22	.50	.54	.97	.88
17	1.44	.92	1.38	1.54	1.39	1.48	.28	1.25	.44	.56	1.03	.86
18	1.47	.90	1.40	1.54	1.44	1.36	.30	1.18	.41	.57	1.05	.81
19	1.46	.90	1.44	1.55	1.46	1.33	.37	1.15	.40	.62	1.05	.83
20	1.42	.97	1.45	1.54	1.51	1.35	.43	1.05	.35	.66	1.03	.86
21	1.39	1.04	1.44	1.52	1.52	1.38	.48	.87	.34	.68	1.04	.87
22	1.34	1.10	1.42	1.52	1.54	1.41	.53	.49	.33	.71	1.02	.88
23	1.37	1.13	1.42	1.51	1.59	1.42	.56	.46	.18	.70	1.02	.92
24	1.42	1.15	1.44	1.55	1.61	1.45	.62	.43	.18	.74	1.04	.93
25	1.44	1.15	1.39	1.57	1.64	1.47	.70	.50	.21	.73	1.04	1.01
26	1.49	1.11	1.32	1.61	1.64	1.51	.75	.27	.28	.72	1.02	1.05
27	1.51	1.07	1.27	1.63	1.59	1.54	.82	.19	.33	.72	1.03	1.12
28	1.49	1.05	1.32	1.64	1.59	1.53	.88	.18	.33	.69	1.03	1.15
29	1.48	1.05	1.35	1.63	---	1.56	.94	.20	.33	.72	1.06	1.18
30	1.46	1.09	1.37	1.63	---	1.56	.97	.25	.27	.74	1.09	1.16
31	1.45	---	1.42	1.62	---	1.56	---	.28	---	.73	1.14	---
LOW	1.71	1.45	1.45	1.65	1.70	1.78	1.77	1.25	.50	.74	1.14	1.18
HIGH	1.34	.85	1.11	1.37	1.38	1.33	.28	.18	.18	.23	.75	.79

WTR YR 1987 MEAN 1.11 LOW 1.78 HIGH .18



GROUND-WATER LEVELS
RIO HONDO TO RIO PUERTO NUEVO BASINS

182623066111000. Local number, 218.

LOCATION.--Lat 18°26'23", long 66°11'10".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Levittown No. 7.

AQUIFER.--Alluvial deposits-Aymamon Limestone.

WELL CHARACTERISTICS.--Drilled water-table well.

DATUM.--Elevation of land surface datum is about 10.0 ft (3.05 m) above mean sea level, from topographic map.

Measuring point: Hole on pump base, 1.55 ft (0.47 m) above land-surface datum.

REMARKS.--Abandoned observation well. Automatic recorder installed August 13, 1985. Water levels affected by nearby pumping well.

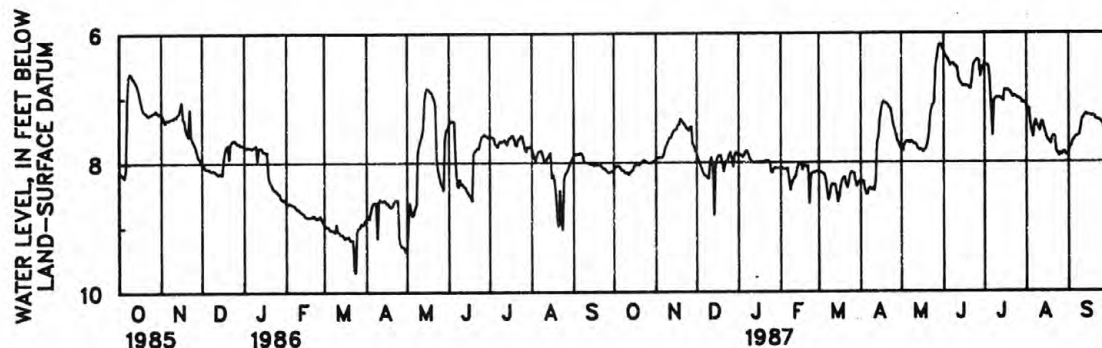
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.13 ft (1.87m) below land-surface datum, Feb. 22, 1987; lowest water level recorded, 9.77 ft (2.98 m) below land-surface datum, Mar. 23, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.11	7.94	7.85	7.86	8.09	8.14	8.27	7.79	6.28	6.49	7.12	7.87
2	8.07	7.93	7.93	7.88	8.08	8.15	8.29	7.82	6.34	6.49	7.17	7.76
3	8.05	7.92	8.00	7.89	8.10	8.16	8.30	7.73	6.38	6.50	7.17	7.75
4	8.05	7.92	8.05	7.91	8.10	8.17	8.43	7.69	6.40	6.51	7.41	7.68
5	8.06	7.92	8.10	7.88	8.10	8.19	8.50	7.68	6.45	6.71	7.53	7.65
6	8.09	7.91	8.17	7.83	8.09	8.26	8.49	7.68	6.50	7.08	7.62	7.61
7	8.12	7.86	8.20	7.82	8.26	8.43	8.41	7.70	6.48	7.59	7.39	7.60
8	8.12	7.77	8.21	7.86	8.42	8.59	8.39	7.67	6.47	7.04	7.35	7.59
9	8.15	7.71	8.23	7.93	8.33	8.50	8.43	7.69	6.51	7.02	7.44	7.58
10	8.16	7.67	8.25	7.97	8.27	8.36	8.40	7.71	6.51	7.00	7.46	7.47
11	8.15	7.61	7.97	7.99	8.24	8.33	8.44	7.72	6.55	7.00	7.52	7.32
12	8.18	7.61	7.92	8.00	8.21	8.35	8.28	7.73	6.70	7.00	7.37	7.31
13	8.15	7.56	8.03	8.00	8.09	8.34	7.70	7.79	6.76	7.01	7.37	7.27
14	8.13	7.51	8.82	7.99	8.04	8.46	7.60	7.81	6.79	7.02	7.47	7.25
15	8.11	7.49	8.08	8.00	8.02	8.61	7.31	7.80	6.82	7.05	7.55	7.27
16	8.05	7.48	7.94	7.99	8.01	8.53	7.18	7.81	6.82	6.88	7.62	7.27
17	8.03	7.42	7.90	8.00	8.11	8.37	7.08	7.84	6.81	6.89	7.66	7.28
18	8.03	7.41	7.89	7.98	8.03	8.28	7.06	7.81	6.82	6.88	7.69	7.29
19	8.03	7.32	7.89	8.00	8.05	8.24	7.08	7.79	6.83	6.90	7.72	7.28
20	8.03	7.35	8.03	7.99	8.07	8.23	7.09	7.71	6.86	6.91	7.62	7.29
21	8.01	7.39	8.15	7.97	8.06	8.35	7.12	7.58	6.86	6.95	7.59	7.34
22	7.98	7.41	8.04	7.99	8.64	8.39	7.15	7.27	6.69	6.99	7.61	7.34
23	7.96	7.45	7.97	7.97	8.22	8.30	7.17	7.17	6.48	6.97	7.83	7.35
24	7.97	7.48	7.96	8.00	8.16	8.19	7.28	7.10	6.45	6.98	7.87	7.35
25	7.99	7.50	7.88	8.16	8.15	8.15	7.42	7.09	6.42	7.00	7.90	7.38
26	8.00	7.46	7.84	8.16	8.16	8.16	7.50	6.52	6.41	7.01	7.86	7.41
27	8.01	7.44	7.95	8.09	8.14	8.17	7.58	6.39	6.43	7.02	7.88	7.46
28	8.00	7.72	8.06	8.08	8.14	8.29	7.67	6.23	6.68	7.03	7.85	7.52
29	8.00	7.75	7.87	8.09	---	8.38	7.71	6.17	6.57	7.08	7.84	7.54
30	7.98	7.81	7.84	8.09	---	8.33	7.76	6.18	6.51	7.07	7.88	7.55
31	7.97	---	7.87	8.09	---	8.30	---	6.23	---	7.09	7.89	---
LOW	8.18	7.94	8.82	8.16	8.64	8.61	8.50	7.84	6.86	7.59	7.90	7.87
HIGH	7.96	7.32	7.84	7.82	8.01	8.14	7.06	6.17	6.28	6.49	7.12	7.25

WTR YR 1987 MEAN 7.66 LOW 8.82 HIGH 6.17



GROUND-WATER LEVELS

RIO HONDO TO RIO PUERTO NUEVO BASINS

182441066082600. Local number, 219.

LOCATION.--Lat 18°24'41", long 66°08'26".

Owner: Department of Defense.

Name: Ft. Buchanan No. 1, Buchanan Park well.

AQUIFER.--Cibao Formation.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 10 in (0.25 m), cased 10 in (0.25 m) 0-270 ft (0-82.3 m), perforated 46-685 ft (14.0-20.7 m), 88-120 ft (26.8-36.6 m), 160-191 ft (48.8-58.2 m), 240-270 ft (73.2-82.3 m). Depth 270 ft (82.3 m).

DATUM.--Elevation of land-surface datum is about 66.0 ft (20.1 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 0.75 ft (0.23 m) above land-surface datum. Prior June 30, 1986, top of shelter floor, 3.59 ft (1.09 m) above land-surface datum.

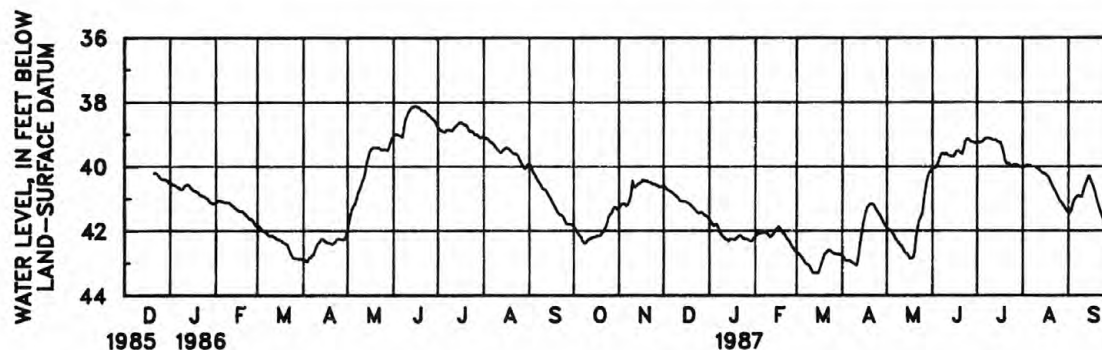
REMARKS.--Abandoned observation well. Automatic recorder installed on December 20, 1985. Estimated noon value: June 30.

PERIOD OF RECORD.--December 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 38.10 ft (11.61 m) below land-surface datum, June 16, 1986; lowest water level recorded, 43.32 ft (13.20 m) below land-surface datum, Mar. 15, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41.85	41.30	40.61	41.64	42.16	42.66	42.77	41.91	40.05	39.22	39.99	41.42
2	41.92	41.22	40.63	41.70	42.12	42.69	42.83	41.95	40.03	39.24	40.01	41.44
3	42.01	41.16	40.69	41.79	42.08	42.73	42.90	41.97	40.04	39.25	39.99	41.34
4	42.08	41.15	40.73	41.83	42.08	42.78	42.92	41.99	39.95	39.23	39.95	41.16
5	42.15	41.16	40.75	41.80	42.07	42.84	42.92	42.07	39.85	39.20	39.99	41.03
6	42.20	41.22	40.78	41.79	42.05	42.92	42.91	42.15	39.72	39.15	39.97	40.96
7	42.31	41.17	40.81	41.89	42.05	42.99	42.96	42.25	39.60	39.11	---	40.92
8	42.38	41.06	40.86	42.04	42.04	43.03	42.99	42.30	39.58	39.11	---	40.90
9	42.38	40.86	40.89	42.11	42.07	43.05	43.01	42.36	39.62	39.11	---	40.92
10	42.30	40.73	40.93	42.17	42.13	43.09	43.06	42.42	39.58	39.13	40.04	40.93
11	42.26	40.65	40.98	42.20	42.18	43.19	43.06	42.46	39.63	39.16	40.06	40.76
12	42.25	40.64	41.06	42.26	42.16	43.30	42.77	42.55	39.66	39.17	40.09	40.61
13	42.21	40.58	41.07	42.27	42.11	43.31	42.38	42.64	39.67	39.17	40.13	40.47
14	42.19	40.53	41.08	42.33	42.04	43.29	42.08	42.69	39.68	39.19	40.19	40.37
15	42.18	40.52	41.08	42.25	41.95	43.31	41.77	42.71	39.68	39.23	40.21	40.28
16	42.17	40.47	41.09	42.26	41.92	43.29	41.56	42.78	39.62	39.24	40.23	40.39
17	42.15	40.41	41.11	42.26	41.87	43.14	41.37	42.87	39.52	39.26	40.26	40.53
18	42.15	40.44	41.14	42.27	41.93	43.00	41.24	42.84	39.51	39.41	40.31	40.63
19	42.14	40.43	41.18	42.24	42.00	42.85	41.19	42.81	39.52	39.60	40.40	40.79
20	42.07	40.46	41.23	42.19	42.07	42.72	41.16	42.65	39.58	39.84	40.51	40.95
21	42.03	40.49	41.27	42.15	42.11	42.67	41.16	42.16	39.60	39.90	40.61	41.12
22	41.93	40.49	41.31	42.14	42.19	42.62	41.18	41.89	39.43	39.89	40.70	41.27
23	41.87	40.52	41.38	42.18	42.26	42.59	41.25	41.68	39.21	39.92	40.76	41.42
24	41.71	40.55	41.43	42.23	42.32	42.62	41.34	41.56	39.15	39.99	40.86	41.55
25	41.54	40.55	41.45	42.25	42.40	42.66	41.42	41.47	39.14	39.99	40.95	41.69
26	41.48	40.58	41.42	42.25	42.49	42.68	41.50	41.12	39.18	39.94	41.05	41.76
27	41.44	40.59	41.42	42.27	42.54	42.71	41.56	40.77	39.23	39.94	41.10	41.78
28	41.32	40.63	41.47	42.30	42.62	42.72	41.65	40.46	39.23	39.94	41.16	41.78
29	41.26	40.62	41.51	42.32	---	42.72	41.76	40.28	39.25	39.97	41.23	41.78
30	41.27	40.62	41.53	42.29	---	42.72	41.83	40.16	39.27	40.01	41.30	41.78
31	41.34	---	41.57	42.23	---	42.74	---	40.11	---	40.01	41.37	---
LOW	42.38	41.30	41.57	42.33	42.62	43.31	43.06	42.87	40.05	40.01	---	41.78
HIGH	41.26	40.41	40.61	41.64	41.87	42.59	41.16	40.11	39.14	39.11	---	40.28



RIO HONDO TO RIO PUERTO NUEVO BASINS

182413066044000. Local number, 220.

LOCATION.--Lat 18°24'13", long 66°04'40".

Owner: P.R. Aqueduct and Sewer Authority.

Name: Parque San Luis Rey-Américo Miranda

AQUIFER.--Surficial Deposits-Cibao Formation.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in (0.25 m), cased 8 in (0.20 m) 0-166 ft (0-50.6 m), perforated 39-166 ft (11.9-50.6 m). Depth 166 ft (50.6 m).

DATUM.--Elevation of land-surface datum is about 16.4 ft (5.0 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 3.00 ft (0.91 m) above land-surface datum.

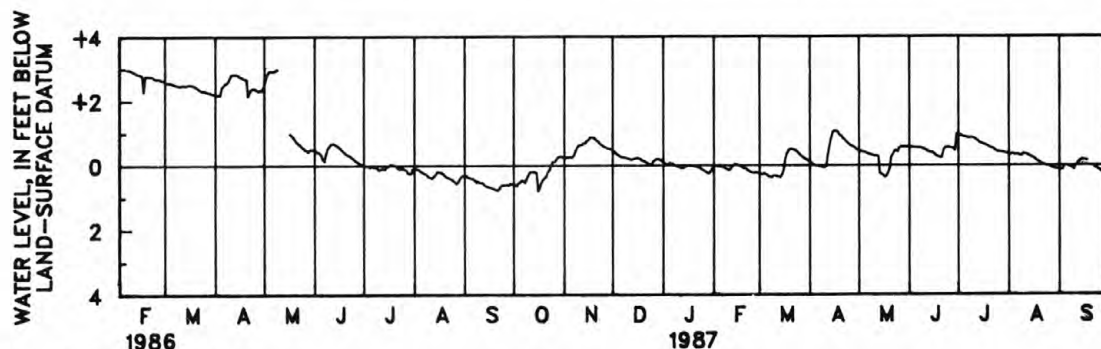
REMARKS.--Abandoned observation well. Automatic recorder installed on Feb. 6, 1986. Water levels affected by nearby pumping well.

PERIOD OF RECORD.--February 1986 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, +2.99 ft (+0.91 m) above land-surface datum, Feb. 6, May 8-9, 1986; lowest water level recorded, 0.90 ft (0.21 m) below land-surface datum, Oct. 16, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	+ .24	+ .47	+ .10	.03	.25	+ .11	+ .45	+1.10	+ .98	+ .36	.12
2	.59	+ .25	+ .43	+ .06	.01	.26	+ .07	+ .44	+1.09	+ .95	+ .34	.13
3	.62	+ .26	+ .38	+ .03	.02	.28	+ .03	+ .42	+1.09	+ .91	+ .36	.13
4	.53	+ .26	+ .33	+ .04	.03	.25	.00	+ .42	+1.09	+ .89	+ .34	.02
5	.51	+ .26	+ .30	+ .07	.04	.28	.01	+ .39	+1.08	+ .88	+ .34	.00
6	.46	+ .27	+ .27	+ .06	.03	.31	.01	+ .38	+1.08	+ .87	+ .34	.02
7	.47	+ .34	+ .25	+ .05	.06	.35	.04	+ .35	+1.08	+ .85	+ .32	.04
8	.53	+ .46	+ .25	+ .01	.09	.36	.03	+ .33	+1.08	+ .85	+ .30	.04
9	.41	+ .57	+ .23	.02	.11	.36	.06	+ .32	+1.05	+ .86	+ .31	.09
10	.29	+ .62	+ .22	.04	.14	.31	.07	+ .30	+1.04	+ .85	+ .36	.12
11	.20	+ .64	+ .21	.05	.13	.32	.02	+ .29	+1.01	+ .83	+ .35	.01
12	.19	+ .65	+ .18	.08	.06	.34	+ .37	+ .29	+ .97	+ .79	+ .33	+ .04
13	.19	+ .69	+ .19	.09	+ .01	.35	+ .65	+ .27	+ .95	+ .76	+ .31	+ .12
14	.19	+ .71	+ .20	.08	+ .04	.36	+ .86	+ .25	+ .92	+ .71	+ .27	+ .16
15	.22	+ .77	+ .22	.03	+ .03	.28	+1.06	+ .24	+ .94	+ .68	+ .25	+ .18
16	.80	+ .80	+ .24	.01	.00	.12	+1.07	+ .21	+ .89	+ .66	+ .23	+ .17
17	.70	+ .88	+ .22	.00	.01	+ .24	+1.07	+ .16	+ .84	+ .64	+ .19	+ .16
18	.52	+ .87	+ .19	.02	.05	+ .39	+1.03	+ .18	+ .80	+ .62	+ .15	+ .15
19	.44	+ .87	+ .15	.01	.08	+ .48	+ .95	+ .28	+ .80	+ .60	+ .12	---
20	.38	+ .83	+ .14	.03	.10	+ .51	+ .91	+ .42	+ .77	+ .56	+ .09	---
21	.33	+ .78	+ .11	.04	.11	+ .51	+ .85	+ .80	+ .79	+ .54	+ .05	---
22	.18	+ .75	+ .08	.05	.16	+ .49	+ .80	+ .87	+1.03	+ .53	+ .03	.03
23	.13	+ .69	+ .05	.06	.19	+ .47	+ .75	+ .97	+1.09	+ .49	+ .01	.08
24	+ .03	+ .64	+ .02	.10	.21	+ .43	+ .70	+ .98	+1.10	+ .45	.01	.09
25	+ .12	+ .60	+ .05	.13	.23	+ .37	+ .65	+ .94	+1.10	+ .42	.03	.13
26	+ .12	+ .57	+ .13	.16	.24	+ .32	+ .61	+1.08	+1.09	+ .42	.03	.17
27	+ .17	+ .55	+ .18	.20	.22	+ .28	+ .59	+1.11	+1.08	+ .40	.06	.21
28	+ .26	+ .53	+ .20	.23	.23	+ .24	+ .56	+1.10	+1.06	+ .41	.09	.22
29	+ .28	+ .52	+ .19	.25	---	+ .20	+ .51	+1.10	+1.00	+ .39	.10	.22
30	+ .28	+ .50	+ .17	.19	---	+ .17	+ .48	+1.10	+ .99	+ .37	.11	.22
31	+ .26	---	+ .15	.11	---	+ .14	---	+1.10	---	+ .37	.12	---
LOW	.80	+ .88	+ .02	.25	.24	.36	.07	+ .16	+ .77	+ .37	.12	---
HIGH	+ .28	+ .24	+ .47	+ .10	+ .04	+ .51	+1.07	+1.11	+1.10	+ .98	+ .36	---



+ Above land-surface datum.

GROUND-WATER LEVELS

RIO HONDO TO RIO PUERTO NUEVO BASINS

182436066031200. Local number, 221.

LOCATION.--Lat 18°24'36", long 66°03'12".

Owner: P.R. Highway Authority

Name: Hyde Park TW-10.

AQUIFER.--Surficial Deposits-Cibao Formation.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 4 in (0.10 m), cased 4 in (0.10 m) 0-107 ft (0-32.36 m), perforated 19-107 ft (5.79-32.6 m). Depth 107 ft (32.6 m).

DATUM.--Elevation of land-surface datum is about 82.0 ft (25.0 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 0.70 ft (0.21 m) above land-surface datum. Prior July 28, 1986, top of shelter floor, 3.14 ft (0.96 m) above land-surface datum.

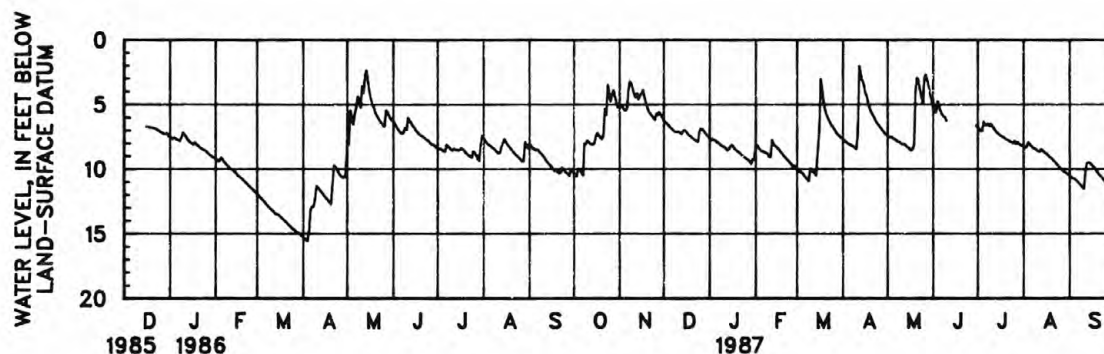
REMARKS.--Observation well. Automatic recorder installed on Dec. 17, 1985.

PERIOD OF RECORD.--December 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.48 ft (0.45 m) below land-surface datum, Apr. 12, 1987; lowest water level recorded, 15.59 ft (4.75 m) below land-surface datum, Apr. 5, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.29	5.13	6.23	7.61	8.07	10.00	7.68	7.44	5.07	6.79	8.27	10.52
2	10.50	5.10	6.40	7.73	8.14	10.14	7.80	7.51	5.41	6.93	8.34	10.61
3	10.56	5.19	6.44	7.66	8.33	10.19	7.90	7.53	5.62	7.05	8.29	10.73
4	9.92	5.42	6.59	7.75	8.49	10.29	8.00	7.53	4.70	7.05	7.92	10.73
5	10.11	5.46	6.73	7.79	8.65	10.35	8.07	7.64	5.10	6.34	8.04	10.81
6	10.26	5.33	6.86	7.94	8.61	10.53	8.12	7.67	5.52	6.58	8.19	10.92
7	10.46	3.89	6.96	7.97	8.72	10.66	8.19	7.80	5.75	6.56	8.30	11.03
8	7.98	3.18	7.08	8.10	8.76	10.80	8.25	7.88	5.90	6.48	8.39	11.17
9	8.03	3.36	7.10	8.19	8.80	10.95	8.35	7.90	5.99	6.64	8.44	11.28
10	7.80	3.80	7.12	8.25	9.05	9.92	8.45	7.99	6.26	6.49	8.55	11.41
11	7.93	4.27	7.09	8.29	9.07	10.08	7.29	8.07	---	6.69	8.60	11.51
12	8.04	4.47	7.19	8.43	7.72	10.21	1.98	8.06	---	6.86	8.65	10.11
13	8.06	4.11	7.26	8.54	8.07	10.35	2.68	8.12	---	7.03	8.47	9.51
14	8.06	4.64	7.03	8.44	8.19	10.49	3.17	8.26	---	7.18	8.57	9.48
15	7.96	4.29	6.99	8.20	8.27	8.69	3.42	8.32	---	7.27	8.69	9.53
16	7.37	4.12	7.08	8.13	8.41	7.08	4.17	8.45	---	7.38	8.78	9.64
17	7.22	3.88	7.24	8.28	8.54	3.01	4.33	8.56	---	7.44	8.88	9.77
18	7.44	4.44	7.39	8.46	8.70	3.97	4.87	8.45	---	7.51	8.99	9.89
19	7.59	4.93	7.46	8.56	8.81	4.87	5.31	8.13	---	7.57	9.11	10.07
20	7.65	5.30	7.57	8.66	8.96	5.45	5.59	4.04	---	7.67	9.19	10.24
21	7.41	5.59	7.64	8.75	9.10	5.83	5.80	2.92	---	7.72	9.32	10.41
22	5.28	5.75	7.73	8.85	9.23	6.08	6.02	3.15	---	7.80	9.44	10.54
23	5.88	5.89	7.81	8.97	9.35	6.34	6.24	3.88	---	7.86	9.56	10.64
24	3.46	6.04	7.88	9.07	9.46	6.58	6.44	4.47	---	7.94	9.70	10.80
25	4.22	6.16	7.08	9.14	9.61	6.72	6.61	5.00	---	8.01	9.83	10.94
26	4.82	5.67	6.85	9.23	9.77	6.89	6.76	2.87	---	7.83	9.94	11.12
27	4.17	5.78	6.90	9.31	9.74	7.08	6.91	2.70	---	8.05	10.06	11.28
28	3.88	5.59	7.04	9.44	9.86	7.27	7.06	3.20	---	7.91	10.18	11.40
29	4.48	5.78	7.22	9.58	---	7.38	7.22	3.72	---	8.07	10.26	11.48
30	4.95	6.01	7.37	9.22	---	7.50	7.34	4.34	6.65	8.15	10.32	11.40
31	5.30	---	7.47	9.25	---	7.59	---	4.84	---	8.21	10.43	---
LOW	10.56	6.16	7.88	9.58	9.86	10.95	8.45	8.56	---	8.21	10.43	11.51
HIGH	3.46	3.18	6.23	7.61	7.72	3.01	1.98	2.70	---	6.34	7.92	9.48



GROUND-WATER LEVELS
RIO GRANDE DE LOIZA BASIN

182515065594100. Local number, 222.

LOCATION.--Lat 18°25'15", long 65°59'41".

Owner: U.S. Geological Survey.

Name: Campo Rico TW-1.

AQUIFER.--Surficial Deposits.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m). Depth 100 ft (30.5 m).

DATUM.--Elevation of land-surface datum is about 10.0 ft (3.05 m) above mean sea level, from topographic map.

Measuring point: Hole on side of casing, 0.80 ft (0.24 m) above land-surface datum. Prior July 28, 1986, top of shelter floor, 3.10 ft (0.94 m) above land-surface datum.

REMARKS.--Observation well. Automatic recorder installed on February 5, 1986.

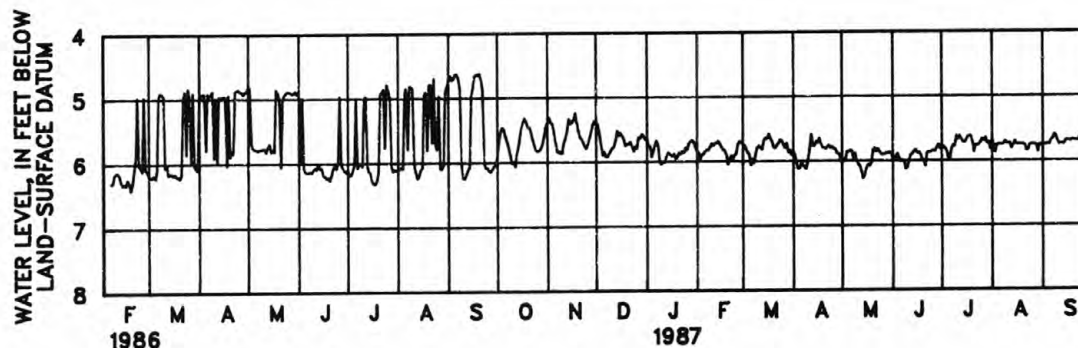
PERIOD OF RECORD.--February 1986 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 4.42 ft (1.35 m) below land-surface datum, Aug. 31, 1986; lowest water level recorded, 7.42 ft (2.26 m) below land-surface datum, Feb. 9, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.90	5.38	5.36	5.63	5.85	5.73	5.85	6.03	5.95	5.80	5.67	5.75
2	5.70	5.30	5.43	5.75	5.87	5.75	5.90	5.97	5.95	5.78	5.75	5.75
3	5.52	5.39	5.56	5.76	5.96	5.80	6.03	6.00	5.95	5.81	5.87	5.75
4	5.46	5.41	5.72	5.93	5.89	5.87	6.12	5.85	5.89	5.84	5.75	5.74
5	5.49	5.54	5.90	5.83	5.88	5.89	6.11	5.85	5.96	5.96	5.75	5.75
6	5.60	5.71	5.84	5.73	5.84	6.07	6.03	5.84	6.02	5.98	5.75	5.69
7	5.68	5.85	5.92	5.67	5.82	5.95	6.07	5.85	5.99	5.82	5.75	5.66
8	5.77	5.83	5.92	5.75	5.82	6.03	6.09	5.98	6.01	5.76	5.74	5.60
9	5.89	5.86	5.87	6.02	5.77	5.87	6.12	5.88	6.12	5.78	5.70	5.62
10	6.01	5.85	5.82	6.04	5.72	5.78	5.97	6.00	6.10	5.61	5.74	5.70
11	5.99	5.70	5.78	6.01	5.75	5.76	5.81	6.06	5.99	5.68	5.73	5.75
12	6.06	5.63	5.76	6.01	5.72	5.78	5.58	6.08	5.91	5.61	5.73	5.74
13	5.87	5.52	5.66	5.92	5.71	5.82	5.77	6.17	5.89	5.67	5.82	5.74
14	5.75	5.33	5.51	5.86	5.69	5.66	5.77	6.28	5.85	5.71	5.75	5.75
15	5.61	5.40	5.60	5.88	5.73	5.64	5.69	6.22	5.83	5.72	5.70	5.69
16	5.45	5.38	5.55	5.90	5.78	5.65	5.72	6.11	5.87	5.69	5.75	5.69
17	5.37	5.34	5.60	5.91	5.82	5.57	5.64	6.06	5.87	5.63	5.75	5.69
18	5.31	5.24	5.65	5.88	5.83	5.64	5.73	6.08	5.90	5.62	5.75	5.70
19	5.38	5.39	5.76	5.96	5.90	5.70	5.79	6.03	5.98	5.62	5.75	5.68
20	5.46	5.52	5.72	5.92	6.05	5.79	5.80	5.82	5.99	5.72	5.75	5.68
21	5.46	5.62	5.72	5.86	5.96	5.79	5.81	5.80	6.08	5.86	5.76	5.69
22	5.54	5.64	5.69	5.88	5.91	5.75	5.78	5.86	5.88	5.76	5.85	5.69
23	5.65	5.70	5.76	5.84	5.97	5.72	5.76	5.82	5.86	5.76	5.83	5.69
24	5.74	5.76	5.83	5.86	5.90	5.67	5.80	5.86	5.87	5.75	5.75	5.63
25	5.82	5.79	5.76	5.78	5.88	5.69	5.78	5.90	5.85	5.71	5.75	5.67
26	5.83	5.72	5.76	5.82	5.73	5.75	5.81	5.90	5.84	5.66	5.75	5.69
27	5.82	5.63	5.78	5.71	5.69	5.79	5.82	5.90	5.85	5.69	5.75	5.75
28	5.79	5.52	5.63	5.69	5.70	5.72	5.88	5.88	5.79	5.65	5.76	5.75
29	5.72	5.41	5.57	5.67	---	5.86	5.89	5.88	5.75	5.73	5.86	5.67
30	5.59	5.36	5.60	5.70	---	5.83	5.96	5.87	5.82	5.72	5.75	5.67
31	5.45	---	5.65	5.78	---	5.91	---	5.88	---	5.82	5.76	---
LOW	6.06	5.86	5.92	6.04	6.05	6.07	6.12	6.28	6.12	5.98	5.87	5.75
HIGH	5.31	5.24	5.36	5.63	5.69	5.57	5.58	5.80	5.75	5.61	5.67	5.60

WTR YR 1987 MEAN 5.78 LOW 6.28 HIGH 5.24



GROUND-WATER LEVELS

RIO HUMACAO TO RIO SECO BASINS

175858066100200. 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 (52.74 m) reported, 110 ft (33.54 m) measured.

DATUM.--Elevation of land-surface datum is about 127 ft (38.7 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 3.00 ft (0.91 m) above land-surface datum. After Aug. 7, 1981, top of 16 in (0.41 m) casing, 1.55 ft (0.47 m) above land-surface datum.

REMARKS.--Recording observation well.

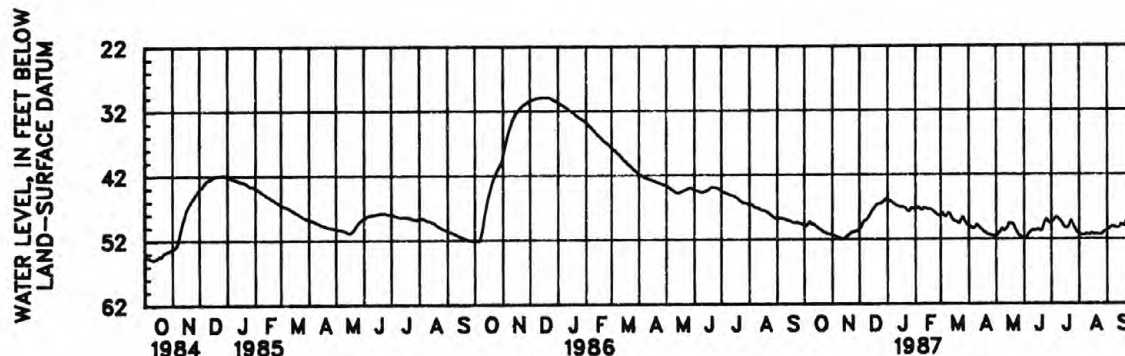
PERIOD OF RECORD.--November 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 26.20 ft (7.99 m) below land-surface datum, Dec. 10, 1979; lowest water level recorded, 65.95 ft (20.10 m) below land-surface datum, June 2, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49.83	51.27	50.34	45.91	47.33	48.11	49.94	51.56	51.81	49.43	51.18	50.67
2	49.92	51.32	50.19	45.96	47.23	47.89	50.00	51.45	51.80	49.28	51.23	50.54
3	49.96	51.37	50.07	45.98	47.04	47.92	50.07	51.30	51.75	49.11	51.30	50.43
4	49.80	51.44	49.80	46.04	47.02	48.16	50.18	51.11	51.62	48.91	51.37	50.25
5	49.61	51.50	49.41	46.13	47.13	48.38	50.26	50.93	51.39	48.77	51.39	50.19
6	49.43	51.57	49.18	46.26	47.26	48.45	50.33	50.75	51.16	48.65	51.37	50.13
7	49.31	51.63	49.10	46.38	47.38	48.47	50.26	50.45	50.97	48.64	51.33	50.09
8	49.34	51.68	49.03	46.48	47.44	48.29	50.13	50.38	50.83	48.71	51.25	50.10
9	49.56	51.75	48.90	46.56	47.31	48.08	49.97	50.56	50.73	48.88	51.23	50.12
10	49.64	51.80	48.73	46.65	47.12	47.98	49.78	50.65	50.66	49.04	51.24	50.16
11	49.56	51.86	48.53	46.77	47.14	48.05	49.85	50.57	50.62	49.20	51.26	50.20
12	49.68	51.90	48.29	46.86	47.21	48.37	50.04	50.46	50.60	49.35	51.29	50.24
13	49.81	51.95	48.05	46.92	47.26	48.67	50.21	50.28	50.59	49.58	51.31	50.25
14	49.94	51.88	47.81	46.96	47.30	48.89	50.36	50.02	50.58	49.85	51.19	50.21
15	50.07	51.76	47.57	46.97	47.33	49.07	50.49	49.52	50.55	50.06	51.11	50.05
16	50.19	51.65	47.35	46.99	47.33	49.19	50.61	49.51	50.43	50.20	51.16	49.76
17	50.30	51.53	47.13	46.99	47.33	49.25	50.75	49.58	50.53	50.25	51.24	49.75
18	50.38	51.41	46.94	47.00	47.37	49.28	50.87	49.58	50.60	50.24	51.26	49.86
19	50.45	51.29	46.76	47.04	47.46	49.35	50.98	49.58	50.67	50.21	51.19	49.92
20	50.53	51.16	46.62	47.13	47.55	49.43	51.09	49.74	50.69	50.07	51.21	49.85
21	50.64	51.04	46.53	47.26	47.67	49.50	51.17	50.00	50.49	49.72	51.24	49.55
22	50.75	50.95	46.48	47.41	47.78	49.47	51.27	50.32	49.97	49.30	51.26	49.24
23	50.84	50.88	46.45	47.53	47.91	49.16	51.30	50.61	49.55	49.14	51.28	49.04
24	50.92	50.83	46.42	47.63	48.06	48.78	51.33	50.87	49.20	49.45	51.31	49.08
25	50.99	50.79	46.36	47.69	48.18	48.60	51.30	51.12	48.94	49.78	51.30	49.11
26	51.04	50.75	46.31	47.47	48.31	48.69	51.40	51.31	48.94	50.06	51.23	49.28
27	51.08	50.72	46.18	47.20	48.38	49.01	51.46	51.47	49.17	50.30	51.11	49.46
28	51.11	50.68	46.02	47.14	48.35	49.32	51.49	51.59	49.40	50.54	50.96	49.62
29	51.14	50.59	45.87	47.20	---	49.51	51.51	51.67	49.50	50.76	50.79	49.77
30	51.18	50.48	45.78	47.24	---	49.69	51.54	51.76	49.53	50.96	50.77	49.91
31	51.23	---	45.84	47.27	---	49.82	---	51.80	---	51.10	50.72	---
LOW	51.23	51.95	50.34	47.69	48.38	49.82	51.54	51.80	51.81	51.10	51.39	50.67
HIGH	49.31	50.48	45.78	45.91	47.02	47.89	49.78	49.51	48.94	48.64	50.72	49.04

WTR YR 1987 MEAN 49.6 LOW 51.95 HIGH 45.78



GROUND-WATER LEVELS

RIO GUAYANES BASIN

180415065513900. Local number, 96.

LOCATION.--Lat 18°04'15", long 65°51'39".

Owner: P.R. Aqueduct and Sewer Authority.

Name: USGS TW-2 or Yabucoa 7.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 16 in (0.41 m), cased 0-10 ft (0-3.05 m), diameter 6 in (0.15 m), cased about 0-183 ft (0-55.79 m), perforated 56-81 ft (17.07-24.70 m), 102-123 ft (31.10-37.50 m), 144-181 ft (43.90-55.18 m). Depth 181 ft (55.18 m).

DATUM.--Elevation of land-surface datum is about 25 ft (7.62 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 4.00 ft (1.22 m) above land-surface.

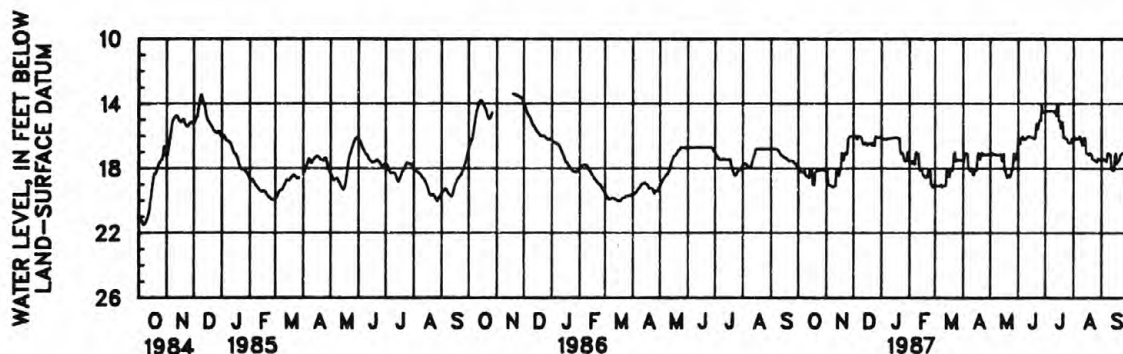
REMARKS.--Observation recording well.

PERIOD OF RECORD.--April 25, 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 13.39 ft (4.08 m) below land-surface datum, Nov. 18, 1985; lowest water level recorded, 28.29 ft (8.62 m) below land-surface datum, Sept. 20, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.90	18.14	16.00	16.11	17.59	19.05	17.55	17.14	16.08	14.44	16.06	17.46
2	18.03	18.17	16.00	16.14	17.56	19.09	17.58	17.18	16.45	14.43	16.02	17.42
3	18.08	19.00	16.00	16.17	17.55	19.08	17.02	17.04	16.45	14.44	16.19	17.42
4	18.20	19.02	16.00	16.18	17.70	19.09	17.05	17.08	16.15	14.44	16.17	17.45
5	18.24	19.05	16.19	16.19	17.70	19.11	17.08	17.12	16.07	14.45	16.16	17.49
6	18.23	19.08	16.00	16.19	17.51	19.12	17.13	17.13	16.02	14.45	16.14	17.52
7	18.21	19.12	16.01	16.18	17.73	19.08	18.01	17.15	16.18	14.44	16.15	17.57
8	18.09	19.14	16.03	16.15	17.00	19.01	18.08	17.16	16.17	14.43	16.02	17.01
9	18.40	19.13	16.06	16.14	17.04	19.17	18.18	17.17	16.14	14.44	16.12	17.07
10	18.48	19.10	16.16	16.14	17.08	19.10	18.07	17.17	16.12	14.47	16.42	17.12
11	18.50	19.05	16.45	16.14	17.14	19.08	18.15	17.16	16.05	14.53	16.57	17.18
12	18.49	18.17	16.53	16.12	18.06	19.09	18.42	17.14	16.01	14.42	16.52	18.06
13	18.58	18.00	16.43	16.11	18.13	19.03	18.40	17.19	16.01	14.72	16.06	18.10
14	18.05	18.41	16.45	16.11	18.03	18.11	18.14	17.56	16.03	14.03	16.17	18.14
15	18.10	18.44	16.43	16.10	18.12	18.00	18.03	17.49	16.06	14.12	17.07	18.09
16	18.16	18.04	16.58	16.09	18.41	18.46	18.11	17.08	16.07	15.07	17.09	17.18
17	19.01	18.03	16.51	16.08	18.47	18.51	17.19	18.13	16.09	15.07	17.12	17.06
18	19.03	17.02	16.47	16.08	18.56	18.17	17.02	18.12	16.12	15.50	17.17	17.75
19	19.03	17.44	16.46	16.10	18.57	18.03	17.43	18.47	16.14	15.51	17.04	17.62
20	18.19	17.47	16.47	16.13	18.43	18.12	17.44	18.57	16.09	15.12	17.10	17.52
21	18.17	17.12	16.53	16.17	18.54	18.00	17.09	18.42	15.19	16.09	17.16	17.44
22	18.16	17.02	16.42	17.03	18.02	17.10	17.02	18.41	15.59	16.03	17.42	17.16
23	18.15	17.14	16.50	17.12	18.10	17.01	17.17	18.51	15.56	16.12	17.45	17.10
24	18.14	17.05	16.58	17.03	18.18	17.55	17.16	18.40	15.17	16.17	17.47	17.06
25	18.11	16.15	16.02	17.16	19.05	17.51	17.14	18.04	15.00	16.19	17.50	17.03
26	18.11	16.07	16.05	17.48	19.12	17.49	17.14	18.07	15.02	16.40	17.54	17.02
27	18.10	16.01	16.07	17.56	19.17	17.48	17.14	17.06	14.06	16.41	17.57	17.02
28	18.10	16.00	16.07	17.45	19.01	17.48	17.14	17.48	14.49	16.41	17.40	17.03
29	18.11	16.00	16.07	17.51	---	17.48	17.14	17.49	14.56	16.41	17.43	17.04
30	18.11	16.00	16.07	17.00	---	17.50	17.14	17.09	14.48	16.18	17.47	17.05
31	18.11	---	16.09	17.01	---	17.52	---	17.10	---	16.13	17.49	---
LOW	19.03	19.14	16.58	17.56	19.17	19.17	18.42	18.57	16.45	16.41	17.57	18.14
HIGH	17.90	16.00	16.00	16.08	17.00	17.01	17.02	17.04	14.06	14.03	16.02	17.01
WTR YR 1987	MEAN 17.1	LOW 19.17	HIGH 14.03									



GROUND-WATER LEVELS

321

RIO SALINAS TO RIO JACAGUAS BASINS

175829066232200. 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, diameter 20 in (0.51 m), iron cased. Depth 112 ft (34.14 m).

DATUM.--Elevation of land-surface datum is 35.32 ft (10.77 m) above mean sea level.

Measuring point: Bottom of clean-out shelter door, 2.50 ft (0.76 m) above land-surface datum. Prior to August 1981, top of recorder shelter floor, 4.00 ft (1.22 m) above land-surface datum.

REMARKS.--Recording observation well.

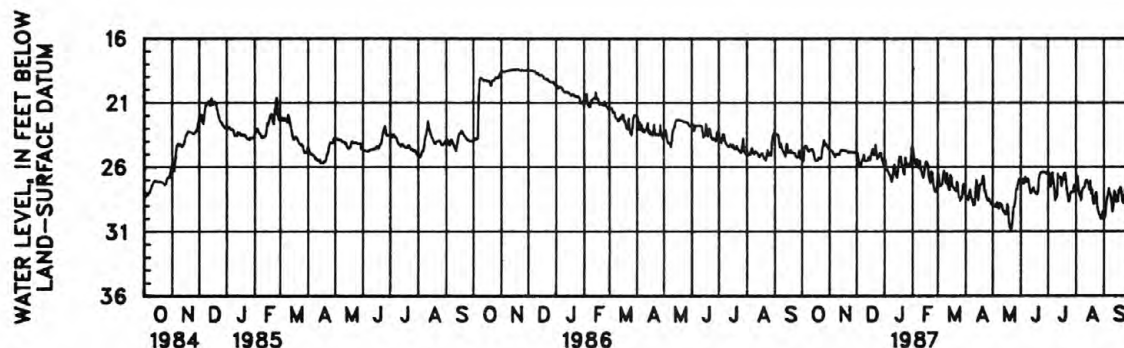
PERIOD OF RECORD.--April 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 8.45 ft (2.58 m) below land-surface datum, Dec. 10, 1970; lowest water level recorded, 49.18 ft (14.99 m) below land-surface datum, July 27, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.33	24.65	24.83	25.41	24.37	26.64	28.23	28.91	27.02	26.44	27.47	29.99
2	25.57	24.68	24.89	25.45	24.94	26.53	28.34	28.98	27.03	26.45	26.66	29.98
3	25.44	24.71	25.35	26.01	25.49	27.51	28.48	29.02	26.92	27.22	26.70	29.64
4	24.43	24.77	25.84	26.24	25.70	27.49	28.57	28.92	27.27	27.58	27.71	28.75
5	24.36	24.96	25.88	26.34	25.80	27.40	28.00	29.11	27.21	26.68	28.22	28.30
6	24.37	25.02	25.79	26.51	25.39	27.27	27.73	28.72	26.76	26.41	28.28	27.99
7	24.57	25.20	25.48	26.62	26.04	26.54	28.35	29.14	27.04	27.17	28.62	27.63
8	24.69	25.04	25.32	26.95	25.50	26.25	28.48	29.22	27.10	27.59	27.81	28.04
9	24.81	24.99	25.03	27.13	25.53	26.72	28.72	28.76	26.90	28.57	27.65	28.23
10	24.66	24.99	25.54	26.83	26.23	27.24	28.99	28.91	27.31	28.39	27.57	28.74
11	24.65	25.01	25.55	26.13	26.34	26.48	28.88	28.97	27.79	28.22	27.49	29.49
12	24.61	25.01	25.50	25.77	26.64	27.40	27.68	29.28	28.06	26.51	27.05	28.98
13	24.62	24.78	25.47	26.27	26.84	27.68	26.99	29.49	27.97	26.78	26.98	27.82
14	24.82	24.69	25.28	26.72	26.42	27.78	27.46	29.46	27.72	26.77	27.19	28.05
15	25.11	24.66	25.22	26.81	25.70	26.62	27.61	29.67	27.58	26.78	27.21	28.67
16	25.44	24.68	25.45	26.12	25.59	26.82	27.81	29.60	27.94	27.49	27.75	28.73
17	25.52	24.66	25.06	25.45	25.63	27.47	27.36	28.87	27.95	27.08	27.08	28.65
18	25.51	24.74	24.80	25.15	25.78	27.57	27.28	29.11	28.07	26.97	28.06	27.77
19	25.49	24.73	24.59	25.19	26.82	27.66	27.30	30.36	28.13	26.50	27.75	27.73
20	25.27	24.73	25.06	25.76	27.09	27.80	26.67	30.72	27.88	26.46	28.58	27.54
21	25.35	24.80	25.01	26.00	27.25	27.86	26.85	30.85	26.86	26.91	28.87	27.90
22	25.35	24.88	24.26	26.45	26.31	27.15	27.90	30.70	26.57	27.69	28.72	28.71
23	25.26	24.82	24.81	26.58	26.46	27.34	27.82	30.15	26.42	28.31	28.05	28.79
24	24.68	24.86	25.36	25.24	27.44	28.16	28.33	29.07	26.38	28.72	27.97	28.79
25	24.22	24.81	25.23	25.79	27.67	28.44	28.57	29.04	26.42	28.67	29.09	27.71
26	23.88	24.81	25.12	25.74	27.95	28.61	28.45	28.61	26.37	28.04	29.44	27.49
27	24.36	24.88	24.90	25.96	27.82	28.47	28.47	27.69	26.40	27.90	29.69	27.58
28	24.18	24.85	24.89	26.00	27.65	28.34	28.69	27.66	26.38	27.96	29.90	27.40
29	24.32	24.89	25.34	25.67	---	27.43	28.85	27.19	26.50	27.93	30.03	27.42
30	24.49	24.84	25.58	25.83	---	27.28	28.90	26.94	26.43	27.35	29.74	27.35
31	24.61	---	25.78	24.45	---	28.00	---	26.90	---	27.55	29.44	---
LOW	25.57	25.20	25.88	27.13	27.95	28.61	28.99	30.85	28.13	28.72	30.03	29.99
HIGH	23.88	24.65	24.26	24.45	24.37	26.25	26.67	26.90	26.37	26.41	26.66	27.35

WTR YR 1987 MEAN 26.9 LOW 30.85 HIGH 23.88



GROUND-WATER LEVELS

RIO INABON TO RIO LOCO BASINS

180133066503300. 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 (6.1-25.61 m), 10 in (0.25 m) perforated pipe 84-190 ft (25.61-57.93 m). Depth 190 ft (57.93 m).

DATUM.--Elevation of land-surface datum is about 75 ft (22.87 m) above mean sea level, from topographic map.

Measuring point: Top of shelter floor, 2.35 ft (0.72 m) above land-surface datum.

REMARKS.--Recording observation well.

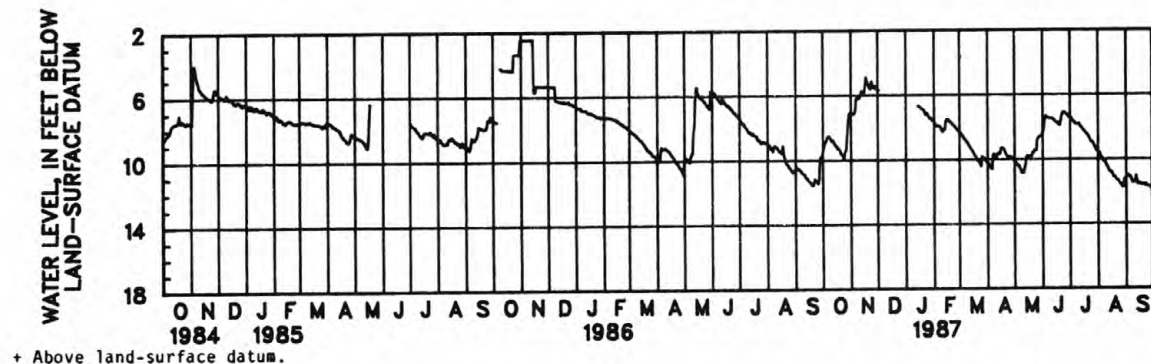
PERIOD OF RECORD.--July 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, +0.12 ft (0.04 m) below land-surface datum, July 19, 1979; lowest water level recorded, 36.91 ft (11.25 m) below land-surface datum, June 27, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.48	7.11	5.66	6.40	7.56	8.30	10.26	10.10	8.38	7.43	9.52	11.24
2	9.31	7.09	5.69	6.43	7.73	8.36	10.27	10.18	8.19	7.44	9.58	11.00
3	8.98	7.15	5.71	6.43	7.84	8.43	10.41	10.26	7.58	7.52	9.70	10.97
4	8.91	7.14	5.75	6.47	7.90	8.48	10.47	10.33	7.31	7.62	9.83	11.01
5	8.76	7.09	5.75	6.50	7.95	8.55	10.52	10.42	7.36	7.69	9.90	11.05
6	8.63	6.89	5.80	6.52	7.90	8.69	10.60	10.40	7.42	7.72	10.04	11.14
7	8.53	6.18	5.82	6.55	7.95	8.73	9.72	10.58	7.43	7.80	10.14	11.28
8	8.51	6.14	5.84	6.57	7.97	8.81	9.66	10.69	7.45	7.83	10.15	11.43
9	8.63	6.20	5.85	6.59	8.11	8.91	9.73	10.83	7.48	7.84	10.18	11.40
10	8.71	6.05	5.89	6.62	8.24	8.97	9.84	10.81	7.48	7.85	10.32	11.42
11	8.83	6.16	5.91	6.64	8.24	9.09	9.86	10.83	7.48	7.81	10.48	11.42
12	8.75	5.90	5.92	6.66	8.10	9.20	9.64	10.58	7.51	7.95	10.57	11.36
13	8.90	5.73	5.96	6.69	8.10	9.28	9.65	10.33	7.54	8.02	10.69	11.40
14	8.98	5.83	5.98	6.71	7.61	9.37	9.68	9.88	7.63	8.06	10.78	11.53
15	9.06	5.80	6.01	6.68	7.51	9.44	9.56	9.80	7.68	8.15	10.81	11.52
16	9.15	5.96	6.01	6.71	7.51	9.53	9.30	9.81	7.71	8.23	10.82	11.48
17	9.19	5.44	6.05	6.75	7.51	9.64	9.29	9.81	7.74	8.28	10.96	11.54
18	9.30	4.86	6.08	6.83	7.64	9.76	9.33	9.86	7.83	8.35	11.09	11.57
19	9.31	5.05	6.10	6.85	7.65	9.85	9.35	9.80	7.87	8.41	11.11	11.56
20	9.38	5.29	6.12	6.88	7.71	9.96	9.53	9.79	7.82	8.47	11.14	11.55
21	9.54	5.39	6.13	6.94	7.79	10.07	9.67	9.58	7.52	8.55	11.27	11.53
22	9.64	5.54	6.17	7.09	7.83	10.09	9.74	9.57	7.24	8.63	11.31	11.65
23	9.71	5.60	6.19	7.22	7.90	10.20	9.83	9.43	7.10	8.75	11.31	11.56
24	9.84	5.12	6.22	7.12	7.96	10.28	9.84	9.44	7.10	8.92	11.44	11.62
25	9.91	5.37	6.24	7.17	8.04	10.41	9.84	9.44	7.10	8.93	11.51	11.64
26	9.42	5.42	6.26	7.32	8.10	9.83	9.81	8.80	7.16	8.96	11.57	11.68
27	9.35	5.54	6.29	7.42	8.16	9.90	9.88	8.67	7.22	9.11	11.65	11.70
28	8.38	5.41	6.31	7.44	8.23	9.91	9.91	8.64	7.24	9.23	11.74	11.75
29	7.75	5.55	6.33	7.43	---	9.94	9.95	8.58	7.35	9.31	11.57	11.81
30	7.15	5.62	6.36	7.61	---	10.06	10.04	8.55	7.42	9.43	11.24	11.94
31	7.08	---	6.38	7.51	---	10.16	---	8.54	---	9.50	11.26	---
LOW	9.91	7.15	6.38	7.61	8.24	10.41	10.60	10.83	8.38	9.50	11.74	11.94
HIGH	7.08	4.86	5.66	6.40	7.51	8.30	9.29	8.54	7.10	7.43	9.52	10.97

WTR YR 1987 MEAN 8.57 LOW 11.94 HIGH 4.86



GROUND-WATER LEVELS

RIO GUANAJIBO BASIN

180132067033800. Local number, 143.

LOCATION.--Lat 18°01'32", long 67°03'38".

Owner: Pedro P. Vivoni.

Name: Vivoni, Hacienda Amistad.

AQUIFER.--Limestone of unknown age.

WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 12 in (0.30 m). Depth 200 ft (60.98 m).

DATUM.--Elevation of land-surface datum is about 52.5 ft (16.0 m) above mean sea level, from topographic map.

Measuring point: Hole side of casing, 0.80 ft (0.24 m) above land-surface datum.

REMARKS.--Recording observation well.

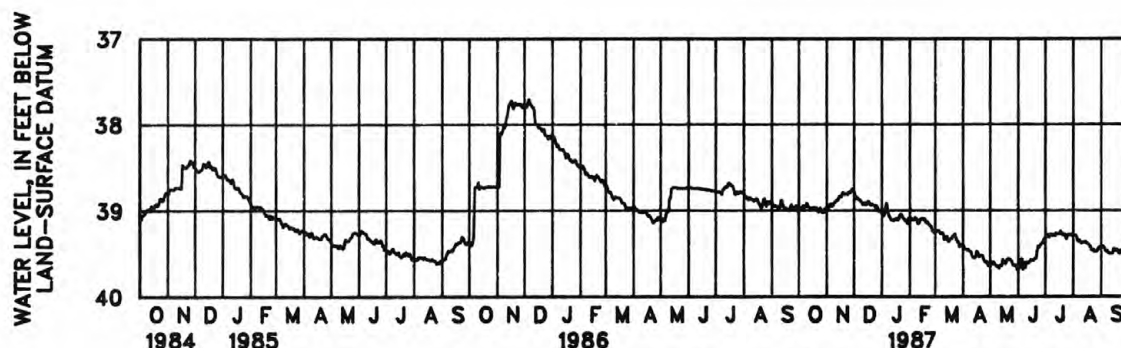
PERIOD OF RECORD.--December 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 37.36 ft (11.39 m) below land-surface datum, Nov. 20, 1985; lowest water level recorded, 39.70 ft (12.10 m) below land-surface datum, June. 29, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38.98	39.00	38.78	39.03	39.09	39.25	39.39	39.64	39.68	39.31	39.28	39.42
2	38.97	38.97	38.80	39.04	39.09	39.24	39.42	39.63	39.67	39.30	39.29	39.41
3	38.98	38.97	38.84	39.06	39.09	39.24	39.45	39.62	39.61	39.29	39.29	39.42
4	38.97	38.93	38.86	39.04	39.11	39.23	39.45	39.60	39.58	39.28	39.29	39.42
5	38.96	38.93	38.85	38.97	39.11	39.23	39.45	39.60	39.56	39.31	39.31	39.44
6	38.94	38.92	38.87	38.91	39.10	39.25	39.46	39.62	39.58	39.30	39.36	39.47
7	38.95	38.95	38.87	38.94	39.08	39.27	39.45	39.63	39.60	39.27	39.36	39.48
8	38.96	38.94	38.88	39.02	39.09	39.27	39.47	39.64	39.63	39.28	39.34	39.47
9	38.95	38.91	38.90	39.06	39.11	39.26	39.48	39.66	39.66	39.29	39.36	39.49
10	38.91	38.90	38.91	39.08	39.15	39.27	39.48	39.66	39.60	39.28	39.38	39.50
11	38.93	38.90	38.93	39.10	39.14	39.34	39.53	39.67	39.60	39.28	39.37	39.50
12	38.96	38.88	38.92	39.11	39.12	39.33	39.54	39.64	39.61	39.29	39.37	39.50
13	38.96	38.88	38.91	39.11	39.10	39.31	39.55	39.64	39.60	39.26	39.36	39.50
14	38.97	38.86	38.93	39.12	39.09	39.30	39.55	39.64	39.59	39.27	39.37	39.50
15	38.97	38.83	38.93	39.10	39.09	39.35	39.54	39.56	39.57	39.27	39.36	39.44
16	38.98	38.84	38.90	39.11	39.10	39.36	39.47	39.58	39.58	39.27	39.38	39.46
17	38.97	38.84	38.89	39.09	39.09	39.35	39.48	39.61	39.58	39.27	39.39	39.47
18	38.96	38.80	38.90	39.10	39.11	39.33	39.51	39.62	39.58	39.24	39.39	39.45
19	38.97	38.79	38.93	39.11	39.14	39.32	39.54	39.60	39.56	39.26	39.41	39.46
20	38.97	38.81	38.94	39.09	39.14	39.32	39.53	39.56	39.56	39.28	39.42	39.48
21	38.97	38.81	38.93	39.05	39.13	39.29	39.52	39.56	39.55	39.28	39.46	39.50
22	38.99	38.80	38.93	39.04	39.16	39.29	39.52	39.57	39.47	39.27	39.45	39.50
23	39.01	38.80	38.94	39.05	39.17	39.27	39.53	39.56	39.41	39.28	39.45	39.46
24	38.99	38.81	38.95	39.08	39.18	39.31	39.57	39.58	39.43	39.33	39.48	39.47
25	38.97	38.79	38.96	39.09	39.19	39.34	39.59	39.59	39.41	39.32	39.48	39.48
26	39.00	38.78	38.94	39.10	39.24	39.36	39.60	39.63	39.39	39.28	39.48	39.48
27	39.02	38.79	38.96	39.12	39.24	39.39	39.59	39.64	39.39	39.28	39.47	39.47
28	39.02	38.77	38.99	39.12	39.26	39.42	39.61	39.63	39.36	39.28	39.46	39.44
29	39.01	38.75	39.01	39.14	---	39.41	39.64	39.63	39.34	39.28	39.43	39.40
30	38.97	38.76	39.00	39.12	---	39.40	39.64	39.65	39.34	39.28	39.43	39.37
31	39.02	---	39.01	39.08	---	39.40	---	39.69	---	39.29	39.42	---
LOW	39.02	39.00	39.01	39.14	39.26	39.42	39.64	39.69	39.68	39.33	39.48	39.50
HIGH	38.91	38.75	38.78	38.91	39.08	39.23	39.39	39.56	39.34	39.24	39.28	39.37

WTR YR 1987 MEAN 39.3 LOW 39.69 HIGH 38.75



GROUND-WATER LEVELS

RIO CULEBRINAS BASIN

182018066593200. Local number, 83.

LOCATION.--Lat 18°20'18", long 66°59'32".

Owner: P.R. Energy and Power Authority.

Name: San Sebastian Well.

AQUIFER.--San Sebastian Formation.

WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 300 ft (91.4 m).

DATUM.--Elevation of land-surface datum is about 230 ft (70.1 m) above mean sea level, from topographic map.

Measuring point: Shelter floor on top of 6 in (0.15 m) casing, 2.75 ft (0.84 m) above land-surface datum.

Prior November 1985, top of casing, 2.40 ft (0.73 m) above land-surface datum.

REMARKS.--Observation well. Automatic recorder installed on November 14, 1985. Formerly published as

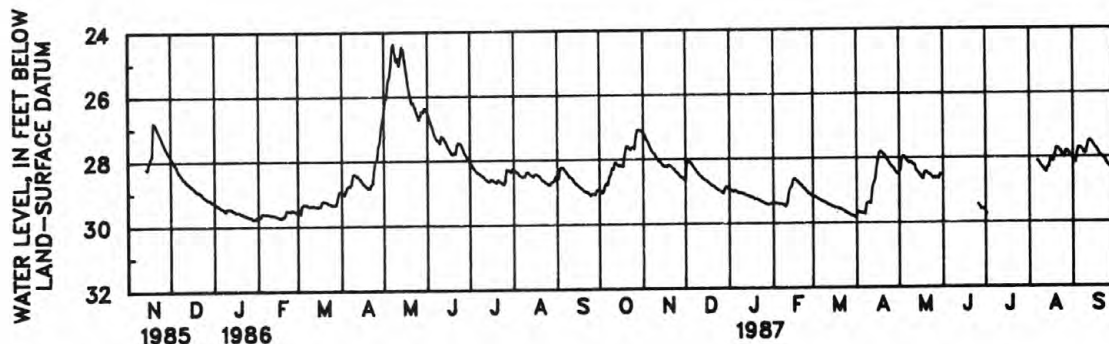
182032066591800

PERIOD OF RECORD.--May 1967 to January 15, 1985. November 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 21.95 ft (6.69 m) below land-surface datum, May 8, 1986; lowest water level recorded, 40.20 ft (12.25 m) below land-surface datum, Jan. 29, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.95	27.17	28.67	28.94	29.40	29.16	29.82	28.48	---	29.64	---	28.04
2	28.97	27.25	28.09	28.97	29.39	29.18	29.65	28.36	---	29.76	---	28.09
3	29.03	27.34	28.07	28.99	29.37	29.20	29.68	27.98	---	---	---	28.18
4	28.96	27.43	28.09	29.00	29.38	29.23	29.68	27.94	---	---	---	27.83
5	28.76	27.52	28.13	28.98	29.40	29.25	29.70	27.97	---	---	---	27.68
6	28.74	27.63	28.19	29.00	29.40	29.28	29.70	28.06	---	---	---	27.70
7	28.78	27.73	28.26	29.04	29.40	29.31	29.72	28.11	---	---	28.12	27.74
8	28.52	27.78	28.32	29.05	29.42	29.33	29.40	28.15	---	---	28.16	27.79
9	28.47	27.82	28.38	29.06	29.45	29.35	29.37	28.13	---	---	28.24	27.88
10	28.26	27.92	28.44	29.06	29.48	29.36	29.37	28.16	---	---	28.31	27.88
11	28.29	27.98	28.51	29.08	29.37	29.40	29.40	28.21	---	---	28.35	27.72
12	28.10	28.06	28.53	29.10	29.04	29.43	28.91	28.22	---	---	28.42	27.50
13	28.11	28.08	28.59	29.12	28.89	29.44	28.78	28.40	---	---	28.46	27.48
14	28.17	28.13	28.62	29.13	28.86	29.46	28.70	28.44	---	---	28.31	27.52
15	28.20	28.19	28.65	29.15	28.65	29.49	28.31	28.49	---	---	28.29	27.57
16	28.18	28.24	28.68	29.18	28.63	29.50	28.08	28.55	---	---	28.06	27.66
17	28.20	28.21	28.72	29.19	28.66	29.53	27.83	28.62	---	---	28.07	27.71
18	28.21	28.24	28.75	29.21	28.71	29.52	27.79	28.66	---	---	28.12	27.76
19	27.84	28.18	28.79	29.24	28.76	29.55	27.84	28.44	---	---	27.93	27.84
20	27.58	28.20	28.83	29.25	28.80	29.56	27.88	28.42	---	---	27.71	27.92
21	27.58	28.24	28.84	29.25	28.83	29.58	27.92	28.47	---	---	27.72	27.96
22	27.64	28.28	28.88	29.27	28.90	29.60	28.02	28.52	---	---	27.75	28.01
23	27.68	28.33	28.92	29.31	28.93	29.62	28.08	28.52	---	---	27.80	28.04
24	27.62	28.39	28.95	29.33	28.99	29.66	28.16	28.59	---	---	27.89	28.09
25	27.61	28.43	28.98	29.34	29.04	29.69	28.23	28.64	---	---	27.97	28.18
26	27.67	28.46	29.00	29.37	29.09	29.71	28.28	28.60	29.45	---	28.01	28.25
27	27.26	28.52	29.03	29.40	29.10	29.73	28.32	28.63	29.51	---	27.79	28.29
28	27.08	28.57	29.06	29.41	29.15	29.76	28.39	28.60	29.59	---	27.79	28.33
29	27.08	28.58	28.89	29.42	---	29.78	28.47	28.64	29.58	---	27.85	28.35
30	27.10	28.63	28.86	29.40	---	29.79	28.49	28.52	29.60	---	27.93	28.39
31	27.13	---	28.90	29.38	---	29.83	---	---	---	---	27.99	---
LOW	29.03	28.63	29.06	29.42	29.48	29.83	29.82	---	---	---	---	28.39
HIGH	27.08	27.17	28.07	28.94	28.63	29.16	27.79	---	---	---	---	27.48



GROUND-WATER LEVELS

RIO CULEBRINAS BASIN

182442067091700. Local number, 200.

LOCATION.--Lat 18°24'42", long 67°09'17".

Owner: Carmelo Sanchez

Name: Aguadilla Cement Well.

AQUIFER.--Surficial deposits.

WELL CHARACTERISTICS.--Abandoned water-table industrial well, diameter 4 in (0.10 m), cased 0-20 ft (0-6.10 m), perforated 11-20 ft (3.35-6.10 m). Depth 20 ft (6.10 m).

DATUM.--Elevation of land-surface datum is about 10 ft (3.05 m) above mean sea level, from topographic map.

Measuring point: Shelter floor on top of 4 in (0.10 m) casing, 3.25 ft (0.99 m) above land-surface datum.

REMARKS.--Observation well. Automatic recorder installed on November 1985. Water levels affected by nearby pumping well. Estimated noon values: Nov. 19-Dec 5.

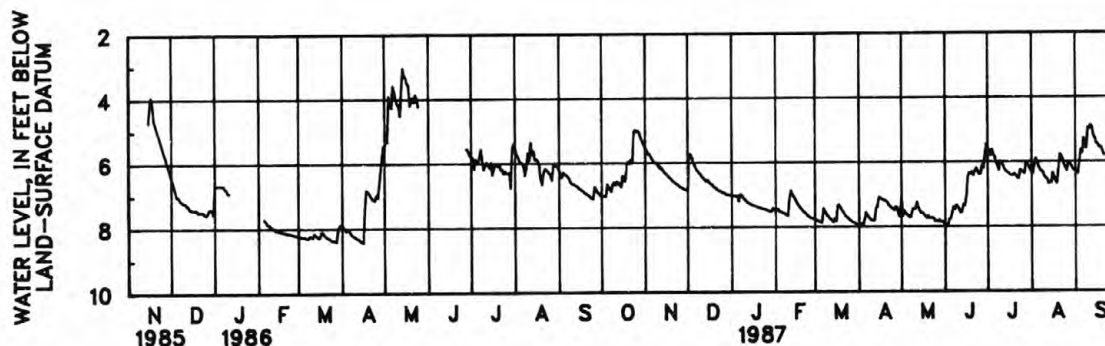
PERIOD OF RECORD.--October 1985 to September 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.85 ft (0.87 m) below land-surface datum, May 14, 1986; lowest water level recorded, 8.46 ft (2.58 m) below land-surface datum, Apr. 17, 1986.

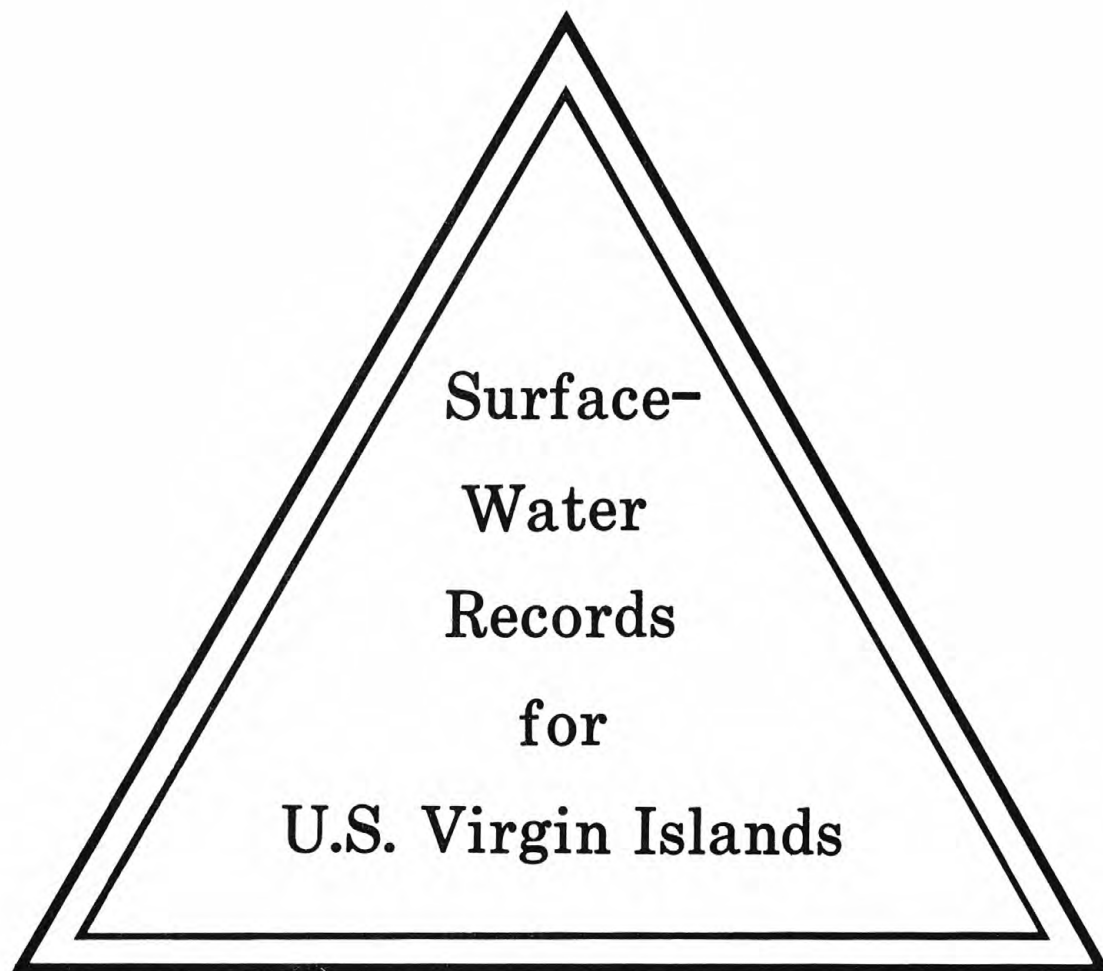
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.00	5.54	6.86	7.02	7.50	7.76	7.97	7.02	7.98	5.56	6.32	6.27
2	7.01	5.62	5.87	7.02	7.46	7.79	7.90	7.69	7.98	5.69	6.37	6.32
3	7.01	5.71	5.71	7.03	7.45	7.81	7.93	7.47	7.98	5.79	6.11	6.37
4	7.02	5.73	5.83	7.03	7.51	7.83	7.95	7.58	7.75	5.61	5.88	6.03
5	6.63	5.82	6.00	7.03	7.53	7.85	7.77	7.63	7.75	5.77	6.02	5.61
6	6.73	5.89	6.09	7.20	7.55	7.86	7.54	7.66	7.55	5.84	6.17	5.75
7	6.81	5.96	6.20	6.96	7.57	7.43	7.65	7.71	7.37	6.04	6.26	5.26
8	6.88	6.00	6.25	7.00	7.59	7.51	7.71	7.69	7.47	6.13	6.30	5.53
9	6.62	6.00	6.32	7.08	7.63	7.60	7.76	7.43	7.33	6.25	6.34	5.59
10	6.58	6.07	6.35	7.13	7.65	7.66	7.80	7.46	7.40	5.97	6.45	4.94
11	6.67	6.15	6.42	7.18	7.15	7.72	7.80	7.44	7.47	6.03	6.51	4.99
12	6.55	6.13	6.47	7.22	6.85	7.76	7.80	7.23	7.58	6.12	6.55	4.87
13	6.65	6.20	6.52	7.25	6.97	7.81	7.45	7.40	7.53	6.24	6.67	4.96
14	6.62	6.26	6.57	7.28	7.06	7.84	7.44	7.51	7.29	6.30	6.64	5.20
15	6.74	6.32	6.53	7.29	7.12	7.74	7.19	7.58	7.34	6.33	6.64	5.28
16	6.37	6.35	6.60	7.33	7.22	7.83	7.25	7.57	7.05	6.36	6.34	5.43
17	6.46	6.40	6.64	7.33	7.30	7.33	7.32	7.63	6.48	6.41	6.49	5.47
18	6.57	6.45	6.67	7.35	7.36	7.31	7.38	7.68	6.32	6.43	6.60	5.54
19	5.99	6.48	6.73	7.37	7.42	7.39	7.43	7.73	6.37	6.41	6.68	5.55
20	5.95	6.54	6.76	7.39	7.47	7.48	7.49	7.67	6.31	6.37	6.27	5.63
21	6.02	6.58	6.79	7.40	7.52	7.55	7.56	7.73	6.43	6.44	5.76	5.77
22	5.88	6.61	6.83	7.42	7.56	7.62	7.68	7.73	6.28	6.50	5.82	5.79
23	6.01	6.65	6.86	7.43	7.60	7.68	7.77	7.73	6.19	6.51	5.94	5.79
24	5.00	6.67	6.88	7.44	7.66	7.72	7.85	7.75	6.30	6.24	6.11	5.81
25	4.97	6.72	6.90	7.45	7.69	7.76	7.92	7.83	6.39	6.29	6.21	5.96
26	5.04	6.75	6.93	7.47	7.72	7.80	7.99	7.82	6.37	6.33	6.28	5.94
27	5.00	6.77	6.94	7.49	7.73	7.84	7.92	7.84	6.10	6.37	6.01	5.97
28	5.06	6.80	6.98	7.51	7.75	7.86	7.99	7.80	6.18	5.98	6.06	6.06
29	5.24	6.82	6.99	7.50	---	7.89	7.64	7.85	5.81	6.07	6.12	6.10
30	5.32	6.83	7.00	7.41	---	7.92	7.68	7.85	5.44	6.14	6.22	5.81
31	5.44	---	7.01	7.46	---	7.95	---	7.87	---	6.26	6.27	---
LOW	7.02	6.83	7.01	7.51	7.75	7.95	7.99	7.87	7.98	6.51	6.68	6.37
HIGH	4.97	5.54	5.71	6.96	6.85	7.31	7.19	7.02	5.44	5.56	5.76	4.87

WTR YR 1987 MEAN 6.81 LOW 7.99 HIGH 4.87



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50252000 BONNE RESOLUTION GUT AT BONNE RESOLUTION, ST. THOMAS, VI

LOCATION.--Lat 18°21'57", long 64°57'34", Hydrologic Unit 21020001, on right bank near Hull Bay Road, 0.5 mi (0.8 km) upstream from Atlantic Ocean, and 2.5 mi (4.02 km) northwest of Fort Christian, Charlotte Amalie.

DRAINAGE AREA.--0.49 mi² (1.27 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1962 to February 1967, March 1979 to April 1981, May 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 280 ft (85 m), from topographic map.

December 1962 to February 1967 at site about 100 ft (30 m) downstream at different datum. March 1979 to April 1981 at site about 100 ft (30 m) upstream at different datum.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--9 years (1964-66, 1980, 1983-87), 0.30 ft³/s (0.008 m³/s), 8.31 in/yr (211 mm/yr), 217 acre-ft/yr (0.268 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft³/s (46.7 m³/s), Apr. 18, 1983, gage height, 7.00 ft (2.134 m), from floodmarks, from rating curve extended above 1.0 ft³/s (0.03 m³/s) on basis of critical-depth analysis and slope-area measurement of peak flow; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s (1.42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)				
Nov. 16	1445	168	4.76	2.29	0.698	May 24	1415	368	10.4	3.27	0.997
Nov. 17	1815	178	5.04	2.35	0.716	May 25	1415	86	2.44	1.75	0.533
Mar. 17	0615	90	2.55	1.78	0.542	May 29	1800	*527	14.9	*3.90	1.189
May 6	1145	103	2.92	1.88	0.573	June 22	0215	356	10.1	3.22	0.981

Minimum daily discharge, 0.01 ft³/s (0.0003 m³/s), Jan. 12-14, 21, Feb. 12-18 and Mar. 4-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.13	.03	.07	.03	.04	.07	.02	.18	.12	.07	.05
2	.02	.05	.09	.08	.04	.03	.07	.02	.27	.09	.08	.11
3	.02	.12	.05	.09	.04	.03	.07	.02	2.7	.07	.10	.11
4	.02	.09	.03	.07	.03	.10	.07	.03	.58	.07	.18	.05
5	.03	.17	.03	.08	.03	.01	.16	.13	.18	.07	.06	.07
6	.03	1.4	.05	.30	.03	.01	.05	6.7	.12	.08	.04	.08
7	.04	.74	.07	.17	.05	.01	.05	.36	.09	.09	.04	.10
8	.05	1.1	.03	.05	.05	.01	.05	.10	.07	.06	.04	.15
9	.09	.30	.03	.03	.06	.02	.04	.07	.06	.06	.03	.11
10	.07	.18	.04	.02	.07	.03	.03	.36	.07	.06	.04	.04
11	.06	.15	.03	.02	.09	.07	.73	.17	.07	.06	.05	.06
12	.04	.10	.03	.02	.02	.08	1.4	.74	.05	.05	.07	.09
13	.02	.08	.07	.01	.02	.06	.30	.13	.05	.07	.04	.11
14	.02	.09	.13	.10	.02	.06	.43	.08	.06	.07	.05	.11
15	.04	.17	.05	.04	.01	1.5	.18	.06	.10	.09	.17	.11
16	.04	15	.02	.03	.01	.28	.10	.05	.06	.07	.08	.16
17	.02	18	.03	.02	.01	6.3	.08	.48	.06	.07	.06	.19
18	.02	1.7	.03	.02	.02	.26	.06	.11	.05	.07	.05	.05
19	.04	.35	.03	.02	.02	.10	.05	3.3	.10	.06	.06	.05
20	.03	.19	.04	.03	.02	.08	.05	.23	.66	.06	.06	.06
21	.06	.13	.06	.02	.03	.06	.05	.30	4.5	.06	.08	.07
22	.02	.11	.06	.02	.03	.06	.04	2.5	15	.05	.05	.06
23	.03	.07	.06	.02	.03	.08	.04	.61	.42	.06	.06	.04
24	.03	.06	.08	.02	.03	.08	.04	14	.24	.06	.08	.11
25	.07	.05	.09	.02	.03	.07	.04	9.4	.16	.06	.10	.14
26	.29	.05	.13	.02	.02	.06	.04	2.0	.13	.05	.09	.18
27	.08	.08	.06	.02	.02	.05	.04	.32	.11	.05	.10	.23
28	.07	.04	.06	.02	.03	.04	.09	.20	.11	.05	.05	.09
29	.08	.03	.06	.02	---	.05	.05	20	.37	.05	.06	.06
30	.06	.04	.06	.03	---	.05	.03	.99	.17	.06	.07	.05
31	.05	---	.06	.04	---	.06	---	.24	---	.07	.11	---
TOTAL	1.61	40.77	1.69	1.52	0.89	9.74	4.50	63.72	26.79	2.06	2.22	2.89
MEAN	.052	1.36	.055	.049	.032	.31	.15	2.06	.89	.066	.072	.096
MAX	.29	18	.13	.30	.09	6.3	1.4	20	15	.12	.18	.23
MIN	.02	.03	.02	.01	.01	.01	.03	.02	.05	.05	.03	.04
AC-FT	3.2	81	3.4	3.0	1.8	19	8.9	126	53	4.1	4.4	5.7
CFSM	.11	2.77	.11	.10	.06	.64	.31	4.19	1.82	.14	.15	.20
IN.	.12	3.10	.13	.12	.07	.74	.34	4.84	2.03	.16	.17	.22

CAL YR 1986 TOTAL 101.17 MEAN .28 MAX 18 MIN .00 AC-FT 201 CFSM .57 IN. 7.68
WTR YR 1987 TOTAL 158.40 MEAN .43 MAX 20 MIN .01 AC-FT 314 CFSM .89 IN. 12.03

ST. THOMAS, U.S. VIRGIN ISLANDS

50276000 TURPENTINE RUN AT MARIENDAL, ST. THOMAS, VI

LOCATION.--Lat 18°19'48", long 64°52'58", Hydrologic Unit 21020001, on right bank, at Mariendal, 1.0 mi (1.6 km) upstream from mouth, and 3.3 mi (5.3 km) southeast of Fort Christian, Charlotte Amalie.

DRAINAGE AREA.--2.97 mi² (7.69 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to April 1969, October 1978 to September 1980, June 1982 to July 1986, July to Sept. 1987 (high-water discharges only).

GAGE.--Crest-stage gage. Elevation of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records poor, peak discharge only.

AVERAGE DISCHARGES.--10 years (1964-68, 1979-80, 1983-85), 1.22 ft³/s (0.034 m³/s), 5.58 in/yr (142 mm/yr), 884 acre-ft/yr (1.09 hm³/yr); median of yearly mean discharges, 0.54 ft³/s (0.015 m³/s), 390 acre-ft/yr (0.48 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,710 ft³/s (275 m³/s), Apr. 18, 1983, gage height, 11.09 ft (3.380 m), from floodmark, from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of slope area measurement and step-backwater analysis; no flow many days from 1963 to 1969, and in 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Nov. 16	0745	194	5.49	3.09	0.942	May 6	0945	*493	14.0	*4.40	1.359

50295000 GUINEA GUT AT BETHANY, ST. JOHN, VI

LOCATION.--Lat. 18°19'55", long 64°46'50", Hydrologic Unit 21020001, 600 ft (183 m) southeast of Bethany Church, and 1.0 mi (1.6 km) east of Government House at Cruz Bay.

DRAINAGE AREA.--0.37 mi² (0.96 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to October 1967, September 1982 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 260 ft (79 m), from topographic map. Prior to September 1982, at datum 1.00 ft (0.30 m) higher.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--9 years (1964-67, 1983-87), 0.09 ft³/s (0.002 m³/s), 3.27 in/yr (83 mm/yr), 64.48 acre-ft/yr (0.080 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 946 ft³/s (26.8 m³/s), Apr. 18, 1983, gage height, 5.33 ft (1.625 m), from floodmark, from rating curve extended above 1.0 ft³/s (0.028 m³/s) on basis of step-backwater analysis and slope-area measurement of peak flow; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10 ft³/s (0.283 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 17	1630	*43	1.22	*2.41	0.734

No flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.02	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00
2	.06	.02	.00	.00	.01	.01	.00	.00	.00	.00	.01	.00
3	.06	.02	.00	.00	.01	.01	.00	.00	.70	.00	.01	.00
4	.05	.02	.00	.00	.01	.02	.00	.00	.14	.00	.01	.00
5	.05	.02	.00	.00	.02	.01	.00	.00	.02	.00	.01	.00
6	.04	.02	.00	.00	.02	.01	.00	.01	.01	.00	.01	.00
7	.04	.02	.00	.00	.01	.00	.01	.00	.00	.00	.01	.00
8	.03	.01	.00	.00	.01	.01	.00	.00	.00	.00	.01	.00
9	.04	.01	.00	.00	.01	.01	.00	.00	.00	.00	.01	.00
10	.04	.01	.00	.00	.01	.00	.00	.00	.00	.00	.01	.00
11	.04	.01	.00	.00	.01	.01	.00	.01	.00	.00	.01	.01
12	.04	.01	.00	.00	.01	.00	.00	.01	.00	.00	.01	.00
13	.04	.01	.00	.00	.01	.00	.00	.01	.00	.00	.01	.00
14	.03	.01	.00	.00	.01	.00	.00	.01	.00	.00	.00	.00
15	.03	.01	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
16	.04	.51	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00
17	.05	2.8	.00	.00	.01	.01	.01	.00	.00	.00	.00	.00
18	.04	.39	.00	e.00	.01	.01	.01	.00	.00	.00	.00	.00
19	.03	.04	.00	e.00	.01	.01	.01	.00	.00	.00	.00	.00
20	.03	.01	.00	e.00	.01	.00	.01	.00	.01	.00	.00	.00
21	.06	.01	.00	e.00	.01	.00	.00	.01	.03	.00	.00	.01
22	.05	.00	.00	e.01	.01	.00	.00	.00	.02	.00	.00	.01
23	.05	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00
24	.05	.00	.00	.01	.01	.00	.00	.02	.00	.00	.00	.00
25	.05	.00	.00	.01	.01	.00	.00	.11	.00	.00	.00	.00
26	.05	.09	.00	.01	.01	.00	.00	.05	.00	.00	.00	.00
27	.05	.09	.00	.01	.01	.00	.00	.01	.00	.00	.00	.00
28	.04	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00
29	.04	.00	.00	.01	---	.00	.00	.00	.00	.00	.00	.01
30	.03	.00	.00	.01	---	.00	.00	.00	.00	.00	.00	.00
31	.03	---	.00	.02	---	.00	---	.00	---	.00	.00	---
TOTAL	1.34	4.16	0.00	0.11	0.30	0.14	0.05	0.25	0.93	0.00	0.12	0.04
MEAN	.043	.14	.00	.004	.011	.005	.002	.008	.031	.00	.004	.001
MAX	.06	2.8	.00	.02	.02	.02	.01	.11	.70	.00	.01	.01
MIN	.03	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
AC-FT	2.7	8.3	.0	.2	.6	.3	.1	.5	1.8	.0	.2	.08
CFSM	.12	.37	.00	.01	.03	.01	.00	.02	.08	.00	.01	.00
IN.	.13	.42	.00	.01	.03	.01	.01	.03	.09	.00	.01	.00

CAL YR 1986 TOTAL 41.52 MEAN .11 MAX 9.3 MIN .00 AC-FT 82 CFSM .31 IN. 4.17
WTR YR 1987 TOTAL 7.44 MEAN .020 MAX 2.8 MIN .00 AC-FT 15 CFSM .06 IN. .75

e Estimated

ST. CROIX, U.S. VIRGIN ISLANDS

50345000 JOLLY HILL GUT AT JOLLY HILL, ST. CROIX, VI

LOCATION.--Lat 17°44'00", long 64°51'47", Hydrologic Unit 21020002, on Mahogany Road at Jolly Hill, 1.8 mi (2.9 km) northeast of Frederiksted.

DRAINAGE AREA.--2.10 mi² (5.44 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to December 1968. Monthly measurements, 1962, 69. October 1982 to current year.

GAGE.--Water-stage recorder, crest-stage gage and sharp-crested concrete control. Elevation of gage is 140 ft (43 m), from topographic map.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--10 years (1964-68, 1983-87), 0.116 ft³/s (0.003 m³/s), 0.75 in/yr (19.0 mm/yr), 84.0 acre-ft/yr (0.10 hm³/yr); median of yearly mean discharges, 0.04 ft³/s (0.001 m³/s), 29.0 acre-ft/yr (0.04 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 349 ft³/s (9.884 m³/s), June 20, 1987, gage height, 3.86 ft (1.176 m); no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25 ft³/s (0.71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 20	2230	*349 9.88	*3.86 1.176				

No flow many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e.03	e.03	.04	.01	.01	.00	.02	1.0	.31	.10
2	.00	.00	e.04	e.03	.05	.01	.01	.00	.05	1.2	.30	.10
3	.00	.00	e.06	e.03	.05	.01	.01	.00	.43	1.2	.29	.10
4	.00	.00	e.03	e.03	.05	.01	.01	.00	.11	.99	.29	.10
5	.00	.00	e.03	e.04	.05	.01	.01	.00	.06	.78	.28	.10
6	.00	.00	e.03	e.05	.05	.01	.01	.00	.06	.45	.23	.10
7	.00	.00	e.05	e.04	.05	.01	.01	.00	.06	e.39	.22	.10
8	.00	.02	e.03	e.03	.04	.01	.01	.00	.06	e.64	.23	.07
9	.00	e.02	e.03	e.03	.04	.01	.00	.00	.12	.55	.24	.07
10	.00	e.03	e.04	e.03	.06	.01	.00	.00	.10	.64	.18	.07
11	.00	e.02	e.07	e.03	.04	.01	.00	.00	.10	.64	.18	.07
12	.00	e.07	e.03	e.03	.04	.01	.00	.00	.12	e.85	.18	.07
13	.00	e.03	e.03	e.03	.05	.00	.01	.00	.13	.48	.18	.07
14	.00	e.04	e.03	e.03	.06	.00	.02	.00	.13	.49	.18	.07
15	.00	e.03	e.03	e.03	.06	.00	.01	.00	.16	.46	.18	.07
16	.00	e.04	e.03	e.03	.06	.00	.01	.00	.16	.42	.18	.07
17	.00	e.03	e.03	e.03	.07	.03	.00	.00	.16	.39	.17	.07
18	.00	e.03	e.03	e.03	.05	.02	.00	.00	.16	.39	.16	.12
19	.00	e.03	e.03	e.03	.05	.02	.00	.00	.18	.39	.16	.10
20	.00	e.02	e.03	e.03	.04	.01	.00	.01	12	.37	.15	.08
21	.00	e.02	e.03	.03	.04	.01	.00	.02	11	.37	.13	.08
22	.00	e.02	e.03	.03	.03	.01	.00	.00	5.0	.36	.13	.08
23	.00	e.02	e.03	.04	.01	.01	.00	.00	2.6	.34	.13	.08
24	.00	e.02	e.03	.04	.01	.01	.00	.05	2.0	.33	.12	.08
25	.00	e.08	e.06	.03	.01	.09	.00	.12	1.6	.33	.11	.08
26	.00	e.05	e.04	.03	.01	.07	.00	.12	1.4	.30	.11	.08
27	.00	e.04	e.04	.03	.01	.04	.00	.05	1.3	.26	.11	.08
28	.00	e.03	e.04	.03	.01	.03	.00	.04	1.2	.26	.11	.08
29	.00	e.03	e.03	.03	---	.02	.00	.03	1.2	.26	.10	.08
30	.00	e.03	e.03	.03	---	.02	.00	.02	1.1	.26	.10	.07
31	.00	---	e.03	.05	---	.01	---	.02	---	.30	.10	---
TOTAL	0.00	0.75	1.10	1.01	1.13	0.52	0.13	0.48	42.77	16.09	5.54	2.49
MEAN	.00	.025	.035	.033	.040	.017	.004	.015	1.43	.52	.18	.083
MAX	.00	.08	.07	.05	.07	.09	.02	.12	12	1.2	.31	.12
MIN	.00	.00	.03	.03	.01	.00	.00	.00	.02	.26	.10	.07
AC-FT	.0	1.5	2.2	2.0	2.2	1.0	.3	1.0	85	32	11	4.9
CFSM	.00	.01	.02	.02	.02	.01	.00	.01	.68	.25	.09	.04
IN.	.00	.01	.02	.02	.02	.01	.00	.01	.76	.29	.10	.04
CAL YR 1986	TOTAL 42.00	MEAN .12	MAX 1.1	MIN .00	AC-FT 83	CFSM .05	IN. .74					
WTR YR 1987	TOTAL 72.01	MEAN .20	MAX 12	MIN .00	AC-FT 143	CFSM .09	IN. 1.28					

e Estimated

Ground-Water Records
for
U.S. Virgin Islands

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GROUND-WATER LEVELS

335

ST. CROIX, U.S. VIRGIN ISLANDS

174225064471900. Local number, 1.

LOCATION.--Lat 17°42'25", long 64°47'19".

Owner: Virgin Islands Government.

Name: Fairplains 6 (FP6).

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

DATUM.--Elevation of land-surface datum is about 20 ft (6.10 m) above mean sea level, from topographic map.

Measuring point: Top of pump concrete base, 2.20 ft (0.67 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.64 ft (4.77 m) below land-surface datum, Mar. 25, 1982; lowest water level measured, a58.57 ft (17.9 m) below land-surface datum, June 20, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	17.19	Apr. 27	a56.24	June 17	17.72

a Pumping.

GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174225064472000. Local number, 2.

LOCATION.--Lat 17°42'25", long 64°47'20".

Owner: U.S. Government, Virgin Islands Government.

Name: USGS-10, Fairplains 2 (FP2).

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

DATUM.--Elevation of land-surface datum is about 20 ft (6.10 m) above mean sea level, from topographic map.

Measuring point: Top of 0.5 in (0.01 m) hole at concrete base wall, 3.00 ft (0.91 m) above land-surface datum.

REMARKS.--Recording observation well. Nearby pumping well.

PERIOD OF RECORD.--June 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 20.91 ft (6.37 m) below land-surface datum, Nov. 27, 1985; lowest water level recorded, 25.02 ft (7.63 m) below land-surface datum, Aug. 22, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.84	23.18	22.00	21.87	---	---	---	23.98	23.38	21.72	21.64	22.33
2	23.87	23.18	22.05	21.86	---	---	---	23.98	23.38	21.68	21.56	22.34
3	23.91	23.19	22.04	21.85	---	---	---	23.96	23.39	21.66	21.56	22.35
4	23.94	23.11	22.03	21.87	---	---	---	23.94	23.32	21.69	21.57	22.36
5	23.95	23.10	22.03	21.88	---	---	---	23.94	23.28	21.67	21.56	22.40
6	23.96	23.05	22.01	21.88	---	---	---	23.94	23.26	21.64	21.62	22.44
7	24.00	23.01	21.97	21.89	---	---	---	23.94	23.24	21.62	21.74	22.47
8	24.07	22.93	21.94	21.91	---	---	---	23.94	23.24	21.61	21.72	22.56
9	24.10	22.85	21.92	21.93	---	---	---	23.89	23.22	21.52	21.68	22.32
10	24.11	22.72	21.97	21.93	---	---	---	23.88	23.19	21.49	21.65	22.20
11	24.13	22.72	22.01	21.92	---	---	---	23.88	22.93	21.49	21.70	22.20
12	24.13	22.72	22.03	21.97	---	---	---	23.88	22.83	21.51	21.75	22.23
13	24.12	22.63	22.04	21.99	---	---	---	23.83	22.74	21.52	21.76	22.22
14	24.11	22.75	22.01	21.96	---	---	---	23.80	22.69	21.58	21.81	22.26
15	24.10	22.71	21.99	21.90	---	---	---	23.79	22.64	21.48	21.92	22.27
16	24.11	22.65	21.96	21.87	---	---	---	23.81	22.54	21.45	21.81	22.36
17	24.12	22.60	21.96	21.86	---	---	---	23.79	22.50	21.45	21.82	22.35
18	24.12	22.54	21.95	21.89	---	---	---	23.82	22.41	21.42	21.65	22.43
19	24.15	22.42	21.90	21.87	---	---	---	23.84	22.40	21.36	21.62	22.71
20	24.12	22.34	21.95	---	---	---	---	23.82	22.37	21.32	21.59	22.78
21	24.20	22.29	21.91	---	---	---	---	23.78	22.18	21.28	21.87	22.84
22	24.23	22.22	21.84	---	---	---	---	23.71	22.01	21.30	21.86	22.92
23	24.20	22.17	21.93	---	---	---	---	23.66	21.94	21.34	21.84	22.96
24	24.19	22.22	21.97	---	---	---	---	23.63	21.98	21.37	21.90	22.86
25	24.18	22.24	21.95	---	---	---	---	23.61	21.95	21.35	21.97	22.86
26	23.97	22.19	21.92	---	---	---	---	23.47	21.91	21.32	22.05	22.86
27	23.63	22.12	21.93	---	---	---	---	23.44	21.85	21.32	22.02	22.86
28	23.47	22.06	22.02	---	---	---	---	23.95	23.45	21.81	21.33	22.22
29	23.38	22.08	21.96	---	---	---	---	24.01	23.44	21.79	21.34	22.23
30	23.31	22.04	21.91	---	---	---	---	24.03	23.42	21.74	21.38	22.25
31	23.25	---	21.91	---	---	---	---	23.39	---	21.42	22.29	---
LOW	24.23	23.19	22.05	---	---	---	---	23.98	23.39	21.72	22.29	23.10
HIGH	23.25	22.04	21.84	---	---	---	---	23.39	21.74	21.28	21.56	22.20



GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174243064475100. Local number, 3.

LOCATION.--Lat 17°42'43", long 64°47'51".

Owner: U.S. Government, Virgin Islands Government.

Name: Golden Grove-6 (PW6).

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in (0.20 m), cased 8 in (0.20 m).

DATUM.--Elevation of land-surface datum is about 40 ft (12.2 m) above mean sea level, from topographic map.

Measuring point: Upper edge of hole at 8 in (0.20 m) casing, 4.20 ft (1.28 m) above land-surface datum.

REMARKS.--Recording observation well.

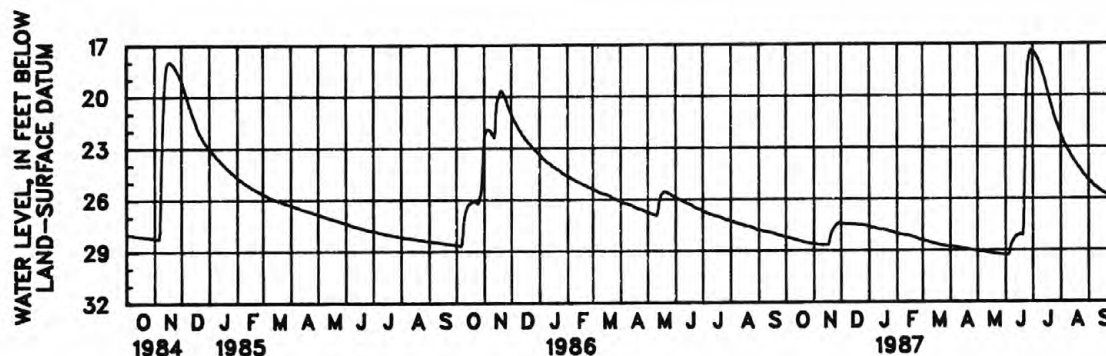
PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 14.76 ft (4.50 m) below land-surface datum, Mar. 25, 1982; lowest water level recorded, 29.27 ft (8.90 m) below land-surface datum, May 30-31, June 1-5, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.20	28.61	27.38	27.60	28.01	28.40	28.77	29.05	29.27	17.40	22.24	24.91
2	28.21	28.62	27.40	27.62	28.03	28.41	28.78	29.05	29.27	17.48	22.38	24.98
3	28.22	28.62	27.42	27.64	28.04	28.42	28.79	29.06	29.27	17.54	22.52	25.03
4	28.23	28.63	27.43	27.65	28.05	28.44	28.79	29.07	29.27	17.61	22.61	25.08
5	28.24	28.64	27.44	27.66	28.06	28.46	28.80	29.07	29.18	17.74	22.76	25.14
6	28.26	28.64	27.45	27.67	28.07	28.47	28.81	29.07	28.91	17.81	22.87	25.20
7	28.28	28.65	27.46	27.68	28.08	28.49	28.82	29.08	28.69	17.91	22.96	25.25
8	28.29	28.66	27.46	27.70	28.08	28.50	28.83	29.08	28.54	18.05	23.04	25.31
9	28.31	28.66	27.47	27.73	28.09	28.52	28.84	29.08	28.44	18.19	23.19	25.34
10	28.33	28.67	27.47	27.74	28.10	28.53	28.85	29.11	28.35	18.34	23.26	25.38
11	28.34	28.67	27.47	27.75	28.10	28.55	28.86	29.13	28.27	18.50	23.35	25.41
12	28.36	28.67	27.47	27.76	28.11	28.57	28.87	29.14	28.21	18.67	23.46	25.45
13	28.38	28.67	27.47	27.76	28.12	28.58	28.88	29.15	28.16	18.85	23.56	25.51
14	28.39	28.67	27.48	27.77	28.13	28.60	28.89	29.16	28.13	19.03	23.63	25.55
15	28.40	28.67	27.48	27.77	28.15	28.61	28.90	29.17	28.10	19.24	23.72	25.58
16	28.42	28.67	27.48	27.78	28.17	28.62	28.90	29.18	28.08	19.44	23.80	25.63
17	28.43	28.67	27.48	27.79	28.18	28.64	28.91	29.18	28.07	19.65	23.87	25.67
18	28.45	28.67	27.48	27.80	28.20	28.65	28.92	29.19	28.07	19.86	23.94	25.68
19	28.46	28.20	27.49	27.81	28.22	28.67	28.93	29.20	28.08	20.11	24.03	25.70
20	28.48	28.01	27.49	27.83	28.23	28.68	28.94	29.20	28.10	20.29	24.10	25.73
21	28.50	27.87	27.50	27.83	28.25	28.69	28.95	29.21	27.49	20.49	24.18	25.76
22	28.51	27.79	27.50	27.85	28.28	28.71	28.96	29.22	25.02	20.66	24.23	25.81
23	28.52	27.68	27.50	27.87	28.29	28.71	28.97	29.23	22.08	20.86	24.30	25.83
24	28.54	27.61	27.51	27.89	28.31	28.72	28.98	29.23	20.03	21.09	24.40	25.89
25	28.55	27.55	27.51	27.90	28.33	28.73	28.99	29.24	18.74	21.24	24.47	25.92
26	28.56	27.49	27.52	27.92	28.35	28.73	29.00	29.25	18.06	21.40	24.55	25.94
27	28.57	27.46	27.53	27.94	28.37	28.74	29.01	29.25	17.72	21.54	24.61	25.96
28	28.58	27.40	27.53	27.95	28.39	28.75	29.02	29.26	17.51	21.69	24.66	25.98
29	28.59	27.37	27.57	27.96	---	28.75	29.03	29.26	17.40	21.83	24.74	25.99
30	28.60	27.38	27.58	27.98	---	28.76	29.04	29.26	17.38	21.97	24.80	26.03
31	28.61	---	27.59	27.99	---	28.77	---	29.27	---	22.11	24.87	---
LOW	28.61	28.67	27.59	27.99	28.39	28.77	29.04	29.27	29.27	22.11	24.87	26.03
HIGH	28.20	27.37	27.38	27.60	28.01	28.40	28.77	29.05	17.38	17.40	22.24	24.91

WTR YR 1987 MEAN 26.8 LOW 29.27 HIGH 17.38



GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174245064475800. Local number, 4.

LOCATION.--Lat 17°42'45", long 64°47'58".

Owner: Virgin Islands Government.

Name: Golden Grove - 1 (PW1).

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m),

0-104 ft (0-31.70 m), perforated 64-104 ft (19.51-31.70 m). Depth 104 ft (31.70).

DATUM.--Elevation of land-surface datum is about 40 ft (12.2 m) above mean sea level, from topographic map.

Measuring point: Lower edge of 1 in. (0.02 m) pipe at pump base, 3.40 ft (1.04 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--January 1983 to current year.

EXTREMES FOR PERIOD OF RECORD: Highest water level measured, 23.09 ft (7.04 m) below land-surface datum, May 18 1983; lowest water level measured, a58.30 ft (17.77 m) below land-surface datum, September 27, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	a54.06	Apr. 27	a54.65	June 17	a57.23

a Pumping.

GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174303064484400. Local number, 6.

LOCATION.--Lat 17°43'03", long 64°48'44".

Owner: U.S. Government, Virgin Islands Government.

Name: Adventure 28.

AQUIFER.--Alluvium of Pleistocene age and marl of Oligocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m), cased 4 in (0.10 m). Depth 97 ft (29.6 m).

DATUM.--Elevation of land-surface datum is about 80 ft (24.39 m) above mean sea level, from topographic map.

Measuring point: Upper edge of hole at 4 in (0.10 m) casing, 2.00 ft (0.61 m) above land-surface datum. Prior June 20, 1983, top of 4 in (0.10 m) casing, 0.90 ft (0.27 m) above land-surface datum.

REMARKS.--Recording observation well.

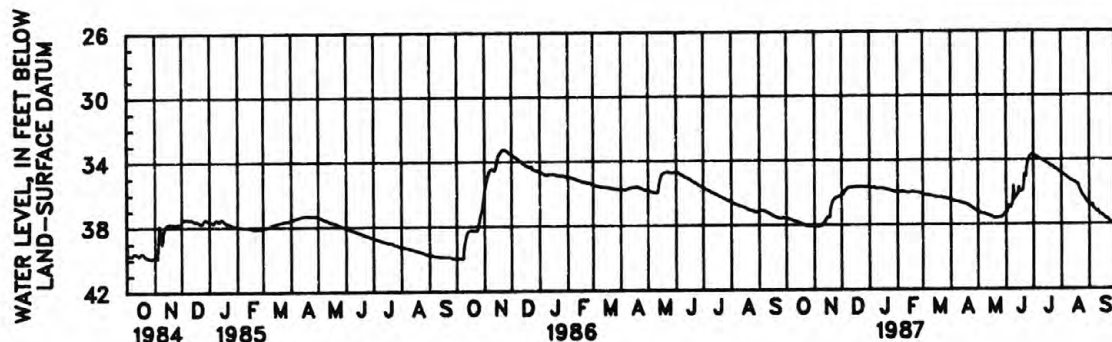
PERIOD OF RECORD.--August 1973 to March 1974, discontinued. March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 24.90 ft (7.59 m) below land-surface datum, Mar. 25, 1982; lowest water level recorded, 40.18 ft (12.25 m) below land-surface datum, Aug. 5, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37.54	38.07	36.19	35.65	35.96	36.10	36.44	37.19	37.27	33.67	34.82	36.74
2	37.55	38.07	35.95	35.66	35.96	36.12	36.47	37.22	37.23	33.71	34.87	36.74
3	37.58	38.08	36.09	35.68	35.96	36.13	36.50	37.26	37.05	33.75	34.92	36.81
4	37.61	38.09	35.96	35.69	35.96	36.14	36.52	37.28	36.80	33.78	34.95	36.88
5	37.62	38.09	35.86	35.68	35.95	36.15	36.53	37.30	36.92	33.84	34.97	36.78
6	37.65	38.09	35.80	35.67	35.94	36.17	36.55	37.32	36.92	33.88	35.04	37.01
7	37.66	38.07	35.74	35.69	35.94	36.18	36.55	37.32	36.79	33.90	35.09	37.05
8	37.69	38.03	35.71	35.72	35.94	36.18	36.56	37.33	36.67	33.94	35.13	37.12
9	37.71	38.03	35.68	35.73	35.97	36.19	36.57	37.35	35.61	33.98	35.17	37.17
10	37.73	37.90	35.67	35.72	35.98	36.20	36.58	37.38	36.41	34.00	35.21	37.22
11	37.75	37.90	35.66	35.72	35.99	36.21	36.61	37.40	36.34	34.01	35.25	37.15
12	37.78	37.85	35.66	35.73	35.99	36.23	36.63	37.42	36.23	34.06	35.29	37.31
13	37.80	37.76	35.65	35.72	35.99	36.24	36.65	37.44	36.13	34.10	35.30	37.37
14	37.81	37.63	35.64	35.73	36.00	36.25	36.67	37.46	36.08	34.14	35.34	37.37
15	37.83	37.56	35.64	35.73	35.98	36.27	36.68	37.48	35.70	34.17	35.37	37.40
16	37.86	37.52	35.63	35.74	35.97	36.28	36.69	37.52	35.95	34.21	35.40	37.46
17	37.88	37.48	35.62	35.75	35.96	36.28	36.71	37.54	35.95	34.25	35.44	37.49
18	37.90	37.48	35.62	35.77	35.96	36.28	36.73	37.57	35.93	34.27	35.47	37.53
19	37.92	36.95	35.62	35.79	35.98	36.28	36.77	37.59	35.91	34.33	35.52	37.61
20	37.95	36.73	35.62	35.81	35.98	36.28	36.79	37.59	35.79	34.39	35.54	37.66
21	37.97	36.55	35.62	35.81	35.99	36.28	36.79	37.59	34.90	34.41	35.73	37.65
22	38.01	36.45	35.62	35.81	35.99	36.28	36.85	37.57	34.85	34.41	35.89	37.70
23	38.04	36.38	35.62	35.83	36.01	36.31	36.90	37.57	35.05	34.45	36.00	37.78
24	38.06	36.33	35.63	35.86	36.01	36.34	36.94	37.55	34.40	34.51	36.14	37.83
25	38.06	36.29	35.63	35.87	36.02	36.35	36.98	37.55	34.13	34.55	36.23	37.85
26	38.06	36.26	35.63	35.89	36.04	36.35	37.02	37.55	33.94	34.59	36.30	37.89
27	38.07	36.24	35.63	35.92	36.05	36.36	37.05	37.53	33.80	34.63	36.38	37.93
28	38.07	36.22	35.63	35.94	36.07	36.39	37.09	37.49	33.74	34.66	36.46	37.96
29	38.07	36.21	35.63	35.95	---	36.40	37.12	37.45	33.69	34.70	36.54	37.99
30	38.07	36.19	35.63	35.97	---	36.41	37.16	37.35	33.68	34.75	36.62	38.01
31	38.07	---	35.63	35.97	---	36.43	---	37.30	---	34.80	36.67	---
LOW	38.07	38.09	36.19	35.97	36.07	36.43	37.16	37.59	37.27	34.80	36.67	38.01
HIGH	37.54	36.19	35.62	35.65	35.94	36.10	36.44	37.19	33.68	33.67	34.82	36.74

WTR YR 1987 MEAN 36.3 LOW 38.09 HIGH 33.67



GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174525064460600. Local number, 7.

LOCATION.--Lat 17°45'25", long 64°46'06".

Owner: Virgin Islands Government.

Name: Concordia 14.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Depth 85 ft (25.91 m).

DATUM.--Elevation of land-surface datum is about 40 ft (12.2 m) above mean sea level, from topographic map.

Measuring point: Top of 0.50 in (0.01 m) pipe on top of pump concrete base, 2.30 ft (0.70 m) above

land-surface datum.

REMARKS.--Observation well. Water levels affected by pumpage.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.54 ft (3.82 m) below land-surface datum, June 17, 1987; lowest water level measured, 41.75 ft (12.73 m) below land-surface datum, Feb. 24, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	21.46	Apr. 27	28.72	June 17	12.54

174527064460100. Local number, 8.

LOCATION.--Lat 17°45'27", long 64°46'01".

Owner: Virgin Islands Government.

Name: Concordia 1 (Main pump house).

AQUIFER.--Limestone of Tertiary Age.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Depth 82 ft (25.0 m).

DATUM.--Elevation of land-surface datum is about 40 ft (12.2 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 2.20 ft (0.67 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumpage.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.68 ft (5.08 m) below land-surface datum, Nov. 13, 1984; lowest water level measured, 28.39 ft (8.66 m) below land-surface datum, Dec. 8, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	23.86	Apr. 27	25.57	June 17	24.81

a Pumping.

GROUND-WATER LEVELS

ST. CROIX, U.S. VIRGIN ISLANDS

174532064460300. Local number, 9.

LOCATION.--Lat 17°45'32", long 64°46'03".

Owner: Virgin Islands Government.

Name: Concordia 7.

AQUIFER.--Limestone of Tertiary Age.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 6 in (0.15 m), cased 0-81 ft (0-24.7 m).

Depth 81 ft (24.7 m).

DATUM.--Elevation of land-surface datum is 35 ft (10.7 m) above mean sea level, from topographic map.

Measuring point: Hole in pump base, 2.20 ft (0.67 m) above land-surface datum. Previous to Mar. 25, 1982,

hole in pump base 2.50 ft (0.76 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--June 1962 to October 1968, discontinued. March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.75 ft (0.53 m) below land-surface datum, May 11, 1966; lowest water level measured, 57.40 ft (17.5 m) below land-surface datum, Mar. 5, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	a32.13	Apr. 27	12.24	June 17	a13.58

174329064454700. Local number, 10.

LOCATION.--Lat 17°43'29", long 64°45'47".

Owner: Virgin Islands Government.

Name: Barren Spot 5 (PWD-5).

AQUIFER.--Alluvium and marl.

WELL CHARACTERISTICS.--Drilled production water-table well, diameter 6 in (0.15 m), cased 0-130 ft (0-39.63 m), perforated 71-130 ft (21.64-39.63 m). Depth 130 ft (39.63 m).

DATUM.--Elevation of land-surface datum is about 75 ft (22.86 m) above mean sea level, from topographic map.

Measuring point: Hole on top of pump base, 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 61.86 ft (18.86 m) below land-surface datum, Mar. 26, 1982; lowest water level measured, a75.52 ft (a23.02 m) below land-surface datum, Sept. 8, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 20	65.57	Apr. 27	a70.36	June 17	a70.21

a Pumping.

GROUND-WATER LEVELS

ST. THOMAS, U.S. VIRGIN ISLANDS

182050064580400. Local number, 1.

LOCATION.--Lat 18°20'50", Long 64°58'04".

Owner: U.S. Government, Virgin Islands Government.

Name: USGS-8 (Family well - Thatch Farm).

AQUIFER.--Volcanic rocks of Cretaceous age.

WELL CHARACTERISTICS.--Drilled water-table production well, diameter 6 in (0.15 m), cased 6 in (0.15 m) 0-25 ft (0-7.62 m), open hole 25-80 ft (7.62-24.4 m). Depth 80 ft (24.4 m).

DATUM.--Elevation of land-surface datum is 80 ft (24.4 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 2.50 ft (0.76 m) above land-surface datum. Prior to Mar. 23,

1982, top of 6 in (0.15 m) casing, 1.30 ft (0.40 m) above land-surface datum.

REMARKS.--Non-potable public-water supply and observation well.

PERIOD OF RECORD.--October 1963 to August 1969, discontinued, March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.33 ft (0.71 m) below land-surface datum, Nov. 20, 1984; lowest water level measured, a57.94 ft (17.66 m) below land-surface datum, Jan. 21, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 21	a57.94	Apr. 28	56.87	June 17	14.30

182138064543100. Local number, 2.

LOCATION.--Lat 18°21'38", Long 64°54'31".

Owner: Mahogany Run Resort.

Name: Mahogany 15.

AQUIFER.--Fractured rocks.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 145 ft (44.21 m).

DATUM.--Elevation of land-surface datum is 120 ft (36.6 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 1.20 ft (0.36 m) below land-surface datum.

REMARKS.--Observation well. Water levels affected by nearby pumping well.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.45 ft (3.79 m) below land-surface datum, July 1, 1986; lowest water level measured, 88.62 ft (27.01 m) below land-surface datum, Oct. 4, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 21	35.66	Apr. 30	43.94	June 18	13.85

182138064542500. Local number, 3.

LOCATION.--Lat 18°21'38", Long 64°54'25".

Owner: Mahogany Run Resort.

Name: Mahogany 16.

AQUIFER.--Fractured rocks.

WELL CHARACTERISTICS.--Drilled water-table production well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 145 ft (44.21 m).

DATUM.--Elevation of land-surface datum is 130 ft (39.6 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 1.30 ft (0.40 m) below land-surface datum.

REMARKS.--Water levels affected by nearby pumping well.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.52 ft (5.34 m) below land-surface datum, July 1, 1986; lowest water level measured, a103.85 ft (31.65 m) below land-surface datum, Oct. 4, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 21	a67.40	Apr. 30	a63.74	June 18	19.17

a Pumping.

GROUND-WATER LEVELS

ST. THOMAS, U.S. VIRGIN ISLANDS

182136064541900. Local number, 4.

LOCATION.--Lat 18°21'36", long 64°54'19".

Owner: Mahogany Run Resort

Name: Mahogany 17.

AQUIFER.--Fractured rock.

WELL CHARACTERISTICS.--Drilled water-table production well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Depth 145 ft (44.21 m).

DATUM.--Elevation of land-surface datum is 140 ft (42.7 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing at land-surface datum.

REMARKS.--Public water supply. Water levels affected by nearby pumping well.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.49 ft (5.33 m) below land-surface datum, Dec. 11 1985; lowest water level measured, a60.40 ft (18.41 m) below land-surface datum, Sept. 10, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 21	39.32	Apr. 30	41.49	June 18	20.02

182029064535200. Local number, 5.

LOCATION.--Lat 18°20'29", long 64°53'52".

Owner: Virgin Islands Government, V.I. Housing Authority.

Name: Donoe 3.

AQUIFER.--Volcanic rock undifferentiated. Fracture at 165 ft (50.3 m), from drilling log.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 0-20 ft (0-6.10 m), open hole 20-400 ft (6.10-122 m). Depth 400 ft (122 m).

DATUM.--Elevation of land-surface datum is about 235 ft (71.6 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 2.30 ft (0.70 m) above land-surface datum.

REMARKS.--Observation well.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.24 ft (16.53 m) below land-surface datum, Nov. 20, 1984; lowest water level measured, 90.98 ft (27.73 m) below land-surface datum, Apr. 30, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 21	39.32	Apr. 30	85.37	June 18	66.95

a Pumping.

GROUND-WATER LEVELS

ST. THOMAS, U.S. VIRGIN ISLANDS

182038064550300. Local number, 6.

LOCATION.--Lat 18°20'38", long 64°55'03".

Owner: U.S. Government, Virgin Islands Government.

Name: Grade School 3.

AQUIFER.--Volcanic breccia.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 70 ft (21.3 m).

DATUM.--Elevation of land-surface datum is about 60 ft (18.3 m) above mean sea level, from topographic map.

Measuring point: Top of 0.5 in (0.01 m) hole at 6 in (0.15 m) casing, 1.30 ft (0.40 m) above land-surface datum.

Prior to June 27, 1983, top of 6 in (0.15 m) casing, 2.90 ft (0.88 m) above land-surface datum.

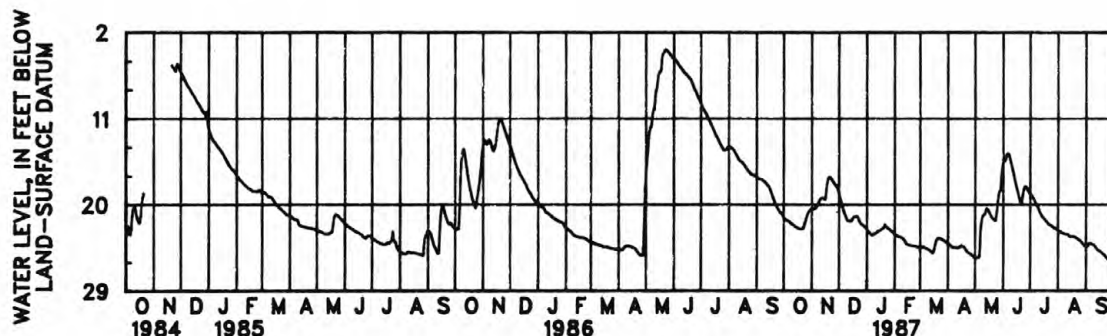
REMARKS.--Recording observation well.

PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 3.72 ft (1.13 m) below land-surface datum, May 22, 1986; lowest water level recorded, 35.38 ft (10.79 m) below land-surface datum, July 21, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.34	20.43	18.85	22.59	23.06	24.44	24.02	25.51	15.62	18.89	22.68	24.40
2	21.43	20.42	19.26	22.74	23.13	24.42	24.11	25.53	15.39	18.97	22.73	24.38
3	21.52	20.43	19.62	22.83	23.20	24.41	24.19	25.54	15.42	19.11	22.79	24.24
4	21.59	20.39	19.94	22.93	23.25	24.41	24.27	25.52	15.17	19.27	22.87	24.10
5	21.64	20.35	20.24	23.01	23.29	24.42	24.36	25.52	14.75	19.40	22.94	24.03
6	21.70	20.29	20.57	23.09	23.33	24.47	24.42	25.31	14.61	19.57	22.96	24.03
7	21.76	20.11	20.86	23.15	23.38	24.52	24.46	22.74	14.71	19.79	22.98	24.09
8	21.84	19.90	21.14	23.06	23.41	24.59	24.48	21.83	14.97	19.97	23.04	24.14
9	21.93	19.62	21.38	23.01	23.45	24.63	24.47	21.33	15.29	20.15	23.06	24.16
10	21.99	19.44	21.57	22.99	23.50	24.67	24.48	21.10	15.69	20.31	23.06	24.22
11	22.05	19.34	21.66	22.91	23.63	24.73	24.50	21.01	16.10	20.56	23.06	24.36
12	22.13	19.29	21.69	22.82	23.78	24.80	24.51	20.94	16.55	20.81	23.09	24.49
13	22.20	19.30	21.70	22.74	23.93	24.86	24.49	20.55	17.01	20.98	23.21	24.63
14	22.28	19.36	21.71	22.68	24.08	24.97	24.44	20.41	17.43	21.15	23.32	24.72
15	22.34	19.41	21.63	22.69	24.17	25.04	24.32	20.47	17.88	21.29	23.36	24.79
16	22.39	19.40	21.45	22.63	24.21	24.83	24.25	20.62	18.26	21.39	23.33	24.84
17	22.46	18.58	21.32	22.54	24.21	24.54	24.34	20.82	18.66	21.50	23.32	24.90
18	22.49	17.72	21.24	22.48	24.23	24.04	24.37	21.00	19.03	21.61	23.35	24.99
19	22.51	17.24	21.21	22.41	24.26	23.72	24.47	21.21	19.38	21.72	23.35	25.07
20	22.52	17.09	21.20	22.33	24.29	23.54	24.60	21.35	19.70	21.82	23.38	25.16
21	22.52	17.11	21.19	22.00	24.30	23.48	24.75	21.47	19.91	21.96	23.43	25.25
22	22.48	17.22	21.30	22.23	24.31	23.46	24.85	21.56	19.61	22.04	23.50	25.35
23	22.32	17.35	21.51	22.31	24.31	23.48	24.97	21.62	18.84	22.09	23.57	25.46
24	22.00	17.50	21.72	22.39	24.32	23.53	25.04	21.57	18.32	22.14	23.67	25.55
25	21.67	17.66	21.91	22.48	24.36	23.61	25.07	20.77	18.12	22.20	23.74	25.64
26	21.35	17.81	22.00	22.54	24.43	23.67	25.13	19.62	18.10	22.27	23.80	25.74
27	21.08	17.94	22.06	22.63	24.46	23.72	25.21	18.91	18.21	22.34	23.90	25.80
28	20.83	18.07	22.14	22.71	24.45	23.79	25.33	18.59	18.39	22.40	24.02	25.85
29	20.65	18.21	22.22	22.80	---	23.83	25.41	18.48	18.64	22.48	24.15	25.90
30	20.53	18.49	22.32	22.89	---	23.89	25.48	17.10	18.82	22.55	24.27	25.94
31	20.46	---	22.44	22.99	---	23.96	---	16.24	---	22.62	24.37	---
LOW	22.52	20.43	22.44	23.15	24.46	25.04	25.48	25.54	19.91	22.62	24.37	25.94
HIGH	20.46	17.09	18.85	22.00	23.06	23.46	24.02	16.24	14.61	18.89	22.68	24.03
WTR YR 1987	MEAN 22.1	LOW 25.94	HIGH 14.61									



GROUND-WATER LEVELS

ST. JOHN, U.S. VIRGIN ISLANDS

182010064472600. Local number, 1.

LOCATION.--Lat 18°20'10", long 64°47'26".

Owner: U.S. Government, National Park Services.

Name: NPS-2 (Cruz Bay).

AQUIFER.--Volcanic rocks of Cretaceous Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), 4 in (0.10 m) cased, 0-20 ft (0-6.10 m), open hole 20-99 ft (6.10-30.2 m). Depth 99 ft (30.2 m).

DATUM.--Elevation of land-surface datum is 60 ft (18.3 m) above mean sea level, from topographic map.

Measuring point: Top of 4 in (0.10 m) casing, 4.10 ft (1.25 m) above old land-surface datum after 1.40 ft (0.43 m) land fill and 2.70 ft (0.82 m) casing extension occurred. Prior to June 29, 1983, top of 4 in (0.10 m) casing, 1.40 ft (0.43 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping nearby well.

PERIOD OF RECORD.--May 1964, discontinued. June 30, 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +1.41 ft (0.43 m) below land-surface datum, May 1, 1986; lowest water level measured, 42.56 ft (12.98 m) below land-surface datum, Aug. 30, 1967.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	26.15	Apr. 29	33.37	June 18	20.04

182109064460300. Local number, 2.

LOCATION.--Lat 18°21'09", long 64°46'03".

Owner: U.S. Government, National Park Service.

Name: NPS-5 (Trunk Bay).

AQUIFER.--Volcanic rocks of Cretaceous Age.

WELL CHARACTERISTICS.--Drilled water-table production well, diameter 6 in (0.15 m), cased 0-12 ft (0-3.66 m), open hole 12-60 ft (3.66-18.3 m). Depth 60 ft (18.3 m).

DATUM.--Elevation of land-surface datum is 60 ft (18.3 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 0.70 ft (0.21 m) above land-surface datum. Prior to Mar. 24, 1982 top of 6 in (0.15 m) casing, 1.00 ft (0.30 m) above land-surface datum.

REMARKS.--Active water supply well for recreation facilities at Trunk Bay.

PERIOD OF RECORD.--August 1964 to December 1969, discontinued. March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.83 ft (3.91 m) below land-surface datum, Jan. 24, 1985; lowest water level measured, 57.29 ft (17.47 m) below land-surface datum, Nov. 27, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level
Jan. 22	a35.96

a Pumping.

+ Above land-surface datum.

GROUND-WATER LEVELS

ST. JOHN, U.S. VIRGIN ISLANDS

182116064451000. Local number, 3.

LOCATION.--Lat 18°21'16", long 64°45'10".

Owner: U.S. Government, National Park Service.

Name: NPS-6 (Cinnamon Bay).

AQUIFER.--Volcanic rocks of Cretaceous Age.

WELL CHARACTERISTICS.--Drilled water-table production well, diameter 6-in (0.15 m), cased 0-51 ft (0-15.55 m), open hole 51-70 ft (15.55-21.34 m). Depth 70 ft (21.34 m).

DATUM.--Elevation of land-surface datum is about 60 ft (18.3 m) above mean sea level, from topographic map.

Measuring point: Hole on 6 in (0.15 m) casing, 2.00 ft (0.61 m) above land-surface datum. Prior to June 29,

1983, top of 6 in (0.15 m) casing at land-surface datum.

REMARKS.--Abandoned as production well. Recording observation well.

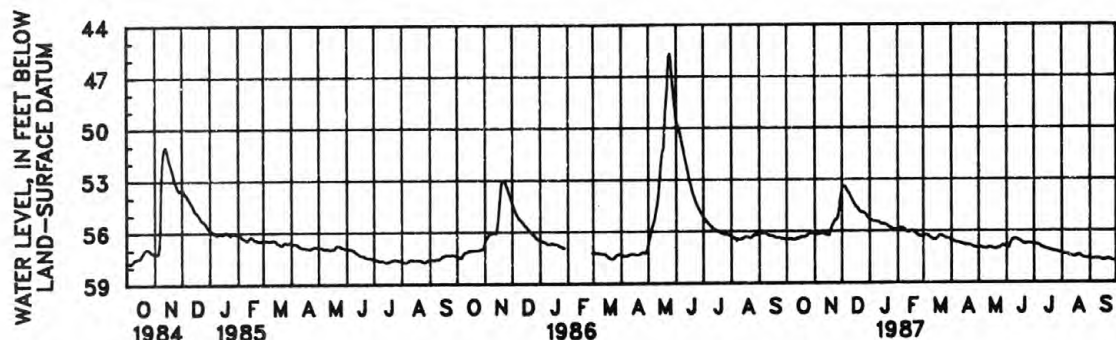
PERIOD OF RECORD.--August 1964 to December 1969, discontinued. March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 41.12 ft (12.54 m) below land-surface datum, Aug. 15, 1969; lowest water level recorded, 63.15 ft (19.25 m) below land-surface datum, July 1, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56.46	56.12	53.58	55.29	55.87	56.26	56.53	56.96	56.89	56.75	57.30	57.60
2	56.46	56.14	53.42	55.33	55.85	56.25	56.56	56.94	56.92	56.77	57.32	57.62
3	56.45	56.16	53.39	55.37	55.84	56.22	56.59	56.94	56.94	56.78	57.33	57.63
4	56.44	56.16	53.40	55.40	55.83	56.22	56.60	56.94	56.91	56.78	57.34	57.63
5	56.43	56.15	53.46	55.42	55.82	56.22	56.62	56.97	56.74	56.79	57.34	57.63
6	56.43	56.13	53.55	55.42	55.82	56.25	56.64	56.99	56.62	56.81	57.34	57.62
7	56.45	56.12	53.65	55.43	55.85	56.30	56.65	56.99	56.54	56.83	57.37	57.61
8	56.46	56.11	53.74	55.45	55.90	56.35	56.66	56.99	56.49	56.86	57.39	57.61
9	56.47	56.10	53.81	55.45	55.94	56.40	56.66	57.01	56.46	56.91	57.40	57.61
10	56.47	56.10	53.93	55.45	56.00	56.42	56.68	57.01	56.45	56.93	57.42	57.61
11	56.44	56.12	54.02	55.46	56.04	56.44	56.70	56.99	56.45	56.95	57.45	57.61
12	56.42	56.14	54.11	55.50	56.05	56.48	56.72	56.97	56.46	56.98	57.46	57.63
13	56.39	56.17	54.22	55.54	56.05	56.50	56.73	56.94	56.48	57.00	57.47	57.64
14	56.39	56.19	54.33	55.57	56.01	56.50	56.76	56.94	56.52	57.03	57.48	57.66
15	56.36	56.20	54.41	55.59	55.99	56.46	56.76	56.95	56.56	57.05	57.50	57.70
16	56.35	56.21	54.51	55.60	55.97	56.43	56.79	56.98	56.59	57.06	57.48	57.71
17	56.31	56.19	54.58	55.60	55.97	56.38	56.81	57.00	56.63	57.07	57.44	57.70
18	56.31	56.04	54.63	55.60	55.98	56.31	56.80	57.01	56.65	57.09	57.42	57.68
19	56.29	55.82	54.69	55.63	56.05	56.28	56.79	57.03	56.69	57.11	57.40	57.65
20	56.31	55.68	54.76	55.66	56.09	56.26	56.80	57.04	56.72	57.12	57.40	57.63
21	56.31	55.56	54.83	55.70	56.13	56.26	56.81	57.03	56.75	57.14	57.41	57.63
22	56.29	55.48	54.87	55.73	56.18	56.27	56.83	57.00	56.75	57.15	57.46	57.63
23	56.25	55.39	54.89	55.77	56.22	56.30	56.85	56.96	56.72	57.16	57.51	57.65
24	56.19	55.32	54.91	55.80	56.25	56.34	56.87	56.93	56.71	57.17	57.53	57.69
25	56.15	55.27	54.92	55.83	56.30	56.38	56.91	56.91	56.71	57.19	57.56	57.71
26	56.12	55.21	54.95	55.85	56.31	56.41	56.92	56.88	56.71	57.20	57.57	57.73
27	56.11	55.06	54.98	55.87	56.30	56.41	56.93	56.85	56.72	57.21	57.57	57.74
28	56.11	54.73	55.05	55.89	56.29	56.42	56.95	56.84	56.73	57.23	57.59	57.75
29	56.11	54.25	55.12	55.91	---	56.43	56.96	56.84	56.74	57.25	57.59	57.76
30	56.11	53.85	55.19	55.91	---	56.45	56.97	56.86	56.74	57.27	57.59	57.78
31	56.11	---	55.24	55.90	---	56.50	---	56.88	---	57.28	57.59	---
LOW	56.47	56.21	55.24	55.91	56.31	56.50	56.97	57.04	56.94	57.28	57.59	57.78
HIGH	56.11	53.85	53.39	55.29	55.82	56.22	56.53	56.84	56.45	56.75	57.30	57.60

WTR YR 1987 MEAN 56.4 LOW 57.78 HIGH 53.39



GROUND-WATER LEVELS

ST. JOHN, U.S. VIRGIN ISLANDS

182042066454500. Local number, 5.

LOCATION.--Lat 18°20'42", long 66°45'45".

Owner: Virgin Islands Government.

Name: DPW-6. (Sussanaberg)

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Sounded depth 70 ft (21.3 m).

DATUM.--Elevation of land-surface datum is about 640 ft (195 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 1.60 ft (0.49 m) above land-surface datum. Prior to June 28, 1983, top of 6 in (0.15 m) casing, 1.30 ft (0.40 m) above land-surface datum.

REMARKS.--Recording observation well.

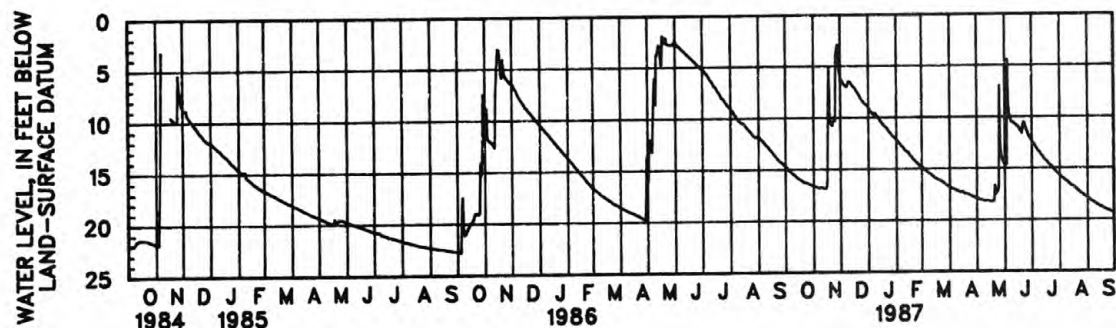
PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.33 ft (0.40 m) below land-surface datum, May 18, 1986; lowest water level recorded, 22.78 ft (6.94 m) below land-surface datum, Oct. 5, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.73	16.60	6.30	9.07	12.18	14.80	16.75	17.89	14.58	12.36	15.71	17.90
2	14.78	16.63	6.29	9.17	12.28	14.83	16.83	17.92	14.61	12.50	15.78	17.97
3	14.81	16.67	6.47	9.34	12.39	15.04	16.87	17.96	14.62	12.66	15.88	18.03
4	15.01	16.69	6.59	9.46	12.52	15.08	16.91	17.99	4.38	12.76	15.94	18.08
5	15.11	16.74	6.72	9.55	12.61	15.14	16.96	18.03	8.80	12.93	15.99	18.16
6	15.17	16.77	6.85	9.65	12.71	15.21	16.99	18.06	9.71	13.04	16.07	18.20
7	15.26	16.81	6.92	9.73	12.82	15.29	17.03	18.05	10.17	13.17	16.14	18.28
8	15.34	16.80	6.98	9.57	12.91	15.35	17.06	18.07	10.40	13.31	16.23	18.33
9	15.42	16.74	6.77	9.67	13.03	15.41	17.11	18.10	10.52	13.42	16.28	18.39
10	15.48	16.75	6.46	9.80	13.14	15.49	17.14	18.15	10.53	13.53	16.35	18.46
11	15.56	16.79	6.50	9.92	13.22	15.55	17.20	18.15	10.61	13.67	16.43	18.51
12	15.64	16.82	6.56	10.06	13.28	15.62	17.26	18.10	10.67	13.79	16.53	18.55
13	15.71	16.83	6.69	10.18	13.38	15.70	17.28	18.10	10.74	13.90	16.60	18.61
14	15.77	16.83	6.84	10.31	13.45	15.75	17.27	18.13	10.82	14.04	16.66	18.66
15	15.86	16.83	6.96	10.43	13.56	15.83	17.25	18.16	10.92	14.15	16.72	18.72
16	15.92	16.34	7.01	10.55	13.69	15.88	17.28	18.19	10.99	14.23	16.75	18.76
17	15.96	9.63	7.14	10.64	13.78	15.93	17.32	18.20	11.11	14.33	16.83	18.80
18	16.02	4.93	7.25	10.75	13.88	15.97	17.38	18.20	11.30	14.39	16.90	18.85
19	16.09	9.55	7.42	10.85	14.01	16.03	17.42	18.20	11.41	14.51	16.99	18.90
20	16.15	10.52	7.57	10.93	14.11	16.07	17.45	18.10	11.57	14.62	17.06	18.95
21	16.21	10.71	7.71	11.01	14.17	16.10	17.48	16.61	10.90	14.72	17.14	19.00
22	16.26	10.76	7.86	11.15	14.29	16.17	17.51	17.54	10.50	14.78	17.20	19.05
23	16.29	10.36	8.06	11.26	14.38	16.22	17.57	17.31	10.64	14.81	17.29	19.09
24	16.30	10.22	8.19	11.38	14.44	16.28	17.61	17.18	11.00	15.05	17.38	19.12
25	16.31	10.22	8.34	11.47	14.55	16.32	17.66	16.90	11.29	15.13	17.44	19.16
26	16.35	3.90	8.45	11.62	14.64	16.40	17.70	6.90	11.52	15.20	17.50	19.20
27	16.40	3.22	8.58	11.71	14.70	16.47	17.73	12.56	11.73	15.28	17.58	19.23
28	16.42	2.93	8.64	11.82	14.78	16.55	17.77	13.64	11.92	15.38	17.66	19.28
29	16.46	4.73	8.72	11.89	---	16.60	17.84	14.10	12.05	15.47	17.72	19.32
30	16.50	5.65	8.75	11.99	---	16.66	17.86	14.38	12.21	15.56	17.78	19.35
31	16.56	---	8.80	12.06	---	16.71	---	14.53	---	15.62	17.84	---
LOW	16.56	16.83	8.80	12.06	14.78	16.71	17.86	18.20	14.62	15.62	17.84	19.35
HIGH	14.73	2.93	6.29	9.07	12.18	14.80	16.75	6.90	4.38	12.36	15.71	17.90

WTR YR 1987 MEAN 14.2 LOW 19.35 HIGH 2.93



GROUND-WATER LEVELS

ST. JOHN, U.S. VIRGIN ISLANDS

182044064454600. Local number, 6.

LOCATION.--Lat 18°20'44", long 64°45'46".

Owner: Virgin Islands Government.

Name: DPW-5

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Sounded depth 145 ft (44.2 m).

DATUM.--Elevation of land-surface datum is about 640 ft (195 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 1.40 ft (0.43 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.85ft (5.74m) below land-surface datum, July 2, 1986; lowest water level measured, a107.4 ft (32.7 m) below land-surface datum, Sept. 19, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	a91.29	Apr. 29	39.50	June 18	42.35

182044064454800. Local number, 7.

LOCATION.--Lat 18°20'44", long 64°45'48".

Owner: Virgin Islands Government.

Name: DPW-4

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Sounded depth 60 ft (18.3 m).

DATUM.--Elevation of land-surface datum is about 640 ft (195 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 0.60 ft (0.18 m) above land-surface datum.

REMARKS.--Observation well.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.48 ft (4.41 m) below land-surface datum, July 2, 1986; lowest water level measured, a50.66 ft (15.44 m) below land-surface datum, Jan. 22, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	a50.66	Apr. 29	29.15	June 18	31.64

182044064454900. Local number, 8.

LOCATION.--Lat 18°20'44", long 64°45'49".

Owner: Virgin Islands Government.

Name: DPW-3.

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Sounded depth 110 ft (33.5 m).

DATUM.--Elevation of land-surface datum is about 640 ft (195 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 1.80 ft (0.55 m) above land-surface datum.

REMARKS.--Observation well.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.17ft (3.71 m) below land-surface datum, July 2, 1986; lowest water level measured, 69.58 ft (21.21 m) below land-surface datum, Feb. 27, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	56.67	Apr. 29	26.10	June 18	27.01

a Pumping.

GROUND-WATER LEVELS

349

ST. JOHN, U.S. VIRGIN ISLANDS

182044064455000. Local number, 9.

LOCATION.--Lat 18°20'44", long 64°45'50".

Owner: Virgin Islands Government.

Name: DPW-2.

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Sounded depth 65 ft (19.8 m).

DATUM.--Elevation of land-surface datum is about 640 ft (195 m) above mean sea level, from topographic map.

Measuring point: Top of 6 in (0.15 m) casing, 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Observation well.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.10 ft (5.21 m) below land-surface datum, July 2,

1986; lowest water level measured, 52.44 ft (15.99 m) below land-surface datum, May 19, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	50.00	Apr. 29	35.49	June 18	38.49

182044064455200. Local number, 10.

LOCATION.--Lat 18°20'44", long 64°45'52".

Owner: Virgin Islands Government.

Name: DPW-1.

AQUIFER.--Louisenhoj Formation.

WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m).

Sounded depth 60 ft (18.3 m).

DATUM.--Elevation of land-surface datum about 640 ft (195 m) above mean sea level.

Measuring point: Top of 6 in (0.15 m) casing, 2.00 ft (0.61 m) above land-surface datum.

REMARKS.--Observation well. Water levels affected by pumping.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.60 ft (5.06 m) below land-surface datum, July 2,

1986; lowest water level measured, 38.92 ft (11.86 m) below land-surface datum, Feb. 27, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level
Jan. 22	38.43	Apr. 29	33.04	June 18	36.08

GROUND-WATER LEVELS

ST. JOHN, U.S. VIRGIN ISLANDS

181956064464500. Local number, 11.

LOCATION.--Lat 18°19'56", long 64°46'45".

Owner: Virgin Islands Government.

Name: Guinea Gut Well.

AQUIFER.--Louisenhoj Formation (Donnelly, 1959).

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), cased 6 in (0.15 m). Depth 85 ft (25.9 m).

DATUM.--Elevation of land-surface datum is about 280 ft (85.36 m) above mean sea level, from topographic map.

Measuring point: Bottom of 0.5 in (0.01 m) hole at 6 in (0.15 m) casing, 1.50 ft (0.46 m) above land-surface datum. Prior to June 28, 1983, top of 6 in (0.15 m) casing, 1.80 ft (0.55 m) above land-surface datum.

REMARKS.--Recording observation well.

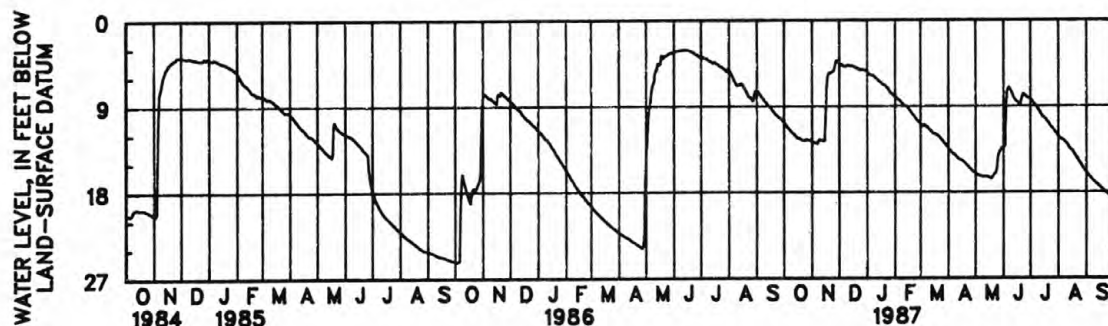
PERIOD OF RECORD.--March 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 3.05 ft (0.93 m) below land-surface datum, June 13, 1986; lowest water level recorded, 25.25 ft (7.70 m) below land-surface datum, Oct. 2, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
INSTANTANEOUS OBSERVATION AT 1200

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.66	12.70	4.54	5.43	7.96	10.82	13.39	16.02	13.30	8.25	12.12	15.94
2	10.79	12.73	4.57	5.51	8.05	10.93	13.53	16.08	13.24	8.37	12.25	16.07
3	10.93	12.79	4.63	5.61	8.16	11.07	13.65	16.17	13.03	8.47	12.37	16.19
4	11.05	12.79	4.67	5.70	8.27	11.09	13.74	16.20	8.90	8.60	12.45	16.29
5	11.19	12.86	4.75	5.75	8.35	10.93	13.84	16.27	7.51	8.72	12.48	16.40
6	11.30	12.87	4.83	5.78	8.41	11.00	13.92	16.33	7.17	8.83	12.55	16.53
7	11.42	12.90	4.82	5.76	8.51	11.07	14.01	16.32	7.05	8.95	12.60	16.66
8	11.55	12.64	4.88	5.77	8.60	11.13	14.08	16.32	7.17	9.09	12.68	16.77
9	11.67	12.51	4.77	5.91	8.72	11.21	14.17	16.35	7.39	9.27	12.79	16.86
10	11.73	12.49	4.74	6.00	8.82	11.33	14.26	16.37	7.59	9.40	12.90	16.96
11	11.81	12.54	4.72	6.06	8.91	11.44	14.38	16.38	7.81	9.52	13.02	17.06
12	11.91	12.56	4.74	6.16	8.95	11.52	14.47	16.36	8.04	9.71	13.16	17.13
13	11.99	12.57	4.76	6.24	8.97	11.61	14.55	16.35	8.20	9.86	13.31	17.19
14	12.10	12.58	4.80	6.36	9.03	11.73	14.60	16.37	8.37	10.01	13.47	17.27
15	12.22	12.55	4.79	6.42	9.14	11.83	14.61	16.40	8.48	10.14	13.57	17.37
16	12.34	10.15	4.83	6.50	9.26	11.87	14.66	16.46	8.51	10.16	13.58	17.46
17	12.35	6.98	4.86	6.57	9.39	11.91	14.75	16.51	8.60	10.26	13.73	17.54
18	12.35	5.93	4.90	6.69	9.51	11.92	14.83	16.55	8.70	10.35	13.87	17.62
19	12.41	5.60	4.95	6.76	9.67	11.99	14.93	16.59	8.77	10.48	14.03	17.72
20	12.46	5.51	4.99	6.79	9.82	12.05	15.01	16.41	8.81	10.63	14.18	17.82
21	12.53	5.50	5.01	6.85	9.88	12.12	15.10	16.29	8.34	10.74	14.34	17.92
22	12.56	5.46	5.07	6.93	10.04	12.20	15.21	16.15	7.93	10.86	14.48	17.99
23	12.58	5.42	5.15	7.07	10.17	12.30	15.32	16.05	7.74	11.01	14.65	18.05
24	12.57	5.33	5.22	7.09	10.29	12.44	15.42	15.95	7.78	11.17	14.81	18.14
25	12.52	5.30	5.18	7.29	10.43	12.54	15.53	15.57	7.85	11.28	14.97	18.22
26	12.49	4.86	5.18	7.46	10.57	12.64	15.63	14.36	7.95	11.37	15.11	18.31
27	12.51	4.35	5.18	7.60	10.58	12.77	15.73	13.94	8.05	11.50	15.26	18.40
28	12.52	4.22	5.22	7.71	10.68	12.91	15.82	13.72	8.12	11.65	15.40	18.48
29	12.53	4.27	5.24	7.74	---	13.02	15.90	13.56	8.17	11.79	15.56	18.56
30	12.56	4.42	5.24	7.85	---	13.15	15.95	13.45	8.17	11.92	15.68	18.62
31	12.64	---	5.33	7.92	---	13.28	---	13.38	---	12.03	15.81	---
LOW	12.64	12.90	5.33	7.92	10.68	13.28	15.95	16.59	13.30	12.03	15.81	18.62
HIGH	10.66	4.22	4.54	5.43	7.96	10.82	13.39	13.38	7.05	8.25	12.12	15.94

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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).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1 2.54×10^{-2}	millimeters (mm) meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3 4.047×10^{-1} 4.047×10^{-3}	square meters (m ²) square hectometers (hm ²) square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0 3.785×10^0 3.785×10^{-3}	liters (L) cubic decimeters (dm ³) cubic meters (m ³)
million gallons	3.785×10^3 3.785×10^{-3}	cubic meters (m ³) cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1 2.832×10^{-2}	cubic decimeters (dm ³) cubic meters (m ³)
cfs-days	2.447×10^3 2.447×10^{-3}	cubic meters (m ³) cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3 1.233×10^{-3} 1.233×10^{-6}	cubic meters (m ³) cubic hectometers (hm ³) cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1 2.832×10^1 2.832×10^{-2}	liters per second (L/s) cubic decimeters per second (dm ³ /s) cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2} 6.309×10^{-2} 6.309×10^{-5}	liters per second (L/s) cubic decimeters per second (dm ³ /s) cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1 4.381×10^{-2}	cubic decimeters per second (dm ³ /s) cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons



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