SUMMARY OF DATA PERTAINING TO LAND USE, RAINFALL, DRYFALL, STREAM DISCHARGE, AND STORM RUNOFF COLLECTED AS PART OF A STUDY OF THE EFFECTS OF URBAN RUNOFF ON RAPID CREEK, RAPID CITY AREA, SOUTH DAKOTA

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U.S. GEOLOGICAL SURVEY

Open-File Report 87-45

Prepared in cooperation with the
SIXTH DISTRICT COUNCIL OF LOCAL GOVERNMENTS, and the
SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY

Rapid City, South Dakota
1989

DEPARTMENT OF THE INTERIOR

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CONTENTS

ILLUSTRATIONS

ILLUSTRATIONS--Continued

TABLES

CONVERSIONS FACTORS

The following factors can be used to convert inch-pound units in this report to the International System (SI) of metric units.

Multiply inch-pound unit	By	To obtain metric unit
acre	0.4047	hectare
acre-foot	0.001233	cubic hectometer
cubic foot per second	0.02832	cubic meter per second
foot	0.3048	meter
foot per mile	0.1894	meter per kilometer
gallon	3.785	liter
inch	25.40	millimeter
mile	1.609	kilometer
pint	0.4732	liter
square mile	2.590	square kilometer
yard	0.9144	meter

Temperature in degrees Fahrenheit ($^{\circ}F$) can be converted to degrees Celsius ($^{\circ}C$) as follows:

$$^{\circ}C = 5/9\ (^{\circ}F - 32)$$

$$^{\circ}F = (1.8\ ^{\circ}C) + 32$$

SUMMARY OF DATA PERTAINING TO LAND USE, RAINFALL, DRYFALL, STREAM DISCHARGE, AND STORM RUNOFF COLLECTED AS PART OF A STUDY OF THE EFFECTS OF URBAN RUNOFF ON RAPID CREEK, RAPID CITY AREA, SOUTH DAKOTA

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ABSTRACT

The urban-runoff study in the Rapid City area was one of 28 similar projects that comprised the U.S. Environmental Protection Agency's Nationwide Urban Runoff Program. The objectives of the 3-year study were to characterize the effects of urban runoff from rainfall on the water quality of Rapid Creek, and to evaluate the effects of the runoff on the existing cold-water fishery. In order to meet these objectives, it was necessary to obtain detailed data pertaining to land use, rainfall, dryfall, stream discharge, and storm runoff. This report describes the rationale behind the data-collection program, describes the methods used to collect and analyze the data, and presents the data collected and summarized during the study.

The study area lies along the eastern flanks of the Black Hills in western South Dakota and includes the majority of the urbanized area of Rapid City. The study area was divided into five watersheds; four of the watersheds consisted of the contributing drainage area between five successive streamflow and water-quality stations on Rapid Creek, and the fifth watershed was upstream from an off-channel streamflow and water-quality station. The watersheds ranged in size from 1,610 to 20,990 acres.

The data-collection network established during the project included 10 recording and 40 nonrecording rain gages, 2 atmospheric-deposition stations, 6 streamflow and water-quality stations, and 3 miscellaneous streamflow stations. Rainfall, stream-discharge, and storm-runoff data were collected for about 30 rainstorms that occurred between June 1980 and July 1982.

INTRODUCTION

Researchers investigating water pollution during the 1960's identified pollutants in urban runoff and concluded that these may degrade the quality of receiving waters. These researchers also concluded that not enough was known about urban runoff to completely understand either its chemical composition or its effects on receiving waters. In order to obtain information that would help resolve these uncertainties, the U.S. Environmental Protection Agency established the Nationwide Urban Runoff Program (NURP) in 1978. Some of the objectives of that 5-year program were:

1. Establish a data base that could be statistically analyzed so that conclusions resulting from the analyses could be transferred to other areas without the need for intensive data-collection efforts.

2. Determine to what extent urban runoff was a contributor to water-quality degradation across the Nation.

3. Determine to what extent urban-runoff controls could decrease water-quality degradation, and determine the cost effectiveness of such controls in comparison to alternative options.

NURP itself was a support function that provided direction and assistance to 28 separate projects, which were managed locally by regional, State, county, or city governmental associations. Rapid City, South Dakota, was chosen for investigation because of its applicability to the national objectives, particularly objective 2, as well as providing information necessary for local water management.

Previous water-quality studies of Rapid Creek conducted by the South Dakota School of Mines and Technology (SDSM&T) (Pirner and Harms, 1978) and the Sixth District Council of Local Governments (written commun., 1981) indicated urban runoff from the Rapid City area causes degradation of water quality in Rapid Creek. During these studies, it was determined that the water quality in Rapid Creek in Rapid City meets the strict water-quality standards for a cold-water fishery during normal flow conditions, but these standards are exceeded during snowmelt and rainfall runoff (Harms and Strub, 1980). However, the significance of the standards being exceeded was not clear. The extent that urban runoff affected the cold-water fishery was undefined. In addition, it was not known if urban runoff contaminated Rapid Creek to the extent that it could not be used as a source of water for municipal and irrigation uses.

To answer these questions, a 3-year study of the effects of urban runoff on the hydrology of Rapid Creek in the Rapid City area was undertaken. The primary objectives of the study were to: (1) Characterize the effects of urban runoff (rainfall runoff) on the water quality of Rapid Creek, and (2) evaluate the effects of urban runoff on the cold-water fishery. The study also was designed to provide an assessment of the value of instream water-quality standards as related to water quality during storms, which would allow the effects of urban runoff on beneficial uses to be determined. The study was intended to provide information for proper management of the cold-water fishery in Rapid Creek and for future evaluation of management options if urban-runoff controls become necessary.

The Rapid City urban-runoff study was a cooperative effort involving local, State, and Federal agencies. The primary agencies involved and their areas of responsibility were:

1. Sixth District Council of Local Governments--As the grant recipient, the Sixth District Council had the overall fiscal responsibility, including documentation of match monies, agency coordination, advisory-committee selection, and reporting functions.

2. South Dakota School of Mines and Technology--The Civil Engineering Department was the primary technical contractor for the project. Their responsibilities included laboratory analysis of water samples, data analysis, quality assurance, and prepartion of quarterly, annual, and final reports for submission to the U.S. Environmental Protection Agency.

3. South Dakota Department of Water and Natural Resources--The Department collected data pertaining to the benthic fauna of Rapid Creek. This work, along with electrofishing by the South Dakota Department of Game, Fish and Parks, was used to develop information regarding the cold-water fishery.

4. U.S. Geological Survey—The primary responsibility of the U.S. Geological Survey was to collect data pertaining to the quantity and quality of precipitation and streamflow. In addition, the U.S. Geological Survey provided data-analysis and management services to the project and prepared this report for national release.

In order to determine the effects of urban runoff on the hydrology of Rapid Creek in the Rapid City area, it was necessary to begin with collection of data pertaining to the factors affecting the quantity and quality of urban runoff. Therefore, data needs were divided into five general categories: (1) Land use; (2) rainfall duration, depth, and intensity; (3) rainfall and dryfall quality; (4) stream discharge and storm runoff; and (5) stream-discharge and storm-runoff quality.

This report describes the rationale behind the data-collection program and the methods used to obtain the data. Figures and tables, both in the body of the report and in the Supplemental Information section at the back of the report, summarize and characterize the data collected during the study. In addition, statistical analysis of long-term precipitation and streamflow data, necessary for the evaluation of the data obtained during the study, also is presented.

Description of Study Area

The Rapid City study area lies along the eastern flanks of the Black Hills in western South Dakota and includes the majority of the urbanized area of Rapid City (fig. 1). Rapid City is the largest urban area in western South Dakota and the hub of economic activity for parts of South Dakota, Wyoming, Montana, and Nebraska. The population of Rapid City was just under 50,000 in 1980 although the population in the study area was somewhat greater because developed areas outside the city limits are included in the study area.

The climate in the Rapid City area is characterized by extreme temperature fluctuations, both daily and seasonally, and minimal precipitation that are typical of temperate, semiarid continental climates. Mid-continent high pressure results in southwest winds during the summer months with resultant daily high temperatures that commonly exceed 90 °F. During the winter months, southward movement of polar air across the mid-continent can result in rapid temperature fluctuations; temperature decreases of 20 to 40 °F in several hours are not uncommon, and minimum temperatures of -20 to -30 °F are typical. However, the mean temperature at Rapid City during the winter months is nearly the warmest in South Dakota due to the orographic effects of the Black Hills and stratification of the polar air masses. Spring and fall are characterized by unsettled conditions, and considerable variations in temperature are common (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1976).

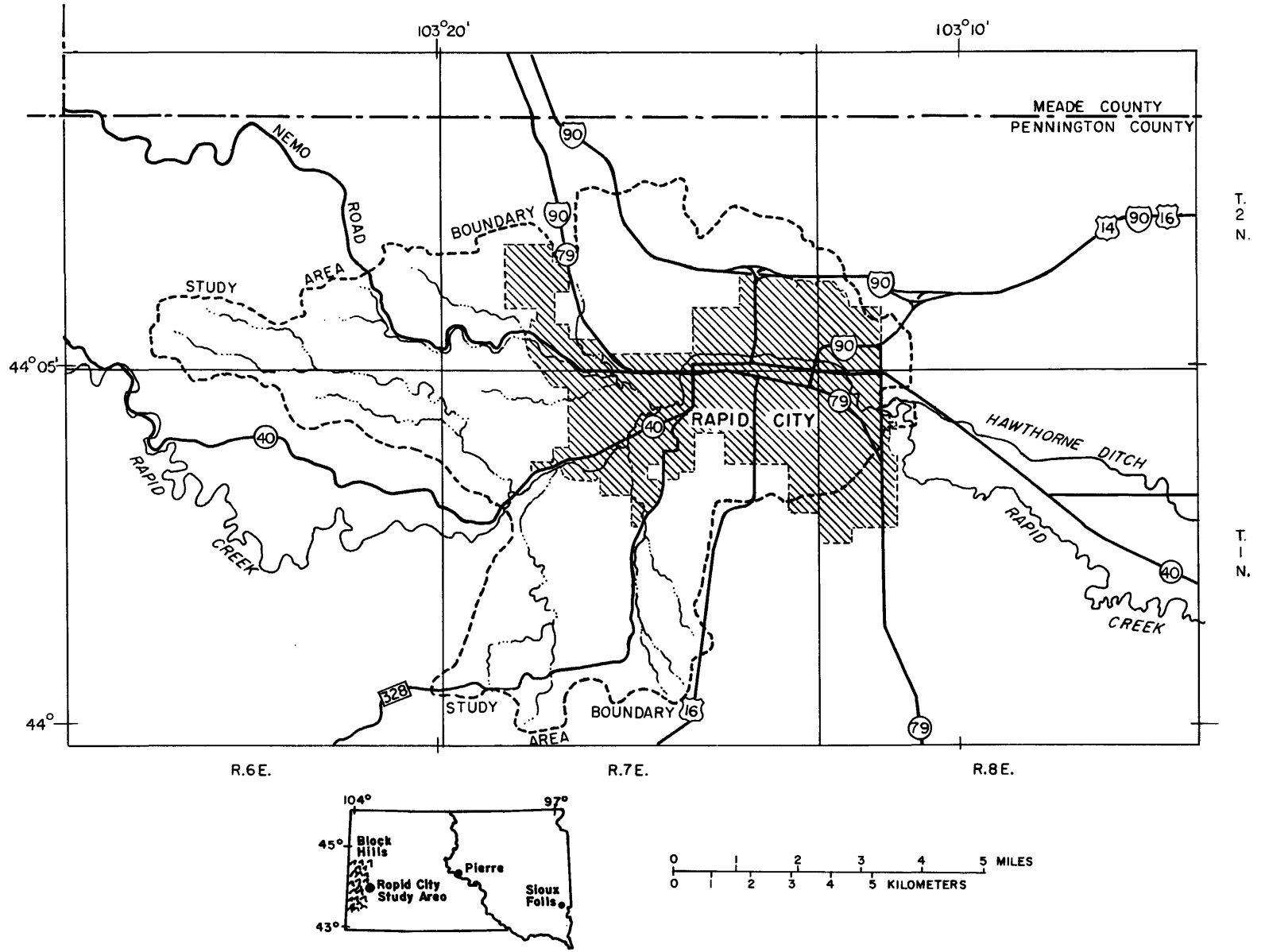

Figure 1.--Location of study area.

The distribution of precipitation during the year characteristically is uneven with a distinct "rainy season" during the late spring and early summer months. The average monthly precipitation measured at the two National Oceanic and Atmospheric Administration (NOAA) weather stations in and near Rapid City is shown in figure 2. More than 60 percent of the annual precipitation falls from April through July.

The majority of the annual precipitation at Rapid City occurs as the result of convective storms. Beginning in May and occurring throughout the summer and early fall, nearly all the precipitation occurs as moderate to severe thunderstorms. These storms usually are accompanied by strong winds and hail, and the resultant rainfall is intense but of short duration. The areal distribution of rainfall from thunderstorms is uneven, with large differences in total rainfall occurring in short distances.

Although convective storms produce the majority of precipitation, an occasional orographic storm common to the eastern part of the Rocky Mountain region occurs in the Rapid City area. A particular arrangement of high and low pressure over the central United States will result in moist air being forced westward (upslope). These upslope storms result in precipitation patterns that usually are dependent on elevation with maximum precipitation generally falling at higher elevations. Specific to the Rapid City study area, westerly airflow during upslope conditions causes substantially more precipitation to fall along the eastern front of the Black Hills than several miles to the east on the plains. The uneven, but elevation dependent, distribution of precipitation during upslope storms is largely responsible for the difference in precipitation measured at the two weather stations (fig. 2).

Rapid Creek originates within the Black Hills of South Dakota as discharge from springs and overland runoff. The 371 square miles (U.S. Geological Survey, 1982) of drainage area upstream from the Rapid City study area is wholly within the central Black Hills and consists of mostly forested rolling hills and steep, narrow valleys. Rapid Creek in this reach has the characteristics of a mountain stream with a relatively steep gradient averaging 48 feet per mile and a sand, gravel, and cobble bottom.

Rapid Creek is a perennial stream that flows eastward through Rapid City. A devastating flash flood occurred along Rapid Creek in June 1972, which resulted in enormous property loss as well as 237 known deaths (Schwarz and others, 1975). To mitigate potential damages that could result from a similar type of disaster, Rapid City developed the flood plain of Rapid Creek into parks and recreational areas. Rapid Creek itself is the central attraction of the park system and is a prime fishing stream. In addition, Rapid Creek is a source of water for several municipalities, including Rapid City, and for irrigation supplies.

Downstream from Rapid City, Rapid Creek enters the Great Plains of western South Dakota and flows about 70 river miles southeast before discharging to the Cheyenne River. Rapid Creek occupies a broad alluvial-floored valley and has a meandering, mud-bottomed channel characteristic of a prairie stream. The average gradient downstream from Rapid City is about 13 feet per mile.

The transformation from a mountain-type to a prairie-type stream occurs, for the most part, within the Rapid City study area. The change in the morphological characteristics of Rapid Creek in the relatively short 10-mile-long

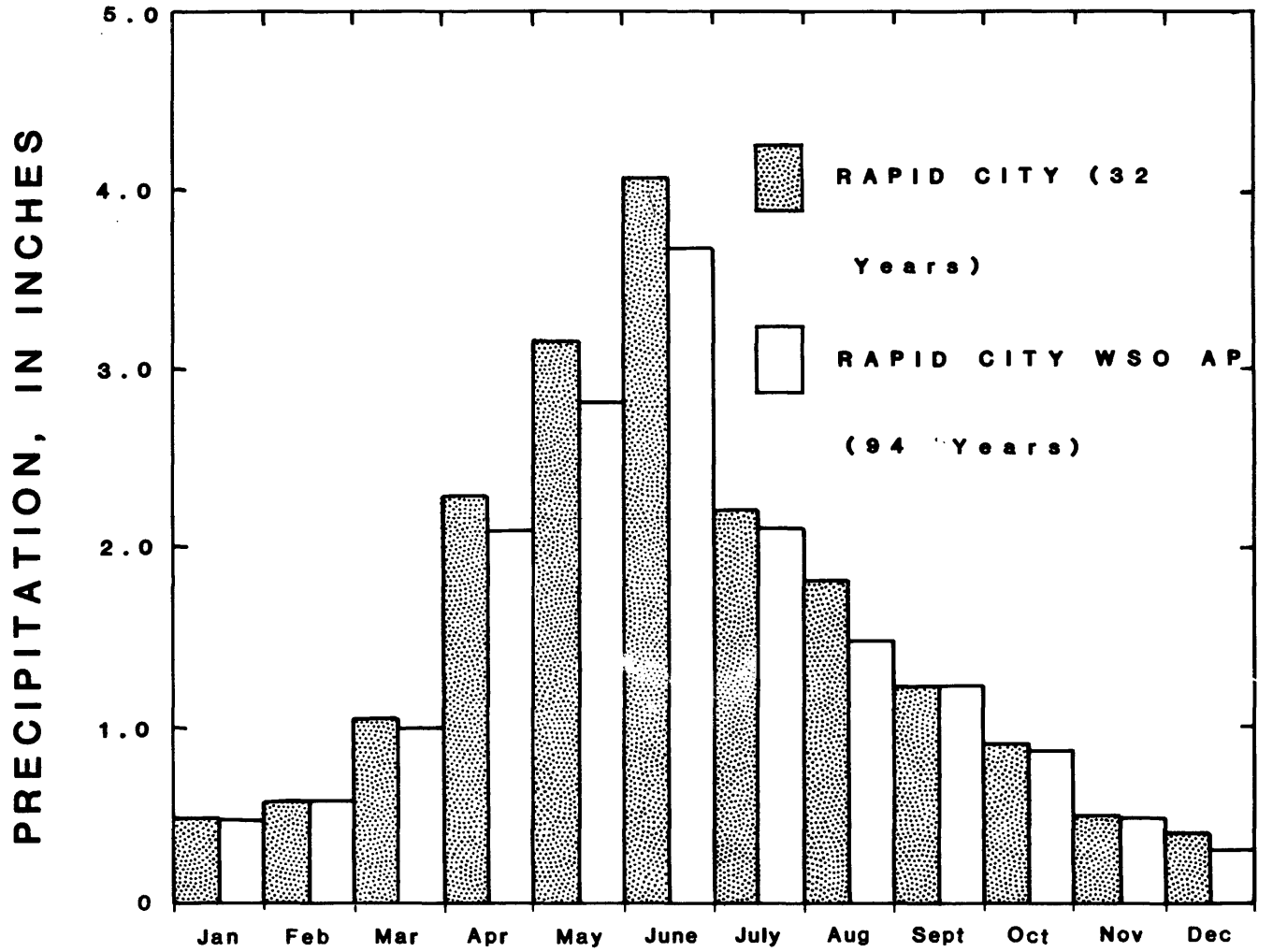

Figure 2.--Mean monthly precipitation for the period of record at the two National Oceanic and Atmospheric Administration (NOAA) weather stations, Rapid City and Rapid City WSO AP.

study reach is caused by the types and structure of the underlying rocks. Due to the eastward dipping trend of the rocks along the eastern flank of the Black Hills uplift, Rapid Creek crosses a series of formation outcrops as it passes through Rapid City. Upstream from Rapid City, and extending into the western part of the study area, Rapid Creek traverses crystalline rocks, sandstone, and limestone. These units are resistant to erosion and Rapid Creek occupies a deep, narrow gorge known as Dark Canyon. In the eastern part of the study area, Rapid Creek traverses shale underlying the Great Plains. This shale is easily eroded and Rapid Creek occupies a broad, shallow valley.

Rapid Creek receives perennial tributary flow at three locations in the study reach. A flow profile of the study reach made in December 1981 is shown in figure 3. The large increase in flow at river mile 9.2 is the result of Cleghorn Springs. A report by Rahn and Gries (1973) that describes major springs in the Black Hills, reports the average discharge of Cleghorn Spring to be between 10 and 11 cubic feet per second during 1968-70. This flow is sometimes decreased by the interception of the spring discharge by a shallow, large-capacity well developed in the alluvium in the discharge area (Rahn and Gries, 1973); this well is used by Rapid City as a municipal water supply. The two other point sources of inflow, at river miles 6.7 and 5.7, also are the result of ground-water discharge. Lime Creek, which enters Rapid Creek at river mile 6.7, is the result of a group of springs, known as City Spring, located about 2 miles north of Rapid Creek in the northwestern part of Rapid City. The discharge of City Spring is reported to be about 0.9 cubic foot per second during 1968-70 (Rahn and Gries, 1973). The other tributary, which is unnamed, enters Rapid Creek at river mile 5.7 and is sustained by the unused discharge of several artesian wells located in the vicinity of a cement plant about 1 mile north of Rapid Creek. The discharge of these flowing wells is reported to be approximately equivalent to that of City Spring (Rahn and Gries, 1973).

Water is diverted from Rapid Creek at two locations in the study reach. The City of Rapid City has a diversion structure at the municipal water-treatment plant at river mile 6.2, about 0.2 river mile downstream from the monitoring station, Rapid Creek above Water Treatment Plant (site 2 on pl. 1). Diversion of water from Rapid Creek for use as a municipal water supply only occurs during the summer months when the need for lawn irrigation greatly increases the demand. The diversion of water from Rapid Creek for irrigation takes place at the headgate of Hawthorne Ditch at river mile 2.0, about 1.5 river miles upstream from the monitoring station, Rapid Creek below Hawthorne Ditch (site 5 on pl. 1). Diversion of water at this site only occurs during the irrigation season, which normally extends from May 1 to about mid-October.

Two large reservoirs, Deerfield and Pactola, are located upstream from Rapid City and regulate the flow of Rapid Creek. Deerfield Reservoir is located on Castle Creek, a major tributary of Rapid Creek, about 53 river miles upstream from Rapid City. Deerfield Reservoir has a capacity of 15,153 acre-feet (U.S. Geological Survey, 1981); regulation of flow began in December 1945. Pactola Reservoir is located on Rapid Creek about 21 river miles upstream from Rapid City. Pactola Reservoir has a conservation capacity of 55,963 acre-feet and an additional flood-storage capacity of 43,050 acre-feet (U.S. Geological Survey, 1981); regulation of flow began in August 1956. Both reservoirs provide flood control and water for municipal and irrigation uses. The storage period varies yearly based on the timing and quantity of precipitation on irrigated areas downstream.

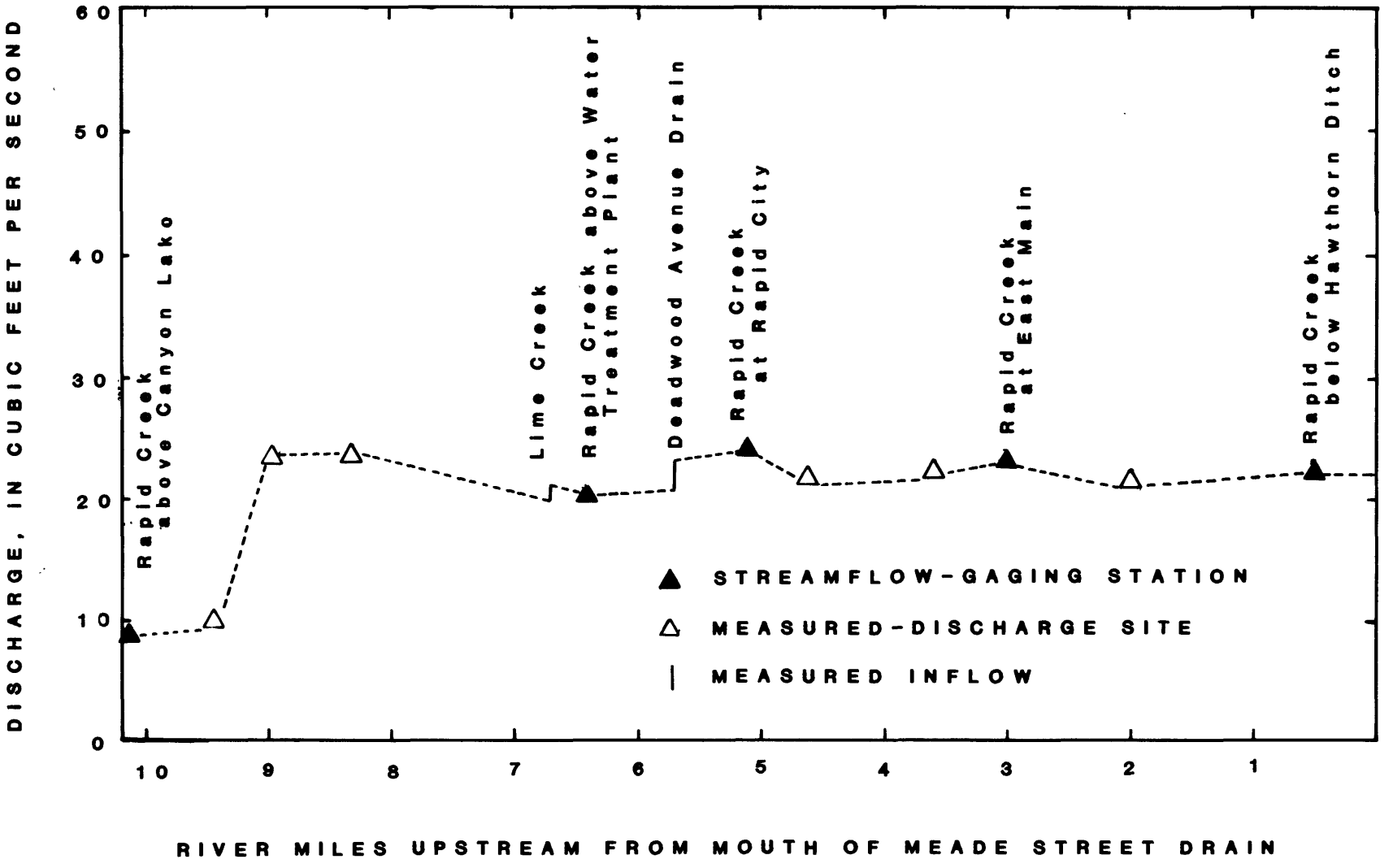

Figure 3.--Discharge profile of the Rapid Creek study reach on December 10, 1981.

Acknowledgments

Special appreciation is given to Michael Strub of the Sixth District Council of Local Governments for his contribution to the administration of the study. The cooperation of William R. Craig and Jerry D. Foster of the City of Rapid City prevented unnecessary delays during the construction phase of the project and is gratefully acknowledged. James Nelson and Steven Pirner of the South Dakota Department of Water and Natural Resources provided expertise to the project and their efforts are acknowledged.

Technical advice and support was given by Patrice M. Bubar, Bruce Zander, Dennis N. Athayde, Stuart S. Tuller, and Roger Dean of the U.S. Environmental Protection Agency; Earnest Cobb of the U.S. Geological Survey; Gail B. Boyd of Woodward-Clyde Consultants; and Dr. Phillip E. Shelley of EG & G. Their contribution to the success of this project is acknowledged.

The success of the project was largely the result of the teamwork between the U.S. Geological Survey personnel and the South Dakota School of Mines and Technology technical team headed by Dr. Leland L. Harms. Dr. Harms provided conscientious leadership during the sometimes long and arduous data-collection efforts. Many people worked long and often unusual hours in the laboratory: Gary R. Gabe, Gregory L. Magee, Craig L. Nowak, Glen Singleton, Timothy McDougall, Maria Wallace Kidner, Eric Staab, Ginger Dungey, and Marsha H. Smith. In particular, the professional attitude and dedication to the project by Marsha Smith, the project's quality-assurance coordinator, produced the reliable data presented in this report.

LAND-USE DATA

The study area is defined by the contributing drainage area between the streamflow-monitoring stations, Rapid Creek above Canyon Lake near Rapid City and Rapid Creek below Hawthorne Ditch, plus the drainage area upstream from the streamflow-gaging station, Meade Street Drain. For the purposes of this study, the study area was divided into five watersheds, four being defined by the contributing drainage area between the five successive streamflow-gaging stations on Rapid Creek, plus the watershed upstream from the streamflow-gaging station, Meade Street Drain. The location of each of the six streamflow-gaging stations and the five watersheds is shown on plate 1.

The quantity and quality of runoff from a particular urban watershed is primarily dependent on the land-use characteristics of that watershed. For example, the quantity and quality of runoff from a paved shopping-center parking lot is quite different than that from a city park. Nearly all the precipitation falling on the impervious pavement in the parking lot would be discharged as runoff and would contain constituents resulting from tire wear, auto exhaust and lubricants, asphalt decomposition, and so forth. The grass-covered, pervious land in the park would result in comparatively little runoff and such runoff would contain constituents such as fertilizer, weed killers, leaf detritus, and so forth. Because of this cause-effect relation between land-use and runoff characteristics, a description of land use in each watershed in the study area was necessary as recommended in guidelines for the NURP.

The list of land-use characteristics recommended in the guidelines for the NURP was detailed and included such categories as length of road lanes, composition and condition of road surfaces, length and type of gutters, pH of the soil-water interface, types and quantities of annual fertilizer application, and so forth. These guidelines were based on studies that had determined that storm-runoff loads of specific constituents could be estimated by statistical procedures relating constituent loads to land-use characteristics. In general, watersheds for which these relations could be developed were relatively small, maximum areas of several hundred acres, and were predominantly of a single land-use category. In comparison, the watersheds in the Rapid City area are large with areas from about 1,500 to 21,000 acres, have complex land-use patterns, and drain to Rapid Creek via numerous drainage paths. It would have been inordinately difficult (if not impossible) to make accurate determinations of many of the recommended land-use characteristics for the large watersheds in the study area. In addition, it is unlikely that these land-use characteristics could be quantitatively correlated against either the quantity or quality of precipitation runoff. Therefore, the characterization of land use in the five watersheds comprising the study area was on a relatively broad scale. The 12 categories of land use that were characterized in the five watersheds comprising the study area, and the areas of each category are listed in table 1. These data were developed by the U.S. Geological Survey from aerial photographs taken in 1978, from topographic maps, and from ground inspection. Many assumptions and estimations had to be made during the categorizing of such large and complex areas. Individual buildings, small groups of buildings, and small areas, located within large areas of some other category, were not differentiated. Other than the differentiation between rural residential and residential, no attempt was made to estimate housing density. Industrial areas were categorized as commercial areas when these land-use types were interspersed.

RAINFALL-DURATION, DEPTH, AND INTENSITY DATA

Only the months in which precipitation normally falls as rain in Rapid City, April through September, were considered in the study. Snowfall was excluded because of the unreliability of snowfall data. Also, periods and quantities of snowfall are not useful in an analysis of urban runoff because they do not directly correspond to periods and quantities of snowmelt runoff.

Rainfall-duration, depth, and intensity data are collected at NOAA weather stations throughout the country and records of these data are available through NOAA's National Climatic Center in Asheville, N.C. The length of available record varies based on the date the weather station was established. The interval at which rainfall data are collected also varies from 5 minutes at some larger metropolitan weather stations to daily at many rural weather stations. However, most NOAA weather-station records are tabulated on an hourly basis.

Two NOAA weather stations are located in or near Rapid City (pl. 1): Rapid City (396947-05) is located on the grounds of the Sioux Sanitarium in the western part of Rapid City and Rapid City WSO AP (396937-05) is located at the Rapid City Regional Airport about 7 miles east-southeast of Rapid City. Located within the study area, the NOAA weather station in western Rapid City would be the logical choice for the evaluation of long-term rainfall data. However, hourly data are unavailable so the precipitation records from the Rapid City WSO AP weather station were used for the statistical characterization.

Table 1.--Total area and land use for the five watersheds within the study area and for the total study area

Land-use category	Percentage of land use in indicated area					
	Watershed					
	West Rapid (20,990 acres)	Deadwood Avenue (3,870 acres)	Central Business District (3,650 acres)	East Rapid (1,610 acres)	Robbins-dale (2,030 acres)	Study area (32,150 acres)
Urban areas						
Rural residential	9	0	4	1	1	7
Residential	8	2	32	19	47	12
Commerical	0	13	13	26	6	5
Industrial	0	5	0	0	0	1
Institutional	2	2	4	10	5	3
Parks	2	3	6	0	2	3
Vacant	1	3	9	25	5	4
Barren or disturbed	0	12	0	0	0	1
Non-urban areas						
Forest	39	7	6	0	5	27
Grassland	39	43	26	16	29	36
Water	0	0	0	0	0	0
Agriculture	0	10	0	3	0	1

Statistical Characterization of Long-Term Rainfall Data

A statistical characterization of long-term rainfall data is necessary for the determination of runoff volumes using rainfall-runoff relations, and the assessment of the effects of constituents in rainfall runoff on water quality. The variable nature of rainfall in any year, or even during several years, necessitates that rainfall data be available for at least 10 years to provide confidence in the statistical characterization.

A data-analysis program developed by and available through the Statistical Climatology Branch of NOAA was used to summarize and characterize the hourly rainfall record. The program, Frequency of Tabulations of Hourly Precipitation Data (TDF 1440), provides frequency distributions of continuous rainstorms and monthly tabulations of hours and depth of rainfall. The program defines rainstorms as at least 1 hour of rainfall separated by at least 1 hour with no recorded rainfall.

Results of the statistical characterization program for rainfall data collected at the Rapid City WSO AP weather station during April through September 1948-78 are presented in figures 4-8. The probability distribution of rainfall duration is presented in figure 4 and the probability distribution of rainfall depth is presented in figure 5. The data for April and August (fig. 4) and for June and September (fig. 5) represent the monthly extremes; the data for the other months plot between these extremes. The 6-month mean also is plotted in both figures. Monthly and 6-month mean duration, depth, and intensity of rainfall during rainstorms are plotted in figure 6. A summary of maximum, mean, and minimum number of hours with recorded rainfall is presented in figure 7; a similar summary of rainfall depth is presented in figure 8. The 6-month mean also is plotted in both figures.

Rainfall Characteristics for Storms Studied

The accurate determination of the areal distribution of rainfall characteristics (duration, depth, and intensity) is needed to determine the characteristics of urban-runoff quantity and quality. In order to obtain sufficient rainfall data, networks of both nonrecording and recording rain gages were established in the Rapid City area. The gages were installed so as to minimize effects caused by obstructions.

The nonrecording rain-gage network consisted of about 40 wedge type rain gages (Tru-Chek Model TRU-201, Edwards Manufacturing Co., Albert Lea, Minnesota)[1/]. These gages, located throughout the Rapid City area, were read and emptied daily by volunteer observers who lived at or near the gage site. The data were recorded on a monthly tabulation sheet provided to the observer.

Rainfall data obtained by the nonrecording rain-gage network was not as useful as originally anticipated. Data were tabulated on a daily basis with the recording interval varying based on the habits of the individual recorder. Daily rainfall could not always be correlated with storm rainfall because of interfering periods of rainfall occurring within 24 hours before or after a

[1/] The use of brand and firm names in this report is for identification only and does not constitute endorsement by the U.S. Geological Survey.

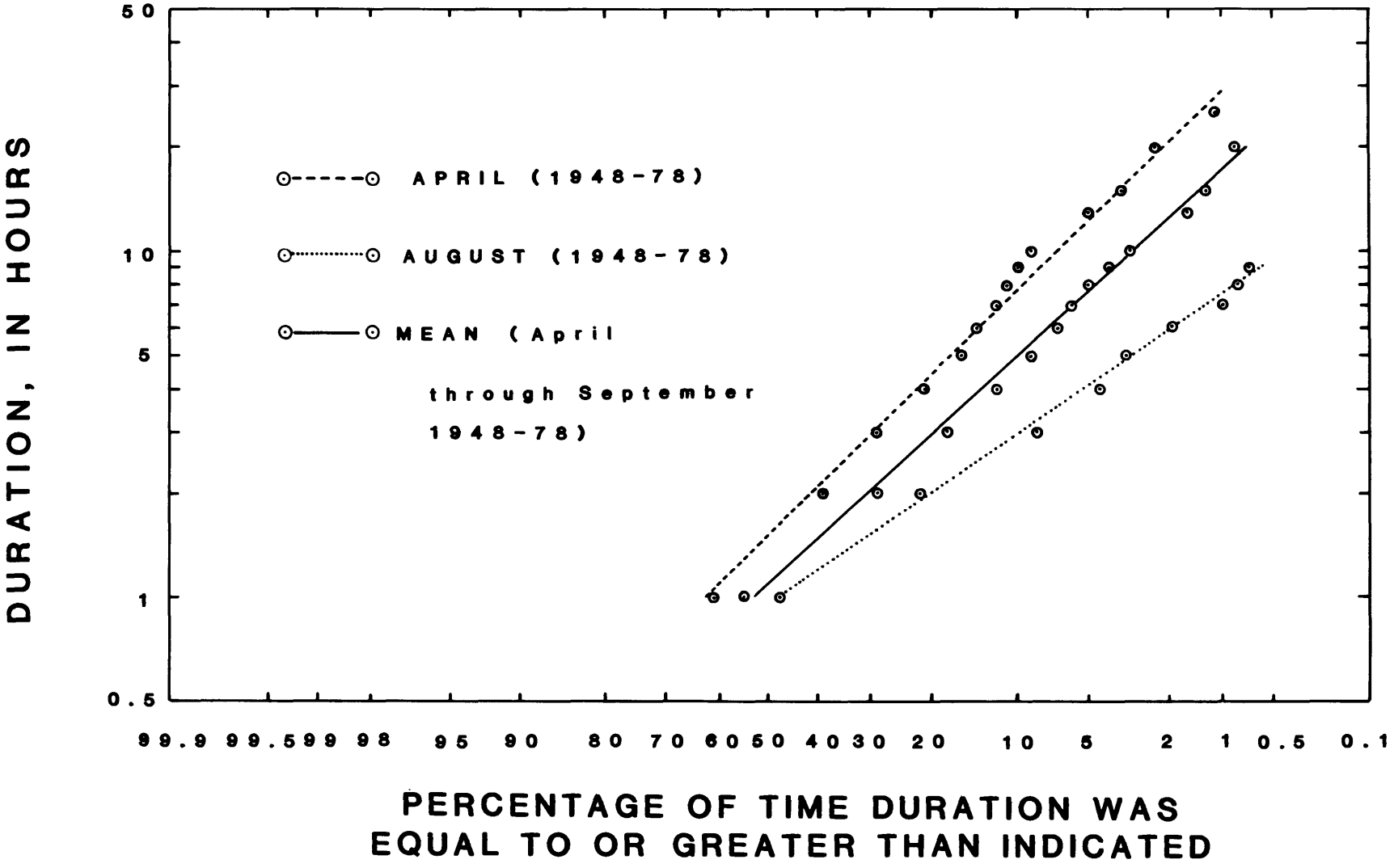

Figure 4.--Probability distribution for the duration of rainstorms for April and August, and the mean for April through September, Rapid City WSO AP weather station, 1948-78.

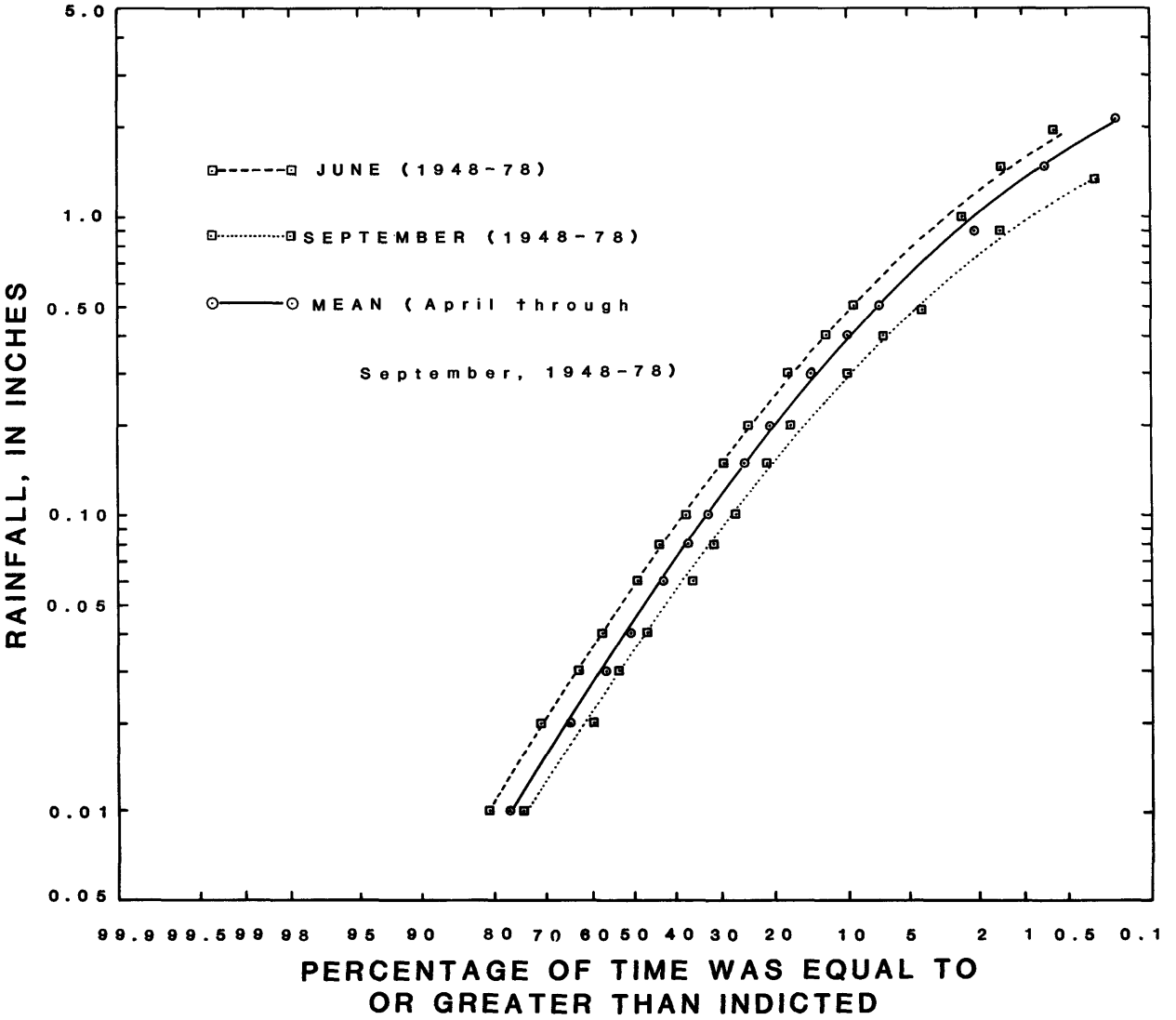

Figure 5.--Probability distribution for the depth of rainfall during rainstorms for June and September, and the mean for April through September, Rapid City WSO AP weather station, 1948-78.

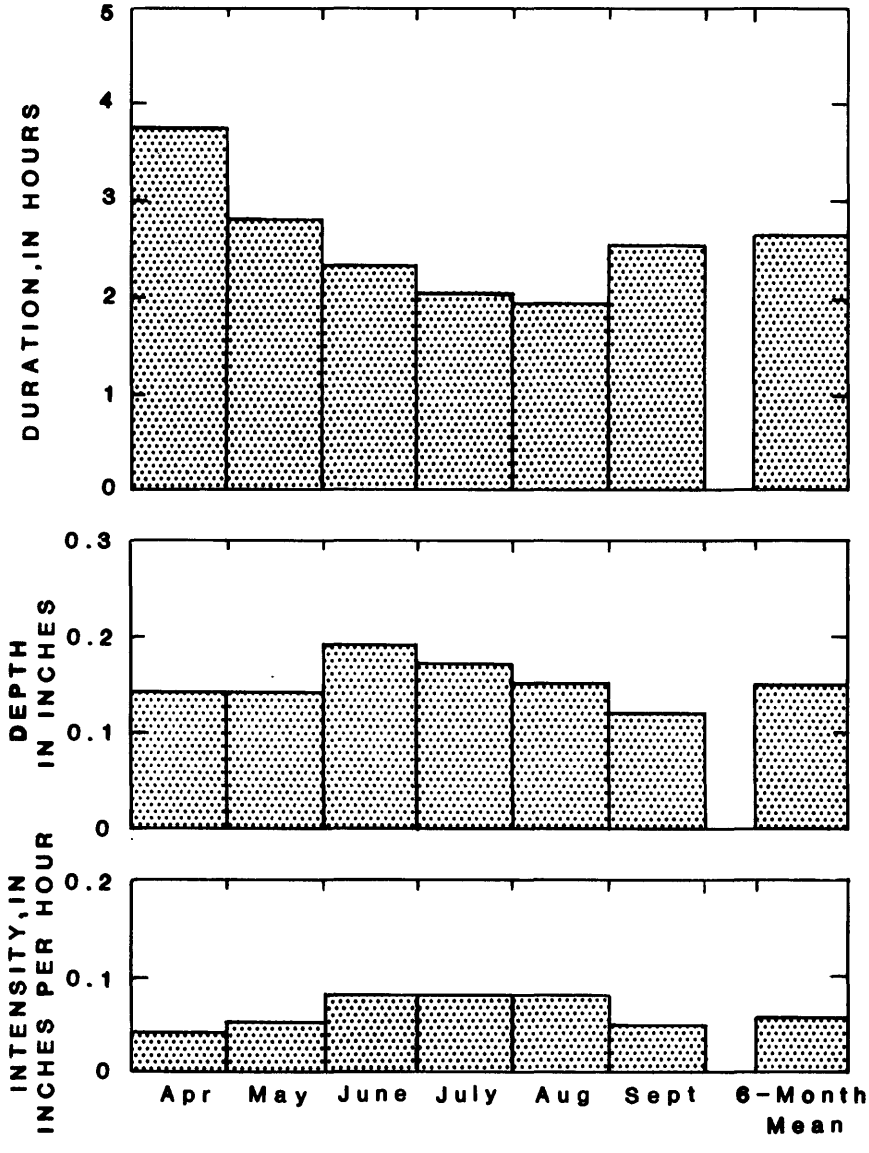

Figure 6.--Monthly and 6-month mean duration, depth, and intensity of rainstorms for April through September, Rapid City WSO AP weather station, 1948-78.

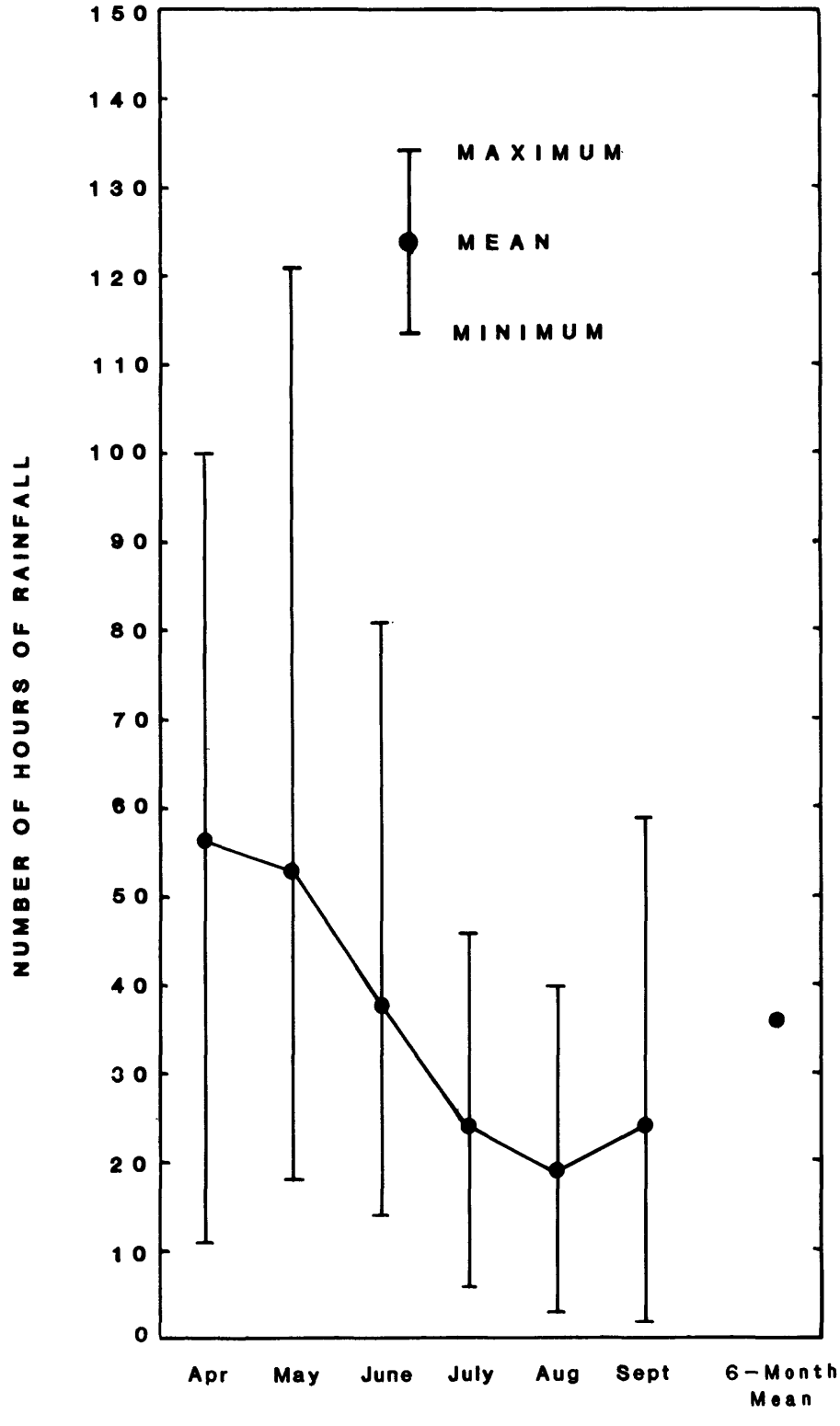

Figure 7.--Maximum, mean, and minimum number of hours with recorded rainfall within a month for April through September, and 6-month mean, Rapid City WSO AP weather station, 1948-78.

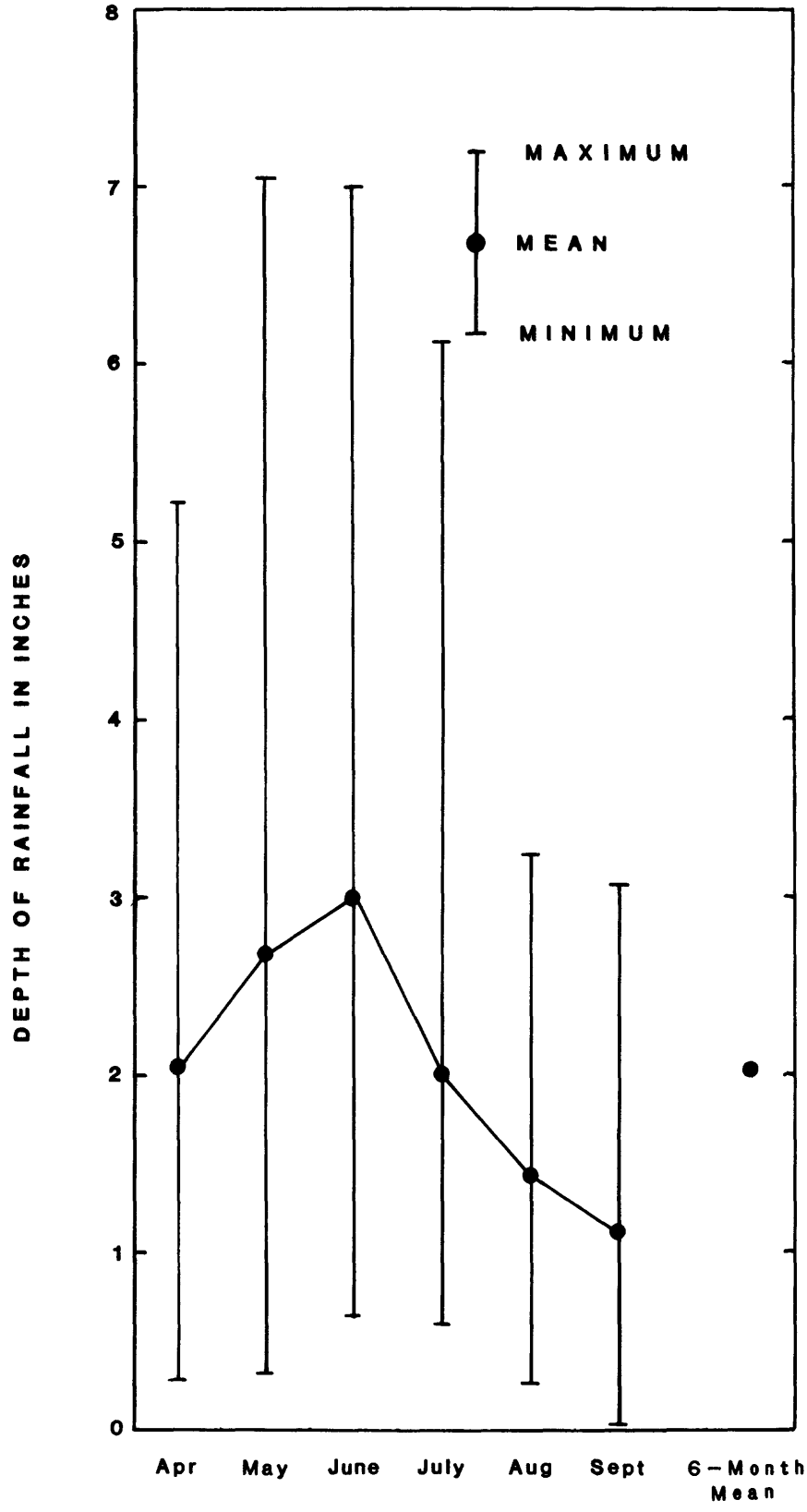

Figure 8.--Maximum, mean, and minimum depth of rainfall for April through September, and 6-month mean, Rapid City WSO AP weather station, 1948-78.

major rainstorm. Data obtained by the nonrecording rain-gage network were used only as supplemental information and are not presented in this report because the integrity of the data could not be assured. However, data from the nonrecording rain-gage network were used to estimate rainfall depth if more accurate data were unavailable due to recording rain-gage malfunction.

The recording rain-gage network consisted of 10 tipping-bucket type rain gages (Weather Measure Model P501-I Remote Recording Rain Gage; Weather Measure Wethertronics, Sacramento, California). Each tip of a bucket mechanism is calibrated to occur after 0.01 inch of rainfall. The tipping action causes a momentary closure of a mercury switch located beneath the bucket mechanism. This switch, when connected to a recorder, enables counting of each tip of the bucket and, therefore, the depth of rainfall. Recording the number of contact closures per time interval allows determination of rainfall intensity. A time interval of 5 minutes was used for the recording of rainfall data.

The location of each of the 10 recording rain gages is shown on plate 1 and the site numbers, names, and U.S. Geological Survey site identification numbers are listed in table 2. Wind screens were installed to protect the gages from the effects of strong winds.

Table 2.—Site number, name, and identification number for recording rain gages operated by the U.S. Geological Survey from April to October 1981 and from April to July 1982

Site number	Site name	U.S. Geological Survey site-identification number
1	Rapid Creek above Canyon Lake	440304103184701
2	South Canyon School	440503103170301
3	Sioux Park above Water Treatment Plant	440427103153401
4	Arrowhead Country Club	440315103160001
5	Rapid Creek at Rapid City	440509103143101
6	North Rapid Fire Station	440549103124001
7	South Dakota School of Mines & Technology	440430103122001
8	Eighth Street at Highland Park Drive	440339103140201
9	Robbinsdale School	440343103122701
10	East Rapid at Lombardy Park	440345103105701

The data obtained from the recording rain-gage network for storms studied in 1981 and 1982 are listed in table 3. No recording rain-gage data are available for rainstorms 1-7 that occurred in 1980 because the gages were not received until after the sampling season. Recording rain-gage data also are not available for the three sampled periods of snowmelt runoff (storms 23-25) and for the two rainstorms used for automatic-sampler calibration (storms 27 and 30). Missing data for individual gages were caused by recorder malfunction or, in one instance, by storm damage to the rain gage.

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982

Rain-storm number	Rain-gage site number[1]	Total rainfall (inches)[2]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
8	1	0.08	04-03-81	0515	04-03-81	0900	0.01
	2	.11	04-03-81	0145	04-03-81	0820	.02
	3	.07	04-03-81	0130	04-03-81	0705	.01
	4	.09	04-03-81	0315	04-03-81	1610	.01
	5	.07	04-03-81	0315	04-03-81	0850	.01
	6	.03	04-03-81	0225	04-03-81	0555	.01
	7	.05	04-03-81	0310	04-03-81	0800	.01
	8	.05	04-03-81	0520	04-03-81	0745	.01
	9	.06	04-03-81	0255	04-03-81	0755	.01
	10	0	--	--	--	--	--
9	1	.19	04-21-81	1510	04-21-81	1605	.03
	2	.13	04-21-81	1510	04-21-81	1600	.02
	3	.12	04-21-81	1510	04-21-81	1920	.02
	4	.21	04-21-81	1545	04-21-81	1635	.03
	5	.15	04-21-81	1525	04-21-81	1840	.02
	6	.13	04-21-81	1500	04-21-81	2000	.02
	7	.16	04-21-81	1535	04-21-81	1645	.02
	8	.17	04-21-81	1540	04-21-81	1630	.03
	9	.19	04-21-81	1520	04-21-81	1640	.02
	10	.18	04-21-81	1520	04-21-81	1640	.02
10	1	E .20	--	--	--	--	--
	2	.31	05-02-81	1630	05-02-81	1900	.11
	3	.33	05-02-81	1630	05-02-81	1855	.14
	4	.18	05-02-81	1630	05-02-81	1920	.02
	5	.39	05-02-81	1705	05-02-81	1900	.16
	6	E .42	--	--	--	--	--
	7	.30	05-02-81	1635	05-02-81	1850	.12
	8	.31	05-02-81	1710	05-02-81	2015	.08
	9	.36	05-02-81	1710	05-02-81	1945	.13
	10	.30	05-02-81	1710	05-02-81	1930	.14
11	1	E .45	--	--	--	--	--
	2	.32	05-06-81	0650	05-06-81	2330	.02
	3	.29	05-06-81	0640	05-06-81	2400	.01
	4	.30	05-06-81	0645	05-06-81	2310	.01
	5	.28	05-06-81	0710	05-07-81	0010	.01
	6	E .29	--	--	--	--	--
	7	.36	05-06-81	0610	05-06-81	2400	.01
	8	.17	05-06-81	1435	05-07-81	0045	.01
	9	.17	05-06-81	1435	05-07-81	0010	.01
	10	.17	05-06-81	1435	05-07-81	0010	.01

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982--Continued

Rain-storm number	Rain-gage site number[1]	Total rainfall (inches)[2]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
12	1	E 0.24	--	--	--	--	--
	2	.21	05-07-81	0650	05-07-81	0840	0.02
	3	.18	05-07-81	0655	05-07-81	0850	.02
	4	.16	05-07-81	0705	05-07-81	0850	.02
	5	.19	05-07-81	0725	05-07-81	0920	.01
	6	E .18	--	--	--	--	--
	7	.17	05-07-81	0700	05-07-81	0900	.02
	8	.20	05-07-81	0725	05-07-81	0940	.01
	9	.18	05-07-81	0745	05-07-81	0935	.01
	10	.19	05-07-81	0735	05-07-81	0940	.01
13	1	.25	05-12-81	2235	05-13-81	0755	.02
	2	.20	05-12-81	2145	05-13-81	0745	.02
	3	.20	05-12-81	2140	05-13-81	0640	.01
	4	.21	05-12-81	2215	05-13-81	0905	.02
	5	.22	05-12-81	2235	05-13-81	0805	.01
	6	E .34	--	--	--	--	--
	7	.25	05-12-81	2145	05-13-81	0540	.02
	8	.22	05-12-81	2225	05-13-81	0620	.02
	9	.25	05-12-81	2225	05-13-81	0730	.02
	10	.17	05-12-81	2220	05-13-81	0330	.02
14	1	3.54	05-15-81	2230	05-17-81	2315	.06
	2	3.20	05-15-81	2210	05-17-81	2355	.03
	3	2.87	05-16-81	0405	05-17-81	2240	.03
	4	3.04	05-15-81	2220	05-17-81	2250	.03
	5	2.53	05-16-81	0020	05-17-81	2320	.03
	6	E 1.88	--	--	--	--	--
	7	1.91	05-16-81	0025	05-17-81	2225	.03
	8	2.35	05-15-81	2305	05-17-81	2300	.03
	9	2.07	05-16-81	0020	05-17-81	2305	.02
	10	1.64	05-16-81	0130	05-17-81	2255	.02
15	1	.77	05-22-81	1540	05-23-81	0930	.04
	2	.77	05-22-81	1505	05-23-81	0905	.05
	3	.66	05-22-81	1515	05-23-81	1045	.04
	4	.64	05-22-81	1530	05-23-81	0945	.03
	5	.73	05-22-81	1530	05-23-81	0950	.03
	6	E .56	--	--	--	--	--
	7	.52	05-22-81	0925	05-23-81	0850	.02
	8	.62	05-22-81	1320	05-23-81	0930	.04
	9	.57	05-22-81	1010	05-23-81	0930	.03
	10	.54	05-22-81	0955	05-23-81	0935	.03

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982--Continued

Rain-storm number	Rain-gage site number[1]	Total rainfall (inches)[2]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
16	1	0.02	06-03-81	1950	06-03-81	2330	0.01
	2	.08	06-03-81	1840	06-03-81	1925	.04
	3	.14	06-03-81	1840	06-03-81	2035	.06
	4	.13	06-03-81	1850	06-03-81	1920	.10
	5	E .29	--	--	--	--	--
	6	.37	06-03-81	1840	06-03-81	1955	.10
	7	.36	06-03-81	1830	06-03-81	2030	.09
	8	.21	06-03-81	1905	06-03-81	2055	.09
	9	.39	06-03-81	1900	06-03-81	2040	.11
	10	.11	06-03-81	1910	06-03-81	2050	.04
17	1	.44	07-01-81	2220	07-01-81	2300	.12
	2	.44	07-01-81	2150	07-01-81	2235	.09
	3	.37	07-01-81	2155	07-01-81	2240	.09
	4	.38	07-01-81	2205	07-01-81	2240	.15
	5	.24	07-01-81	2230	07-01-81	2300	.08
	6	E .32	--	--	--	--	--
	7	.35	07-01-81	2150	07-01-81	2235	.08
	8	.22	07-01-81	2230	07-01-81	2300	.05
	9	.35	07-01-81	2225	07-01-81	2310	.08
	10	.38	07-01-81	2225	07-01-81	2310	.10
18	1	.41	07-13-81	0130	07-13-81	0345	.05
	2	.40	07-13-81	0055	07-13-81	0315	.04
	3	.39	07-13-81	0055	07-13-81	0325	.04
	4	.40	07-13-81	0045	07-13-81	0330	.04
	5	.40	07-13-81	0140	07-13-81	0405	.05
	6	.30	07-13-81	0125	07-13-81	0325	.03
	7	.32	07-13-81	0055	07-13-81	0310	.04
	8	.37	07-13-81	0130	07-13-81	0345	.05
	9	.32	07-13-81	0125	07-13-81	0345	.03
	10	.34	07-13-81	0135	07-13-81	0350	.04
19	1	.50	07-18-81	1900	07-18-81	1925	.15
	2	.40	07-18-81	1820	07-18-81	1845	.15
	3	.38	07-18-81	1830	07-18-81	1900	.19
	4	.30	07-18-81	1830	07-18-81	1900	.11
	5	.40	07-18-81	1855	07-18-81	1925	.16
	6	.32	07-18-81	1835	07-18-81	1855	.13
	7	.41	07-18-81	1825	07-18-81	1905	.14
	8	.72	07-18-81	1900	07-18-81	1935	.47
	9	.55	07-18-81	1905	07-18-81	1935	.26
	10	.77	07-18-81	1905	07-18-81	1930	.32

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982--Continued

Rain-storm number	Rain-gage site number[1]	Total rainfall (inches)[2]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
20	1	0	--	--	--	--	--
	2	.26	07-23-81	1755	07-23-81	1810	0.14
	3	.24	07-23-81	1800	07-23-81	1815	.12
	4	.05	07-23-81	1755	07-23-81	1815	.03
	5	.24	07-23-81	1835	07-23-81	1850	.12
	6	E 1.61	--	--	--	--	--
	7	.39	07-23-81	1800	07-23-81	1830	.13
	8	.26	07-23-81	1835	07-23-81	1850	.16
	9	.40	07-23-81	1835	07-23-81	1855	.27
	10	.82	07-23-81	1835	07-23-81	1905	.33
21	1	2.71	07-25-81	0115	07-25-81	2330	.18
	2	2.38	07-25-81	0055	07-25-81	2220	.14
	3	2.69	07-25-81	0100	07-25-81	2225	.18
	4	2.94	07-25-81	0045	07-25-81	2215	.31
	5	2.05	07-25-81	0120	07-25-81	2255	.08
	6	1.88	07-24-81	2400	07-25-81	1955	.11
	7	E 2.73	--	--	--	--	--
	8	3.47	07-25-81	0100	07-25-81	2135	.28
	9	2.77	07-25-81	0055	07-25-81	2130	.29
	10	2.25	07-25-81	0050	07-25-81	2140	.11
22	1	.44	10-04-81	2135	10-05-81	0950	.01
	2	E .45	--	--	--	--	--
	3	E .57	--	--	--	--	--
	4	E .51	--	--	--	--	--
	5	.52	10-04-81	2045	10-05-81	1050	.01
	6	E .49	--	--	--	--	--
	7	E .58	--	--	--	--	--
	8	.51	10-04-81	2045	10-05-81	1015	.01
	9	.57	10-04-81	2045	10-05-81	1050	.02
	10	.53	10-04-81	2045	10-05-81	1020	.01
26	1	.57	05-10-82	0430	05-10-82	0735	.04
	2	.61	05-10-82	0405	05-10-82	0705	.03
	3	.67	05-10-82	0405	05-10-82	0715	.03
	4	.74	05-10-82	0420	05-10-82	0720	.06
	5	.79	05-10-82	0405	05-10-82	0715	.05
	6	.68	05-10-82	0405	05-10-82	0710	.05
	7	.76	05-10-82	0405	05-10-82	0705	.06
	8	.76	05-10-82	0435	05-10-82	0740	.07
	9	.81	05-10-82	0435	05-10-82	0745	.04
	10	.80	05-10-82	0435	05-10-82	0745	.06

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982--Continued

Rain-storm number	Rain-gage site number[1]	Total rainfall (inches)[2]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
28	1	0.10	05-17-82	1415	05-17-82	1645	0.01
	2	.16	05-17-82	1430	05-17-82	1540	.03
	3	.13	05-17-82	1445	05-17-82	1655	.02
	4	.08	05-17-82	1415	05-17-82	1635	.02
	5	E .30	--	--	--	--	--
	6	E .10	--	--	--	--	--
	7	.28	05-17-82	1450	05-17-82	1620	.09
	8	.29	05-17-82	1505	05-17-82	1555	.09
	9	.68	05-17-82	1535	05-17-82	1600	.14
	10	.12	05-17-82	1530	05-17-82	1605	.04
29	1	.97	05-19-82	1945	05-20-82	1205	.06
	2	.98	05-19-82	1915	05-20-82	1120	.05
	3	1.09	05-19-82	1910	05-20-82	1115	.05
	4	1.15	05-19-82	1910	05-20-82	1120	.10
	5	1.34	05-19-82	1910	05-20-82	1055	.08
	6	1.15	05-19-82	1915	05-20-82	1120	.13
	7	1.22	05-19-82	1910	05-20-82	1040	.12
	8	1.43	05-19-82	1940	05-20-82	1115	.06
	9	1.55	05-19-82	1940	05-20-82	1125	.09
	10	1.38	05-19-82	1940	05-20-82	1115	.14
31	1	.36	06-15-82	0015	06-15-82	0310	.13
	2	.25	06-15-82	0020	06-15-82	0310	.05
	3	.29	06-15-82	0005	06-15-82	0345	.06
	4	.29	06-15-82	0010	06-15-82	0330	.07
	5	.23	06-15-82	0010	06-15-82	0320	.06
	6	.29	06-15-82	0010	06-15-82	0320	.08
	7	.33	06-15-82	0005	06-15-82	0315	.08
	8	.27	06-15-82	0035	06-15-82	0340	.05
	9	.36	06-15-82	0035	06-15-82	0335	.09
	10	.52	06-15-82	0040	06-15-82	0330	.15
32	1	.82	06-16-82	1115	06-16-82	1810	.13
	2	.55	06-16-82	1225	06-16-82	1755	.22
	3	.65	06-16-82	1110	06-16-82	1810	.21
	4	.84	06-16-82	1110	06-16-82	1805	.19
	5	.61	06-16-82	1255	06-16-82	1740	.26
	6	.36	06-16-82	1315	06-16-82	1810	.18
	7	.40	06-16-82	1320	06-16-82	1805	.24
	8	.53	06-16-82	1145	06-16-82	1835	.10
	9	.57	06-16-82	1155	06-16-82	1850	--
	10	.56	06-16-82	1320	06-16-82	1835	.13

Table 3.--Total rainfall, rainfall starting and ending dates and times, and maximum 5-minute rainfall from recording rain gages for sampled rainstorms, April 1981 to July 1982--Continued

Rain-storm number	Rain-gage site number[1/]	Total rainfall (inches)[2/]	Rainfall start		Rainfall end		Maximum 5-minute rainfall (inches)
			Date	Time	Date	Time	
33	1	0.29	07-08-82	1300	07-08-82	1430	0.13
	2	.27	07-08-82	1310	07-08-82	1400	.11
	3	.22	07-08-82	1325	07-08-82	1410	.09
	4	.37	07-08-82	1325	07-08-82	1450	.12
	5	.23	07-08-82	1325	07-08-82	1410	.08
	6	.10	07-08-82	1335	07-08-82	1405	.03
	7	.09	07-08-82	1330	08-08-82	1400	.03
	8	.22	07-08-82	1400	07-08-82	1520	.09
	9	.19	07-08-82	1410	07-08-82	1445	.06
	10	.23	07-08-82	1415	07-08-82	1450	.12

1/ Site number refers to number listed in table 2.
2/ Estimated values indicated by E.

For most watersheds, rainfall during most rainstorms, and particularly during thunderstorms, typically is distributed unequally. The rainfall at any single rain gage, therefore, does not accurately represent the rainfall throughout an entire watershed. However, when rainfall records are available at several locations within and near the watershed, mathematical methods are available that enable the average rainfall throughout the watershed to be determined more accurately.

The Thiessen polygon method (Brakensiek and others, 1979) was used to determine the average rainfall throughout the five study watersheds for sampled rainstorms. The Thiessen polygon method involves determining the area of a watershed for which data collected at a rain gage are applicable. Briefly, the method is: (1) Locate the site of each rain gage on a map of the area that includes watershed boundaries; (2) connect each site by straight lines with the several nearest sites to form a series of triangles; (3) draw perpendicular bisectors on each of these lines and extend them to intersect with other bisectors, thus forming a series of irregular polygons around each site; and (4) measure the area of each polygon and divide by the total area in the watershed to obtain the fraction of the total watershed area within each polygon. These fractions, known as Thiessen constants, are applied to the rainfall depth measured at each site within the watershed in computing the area-weighted average rainfall. The polygon area and Thiessen constants used in determination of area-weighted average rainfall for the five watersheds and the study area are listed in table 4.

Table 4.--Polygon area and Thiessen constant used in the determination of area-weighted average rainfall for each watershed and for the study area

Area name	Rain-gage site number[1/]	Polygon area (square miles)	Thiessen constant
West Rapid watershed	1	14.94	0.456
	2	8.81	.269
	3	1.01	.031
	4	7.92	.241
	8	.11	.003
Watershed total		32.79	1.000
Deadwood Avenue watershed	2	2.91	.481
	3	.78	.129
	5	2.36	.390
Watershed total		6.05	1.000
Central Business District watershed	3	.17	.030
	5	2.07	.363
	6	2.36	.414
	7	.67	.118
	8	.43	.075
Watershed total		5.70	1.000
East Rapid watershed	6	1.04	.414
	7	1.21	.482
	10	.26	.104
Watershed total		2.51	1.000
Robbinsdale watershed	7	.21	.066
	8	1.66	.524
	9	1.25	.394
	10	.05	.016
Watershed total		3.17	1.000
Study area	1	14.94	.298
	2	11.72	.233
	3	1.96	.039
	4	7.92	.158
	5	4.43	.088
	6	3.40	.067
	7	2.09	.042
	8	2.20	.044
	9	1.25	.025
	10	.31	.006
Study-area total		50.22	1.000

1/ Site number refers to number listed in table 2.

The area-weighted average rainfall determined using the Thiessen polygon method for each watershed and for the study area for storms studied from June 1980 to July 1982 is listed in table 5. Data from the recording rain-gage network were used in these determinations for storms 8 through 33, excepting storms 23-25 and 27 and 30 as previously discussed. The accuracy of these data is considered excellent within the limits of uncertainty of the method. Storms in which the rainfall was unevenly distributed, such as rainstorms 14 and 20, are likely to contain larger errors. Rainfall depths for storms 1 through 6 were estimated based on data from NOAA and on information obtained from private citizens. The accuracy of these data is considered poor and depth values may be as much as 50 percent in error. Rainfall depths for storm 7 were estimated based on the nonrecording rain-gage network, which was placed in operation between rainstorms 6 and 7. The accuracy of data for rainstorm 7 is considered good.

RAINFALL- AND DRYFALL-QUALITY DATA

Both wetfall (rain and snow) and dryfall (particulates and aerosols) supply large fluxes of many chemical constituents to urban runoff. A knowledge of the chemical constituents in rainfall and dryfall is necessary to determine the quality of urban runoff. The rainfall and dryfall sampling program used in this study was designed to determine if the fluxes of chemical constituents in rainfall and dryfall were of sufficient magnitude to account for a significant proportion of the chemical constituents present in urban runoff from the five watersheds.

Rainfall and dryfall samples were collected at two sites in Rapid City during 1981-82. These sites, West Rapid at Sioux Park (site 3), and East Rapid at Lombardy Park (site 10), are shown on plate 1. Each site was equipped with a Weathermeasure tipping bucket rain gage with windshield, a Fisher-Porter digital recorder for recording rainfall data, and an Aerochem Metrics Model 301 sampler on a wooden pedestal. The top of the rain gage was about 6 feet above the ground. The top of the atmospheric sampler was about 7 feet above the ground. To prevent vadalism, the equipment was surrounded by a 6-foot-high chain-link fence with barbed-wire top.

The Aerochem Metrics Model 301 sampler consists of two polyethylene collector buckets for collecting rainfall and dryfall samples and a moveable lid, which covers one of the two collector buckets. During dry periods, the lid covers the rainfall collector while leaving the dryfall collector open to atmospheric deposition. When rainfall begins, sensed by an electrified grid, the sampler moves the lid from the rainfall collector to the dryfall collector. After rainfall ceases, the heated grid dries, breaks the circuit, and the sampler moves the lid from the dryfall collector to the rainfall collector.

The West Rapid at Sioux Park site was located in a city park. The area surrounding the sampler was completely covered by thick, lawn type grass. The nearest paved surface was a concrete bike path about 100 yards to the north. The nearest roads with regular vehicular traffic were about 200 yards from the sampler to the west and north. A number of large trees, mostly cottonwoods, were located between 75 and 150 yards to the west and north of the sampler. Only one object, a pole erected to bring power to the site, protruded above a line-of-sight projected at an angle of 30° above the horizontal. Major sources of atmospheric emissions that may have affected rainfall or dryfall chemistry at this site were a cement plant located 1.2 miles to the north, and several open-pit limestone quarries located between 1.5 and 3 miles to the north and northwest.

Table 5.--Area-weighted average rainfall for each watershed and for the study area for storms studied from June 1980 to July 1982

Storm number	Area-weighted average rainfall, in inches[1/]					
	Watershed					
	West Rapid	Deadwood Avenue	Central Business District	East Rapid	Robbins-dale	Study area
1	E 0.6	E 0.7	E 0.5	E 0.5	E 0.5	E 0.6
2	E .2	E .2	E .2	E .2	E .2	E .2
3	E .9	E .7	E .8	E .5	E .8	E .8
4	E .3	E .3	E .3	E .3	E .3	E .3
5	E .3	E .2	E .3	E .2	E .2	E .3
6	E .2	E .2	E .2	E .2	E .2	E .2
7	E 2.12	E 2.10	E 2.30	E 2.22	E 2.18	E 2.12
8	.09	.09	.05	.04	.05	.08
9	.18	.14	.14	.15	.17	.17
10	.23	.34	.37	.35	.33	.27
11	.37	.30	.29	.31	.18	.34
12	.21	.20	.18	.18	.19	.14
13	.23	.21	.27	.28	.23	.23
14	3.30	2.90	2.18	1.87	2.20	2.99
15	.73	.74	.62	.54	.59	.70
16	.07	.17	.32	.34	.29	.14
17	.42	.35	.29	.34	.28	.39
18	.40	.40	.35	.31	.35	.39
19	.42	.40	.39	.41	.63	.43
20	.09	.25	.82	.94	.33	.25
21	2.68	2.29	2.18	2.33	3.12	2.59
22	.46	.49	.52	.54	.54	.48
23-SM[2/]	E .3	E .3	E .3	E .3	E .3	E .3
24-SM[2/]	E .3	E .3	E .3	E .3	E .3	E .3
25-SM[2/]	0	0	0	0	0	0
26[3/]	.62	.69	.74	.73	.78	.66
27[3/]	--	--	--	--	--	--
28	.11	.21	.21	.19	.44	.16
29[3/]	1.02	1.14	1.25	1.21	1.46	1.10
30[3/]	--	--	--	--	--	--
31	.31	.25	.27	.33	.31	.30
32	.75	.59	.48	.40	.54	.67
33	.30	.25	.16	.11	.20	.26

1/ Estimated values indicated by E.

2/ Snowmelt runoff. Equivalent rainfall depth estimated based on temperature and snowfall data obtained from the National Oceanic and Atmospheric Administration. Storms 24 and 25 are two periods of snowmelt runoff from a single snowstorm.

3/ Rainstorm used for automatic-sampler calibration. Rainfall data not necessary.

The East Rapid at Lombardy Park site was located at the edge of an industrial park. The area surrounding the sampler was spottily covered with native grasses and weeds. The nearest road with regular vehicular traffic was about 100 yards to the northwest. During the first 6 months of operation, this road was the nearest source of localized pollution. However, in November 1981, a small frozen-food warehouse was erected about 75 yards to the northwest of the sampler. A graveled parking lot encircled the warehouse and was about 50 yards from the sampler to the north and northwest. The refrigeration units at the warehouse and vehicular traffic on the parking lot may have had some effects on the chemistry of rainfall and dryfall at this site. Other operations at the industrial park (warehouses, auto-repair shops, and small commercial business) were not thought to cause anomalous effects due to their distance from the sampler, 300 to 1,000 yards to the north and northwest. Large cottonwood trees were located about 150 yards to the east of the sampler. As was the case at the West Rapid site, only a power pole protruded above the 30° line-of-site angle. The only other major source of atmospheric emissions that may have affected rainfall and dryfall chemistry at this site was a large sod farm located about 1,000 yards to the northeast.

Rainfall and dryfall samples were collected on a fixed-interval basis. Rainfall samples were collected monthly except during the winter months, whereas dryfall samples were collected once every 2 months. Sample collection always took place the first Tuesday of the month. The collector buckets were transported directly to the laboratory at South Dakota School of Mines and Technology for processing; clean buckets were placed in the sampler when the sample buckets were removed.

Rainfall samples were first weighed to determine the volume collected during the sampling interval and then split into subsample bottles required for laboratory analysis including an extra bottle for field measurement of specific conductance and pH. A cone splitter was not used for splitting the rainfall samples because of both the minimal particulate matter in the samples and the possibility of contaminating the sample. Instead, the samples were stirred rapidly with a glass rod and then pored quickly through a glass funnel into subsample bottles.

Dryfall samples were first weighed if any snow was present in the bucket. Some snow, less than 10 milliliters of water equivalent, was present in the October to November 1981 and the December to January 1982 samples collected at West Rapid at Sioux Park. About 2 liters of reagent-grade distilled water was then added to the dryfall buckets. After leaching for 24 hours, the dryfall sample was removed from the bucket by alternately scrubbing the walls and bottom of the collector with a clean plastic spatula and sequentially rinsing with small volumes of reagent-grade distilled water. A cone splitter was used for splitting of the dryfall samples into subsample bottles required for field measurements of specific conductance and pH, and for laboratory analysis.

Measurements of specific conductance were made with a Yellow Springs Instrument Company Model 32FL conductance meter equipped with a glass conductivity cell with a cell constant of K = 1.0 per centimeter. Although the instrument can be temperature compensated, specific-conductance measurements were made only after the sample was at 25 °C. The meter-cell combination was checked frequently against a standard with a specific conductance of 17 microsiemens per centimeter at 25 °C and was determined to be accurate to within 1 microsiemen.

Measurements of pH were made with an Orion model 701A digital-display pH meter equipped with an Orion Model 91-62 research-grade combination electrode. The instrument was calibrated before use with pH 4.0, 7.0, and 10.0 buffers and checked after use with pH 7.0 buffer. Calibration and measurements were made with the temperature of the buffers and sample at 25 °C. The sample was stirred continuously during measurement and at least 15 minutes was allowed for probe equilibration.

Chemical analysis of the rainfall and dryfall samples was done by the U.S. Geological Survey laboratory in Denver, Colorado. Prior to shipping the samples to this laboratory, the samples were preserved following standard Survey methods for water samples (U.S. Geological Survey, 1982). Subsamples designated for trace-metal analysis were placed into acid-rinsed bottles and preserved with 2 milliliters of ultrapure nitric acid per 500 milliliters of sample. Subsamples designated for nutrient analysis were placed in opague bottles, preserved with mercuric chloride and chilled to and maintained at 4 °C.

The results of rainfall and dryfall sampling program are listed in tables 6 and 7. Along with the individual constituent values, means and standard deviations also are listed for each data set. The dryfall-constituent concentrations listed in table 7 have been converted from laboratory data to a more useful form, the mass of constituent per mass of total dry deposition. These concentrations were computed as follows:

$$Mx_i = \frac{Cx_i}{TS_i} \times K \qquad (1)$$

where Mx_i = mass of constituent X in sample i;
Cx_i = concentration of constituent X in sample i;
TS_i = total solids concentration in sample i; and
K = constant to convert units to milligrams per kilogram.

The number of analyzed constituents varied for rainfall samples based on the volume of sample obtained during the month. Two dryfall samples were lost from East Rapid at Lombardy Park due to vandalism. Data from a third sample from this site are not listed because the analysis of total solids is thought to be inaccurate.

Table 6.--Individual chemical analyses and statistical summaries of monthly composited rainfall samples collected at two sites between May 1981 and August 1982

[mL, milliliters; µS/cm, microsiemens per centimeter at 25 °Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter]

Collection site	Collection period	Sample volume (mL)	Field specific conductance (µS/cm)	Laboratory specific conductance (µS/cm)	Field pH (units)
West Rapid at Sioux Park	5- 4-81 - 6- 2-81	8,230	14	14	6.5
	6- 2-81 - 7- 7-81	2,900	42	39	8.1
	7- 7-81 - 8- 4-81	7,260	6	7	6.2
	8- 4-81 - 9- 1-81	1,300	12	16	6.7
	9- 1-81 - 10- 6-81	1,550	32	26	6.5
	4- 7-82 - 5- 4-82	395	30	--	6.5
	5- 4-82 - 6- 1-82	9,400	6	7	5.3
	6- 1-82 - 7- 6-82	6,085	11	13	6.1
	7- 6-82 - 8- 4-82	7,000	12	15	6.8
	Mean	--	18.3	17.1	
	Standard deviation	--	12.9	10.6	
East Rapid at Lombardy Park	5- 4-81 - 6- 2-81	5,180	10	11	5.2
	6- 2-81 - 7- 7-81	2,670	9	10	7.4
	7- 7-81 - 8- 4-81	7,550	6	8	5.5
	8- 4-81 - 9- 1-81	1,505	9	11	6.3
	9- 1-81 - 10- 6-81	1,300	17	15	6.0
	4- 7-82 - 5- 4-82	420	17	--	6.0
	5- 4-82 - 6- 1-82	8,700	4	4	5.4
	6- 1-82 - 7- 6-82	4,125	10	13	6.1
	7- 6-82 - 8- 4-82	6,040	9	10	6.7
	Mean	--	10.1	10.2	
	Standard deviation	--	4.37	3.28	

Table 6.--Individual chemical analysis and statistical summaries of monthly composited rainfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Laboratory pH (units)	Total solids (mg/L)	Total calcium (mg/L)	Total magnesium (mg/L)	Total potassium (mg/L)
West Rapid at Sioux Park	5- 4-81 - 6- 2-81	6.7	32	1.7	0.1	0.1
	6- 2-81 - 7- 7-81	7.0	--	--	--	--
	7- 7-81 - 8- 4-81	6.5	8	.4	0	0
	8- 4-81 - 9- 1-81	6.5	12	--	--	--
	9- 1-81 - 10- 6-81	6.9	39	3.8	.2	0
	4- 7-82 - 5- 4-82	--	--	--	--	--
	5- 4-82 - 6- 1-82	--	5	.8	.1	.1
	6- 1-82 - 7- 6-82	7.7	13	1.4	.2	.2
	7- 6-82 - 8- 4-82	7.5	18	2.1	.1	.3
	Mean		18.1	1.7	.1	.1
	Standard deviation		12.7	1.2	.08	.12
East Rapid at Lombardy Park	5- 4-81 - 6- 2-81	6.0	34	.6	.1	.1
	6- 2-81 - 7- 7-81	6.1	--	--	--	--
	7- 7-81 - 8- 4-81	5.9	8	.1	.0	.0
	8- 4-81 - 9- 1-81	6.1	16	--	--	--
	9- 1-81 - 10- 6-81	6.5	18	1.1	.2	.0
	4- 7-82 - 5- 4-82	--	--	--	--	--
	5- 4-82 - 6- 1-82	5.9	3	.3	.1	.1
	6- 1-82 - 7- 6-82	8.0	12	1.0	.2	.2
	7- 6-82 - 8- 4-82	7.2	11	1.0	.1	.2
	Mean		14.6	.68	.1	.1
	Standard deviation		9.90	.42	.08	.09

Table 6.--Individual chemical analysis and statistical summaries of monthly composited rainfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Total sodium (mg/L)	Alkalinity total (mg/L)	Nitrogen NH_4+ORG total (mg/L)	Nitrogen NH_4 total (mg/L)	Nitrogen NO_2+NO_3 total (mg/L)
West Rapid at Sioux Park	5- 4-81 - 6- 2-81	1/ 0.1	12	0.68	0.427	0.277
	6- 2-81 - 7- 7-81	--	18	.82	.103	.207
	7- 7-81 - 8- 4-81	0	12	.57	.317	.224
	8- 4-81 - 9- 1-81	--	8	1.1	.427	.178
	9- 1-81 - 10- 6-81	.3	1	1.1	.742	.431
	4- 7-82 - 5- 4-82	--	--	.86	.537	.437
	5- 4-82 - 6- 1-82	.8	7	.80	.288	.146
	6- 1-82 - 7- 6-82	.1	9	1.6	.417	.230
	7- 6-82 - 8- 4-82	.2	31	1.1	.342	.265
	Mean	.26	12.2	.96	.400	.266
	Standard deviation	.33	9.0	.31	.176	.103
East Rapid at Lombardy Park	5- 4-81 - 6- 2-81	--	31	.88	.477	.222
	6- 2-81 - 7- 7-81	--	0	1.0	.159	.214
	7- 7-81 - 8- 4-81	.0	2	.67	.342	.242
	8- 4-81 - 9- 1-81	--	2	.92	.377	.156
	9- 1-81 - 10- 6-81	.2	1	1.6	1.00	.522
	4- 7-82 - 5- 4-82	--	--	.92	.662	.448
	5- 4-82 - 6- 1-82	.8	7	1.0	.257	.147
	6- 1-82 - 7- 6-82	<.1	9	3.0	.536	.340
	7- 6-82 - 8- 4-82	.2	6	1.2	.498	.290
	Mean	.24	7.2	1.24	.479	.287
	Standard deviation	.33	10.1	.71	.247	.129

Table 6.--Individual chemical analysis and statistical summaries of monthly composited rainfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Orthophosphorus total (mg/L)	Phosphorus total (mg/L)	Cadmium total (µg/L)	Chromium total (µg/L)	Copper total (µg/L)
West Rapid at Sioux Park	5- 4-81 - 6- 2-81	0.005	0.006	--	3	2
	6- 2-81 - 7- 7-81	.002	.001	--	4	3
	7- 7-81 - 8- 4-81	.000	.012	0	4	3
	8- 4-81 - 9- 1-81	.012	.014	--	12	3
	9- 1-81 - 10- 6-81	.001	.012	0	7	10
	4- 7-82 - 5- 4-82	.012	.026	--	--	--
	5- 4-82 - 6- 1-82	.003	.008	< 1	4	2
	6- 1-82 - 7- 6-82	.009	.026	< 1	4	3
	7- 6-82 - 8- 4-82	.007	.007	< 1	5	3
	Mean	.006	.012	< 1	5.4	3.6
	Standard deviation	.005	.009	--	2.9	2.6
East Rapid at Lombardy Park	5- 4-81 - 6- 2-81	.002	.006	--	2	2
	6- 2-81 - 7- 7-81	.001	.001	--	4	4
	7- 7-81 - 8- 4-81	.000	.014	0	5	4
	8- 4-81 - 9- 1-81	.006	.005	--	15	4
	9- 1-81 - 10- 6-81	.003	.016	< 1	8	16
	4- 7-82 - 5- 4-82	.014	.039	--	--	--
	5- 4-82 - 6- 1-82	.003	.005	< 1	10	3
	6- 1-82 - 7- 6-82	.027	.026	< 1	5	2
	7- 6-82 - 8- 4-82	.008	.010	< 1	3	4
	Mean	.007	.014	< 1	6.5	4.9
	Standard deviation	.009	.012	--	4.3	4.6

Table 6.--Individual chemical analysis and statistical summaries of monthly composited rainfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Iron total (µg/L)	Lead total (µg/L)	Nickel total (µg/L)	Silver total (µg/L)	Zinc total (µg/L)
West Rapid at Sioux Park	5- 4-81 - 6- 2-81	--	5	0	0	--
	6- 2-81 - 7- 7-81	--	6	1	0	--
	7- 7-81 - 8- 4-81	130	12	3	0	10
	8- 4-81 - 9- 1-81	--	4	--	--	10
	9- 1-81 - 10- 6-81	480	10	1	0	10
	4- 7-82 - 5- 4-82	--	--	--	--	--
	5- 4-82 - 6- 1-82	30	<1	<1	< 1	10
	6- 1-82 - 7- 6-82	90	<1	11	1	10
	7- 6-82 - 8- 4-82	190	3	4	< 1	20
	Mean	184	5.0	2.8	< 1	12
	Standard deviation	175	4.3	3.9		4
East Rapid at Lombardy Park	5- 4-81 - 6- 2-81	--	5	0	0	--
	6- 2-81 - 7- 7-81	--	5	1	0	--
	7- 7-81 - 8- 4-81	130	2	3	1	10
	8- 4-81 - 9- 1-81	--	3	--	--	10
	9- 1-81 - 10- 6-81	330	6	1	< 1	40
	4- 7-82 - 5- 4-82	--	--	--	--	--
	5- 4-82 - 6- 1-82	10	2	1	1	10
	6- 1-82 - 7- 6-82	210	3	6	< 1	10
	7- 6-82 - 8- 4-82	170	4	7	< 1	10
	Mean	170	3.8	2.7	< 1	15
	Standard deviation	117	1.5	2.8	--	12

1/ Not used in calculation of summary statistics.

Table 7.--Individual chemical analyses and statistical summaries of bimonthly composited dryfall samples collected at two sites between May 1981 and August 1982

[mL, milliliters; µS/cm, microsiemens per centimeter at 25 °Celsius; mg, milligrams; mg/kg, milligrams per kilograms; ND, not detected]

Collection site	Collection period	Volume dilution water (mL)	Field specific conductance (µS/cm)	Laboratory specific conductance (µS/cm)	Field pH (units)	Laboratory pH (units)
West Rapid at Sioux Park	4- 7-81 - 6- 2-81	2,152	97	106	9.1	8.3
	6- 2-81 - 8- 4-81	2,225	56	78	8.4	7.6
	8- 4-81 - 10- 6-81	2,133	74	80	8.9	8.7
	10- 6-81 - 12- 1-81	1,775	103	101	7.9	8.7
	12- 1-81 - 2- 2-82	2,325	72	98	8.4	--
	2- 2-82 - 4- 7-82	2,025	65	77	7.6	8.5
	4- 7-82 - 6- 1-82	1,928	64	77	6.5	5.3
	6- 1-82 - 8- 3-82	1,756	86	103	7.4	8.8
East Rapid at Lombardy Park	4- 7-81 - 6- 2-81	2,201	46	55	8.3	7.8
	6- 2-81 - 8- 4-81	2,153	42	72	7.3	7.1
	8- 4-81 - 10- 6-81	2,193	36	70	8.1	7.8
	10- 6-81 - 12- 1-81	2,266	32	40	7.5	8.9
	12- 1-81 - 2- 2-82 [1]	--	--	--	--	--
	2- 2-82 - 4- 7-82 [1]	--	--	--	--	--
	4- 7-82 - 6- 1-82	2,047	29	45	6.7	8.4
	6- 1-82 - 8- 2-82	2,347	41	62	7.4	7.5

Table 7.--Individual chemical analysis and statistical summaries of bimonthly composited dryfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Total solids (mg)	Calcium (mg/kg)	Magnesium (mg/kg)	Potassium (mg/kg)	Sodium (mg/kg)	Alkalinity (mg/kg)
West Rapid at Sioux Park	4- 7-81 - 6- 2-81	807	190,000	5,300	4,000	1,600	130,000
	6- 2-81 - 8- 4-81	365	180,000	9,100	6,700	1,800	200,000
	8- 4-81 - 10- 6-81	429	220,000	7,000	3,000	2,500	240,000
	10- 6-81 - 12- 1-81	238	400,000	9,000	12,000	4,500	400,000
	12- 1-81 - 2- 2-82	232	280,000	6,000	6,000	6,000	320,000
	2- 2-82 - 4- 7-82	234	210,000	5,200	4,300	5,200	320,000
	4- 7-82 - 6- 1-82	240	210,000	9,100	6,600	9,100	240,000
	6- 1-82 - 8- 3-82	499	230,000	5,900	8,300	2,400	480,000
	Mean	380	240,000	7,070	6,360	4,130	291,000
	Standard deviation	200	71,300	1,730	2,850	2,590	112,000
East Rapid at Lombardy Park	4- 7-81 - 6- 2-81	600	59,000	5,100	4,400	1,500	110,000
	6- 2-81 - 8- 4-81	320	88,000	8,100	15,000	670	110,000
	8- 4-81 - 10- 6-81	309	110,000	5,700	2,800	2,800	240,000
	10- 6-81 - 12- 1-81	2/ 88	--	--	--	--	--
	12- 1-81 - 2- 2-82	--	--	--	--	--	--
	2- 2-82 - 4- 7-82	--	--	--	--	--	--
	4- 7-82 - 6- 1-82	151	15,000	8,100	8,100	28,000	270,000
	6- 1-82 - 8- 2-82	371	89,000	4,400	8,200	1,900	270,000
	Mean	306	72,200	6,280	7,700	6,970	200,000
	Standard deviation	180	36,700	1,720	4,700	117,000	63,000

Table 7.--Individual chemical analysis and statistical summaries of bimonthly composited dryfall samples collected at two sites between May 1981 and August 1982--Continued

Collection site	Collection period	Nitrogen NH_4+ORG (mg/kg)	Nitrogen NH_4 (mg/kg)	Nitrogen NO_2+NO_3 (mg/kg)	Ortho-phosphorus (mg/kg)	Phosphorus (mg/kg)	Cadmium (mg/kg)
West Rapid at Sioux Park	4- 7-81 - 6- 2-81	--	240	1,900	110	--	--
	6- 2-81 - 8- 4-81	12,000	2,100	4,100	670	1,800	ND
	8- 4-81 - 10- 6-81	4,600	650	2,700	200	750	ND
	10- 6-81 - 12- 1-81	3,300	1,200	4,100	370	370	ND
	12- 1-81 - 2- 2-82	4,800	1,000	1,900	400	100	ND
	2- 2-82 - 4- 7-82	3,500	860	2,200	260	170	9
	4- 7-82 - 6- 1-82	9,900	1,300	4,200	330	1,200	ND
	6- 1-82 - 8- 3-82	11,000	630	2,400	950	1,600	ND
	Mean	7,010	998	2,940	411	841	--
	Standard deviation	3,780	360	1,020	274	707	--
East Rapid at Lombardy Park	4- 7-81 - 6- 2-81	--	440	2,700	150	--	--
	6- 2-81 - 8- 4-81	42,000	3,000	4,000	670	5,600	ND
	8- 4-81 - 10- 6-81	5,100	850	3,600	280	850	ND
	10- 6-81 - 12- 1-81	--	--	--	--	--	--
	12- 1-81 - 2- 2-82	--	--	--	--	--	--
	2- 2-82 - 4- 7-82	--	--	--	--	--	--
	4- 7-82 - 6- 1-82	11,000	1,900	5,400	270	1,200	ND
	6- 1-82 - 8- 2-82	25,000	760	5,300	1,300	2,800	ND
	Mean	12,600	1,390	4,200	534	2,610	--
	Standard deviation	19,600	10	1,150	471	2,160	--

1/ Sample lost due to sampler malfunction.
2/ Chemical analysis thought to be incorrect. Dryfall data not calculated for this sample.

STREAM-DISCHARGE AND STORM-RUNOFF DATA

Long-term, continuous, stream-discharge data were available at two streamflow-gaging stations in the study area (sites 1 and 3, table 8). Data from these gaging stations are discussed in the next section of the report.

Continuous stream-discharge data were obtained at seven additional streamflow-gaging stations during the study. The name, number, and period of record for all nine gaging stations are listed in table 8. All stream-discharge data were obtained using established U.S. Geological Survey (1968) procedures for discharge determination in natural streams.

Mean daily discharges for the period of station operation during the study were determined at each of the gaging stations listed in table 8, except for Meade Street Drain at Rapid City (site 6). The nature of the channel at the Meade Street Drain gaging station was such that accurate stream-discharge data could not be determined during periods of low flow (periods of non-storm runoff). The mean daily discharge data, monthly and annual summaries, and other applicable information for these stations have been published by the U.S. Geological Survey (1980, 1981, 1982).

Storm-runoff data were determined for sites 1-6. These data are discussed in a subsequent section of the report.

Statistical Characterization of Long-Term, Stream-Discharge Data

The statistical characterization of long-term, stream-discharge data is necessary in calculating dilution and the recurrence interval of instream concentrations of pollutants. Discharge of streams and rivers is largely dependent on the quantity and timing of precipitation which has large daily, seasonal, and yearly variation. The variable streamflow in the study area necessitates that stream-discharge data be collected for many years to provide confidence in a statistical characterization.

Long-term, continuous, stream-discharge data were available at two streamflow-gaging stations on Rapid Creek within the study area. The stations, Rapid Creek above Canyon Lake (site 1, pl. 1 and table 8), and Rapid Creek at Rapid City (site 3, pl. 1 and table 8), have been operated by the U.S. Geological Survey since the mid-1940's (U.S. Geological Survey, 1981). However, the construction, filling, and operation of the two upstream reservoirs, in particular Pactola Reservoir, has regulated the discharge in Rapid Creek for much of this period. Pactola Reservoir reached normal conservation pool capacity in the spring of 1963 and has been fully operational since that time. The period since the normal operation of Pactola Reservoir began more accurately represents the current and future discharge characteristics of Rapid Creek in Rapid City and so was chosen for analysis.

Table 8.--Streamflow-gaging stations operated by the U.S. Geological Survey during 1980-82

Site number[1]	Station name	U.S. Geological Survey station identification number[2]	Period of record
1	Rapid Creek above Canyon Lake, near Rapid City, SD	06412500	July 1946 to September 1982 (continuing).
2	Rapid Creek above Water Treatment Plant, at Rapid City, SD	06413700	May 1980 to September 1982.
3	Rapid Creek at Rapid City, SD	06414000	June 1903 to November 1906. July 1942 to September 1982 (continuing).
4	Rapid Creek at East Main Street, at Rapid City, SD	06414700	May 1980 to September 1982.
5	Rapid Creek below Hawthorne Ditch, at Rapid City, SD	06416000	August 1946 to October 1953. May 1980 to September 1982.
6	Meade Street Drain, at Rapid City, SD	06416300	May 1980 to September 1982.
7	Lime Creek at mouth, at Rapid City, SD	06413650	April 1981 to September 1981. April 1982 to September 1982.
8	Deadwood Avenue Drain at mouth, at Rapid City, SD	06413800	April 1981 to September 1981. April 1982 to September 1982.
9	Hawthorne Ditch at Rapid City, SD	06415500	August 1946 to September 1953. May 1981 to September 1981. May 1982 to July 1982.

1/ Number refers to site number on plate 1.
2/ Downstream order number used by the U.S. Geological Survey to identify streamflow-gaging stations.

Although the flow in Rapid Creek is largely controlled by the release of water from Pactola Reservoir, inflow from snowmelt and rainfall runoff creates daily and seasonal variability. The mean monthly discharge for October 1, 1963, to September 30, 1981, at the two long-term, streamflow-gaging stations on Rapid Creek is compared to the mean daily discharge during the study (water years 1980-82) in figure 9 (water year 1980), figure 10 (water year 1981), and figure 11 (water year 1982). The station, Rapid Creek above Canyon Lake (site 1 on pl. 1), is located at the head of the study reach. This site is upstream from Cleghorn Spring, and Rapid Creek at this site has low winter flows and substantial discharge variability. The station, Rapid Creek at Rapid City (site 3 on pl. 1), is located near the middle of the study reach downstream from the three perennial tributaries.

Applicable monthly statistics for the two stations on Rapid Creek for October 1, 1963, to September 30, 1981, are listed in table 9. The distribution of discharge at the two stations for April through September from April 1, 1964, to September 30, 1981, is shown in figure 12. April through September were selected to correspond to the period selected for statistical characterization of long-term rainfall.

Stream discharge is a continuous process that varies with time, and thus streamflow-discharge data form a time series. Because stream-discharge data do not occur as discrete values, the time series usually is divided into increments that can be considered individually. The most common division is mean daily discharge. The data listed in table 9 and shown in figure 12 were calculated using mean daily discharge. In statistical terms, mean daily discharge is a serially correlated variable because the individual values are nonrandom and nonhomogeneous. A mean daily discharge is related principally to the discharge of the previous day and occurs within a range that depends on the time of year. Thus, the duration curves in figure 12 are merely the distributions of mean daily discharges that have occurred, not probability distributions. However, these curves can be considered reliable estimates of the probability distributions for future periods provided the stream system remains stable and isn't affected by a major change such as the construction of a new reservoir or a diversion point.

Stream-Discharge and Storm-Runoff Characteristics for Storms Studied

Stream-discharge and storm-runoff data for the storms studied are presented in tables 10-15 for sites 1-6. Data for Hawthorne Ditch (site 9) are included with the data for site 5 (Rapid Creek below Hawthorne Ditch) because the cumulative discharge is necessary to calculate runoff volume. Similar data for sites 7 and 8 are not presented because the data for these sites are included in data presented for sites 2 and 3 respectively. In tables 10-15, stream-discharge data consists of base, peak, and mean flows; storm-runoff data consist of runoff duration and volume. These data also are summarized in hydrographs (figs. 13-40) presented in the Supplemental Information section at the back of the report. The stream-discharge and storm-runoff data in these figures are based on a data-recording interval of 5 minutes. The shaded areas of these figures represent the storm-runoff volume; the calculated storm-runoff volume also is indicated. Data for storms 23-25, 27, and 30 are not presented in either tables 10-15 or figures 13-40 for the reasons stated previously.

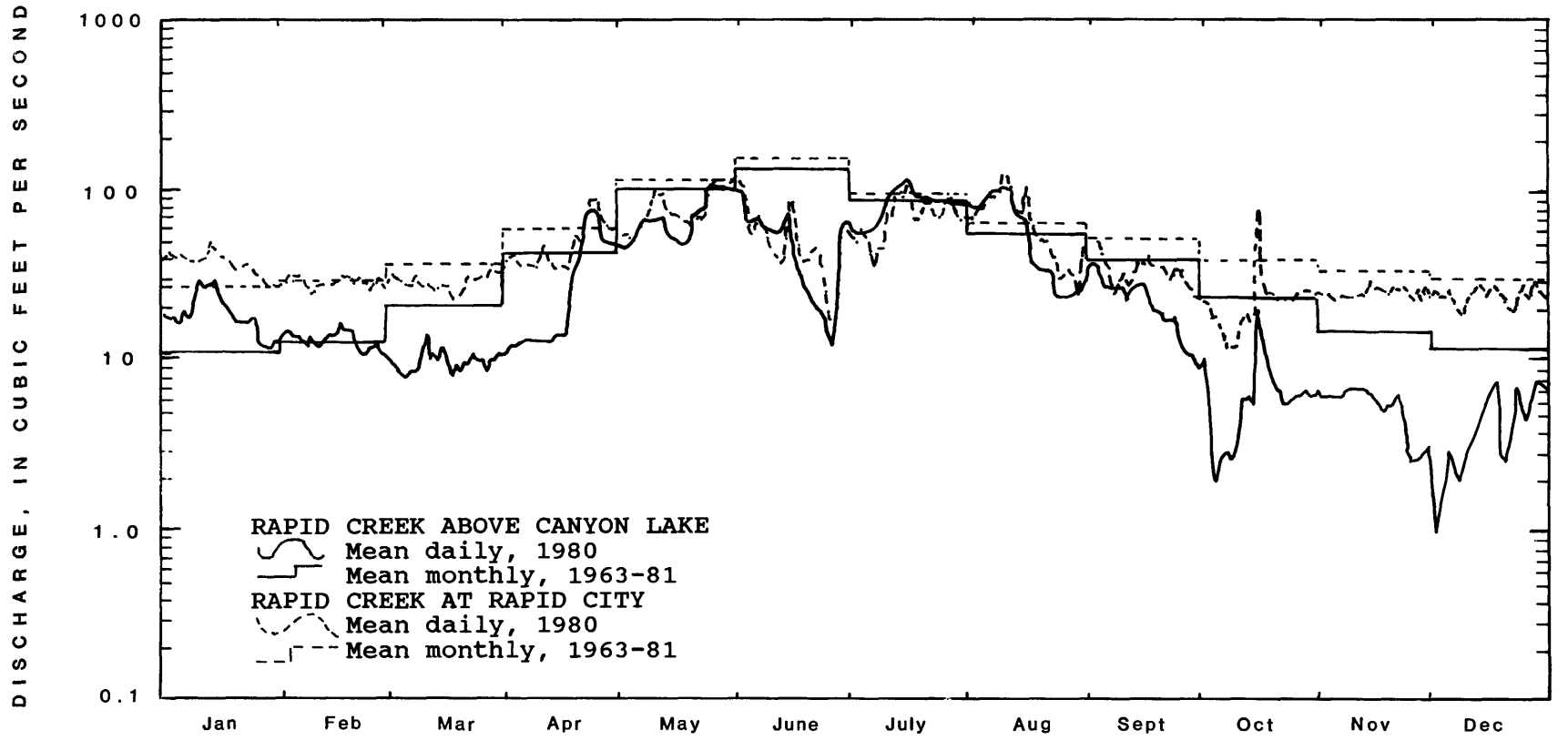

Figure 9.--Mean monthly discharge for October 1, 1963, to September 30, 1981, at Rapid Creek above Canyon Lake (site 1) and Rapid Creek at Rapid City (site 3), and mean daily discharge measured during 1980.

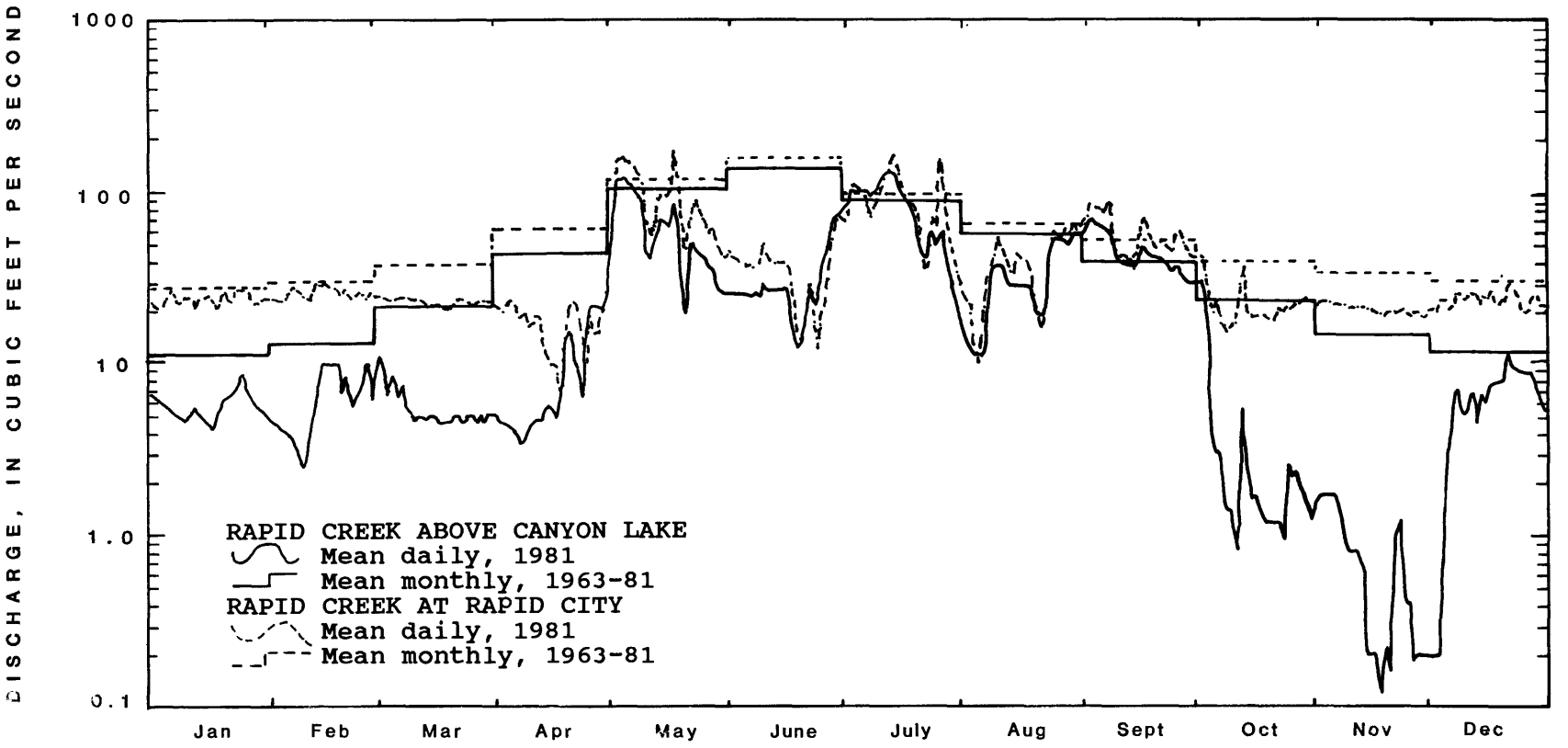

Figure 10.--Mean monthly discharge for October 1, 1963, to September 30, 1981, at Rapid Creek above Canyon Lake (site 1) and Rapid Creek at Rapid City (site 3), and mean daily discharge measured during 1981.

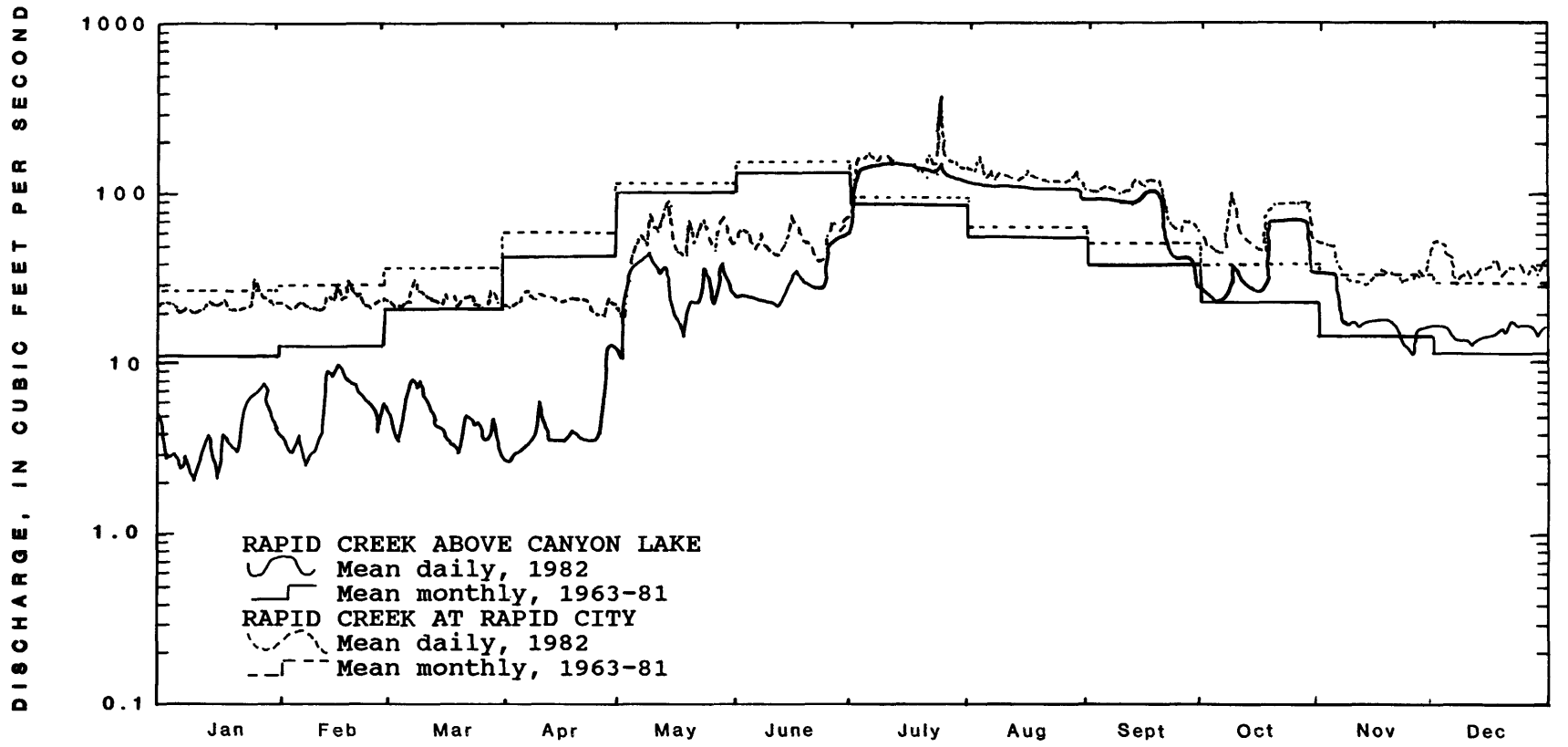

Figure 11.--Mean monthly discharge for October 1, 1963, to September 30, 1981, at Rapid Creek above Canyon Lake (site 1) and Rapid Creek at Rapid City (site 3), and mean daily discharge measured during 1982.

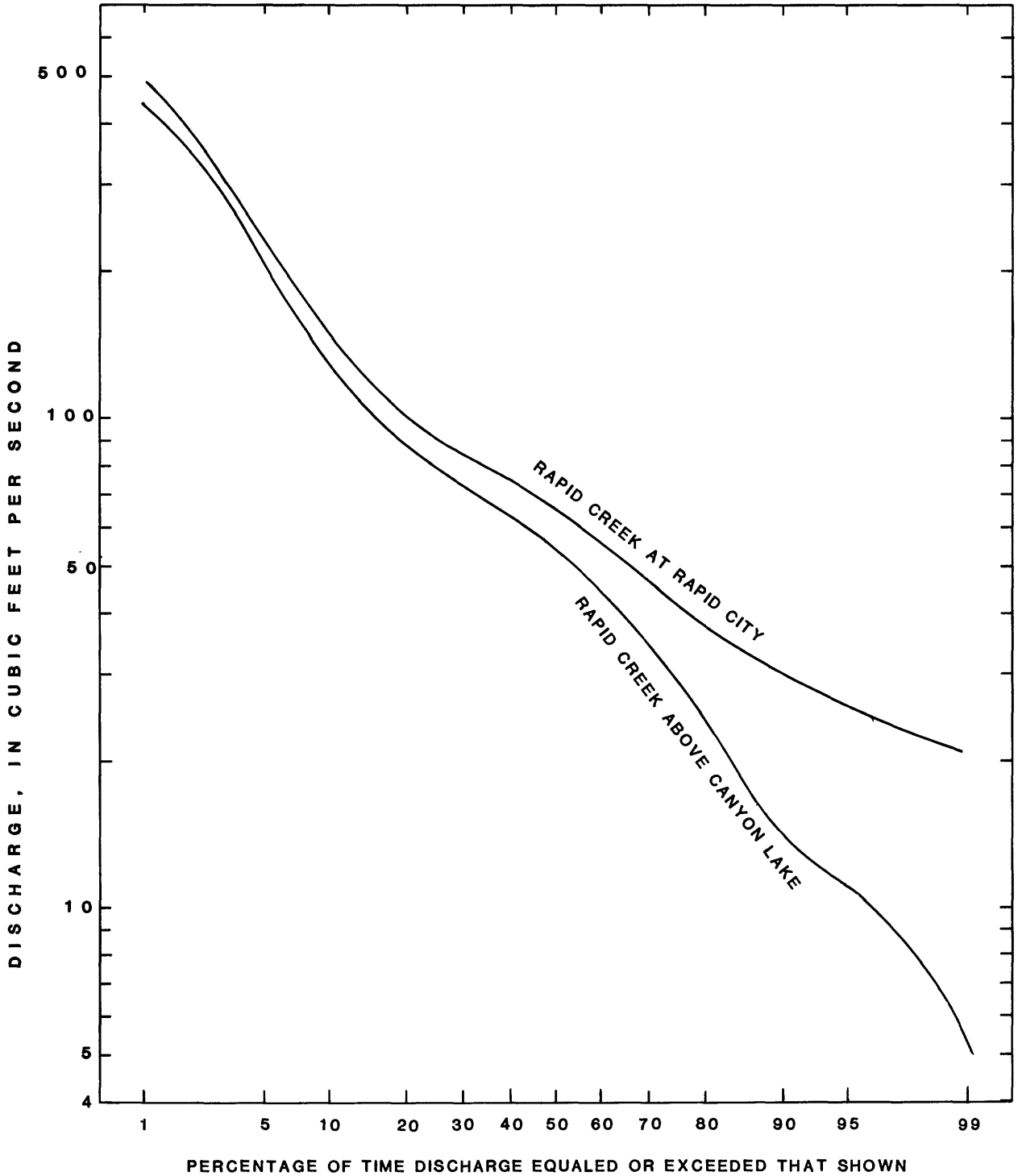

Figure 12.--Distribution of mean daily discharge measured at Rapid Creek above Canyon Lake (site 1) and Rapid Creek at Rapid City (site 3) for April through September from April 1, 1964, to September 30, 1981.

Table 9.--Statistics, by month, of mean daily discharge at Rapid Creek above Canyon Lake (site 1) and Rapid Creek at Rapid City (site 3), October 1, 1963, to September 30, 1981

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Rapid Creek above Canyon Lake											
	Values are in cubic feet per second											
Mean	11.50	13.10	21.40	43.60	102.00	135.00	87.90	56.40	39.70	23.60	15.10	12.00
Variance	20.40	24.50	248.00	1,267.00	5,470.00	12,560.00	1,782.00	344.00	206.00	391.00	55.20	26.70
Standard deviation	4.52	4.95	15.70	35.60	74.00	112.00	42.20	18.50	14.30	19.80	7.43	5.17
Skewness	.62	1.74	1.72	2.06	1.39	1.59	1.53	.62	.51	2.41	1.17	1.04
Coefficient of variation	.39	.38	.73	.82	.72	.83	.48	.33	.36	.84	.49	.43
	Percentage of average value											
	2.06	2.33	3.82	7.76	18.20	24.10	15.70	10.00	7.06	4.21	2.69	2.14
	Rapid Creek at Rapid City											
	Values are in cubic feet per second											
Mean	28.20	30.20	38.20	61.40	118.00	156.00	96.90	64.70	52.40	39.80	34.20	31.00
Variance	41.70	52.10	225.00	1,523.00	6,047.00	17,550.00	1,853.00	262.00	222.00	335.00	68.00	41.30
Standard deviation	6.46	7.22	15.00	39.00	77.80	132.00	43.00	16.20	14.90	18.30	8.25	6.42
Skewness	-.05	.73	1.67	1.97	1.52	1.59	1.53	.65	.52	2.20	1.38	.32
Coefficient of variation	.23	.24	.39	.64	.66	.85	.44	.25	.28	.46	.24	.21
	Percentage of average value											
	3.75	4.01	5.08	8.17	15.70	20.80	12.90	8.68	6.97	5.30	4.55	4.13

Table 10.--Stream-discharge and storm-runoff data for storms studied, Rapid Creek above Canyon Lake (site 1)

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet; NA, data not available]

Storm number	Date of storm	Stream discharge			Storm runoff	
		Base flow (ft^3/s)	Peak flow (ft^3/s)	Mean flow (ft^3/s)	Duration (min)	Volume (acre-ft)
1	6-14-80	75	81	80	270	1.86
2	6-18-80	26	26	NA	NA	0
3	7-12-80	103	108	108	360	2.48
4	7-20-80	90	92	92	240	.66
5	7-25-80	82	86	86	450	2.48
6	8-20-80	32	35	35	180	.74
7	10-15-80	5.6	25	20	1,020	20.2
8	4- 3-81	4.5	4.5	NA	NA	0
9	4-21-81	7.6	9.2	8.2	240	.20
10	5- 2-81	116	123	119	230	.95
11	5- 6-81	110	111	110	360	0
12	5- 7-81	98	101 1/	100	255	.70 1/
13	5-12,13-81	50	68 1/	NA	NA	0 1/
14	5-16 to 18-81	61	102	81	2,445	67.4
15	5-22,23-81	50	50	NA	NA	0
16	6- 3-81	23	23	NA	NA	0
17	7-1,2-81	92	101	99	255	2.46
18	7-13-81	127	133	132	285	1.96
19	7-18-81	75	85	83	220	2.42
20	7-23-81	58	58	NA	NA	0
21	7-25-81	42	73	53	1,300	19.7
22	10-4,5-81	1.7	1.7	NA	NA	0
23	12-20-81	Snowmelt runoff--Accurate data not available				
24	3- 7-82	Snowmelt runoff--Accurate data not available				
25	3- 9-82	Snowmelt runoff--Accurate data not available				
26	5-10-82	42	48	47	390	2.68
27	5-13,14-82	Sampler calibration--No data necessary				
28	5-17-82	17	17	17	145	0
29	5-19,20-82	13	23	19	1,135	9.38
30	5-28-82	Sampler calibration--No data necessary				
31	6-15-82	25	27	26	300	.41
32	6-16-82	29	36	33	555	3.06
33	7- 8-82	143	155	150	210	2.02

1/ Increase in discharge due to release from Pactola Reservoir; runoff volume assumed to be zero.

Table 11.--Stream-discharge and storm-runoff data for storms studied, Rapid Creek above Water Treatment Plant (site 2)

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet; NA, data not available]

Storm number	Date of storm	Stream discharge			Storm runoff	
		Base flow (ft^3/s)	Peak flow (ft^3/s)	Mean flow (ft^3/s)	Duration (min)	Volume (acre-ft)
1	6-14-80	82	153	110	270	10.4
2	6-18-80	38	47	44	240	1.86
3	7-12-80	116	255	158	390	22.6
4	7-20-80	95	124	110	420	8.68
5	7-25-80	98	133	114	405	8.93
6	8-20-80	40	52	49	210	2.60
7	10-15-80	20	127	72	1,065	76.3
8	4- 3-81	18	18	NA	NA	0
9	4-21-81	19	28	24	240	1.65
10	5- 2-81	134	149	144	230	3.17
11	5- 6-81	127	137	135	360	3.97
12	5- 7-81	114	128	124	255	3.51
13	5-12,13-81	64	85	NA	NA	0
14	5-16 to 18-81	84	183	134	2,450	169
15	5-22,23-81	72	92	82	780	10.7
16	6- 3-81	39	47	44	155	1.07
17	7-1,2-81	97	166	129	255	11.2
18	7-13-81	140	183	167	285	10.6
19	7-18-81	68	134	105	220	11.2
20	7-23-81	56	70	64	220	2.42
21	7-25-81	38	366	116	1,300	140
22	10-4,5-81	11	21	18	1,020	9.83
23	12-20-81	Snowmelt runoff--Accurate data not available				
24	3- 7-82	Snowmelt runoff--Accurate data not available				
25	3- 9-82	Snowmelt runoff--Accurate data not available				
26	5-10-82	53	101	77	390	12.9
27	5-13,14-82	Sampler calibration--No data necessary				
28	5-17-82	38	44	42	145	.80
29	5-19,20-82	27	79	51	1,135	37.5
30	5-28-82	Sampler calibration--No data necessary				
31	6-15-82	40	64	54	300	5.79
32	6-16-82	47	144	78	555	23.7
33	7- 8-82	155	196	180	180	6.20

1/ Increase in discharge due to release from Pactola Reservoir; runoff volume assumed to be zero.

Table 12.--Stream-discharge and storm-runoff data for storms studied, Rapid Creek at Rapid City (site 3)

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet; NA, data not available]

Storm number	Date of storm	Stream discharge			Storm runoff	
		Base flow (ft^3/s)	Peak flow (ft^3/s)	Mean flow (ft^3/s)	Duration (min)	Volume (acre-ft)
1	6-14-80	83	144	117	270	12.6
2	6-18-80	36	49	43	240	2.31
3	7-12-80	78	214	142	390	34.4
4	7-20-80	73	115	99	390	14.0
5	7-25-80	86	125	110	375	12.4
6	8-20-80	50	68	60	315	4.34
7	10-15-80	19	172	88	1,200	114
8	4- 3-81	23	23	23	NA	0
9	4-21-81	19	30	24	425	2.93
10	5- 2-81	143	188	160	270	6.32
11	5- 6-81	143	161	156	450	8.06
12	5- 7-81	132	153	147	270	5.58
13	5-12,13-81	76	101	94	490	1/ 8.2
14	5-16 to 18-81	98	225	158	2,625	217
15	5-22,23-81	82	121	95	1,120	20.1
16	6- 3-81	38	57	45	215	2.07
17	7-1,2-81	71	151	120	415	28.0
18	7-13-81	143	202	184	355	20.0
19	7-18-81	79	161	130	255	17.9
20	7-23-81	70	127	87	255	5.97
21	7-25-81	54	409	159	1,335	193
22	10-4,5-81	17	33	26	1,020	12.6
23	12-20-81	Snowmelt runoff--Accurate data not available				
24	3- 7-82	Snowmelt runoff--Accurate data not available				
25	3- 9-82	Snowmelt runoff--Accurate data not available				
26	5-10-82	53	156	98	490	30.4
27	5-13,14-82	Sampler calibration--No data necessary				
28	5-17-82	49	68	60	180	2.73
29	5-19,20-82	33	115	78	1,125	69.7
30	5-28-82	Sampler calibration--No data necessary				
31	6-15-82	54	82	68	330	6.36
32	6-16-82	54	191	102	555	36.7
33	7- 8-82	156	205	190	185	8.66

1/ Adjusted due to release from Pactola Reservoir.

Table 13.--Stream-discharge and storm-runoff data for storms studied, Rapid Creek at East Main Street (site 4)

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet]

Storm number	Date of storm	Stream discharge			Storm runoff	
		Base flow (ft^3/s)	Peak flow (ft^3/s)	Mean flow (ft^3/s)	Duration (min)	Volume (acre-ft)
1	6-14-80	69	381	146	300	31.8
2	6-18-80	34	59	47	330	5.91
3	7-12-80	84	309	169	450	52.7
4	7-20-80	75	162	116	405	22.9
5	7-25-80	75	157	116	405	22.9
6	8-20-80	51	103	65	450	8.68
7	10-15-80	16	266	120	1,170	168
8	4- 3-81	Negligible rise--Data not determined				
9	4-21-81	20	54	32	400	6.61
10	5- 2-81	144	285	163	360	24.3
11	5- 6-81	120	150	141	490	14.2
12	5- 7-81	110	162	132	285	8.64
13	5-12,13-81	67	110	97	510	1/ 17.2
14	5-16 to 18-81	92	312	176	2,670	309
15	5-22,23-81	69	137	92	1,120	35.5
16	6-3,4-81	43	200	77	280	13.1
17	7-1,2-81	69	187	119	520	35.8
18	7-13-81	132	244	181	345	23.3
19	7-18-81	77	355	159	260	29.4
20	7-23,24-81	77	1,040	191	465	73.0
21	7-25,26-81	59	730	222	1,415	318
22	10-4,5-81	24	51	37	1,080	19.3
23	12-20-81	Snowmelt runoff--Accurate data not available				
24	3- 7-82	Snowmelt runoff--Accurate data not available				
25	3- 9-82	Snowmelt runoff--Accurate data not available				
26	5-10-82	58	241	138	495	54.5
27	5-13,14-82	Sampler calibration--No data necessary				
28	5-17-82	50	226	97	175	11.3
29	5-19,20-82	39	220	117	1,160	125
30	5-28-82	Sampler calibration--No data necessary				
31	6-15-82	46	116	76	460	19.0
32	6-16-82	55	347	117	575	49.1
33	7- 8-82	150	244	191	220	12.4

1/ Adjusted due to release from Pactola Reservoir.

Table 14.--Stream-discharge and storm-runoff data for storms studied, Rapid Creek below Hawthorne Ditch (site 5), and base and mean flows for Hawthorne Ditch

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet]

Storm number	Date of storm	Stream discharge							Storm runoff	
		Rapid Creek base flow (ft^3/s)	Hawthorne Ditch[1] base flow (ft^3/s)	Total base flow (ft^3/s)	Rapid Creek peak flow (ft^3/s)	Rapid Creek mean flow (ft^3/s)	Hawthorne Ditch[1] mean flow (ft^3/s)	Total mean flow (ft^3/s)	Duration (min)	Total (acre-ft)
1	6-14-80	69	9.0	78	334	142	9.0	151	345	34.7
2	6-18-80	37	9.0	46	68	52	9.0	61	420	8.68
3	7-12-80	48	19	67	241	118	19	137	480	46.3
4	7-20-80	58	9.0	67	130	89	9.0	98	450	19.2
5	7-25-80	66	9.0	75	138	97	9.0	106	420	17.9
6	8-20-80	42	6.0	48	77	54	6.0	60	465	7.68
7	10-15-80	12	10	22	338	130	10	140	1,170	190
8	4- 3-81	18	0	18	Negligible rise--Data not determined					
9	4-21-81	8.2	0	8.2	31	16.8	0	16.8	395	4.67
10	5- 2-81	91	27	118	228	147	28	175	415	32.6
11	5- 6-81	101	27	128	135	124	28	152	490	16.2
12	5- 7-81	92	27	119	158	121	27	148	340	13.5
13	5-12,13-81	47	18	65	95	82	19	101	540	17.6[2]
14	5-16 to 18-81	75	19	94	331	176	22	198	2,585	370
15	5-22,23-81	58	17	75	124	86	14	100	1,030	35.5
16	6-3,4-81	32	11	43	163	62	14	76	355	16.1
17	7-1,2-81	47	19	66	164	99	24	123	480	37.7
18	7-13-81	100	22	122	207	143	24	167	455	28.2
19	7-18,19-81	54	12	66	260	112	16	128	405	35.7
20	7-23,24-81	48	10	58	843	193	10	203	565	116
21	7-25,26-81	43	10	53	720	209	13	222	1,600	372
22	10-4,5-81	9.7	17	27	36	23	22	45	1,080	26.8
23	12-20-81	Snowmelt runoff--Accurate data not available								
24	3- 7-82	Snowmelt runoff--Accurate data not available								
25	3- 9-82	Snowmelt runoff--Accurate data not available								
26	5-10-82	48	.53	49	253	132	1.2	133	530	61.3
27	5-13,14-82	Sampler calibration--No data necessary								
28	5-17-82	53	0	53	175	98	.31	98	200	12.4
29	5-19,20-82	41	0	41	232	128	.60	129	1,200	145
30	5-28-82	Sampler calibration--No data necessary								
31	6-15-82	53	1.6	55	124	83	1.8	85	460	19.0
32	6-16-82	53	1.2	54	296	121	1.2	122	545	51.0
33	7- 8-82	146	11	157	218	182	12	194	255	13.0

1/ Base and mean flows for storms 1-9 based on data provided by water master; base and mean flows for other storms determined from continuous discharge record.
2/ Adjusted due to release from Pactola Reservoir.

Table 15.--Stream-discharge and storm-runoff data for storms studied, Meade Street Drain (site 6)

[ft^3/s, cubic feet per second; min, minutes; acre-ft, acre-feet]

Storm number	Date of storm	Stream discharge			Storm runoff	
		Base flow (ft^3/s)	Peak flow (ft^3/s)	Mean flow (ft^3/s)	Duration (min)	Volume (acre-ft)
1	6-14-80	1.9	190	25	390	12.4
2	6-18-80	.50	31	4.7	480	2.78
3	7-12-80	.50	84	20	300	8.06
4	7-20-80	.50	41	7.7	450	4.46
5	7-25-80	.50	33	7.4	350	3.33
6	8-20-80	.50	31	5.2	325	2.10
7	10-15-80	.50	100	31	1,160	48.7
8	4- 3-81	Negligible rise--Data not determined				
9	4-21-81	.50	24	6.3	215	1.72
10	5- 2-81	.50	53	12.3	320	5.20
11	5- 6-81	.50	10	4.5	520	2.87
12	5- 7-81	1.1	26	9.8	325	3.89
13	5-12,13-81	.50	17	7.3	445	4.17
14	5-16 to 18-81	.50	79	25.8	2,035	70.9
15	5-22,23-81	.68	29	10.4	840	11.2
16	6-3,4-81	.50	79	12.4	315	5.16
17	7-1,2-81	.50	62	11.6	265	4.05
18	7-13-81	.50	53	12.2	300	4.83
19	7-18-81	.50	160	26.0	295	10.4
20	7-23-81	.50	138	19.1	325	8.33
21	7-25-81	.50	287	53.3	1,385	101
22	10-4,5-81	.50	14	5.9	810	6.02
23	12-20-81	Snowmelt runoff--Accurate data not available				
24	3- 7-82	Snowmelt runoff--Accurate data not available				
25	3- 9-82	Snowmelt runoff--Accurate data not available				
26	5-10-82	.50	81	26	495	17.4
27	5-13,14-82	Sampler calibration--No data necessary				
28	5-17-82	.85	175	26	285	9.87
29	5-19,20-82	.50	119	34	1,115	51.4
30	5-28-82	Sampler calibration--No data necessary				
31	6-15-82	.50	63	12	550	8.71
32	6-16-82	.50	138	19	570	14.5
33	7- 8-82	.50	62	11	210	3.04

STREAM-DISCHARGE- AND STORM-RUNOFF-QUALITY DATA

Water-quality aspects of the Rapid City urban runoff project included: (1) Collection of water samples during non-storm periods to define stream-discharge quality and during storms to define storm-runoff quality; (2) measurement of temperature, specific conductance, pH, and dissolved-oxygen concentration at the sampling sites; (3) laboratory analysis of discrete and composite water samples for physical properties, chemical and biological constituents, and sediment; (4) laboratory analysis of discrete and composite water samples for priority pollutants; and (5) field and laboratory quality assurance. All of the above water-quality aspects are described in this section of the report. The field measurements and laboratory analyses are listed in table 21 in the Supplemental Information section at the back of the report.

Collection of Water Samples

Water-quality samples were collected at six streamflow-gaging stations (sites 1 through 6, pl. 1 and table 8). These stations were equipped with water-stage recorders so that a continuous record of discharge would be available. During 1980, all samples were collected manually at all stations. During 1981, stations at sites 1, 3, 5, and 6 were equipped with automatic samplers; samples were collected manually at the stations at sites 2 and 4. During 1982, stations at sites 3, 4, 5, and 6 were equipped with automatic samplers; samples were collected manually at the stations at sites 1 and 2. Prior to sampling in 1982, one of the automatic samplers was transferred from the station at site 1 to the station at site 4 after it was determined that stream-stage rises at site 1 were not sufficient to activate the sampler. The drainage area upstream from site 1 is almost totally covered by thick evergreen forest and little runoff occurs except during exceptionally intense precipitation.

Manually collected water samples for chemical analysis were obtained by wading the stream and collecting depth-integrated aliquots at from 10 to 15 verticals across the channel. In the first year of the study, manually collected low-flow and storm-runoff samples were collected directly into new, 1-gallon plastic containers. During 1981 and 1982, samples were collected manually by use of DH-77 depth-integrating samplers. After collection, the samples were transferred to new, 1-gallon plastic containers. All sampling equipment and containers were rinsed three times with stream water prior to collecting the first aliquot. The sample was cooled to 4 ^{o}C within several minutes after collection. Date, time, and stream stage were recorded before and after sample collection.

All water samples for sediment analysis were collected manually by use of either DH-48, DH-77 (hand-held), or D-49 (cable-suspended) depth-integrating sediment samplers. In all cases, a standard U.S. Geological Survey (1970) procedure for suspended-sediment sampling, the equal transit rate method, was used. Briefly, the stream is divided into 10 to 20 equally spaced verticals. The equal spacing between verticals and an equal transit rate, both up and down in all verticals, yields a sample volume proportional to the streamflow. The maximum transit rate did not exceed $0.4V_m$, where V_m is the mean flow velocity of the stream. During exceptionally rapid changes in stage, fewer than 10 verticals were sampled.

An automatic-sampling and instrumentation system, the U.S. Geological Survey Urban Hydrology Monitoring System (UHMS), was used to collect the majority of storm-runoff samples. The UHMS allowed more frequent sampling during the storm runoff and alleviated some of the logistic problems involved in manually sampling short-duration storm runoff.

Components of the UHMS are: (1) A microprocessor-based system control unit; (2) a digital-punch recorder; (3) a vacuum-operated water sampler with intake line; and (4) a refrigerated cooler for chilling samples. The system control unit, produced by Snyder Instrument Co., controls the functioning of the system and processes data received from the stream-stage sensor and the water sampler. The system control unit is not activated until a threshold value of stream stage (corresponding to some selected discharge) occurs. This activates the recorder and starts sample collection. A unique aspect of the system is that the sample interval can be varied according to preselected thresholds of stream stage, or change in stream stage, as well as by time. The water sampler, produced by Manning Environmental Corp., consists of an intake, suction line, vacuum chamber, and a sample distributor. After activation by the system control unit, the sampler flushes the intake and suction line, draws about 1 gallon of water into the vacuum chamber, distributes the sample sequentially to 1 of 24 sample containers, and reflushes the intake and suction line. The sample containers, which are new, 1-gallon plastic containers, are located in the refrigerated cooler, and the sample is cooled to 4 ^{o}C. The data recorded for each sample include date, time to the nearest second, stream stage, and sample number.

Both manually and automatically collected water samples were transported to the laboratory at the South Dakota School of Mines and Technology as soon as practicable. Under most conditions, samples were delivered to the laboratory within 6 hours after collection. Each sample container was labeled as to station, date, time of collection, and stream stage using a preprinted, waterproof adhesive label or a wired-on tag.

Samples for sediment analysis were collected in glass or plastic bottles. Time and stream stage were recorded before and after the collection of the samples. Intervals at which each sample bottle was used and other pertinent information were recorded and entered either on the paper bottle caps, if pint-size, glass sample bottles were used, or on adhesive labels, if one-half-gallon-size, plastic sample bottles were used. Sediment samples were mailed to U.S. Geological Survey sediment laboratories at either Lincoln, Nebraska, or Iowa City, Iowa, for analysis.

Field Measurements of Four Properties

Water temperature, specific conductance, pH, and dissolved-oxygen concentration were measured in the field in conjunction with the manual collection of water samples. A Hydrolab Environmental Data Systems Model 4041 Digital instrument was used for these measurements. The Hydrolab instrument consists of a sonde unit, which contains the sensors, a connecting cable, and an indicator unit. The sonde consists of a temperature thermistor, a four-electrode conductivity cell, a glass pH electrode, a reference electrode, and a Clark polarographic dissolved-oxygen cell. The indicator unit consists of a digital readout, a rotary switch to select the property for readout, and calibration

controls. This instrument also is provided with a circulator unit that can be connected to the bottom (probe end) of the sonde unit to circulate water past the dissolved-oxygen cell in still water. The Hydrolab instrument is fully temperature compensated.

Laboratory Analysis of Physical Properties, Chemical and Biological Constituents, and Sediment

Most water samples were analyzed at the Civil Engineering Laboratory at the South Dakota School of Mines and Technology. The constituents and properties selected for analysis and the analytical procedures used by the laboratory are presented in table 16. Only water samples collected at site 6, Meade Street Drain, were routinely analyzed for all constituents and properties listed in table 16. Water samples from sites 1-5 were not routinely analyzed for solids (dissolved), nitrogen (ammonia plus organic), lead (dissolved and total), major cations and anions, and biochemical oxygen demand (5-day and ultimate).

Occasionally, due to equipment failure or staff scheduling problems at the Civil Engineering Laboratory, partial or complete sets of samples were analyzed by the U.S. Geological Survey laboratory in Denver, Colorado. Analyses by the U.S. Geological Survey included: nitrogen (ammonia plus organic) for sample sets collected in July and August of 1980; a complete analysis for a set of low-flow samples collected on October 9, 1980; analysis of sample sets from snowmelt collected on December 10 and 20, 1981; analysis of sequential discrete samples collected on May 10, 1982; and all total organic-carbon analyses. Sample-handling and analysis procedures followed standard U.S. Geological Survey (1979) methods.

The concentrations of the constituents listed in table 16 are variable, both during runoff from a single storm, as well as during runoff from storm to storm at a given site, and from site to site within the Rapid City area. Discrete (individual) water samples collected at a single site during storm runoff represent only the constituent concentrations present in the stream at the particular instant of sample collection, not the constituent concentrations for the entire storm runoff. Although the analysis of sequential discrete samples collected during the storm runoff provide information on the variability of constituent concentrations during that particular storm runoff, a statistic that expresses the magnitude of constituent load in the storm runoff and that can be used to determine the variability in constituent load between storms and sites is more useful. The statistic chosen was the event mean concentration, which is defined as the total constituent-mass discharge divided by the total runoff volume (U.S. Environmental Protection Agency, 1981). Two methods of determining the event mean concentration are available. If sequential discrete samples were analyzed, the event mean concentration can be calculated. However, if sequential discrete samples are discharge composited before analysis, the resultant analysis will represent the event mean concentration. This has the advantage of markedly decreasing laboratory efforts because a single sample represents the entire storm runoff.

Table 16.--Analytical procedures used by the Civil Engineering Laboratory at the South Dakota School of Mines and Technology for analysis of water samples

[Reference: APHA, American Public Health Association and others, 1976; US EPA, U.S. Environmental Protection Agency, 1979]

Constituent or property	Method	Reference
Alkalinity, total ($CaCO_3$)	Titration to pH 4.5	APHA, p. 278.
Biochemical oxygen demand, 5-day, carbonaceous	Electrode	APHA, p. 278.
Biochemical oxygen demand, ultimate, carbonaceous	Electrode	None.
Calcium, total recoverable	Digestion followed by atomic absorption	US EPA, p. 215.1.
Chemical oxygen demand	Dichromate reflux	APHA, p. 550.
Chloride, dissolved	Filtration, mercuric nitrate	APHA, p. 304.
Coliform, fecal	Membrane filter	APHA, p. 937.
Lead, dissolved	Filtration and digestion followed by atomic absorption	APHA, p. 147.
Lead, total recoverable	Digestion followed by atomic absorption	APHA, p. 147.
Magnesium, total recoverable	Digestion followed by atomic absorption	APHA, p. 148.
Nitrogen, ammonia plus organic, dissolved	Filtration and digestion followed by colorimetric method	US EPA, p. 351.4.
Nitrogen, ammonia plus organic, total	Digestion followed by electrode method	US EPA, p. 351.4.
Nitrogen, ammonia, dissolved	Filtration followed by electrode method	US EPA, p. 350.3.
Nitrogen, nitrite plus nitrate, dissolved	Filtration followed by cadmium reduction	US EPA, p. 353.3.
Oil and grease, total recoverable	Freon-extraction, gravimetry	US EPA, p. 413.1.

Table 16.--Analytical procedures used by the Civil Engineering Laboratory at the South Dakota School of Mines and Technology for analysis of water samples--Continued

Constituent or property	Method	Reference
pH	Electrometric method	US EPA, p. 150.1.
Phosphorus, dissolved	Filtration followed by automated ascorbic-acid method	US EPA, p. 365.1.
Phosphorus, total	Automated ascorbic-acid method	US EPA, 365.1.
Potassium, total recoverable	Digestion followed by atomic absorption	US EPA, p. 258.1.
Sodium, dissolved	Filtration followed by atomic absorption	US EPA, p. 273.1.
Sodium, total recoverable	Digestion followed by atomic absorption	US EPA, 273.1.
Solids, dissolved, residue on evaporation at 180 °Celsius	Gravimetric	US EPA, p. 160.1.
Solids, suspended, residue at 105 to 110 °Celsius	Gravimetric	US EPA, p. 160.2.
Solids, total, residue at 105 to 110 °Celsius	Gravimetric	US EPA, p. 160.3.
Solids, total, volatile on ignition	Gravimetric	US EPA, p. 160.4.
Specific conductance	Conductivity bridge	APHA, p. 71.
Sulfate, dissolved	Turbidimetric	APHA, p. 496.
Turbidity	Nephelometric	US EPA, p. 180.1.

Nearly all sequential discrete samples collected during the study and analyzed by the laboratory at the South Dakota School of Mines and Technology were discharge composited before analysis. The volume represented by each discrete sample was the total runoff volume divided by the number of samples available for the storm runoff. The ratio of the discharge volume represented by a discrete sample to the total discharge volume is the percentage of the discrete sample that was used for the composite. For example, if the discharge volume represented by a discrete sample is 0.25 times the total volume, 25 percent of the composited sample consists of the discrete sample under consideration. The discrete-sample aliquots necessary for compositing were split from the individual discrete samples by use of a cone splitter to assure accurate subsamples.

Laboratory Analysis of Priority Pollutants

In addition to the collection and analysis of low-flow and storm-runoff water samples as described, runoff from three storms was sampled for the analysis of 127 of the 129 constituents listed by the U.S. Environmental Protection Agency (1986) as priority pollutants. Asbestos and TCDD (2, 3, 7, 8 - tetrachlorodibenzo - p - dioxin) have been deleted by the U.S. Environmental Protection Agency from the list of priority pollutants to be determined for the NURP projects.

Samples for analysis of priority pollutants were collected at sites 1, 3, 5, and 6. All samples were collected directly into specially prepared glass bottles. Three discrete samples were collected at each site during the storm runoff, one during rising stream stage, one at or near the maximum stream stage, and one during declining stream stage. Discharge-composited samples were obtained from the discrete samples for the analysis of all priority pollutants except the volatile organic compounds. Samples for analysis of volatile organic compounds were collected in special glass vials and sealed immediately to prevent emissions.

Compositing was performed as soon as possible after the collection of the final discrete sample by personnel at the Civil Engineering Laboratory. Samples were packed in ice and shipped via air freight to Systems, Science, and Software (S^3), a U.S. Environmental Protection Agency approved laboratory in San Diego, California, for analysis. The results of the priority-pollutant analyses are listed in table 22 in the Supplemental Information section at the back of this report. Concentrations of almost all the priority pollutants, other than several of the heavy metals, were less than detection limits.

Field and Laboratory Quality Assurance

The water-quality data obtained during the Rapid City urban runoff project will be used nationwide on a comparative basis with data obtained during other NURP projects. It is, therefore, important that the data be accurate and reliable. During the planning stage of the project, every effort was made to implement proper quality-assurance procedures for both sample-collection and laboratory procedures. Several project reviews took place during the study, wherein technical staff of the U.S. Geological Survey and the U.S. Environmental Protection Agency reviewed all aspects of data collection and data analysis. Suggestions made during these meetings that resulted in more accurate data, but did not effect the continuity of the data, were implemented.

All manually collected water samples were collected using methods to assure that the samples would be representative of the quality of the water at all points across and through the depth of the channel. However, the automatic samplers used during the study collect water samples from a single point in the stream. Insomuch as possible, the sampler intake was located at a point in the channel where the effect of unequal mixing would be minimized. In addition, the ability of the automatic sampler to collect representative samples was checked several times during the study. The checking consisted of simultaneously obtaining both manually collected and automatically collected samples at sites with automatic samplers. These paired samples then were analyzed for suspended solids and total volatile solids. The results of the quality-assurance testing are listed in table 17.

The two Hydrolab instruments used during the study were calibrated weekly to document the drift in calibration. Ideally, the instruments would be calibrated before each use, and they were during the collection of low-flow samples. However, due to the time limitation involved in sampling short-duration storm runoff, the instruments normally were not calibrated before runoff sampling. A summary of calibration data for the Hydrolab instruments used during the study is presented in table 18. The accuracy of the properties measured at the sampling sites can only be assured within the limits presented in this table. After the end of data collection in July 1982, an operating problem in the pH function of all Hydrolab model 4041 instruments was discovered. Testing conducted in early 1983 indicates that although these instruments calibrate properly in buffer solutions, they may yield inaccurate measurements of test solutions. The problem is apparently greater in waters of low ionic strength. As a result of this manufacturing defect, some of the field pH measurements made during the study may be outside the range shown in table 18.

The Civil Engineering Laboratory at the South Dakota School of Mines and Technology implemented a comprehensive quality-assurance program. The quality-assurance program included, but was not limited to:

1. Assurance that all components of the sample-collection, sample-handling, and analytical procedures conformed with U.S. Environmental Protection Agency quality-control and methods guidelines.

2. Measuring the precision and accuracy of the analytical data using reference, duplicate, spiked, and audit samples. Reference and audit samples were obtained from the U.S. Environmental Protection Agency.

3. Use of precision and accuracy control charts to insure that the analytical procedures were controlled throughout the study.

Analytical results of the quality-assurance program are listed in tables 19 and 20. The precision of the analytical data determined by duplicate analysis is listed in table 19. The accuracy of the analytical data as determined by analysis of reference samples is listed in table 20.

Table 17.--Comparison between manually and automatically collected samples based on laboratory determinations of suspended and total volatile solids

Streamflow-gaging station	Date	Time	Discharge (cubic feet per second)	Solids, suspended (milligrams per liter)		Solids, total volatile (milligrams per liter)	
				Manually collected (depth-channel integrated)	Automatically collected (point source)	Manually collected (depth-channel integrated)	Automatically collected (point source)
Rapid Creek at Rapid City (site 3)	5-13-82	0800	92	93	83	12	12
	5-13-82	0830	103	131	115	16	16
	5-13-82	0900	89	114	112	16	13
	5-13-82	1000	74	117	109	14	16
	5-14-82	1400	119	142	126	16	16
	5-28-82	1415	169	544	470	53	52
	5-28-82	1450	151	1,405	1,230	106	102
	5-28-82	1545	92	566	609	48	52
	5-28-82	1615	81	411	418	36	38
Rapid Creek at East Main Street (site 4)	5-13-82	1120	137	236	240	26	27
	5-13-82	1245	155	216	261	25	28
	5-13-82	1440	130	195	208	22	24
	5-28-82	1355	238	1,435	1,470	128	131
	5-28-82	1435	155	693	807	71	76
	5-28-82	1520	152	523	554	58	60
	5-28-82	1635	92	753	766	66	68
Rapid Creek below Hawthorne Ditch (site 5)	5-13-82	0850	137	277	350	22	30
	5-13-82	0920	118	283	285	35	34
	5-13-82	0950	103	274	288	33	40
	5-13-82	1020	92	250	234	32	32
	5-28-82	1420	298	1,215	1,105	104	100
	5-28-82	1455	278	1,140	1,160	106	109
	5-28-82	1535	189	968	988	92	97
Meade Street Drain (site 6)	5-14-82	1050	39	2,320	2,100	160	166
	5-14-82	1230	46	1,740	1,670	144	136
	5-14-82	1410	20	823	854	64	68
	5-28-82	1335	117	4,685	4,635	400	390
	5-28-82	1400	89	2,525	2,515	216	238
	5-28-82	1435	40	1,300	1,405	118	136

Table 18.--Summary of calibration data for Hydrolab instruments used for field measurement of properties

[°C, degrees Celsius; mg/L, milligrams per liter]

	Property	Accepted deviation[1/]	Number of calibrations	Number of instances outside accepted deviation	Range of applied corrections	Mean of applied corrections
Hydrolab unit W381858	Temperature	±0.3 °C	20	0	--	--
	Specific conductance	±3 percent	64	9	+7.5 to -7.7 percent	-0.4 percent
	pH	±0.1 unit	64	22	+0.4 to -0.4 unit	+0.08 unit
	Dissolved oxygen	±0.3 mg/L	76	24	+1.7 to -1.2 mg/L	+0.05 mg/L
Hydrolab unit W383625	Temperature	±0.3 °C	16	0	--	--
	Specific conductance	±3 percent	47	12	+5.6 to -5.6 percent	+0.6 percent
	pH	±0.1 unit	47	8	+0.4 to -0.4 unit	+0.02 unit
	Dissolved oxygen	±0.3 mg/L	64	22	+1.0 to -0.9 mg/L	+0.01 mg/L

1/ Manufacturer's specifications.

Table 19.--Precision of laboratory analyses made by the Civil Engineering Laboratory at the South Dakota School of Mines and Technology

[Data from routinely analyzed duplicate samples between May 1980 to April 1981. Units: mg/L, milligrams per liter; mL, milliliters; µg/L, micrograms per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 °Celsius; NTU, Nephelometric Turbidity Units. Precision data not available for all constituents]

Constituent or property	Range of measurement	Average range of duplicate analysis	Number of replicates
Alkalinity, total ($CaCO_3$) (mg/L)	50-100	1.1	13
	101-270	1.9	9
Biochemical oxygen demand, 5-day, carbonaceous (mg/L)	0-50	1.2	18
Biochemical oxygen demand, ultimate, carbonaceous (mg/L)	10-50	7	1
Calcium, total recoverable (mg/L)	45-200	2.8	6
	201-400	4.6	5
Chemical oxygen demand (mg/L)	0-50	1.9	25
	51-500	4.7	11
Chloride, dissolved (mg/L)	0-10	.22	27
	10.1-100	.45	10
Coliform, fecal[1/] (colonies per 100 mL)	0-60	3.7	19
	61-170	21	5
Lead, total recoverable (µg/L)	0-50	4.6	7
	200-500	36	6
Magnesium, total recoverable (mg/L)	10-50	.34	11
Nitrogen, ammonia plus organic, total (mg/L as N)	0-1.0	.03	12
	1.01-10	.14	13
Nitrogen, ammonia (mg/L as N)	0-0.6	.007	27
Nitrogen, nitrite plus nitrate, dissolved (mg/L as N)	0-0.5	.010	23
	0.51-2.0	.013	6
pH (units)	7.4-9.5	.05	32
Phosphorus, dissolved (mg/L as P)	0-0.10	.006	27

Table 19.--Precision of laboratory analyses made by the Civil Engineering Laboratory at the South Dakota School of Mines and Technology--Continued

Constituent or property	Range of measurement	Average range of duplicate analysis	Number of replicates
Phosphorus, total (mg/L as P)	0-0.50	0.008	24
	1.0-3.0	.07	3
Potassium, total recoverable (mg/L)	2.5-30	0.43	13
Sodium, dissolved (mg/L)	4.0-40.0	.13	7
Sodium, total recoverable (mg/L)	3.0-16.0	.16	17
Solids, dissolved, residue on evaporation at 180 °C (mg/L)	100-500	6	12
	501-3,000	17	9
Solids, suspended, residue at 105 to 110 °C (mg/L)	0-100	5.3	42
	101-1,000	7.2	72
	1,001-7,000	57	28
Solids, total, residue at 105 to 110 °C (mg/L)	200-1,000	17	59
	1,001-10,000	28	16
Solids, total, volatile on ignition (mg/L)	0-100	3.8	93
	101-600	11	21
Specific conductance (µS/cm)	200-1,200	3.1	35
Sulfate, dissolved (mg/L)	50-500	2.8	11
	1,000-2,000	59	4
Turbidity (NTU)	0-25	.3	15
	26-100	2.7	10
	101-400	7.7	14

1/ Range of measurement data based on plate count rather than reported values.

Table 20.--Accuracy of laboratory analyses made by the the Civil Engineering Laboratory at the South Dakota School of Mines and Technology

[Data based on the analysis of available U.S. Environmental Protection Agency quality-control samples. Units: mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 °Celsius]

Constituent or property	Accepted value[1]	Number of analyses	Average reported value	Percent bias	Standard deviation
Alkalinity, total ($CaCO_3$) (mg/L)	16.0	7	15.3	-4.4	1.08
	73.7	7	71.7	-2.7	2.03
Biochemical oxygen demand, 5-day, carbonaceous (mg/L)	2.4	4	2.4	0	.29
	100.6	4	105	+4.4	30.8
Calcium, total recoverable[2] (mg/L)	6.7	10	6.4	-4.5	.25
	32.0	11	31.3	-2.2	.80
Chemical oxygen demand (mg/L)	10.4	8	8.8	-15.4	1.0
	192.7	8	188	-2.4	4.3
Chloride, dissolved (mg/L)	20.5	7	19.9	-2.9	.88
	70.2	7	69.4	-1.1	.85
Lead, dissolved (µg/L)	18	10	14.6	-18.9	2.8
	80	10	75.4	-5.8	7.3
	250	10	256	+2.4	37
Magnesium, total recoverable[2] (mg/L)	2.4	10	2.36	-1.7	.07
	7.1	10	6.99	-1.6	.10
Nitrogen, ammonia plus organic, dissolved (mg/L)	.52	12	.48	-7.7	.049
	4.12	11	4.15	+.7	.22
Nitrogen, ammonia, dissolved (mg/L as N)	.19	15	.20	+5.3	.12
	1.3	14	1.36	+4.6	.044
Nitrogen, nitrite plus nitrate dissolved (mg/L as N)	.31	10	.31	0	.02
	1.59	9	1.60	+.6	.12
Oil and grease (mg/L)	12	9	13.1	+10.8	1.1
	20	9	19.6	-2.0	1.2
Phosphorus, dissolved (mg/L as P)	.14	21	.126	-10.0	.01
	.93	21	1.0	+7.5	.06
Potassium, total recoverable[2] (mg/L)	1.7	10	1.72	+1.2	.02
	7.2	10	7.20	0	.17

Table 20.--Accuracy of laboratory analyses made by the the Civil Engineering Laboratory at the South Dakota School of Mines and Technology--Continued

Constituent or property	Accepted value[1/]	Number of analyses	Average reported value	Percent bias	Standard deviation
Sodium, total recoverable[2/] (mg/L)	7.0	7	6.91	-1.3	0.085
	40.0	6	39.4	-1.5	.57
Solids, dissolved, residue on evaporation at 180 °C (mg/L)	66	7	73	+10.6	8.4
	277	7	294	+6.1	24
Solids, suspended, residue at 105 to 110 °C (mg/L)	29.1	5	32.4	+11.3	1.9
	156	10	164	+5.1	12
	534	11	540	+1.1	28
Solids, total volatile on ignition (mg/L)	44.3	10	48.5	+8.3	6.0
	296	11	304	+2.7	26
Specific conductance (µS/cm)	125	9	131	+4.8	5.2
	479	9	491	+2.5	29
Sulfate, dissolved (mg/L)	12.0	9	11.5	-4.2	.41
	75.0	10	74.8	-.3	1.4

1/ Determined by U.S. Environmental Protection Agency.
2/ Digestion step included in analysis procedure, sample did not contain any visible particulate matter.

REFERENCES CITED

American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1976, Standard methods for the examination of water and wastewater (14th ed.): Washington, D.C., American Public Health Association, 1,121 p.

Brakensiek, D.L., Osborn, H.B., and Rawls, W.J., Coordinators, 1979, Field manual for research in agricultural hydrology, U.S. Department of Agriculture, Agriculture Handbook No. 224, 550 p.

Harms, L.L., and Strub, Michael, 1980, Work plan for urban runoff control in Rapid City, South Dakota: Sixth District Council of Local Governments, 135 p.

Pirner, S.M., and Harms, L.L., 1978, Rapid City combats the effects of urban runoff on surface water, in Water and Sewage Works: v. 125, p. 48.

Rahn, P.H., and Gries, J.P., 1973, Large springs in the Black Hills, South Dakota and Wyoming: South Dakota Geological Survey Report of Investigations No. 107, 46 p.

Schwarz, F.K., and others, 1975, The Black Hills-Rapid City flood of June 9-10, 1972--A description of the storm and flood: U.S. Geological Survey Professional Paper 877, 47 p.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1976, Narrative climatological summary, in Local Climatological Data, Rapid City, South Dakota: Asheville, North Carolina, 4 p.

----- 1981, Climatological data annual summary, South Dakota: Asheville, North Carolina, 20 p.

U.S. Environmental Protection Agency, 1979, Methods for chemical analysis of water and wastes: Washington, D.C., Office of Research and Development, Environmental Monitoring and Support Laboratory, 392 p.

----- 1981, Preliminary results of the nationwide urban runoff program, v. 1 draft: Washington, D.C., 88 p.

----- 1986, Quality criteria for water 1986: U.S. EPA 44015-86-001, Washington, D.C., 197 p.

U.S. Geological Survey, 1968, General procedure for gaging streams: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6, 13 p.

----- 1970, Field methods for measurement of fluvial sediment: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter C2, 59 p.

----- 1979, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Chapter A1, 626 p.

----- 1982-84, Water resources data, South Dakota, water years 1981-83: U.S. Geological Survey Water-Data Report SD-81-1 to SD-83-1 (published annually).

----- 1982, 1983 water quality laboratory services catalog, U.S. Geological Survey Open-File Report 82-766.

SUPPLEMENTAL INFORMATION

This section of the report presents hydrographs (figs. 13-40) showing stream discharge and storm-runoff volumes at sites 1-6 for storms 1-22, 26, 28-29, and 31-33. Also presented in this section are two tables: (1) The first table (table 21) presents physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6 from May 1980 to July 1982; and (2) the second table (table 22) presents laboratory analyses of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982.

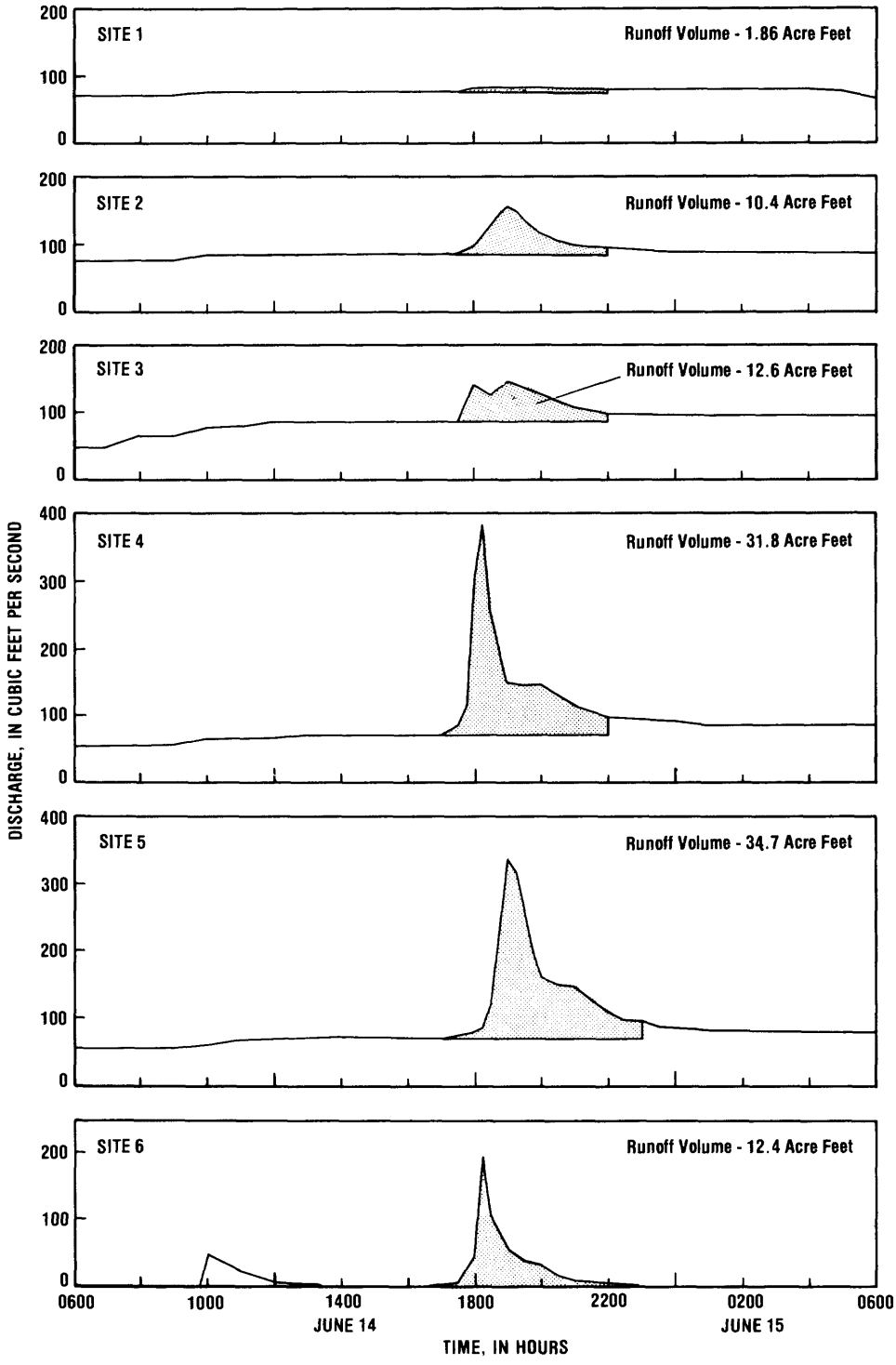

Figure 13.--Stream discharge and storm-runoff volume at sites 1-6 for storm 1, June 14, 1980.

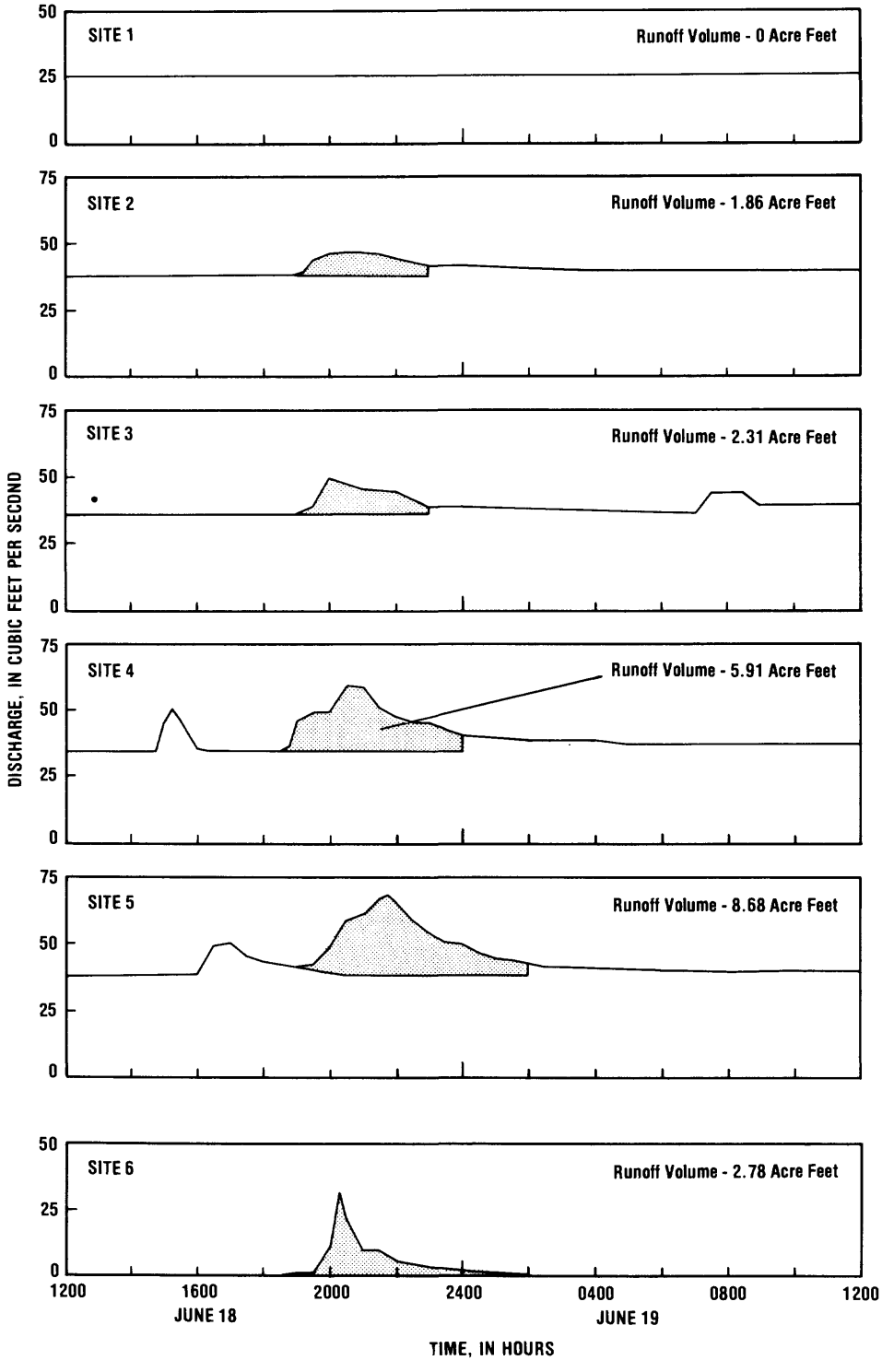

Figure 14.--Stream discharge and storm-runoff volume at sites 1-6 for storm 2, June 18, 1980.

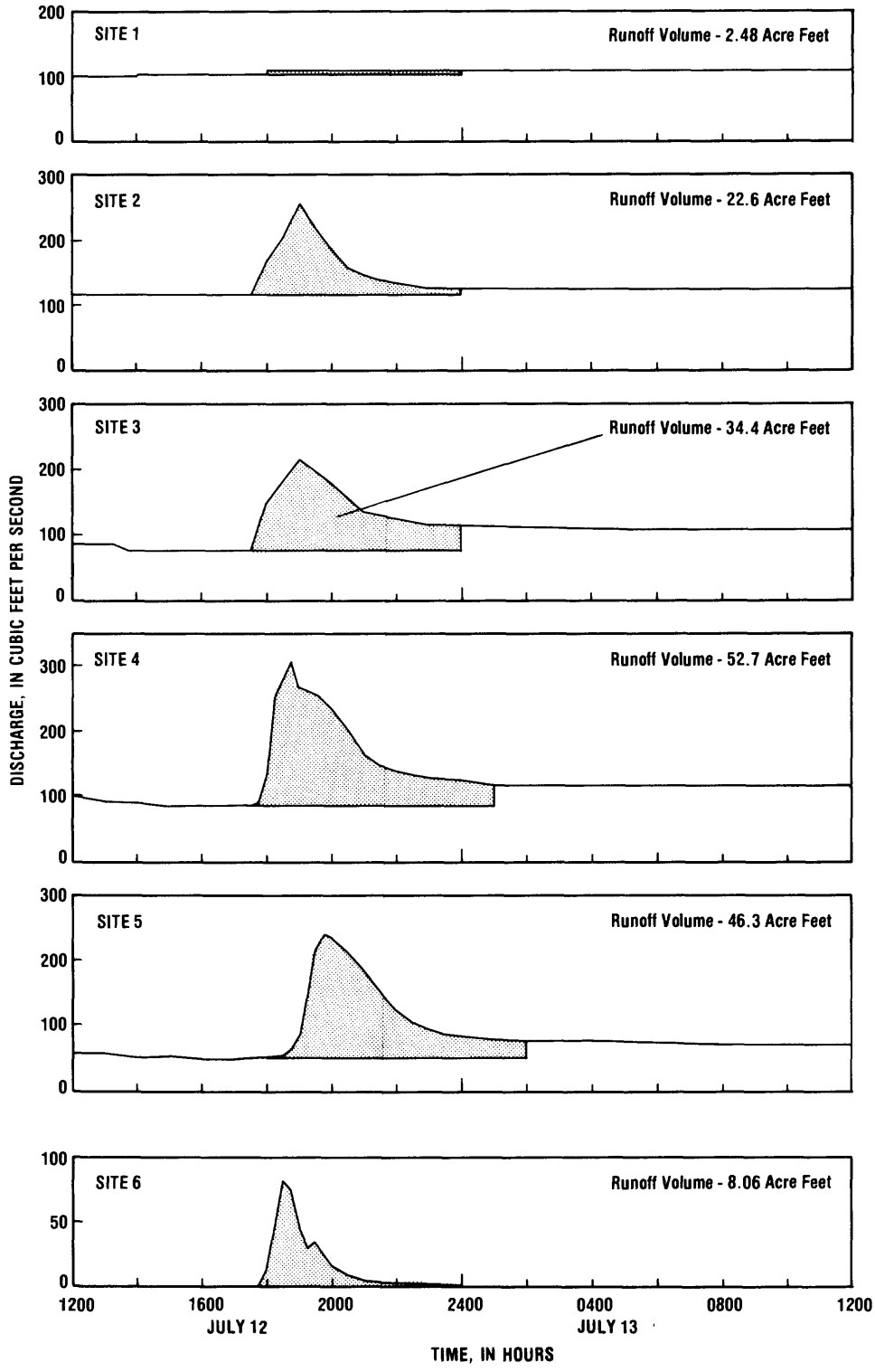

Figure 15.--Stream discharge and storm-runoff volume at sites 1-6 for storm 3, July 12, 1980.

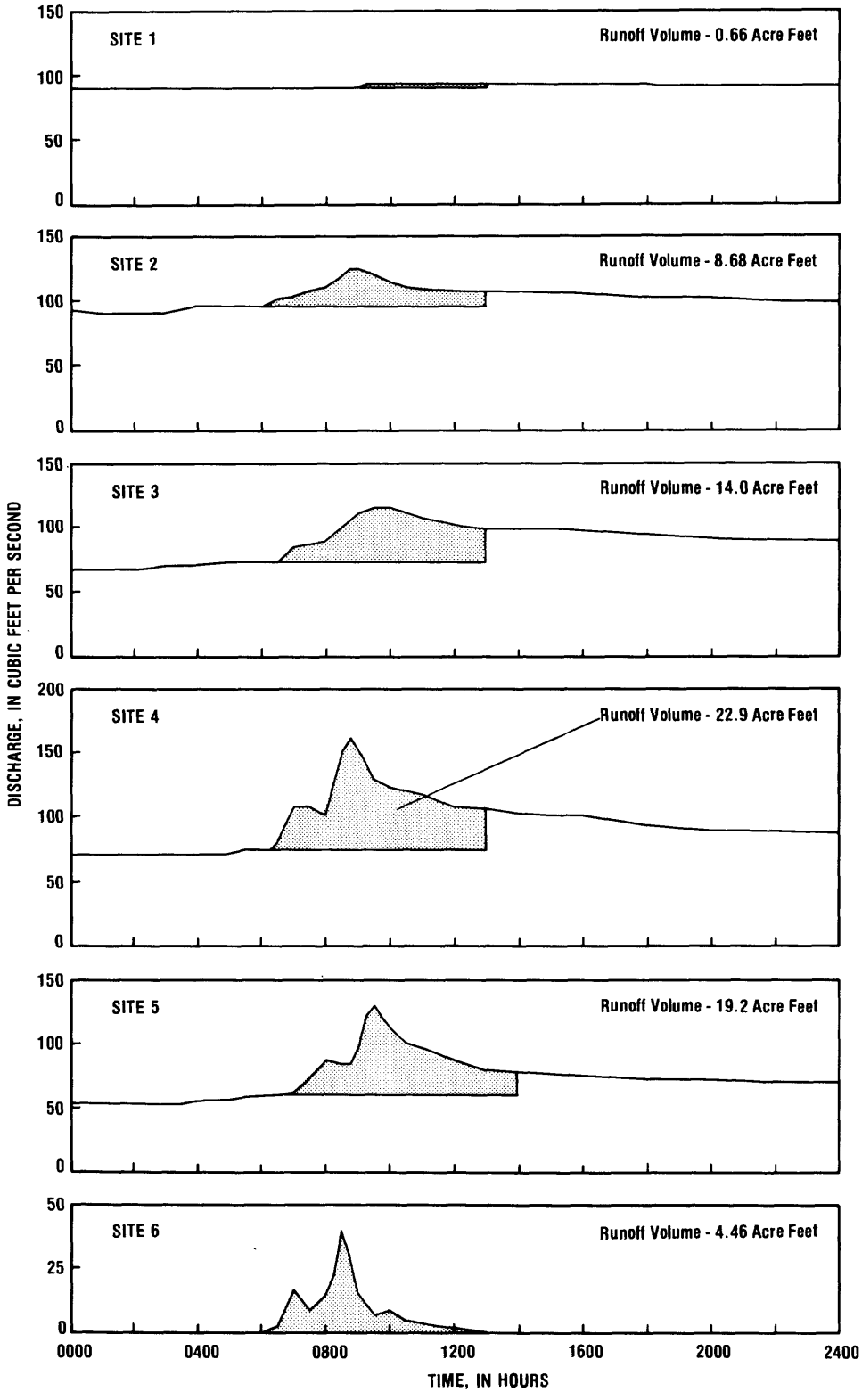

Figure 16.--Stream discharge and storm-runoff volume at sites 1-6 for storm 4, July 20, 1980.

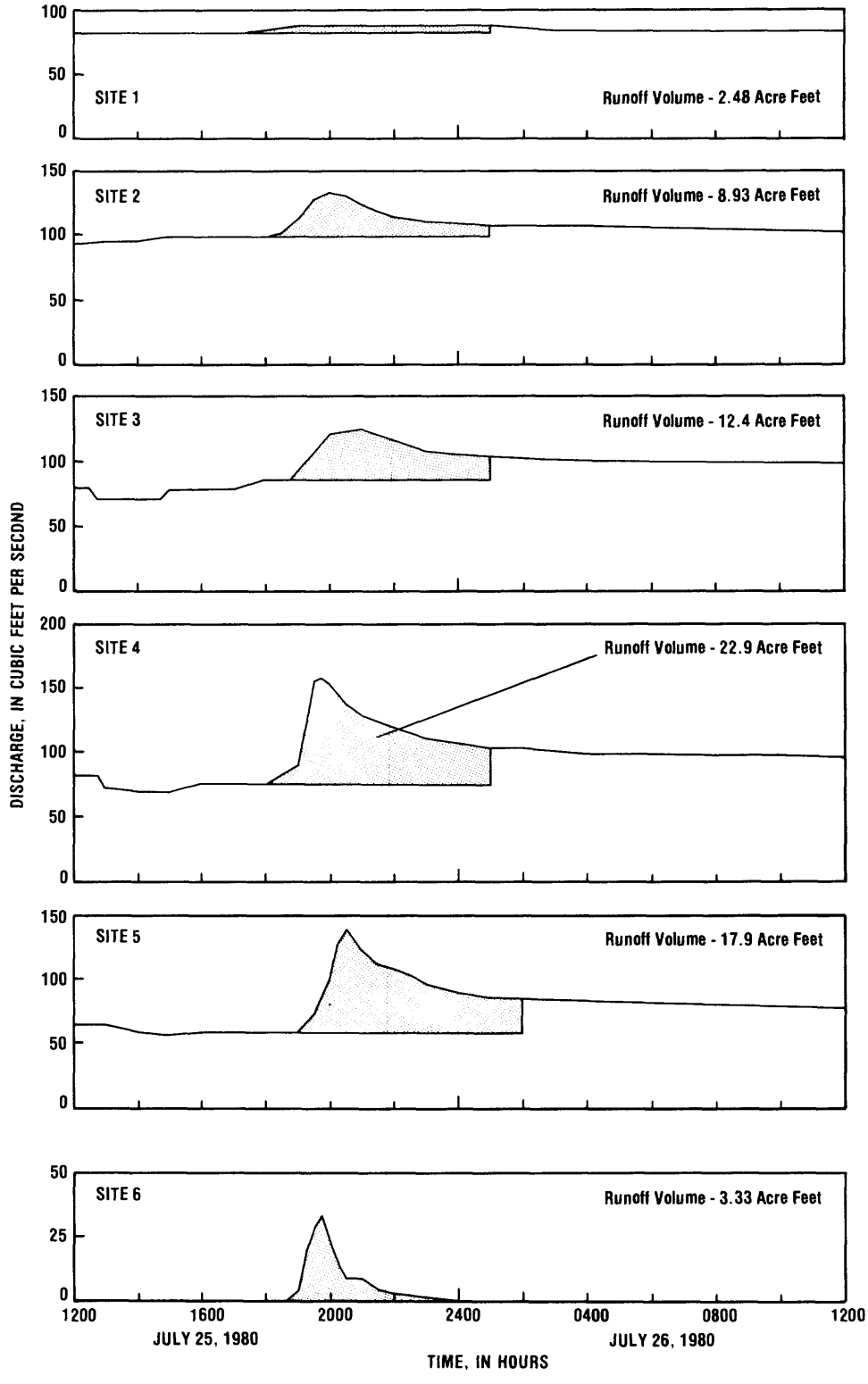

Figure 17.--Stream discharge and storm-runoff volume at sites 1-6 for storm 5, July 25, 1980.

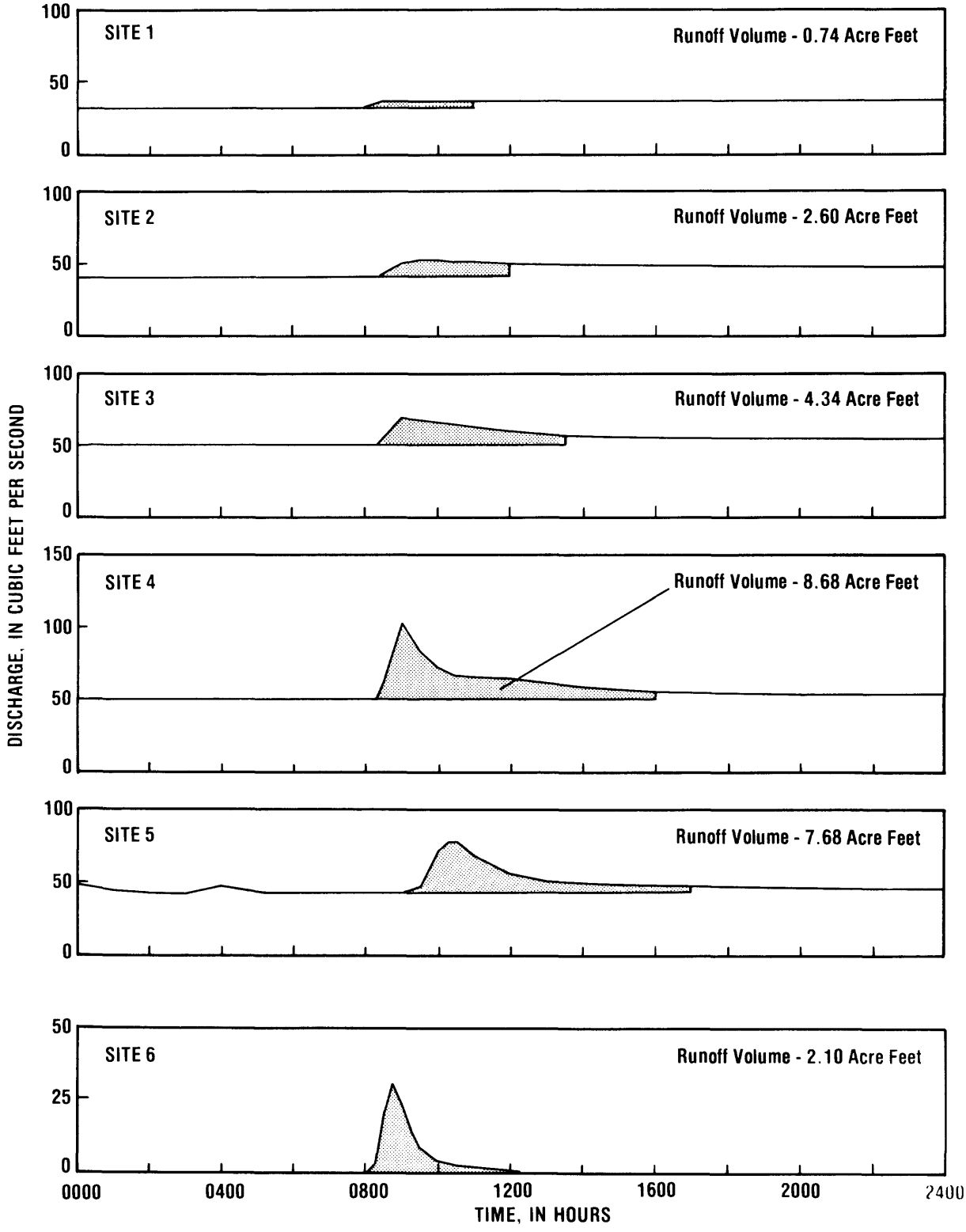

Figure 18.--Stream discharge and storm-runoff volume at sites 1-6 for storm 6, August 20, 1980.

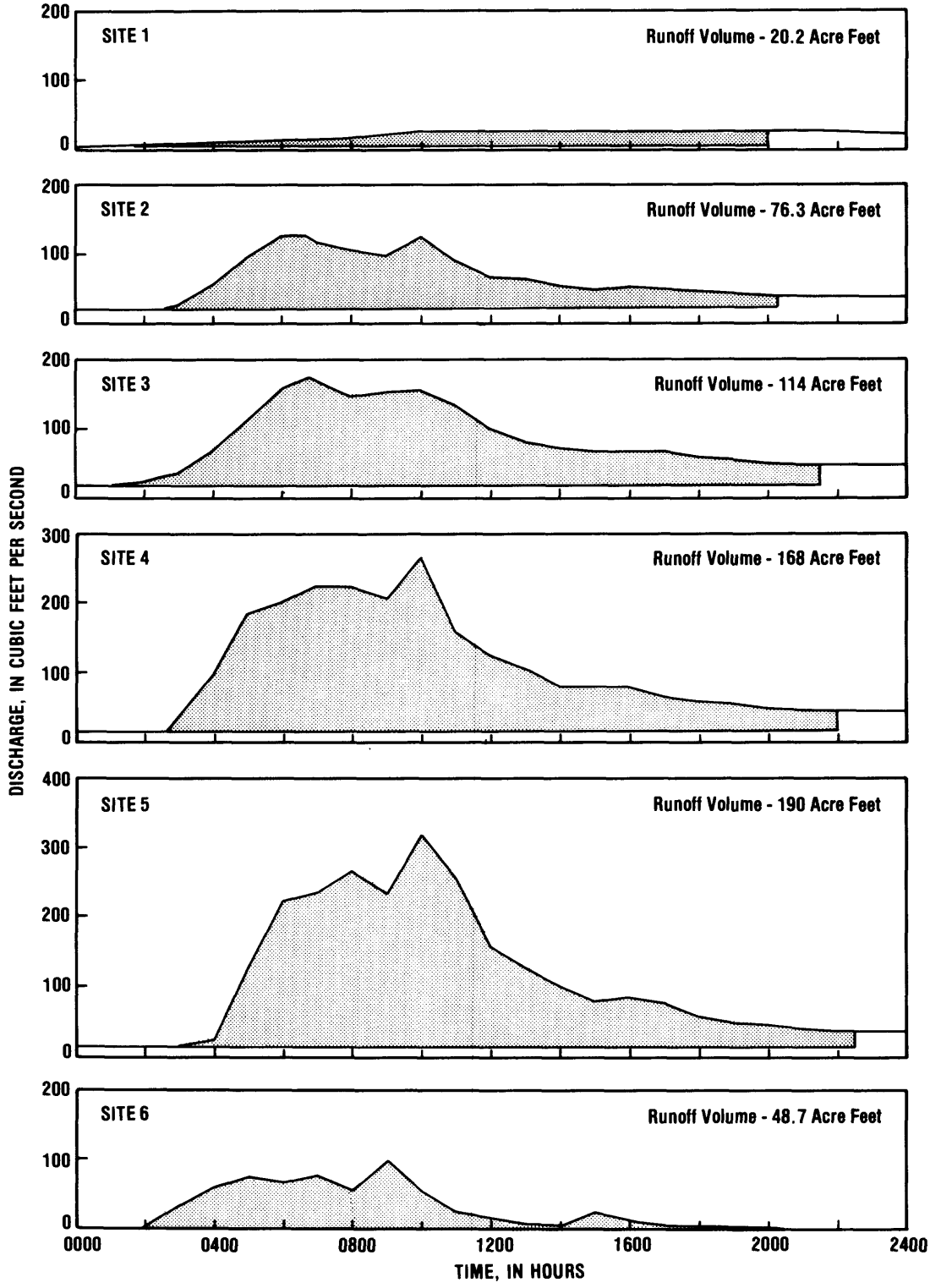

Figure 19.--Stream discharge and storm-runoff volume at sites 1-6 for storm 7, October 15, 1980.

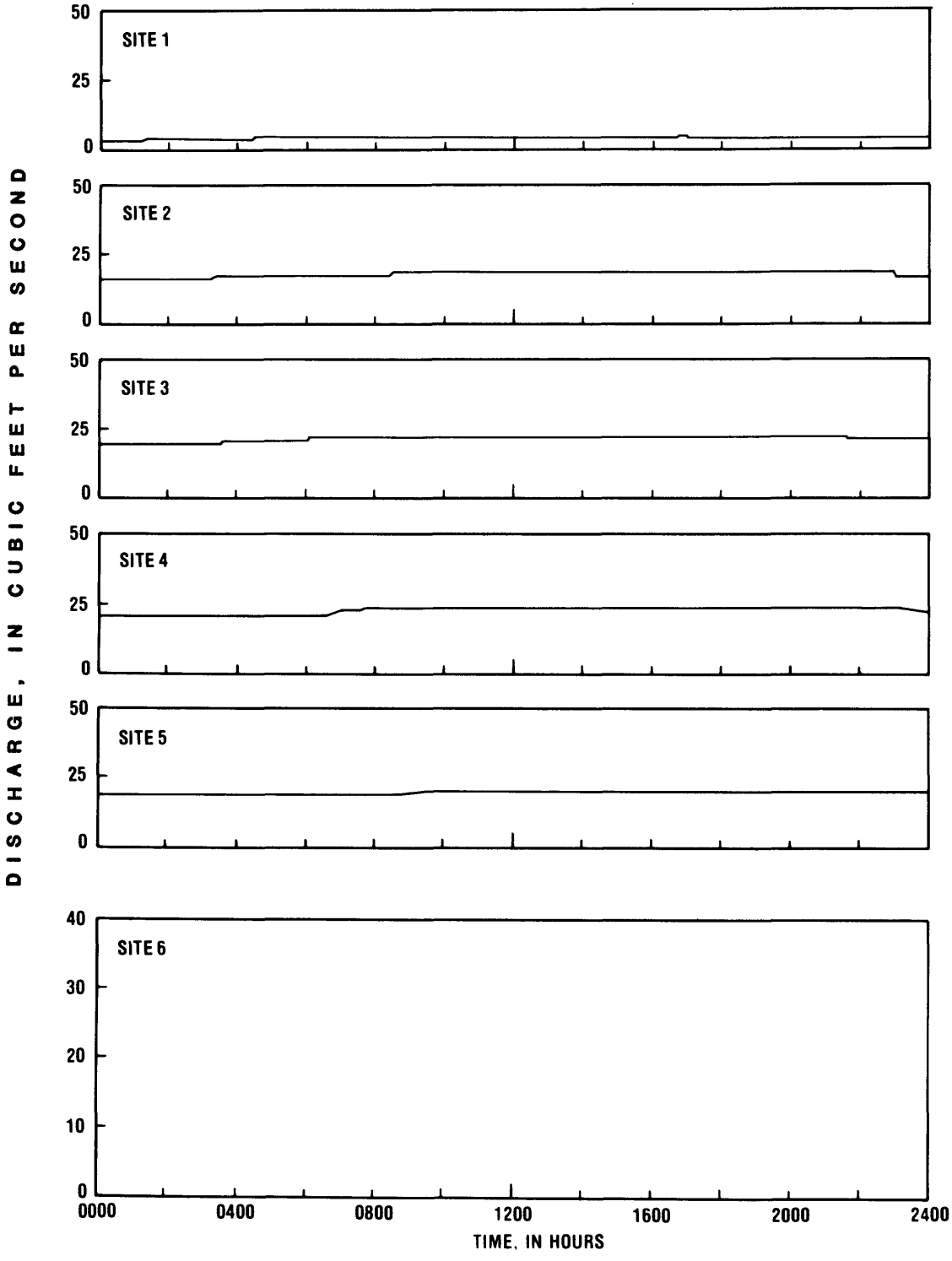

Figure 20.--Stream discharge and storm-runoff volume at sites 1-6 for storm 8, April 3, 1981.

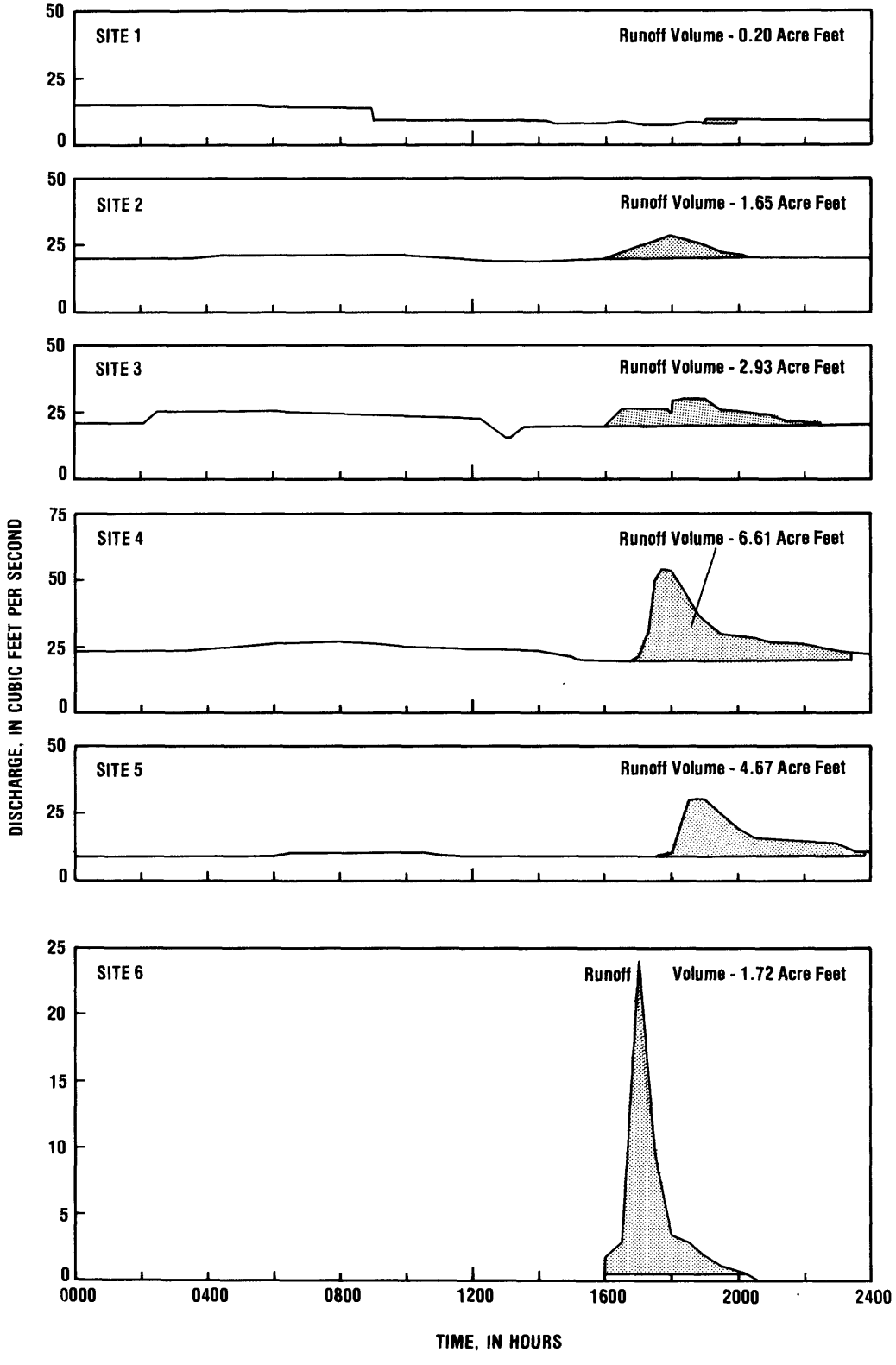

Figure 21.--Stream discharge and storm-runoff volume at sites 1-6 for storm 9, April 21, 1981.

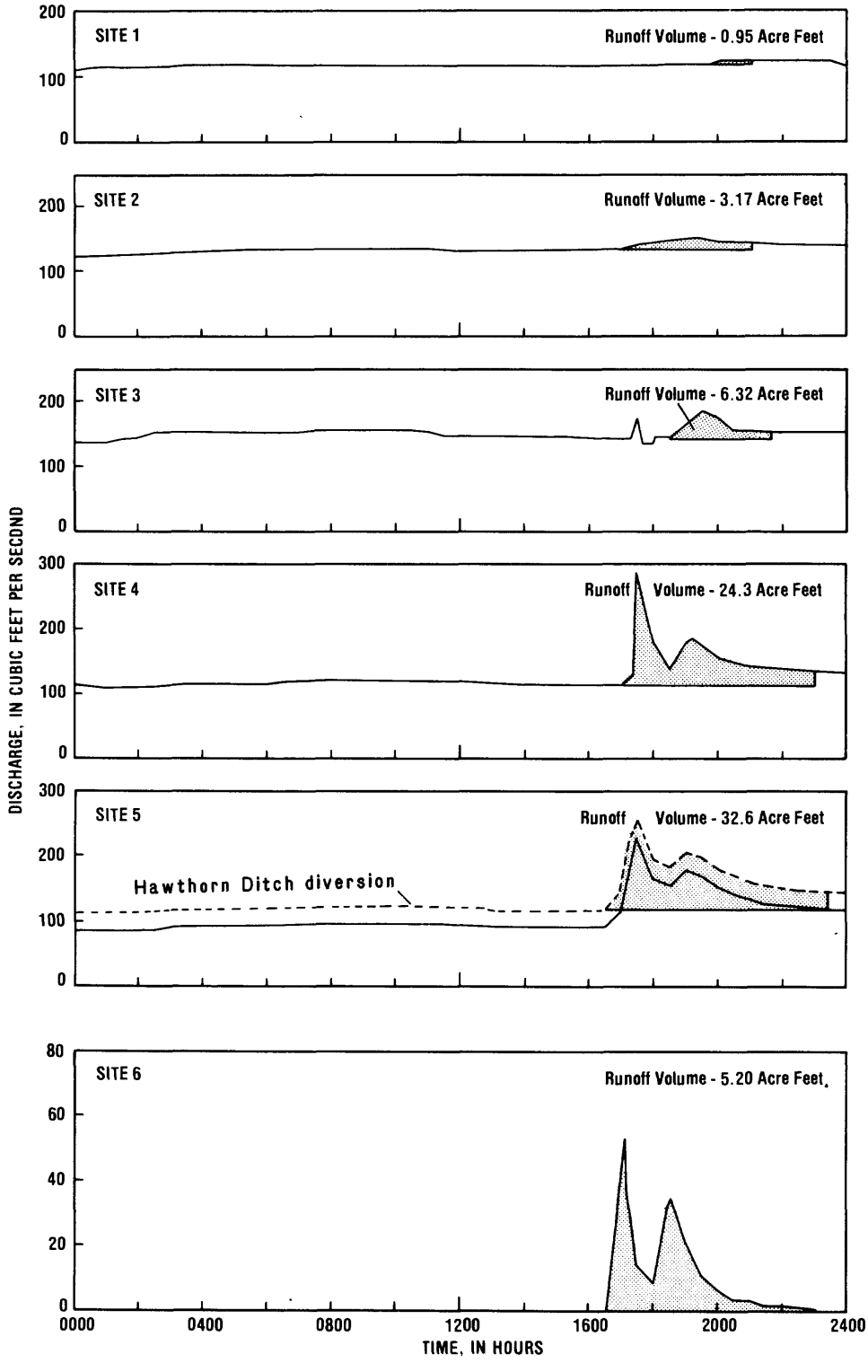

Figure 22.--Stream discharge and storm-runoff volume at sites 1-6 for storm 10, May 2, 1981.

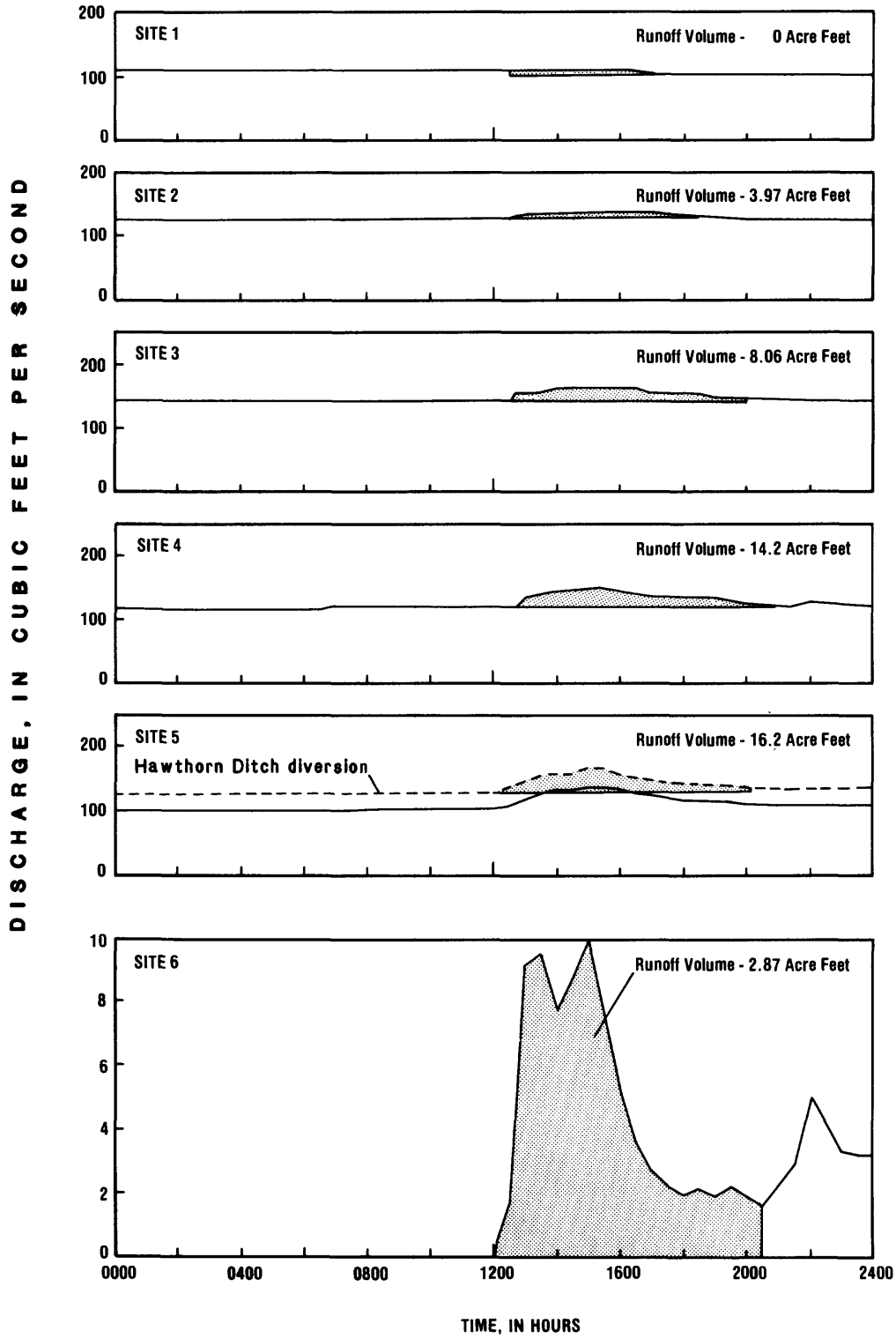

Figure 23.--Stream discharge and storm-runoff volume at sites 1-6 for storm 11, May 6, 1981.

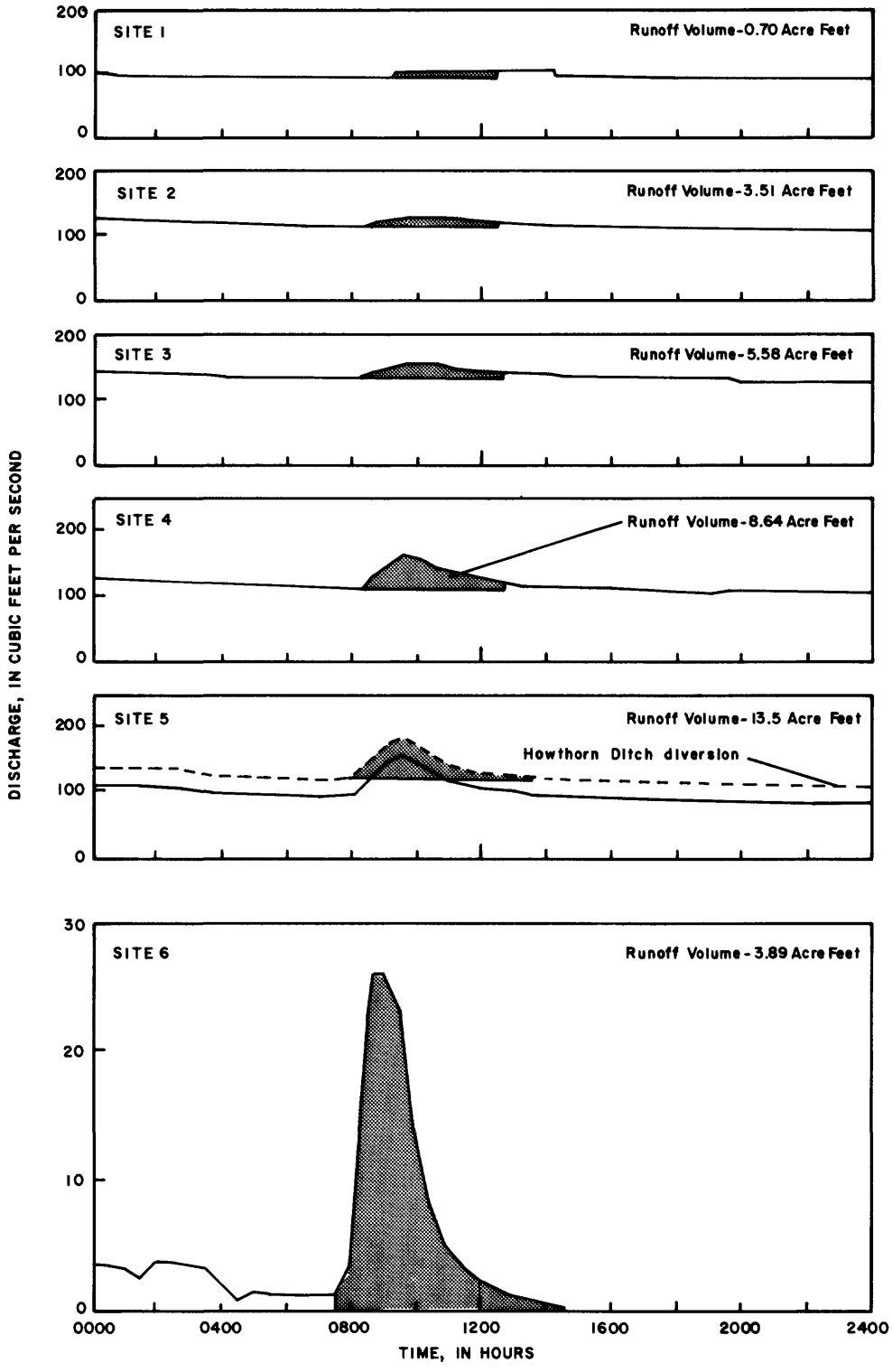

Figure 24.--Stream discharge and storm-runoff volume at sites 1-6 for storm 12, May 7, 1981.

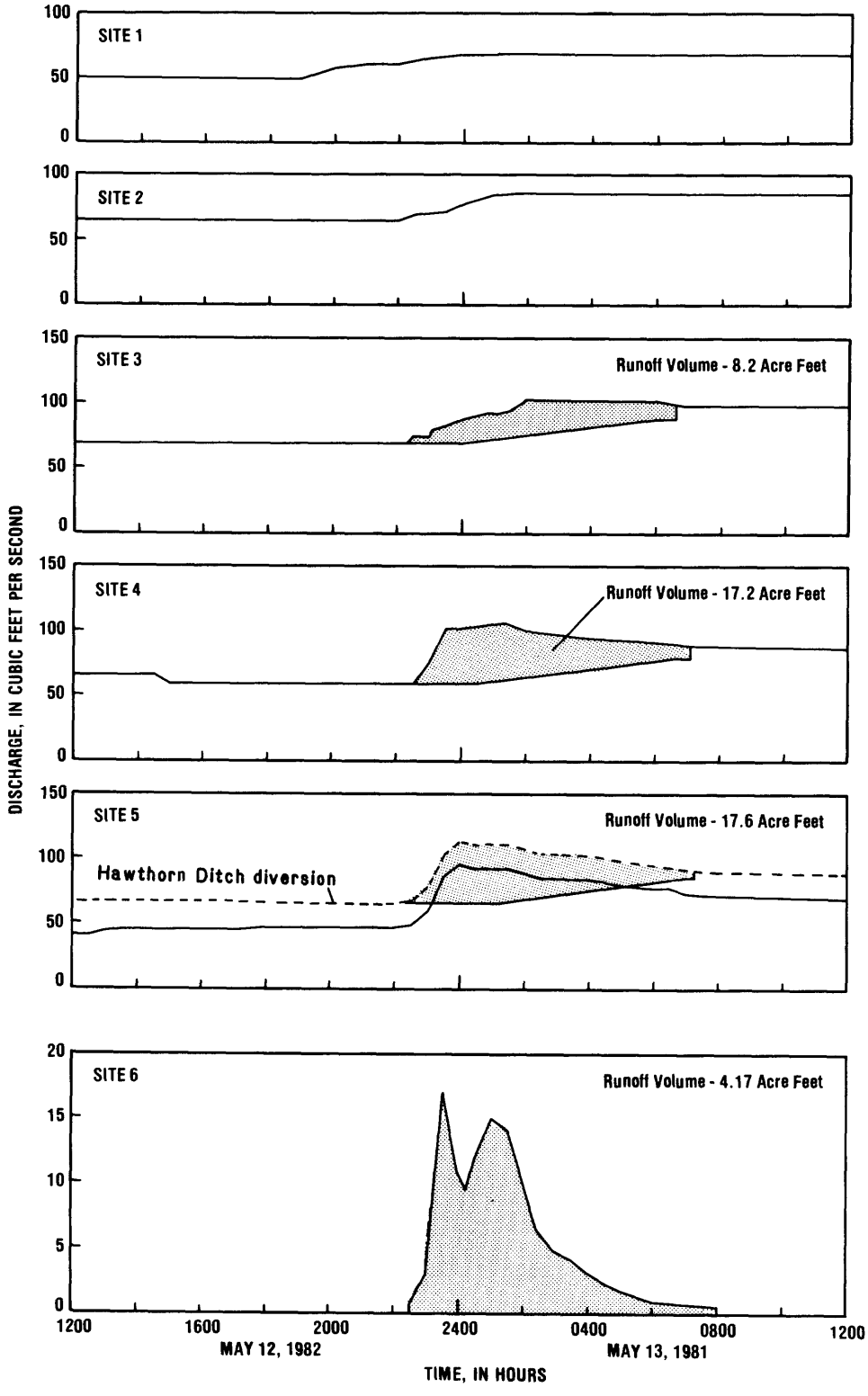

Figure 25.--Stream discharge and storm-runoff volume at sites 1-6 for storm 13, May 12-13, 1981.

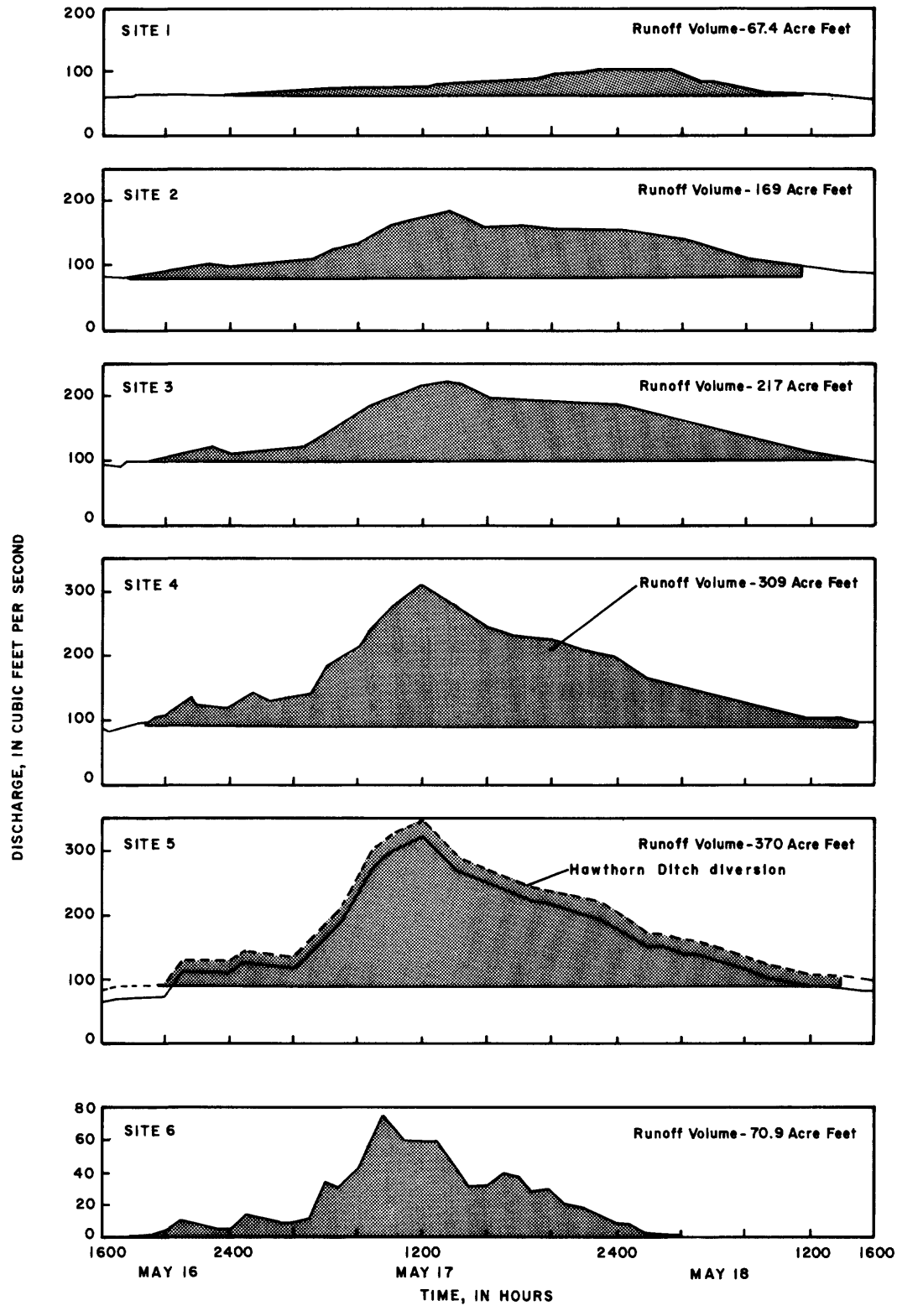

Figure 26.--Stream discharge and storm-runoff volume at sites 1-6 for storm 14, May 16-18, 1981.

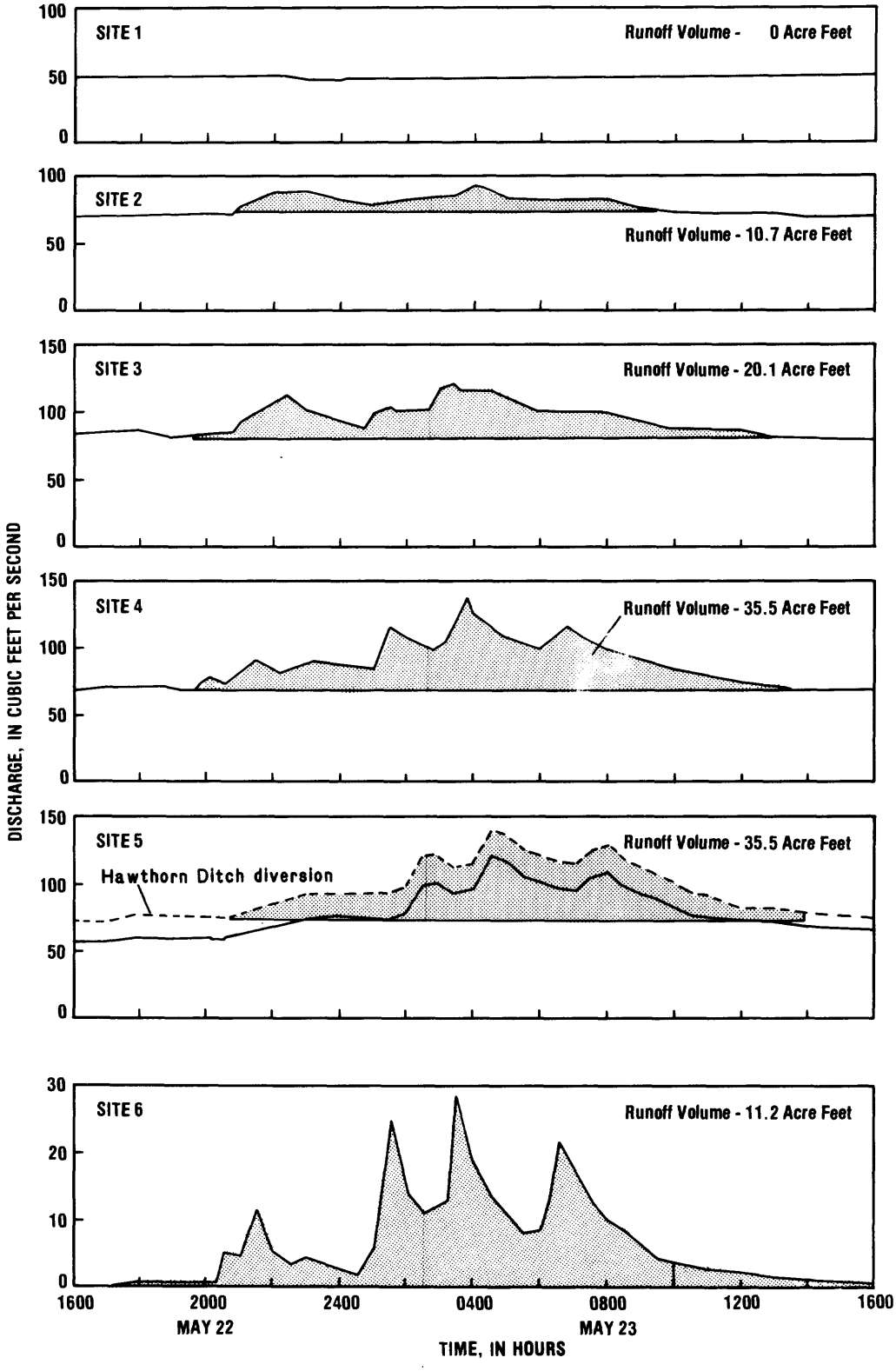

Figure 27.--Stream discharge and storm-runoff volume at sites 1-6 for storm 15, May 22-23, 1981.

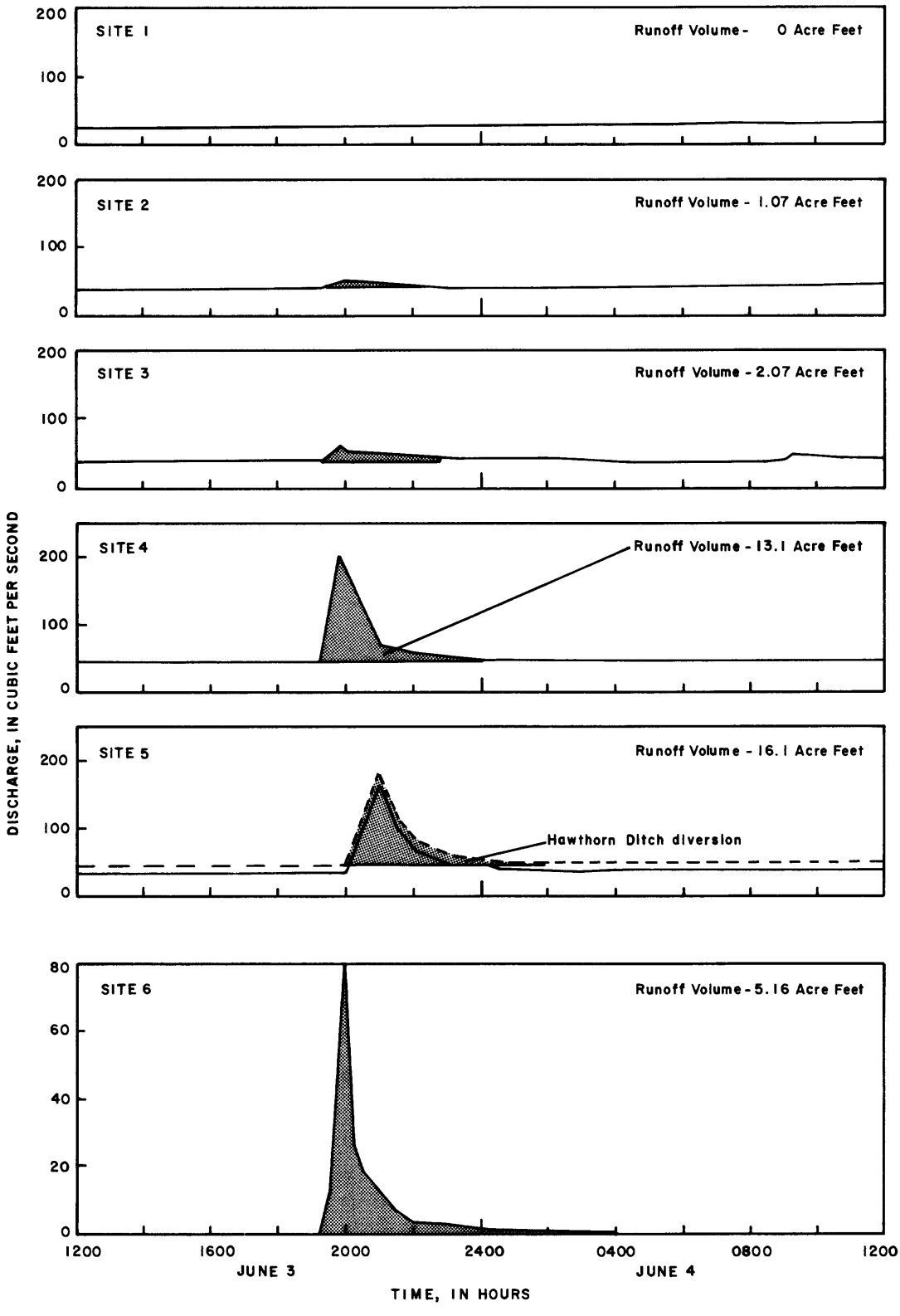

Figure 28.--Stream discharge and storm-runoff volume at sites 1-6 for storm 16, June 3-4, 1981.

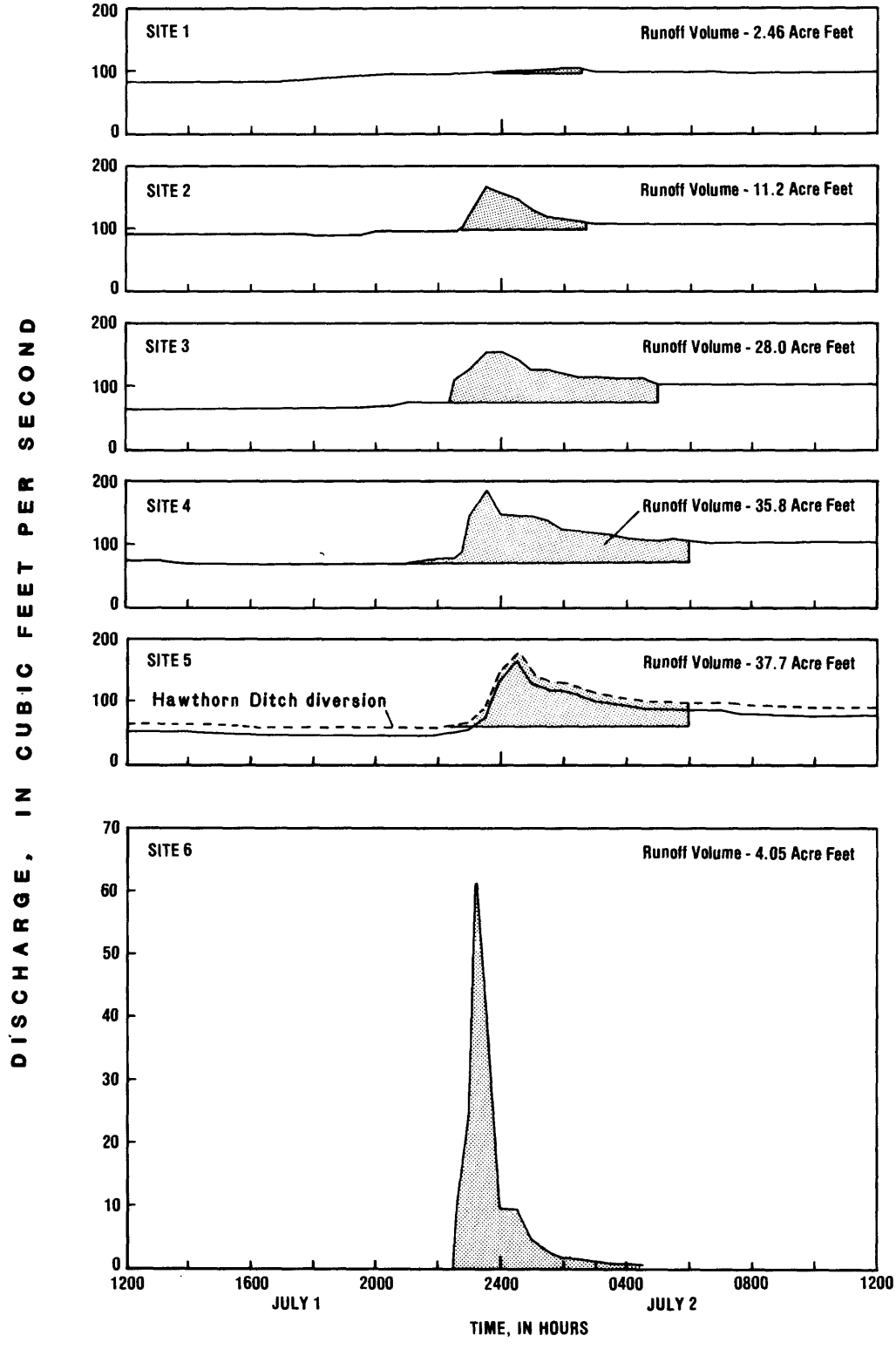

Figure 29.--Stream discharge and storm-runoff volume at sites 1-6 for storm 17, July 1-2, 1981.

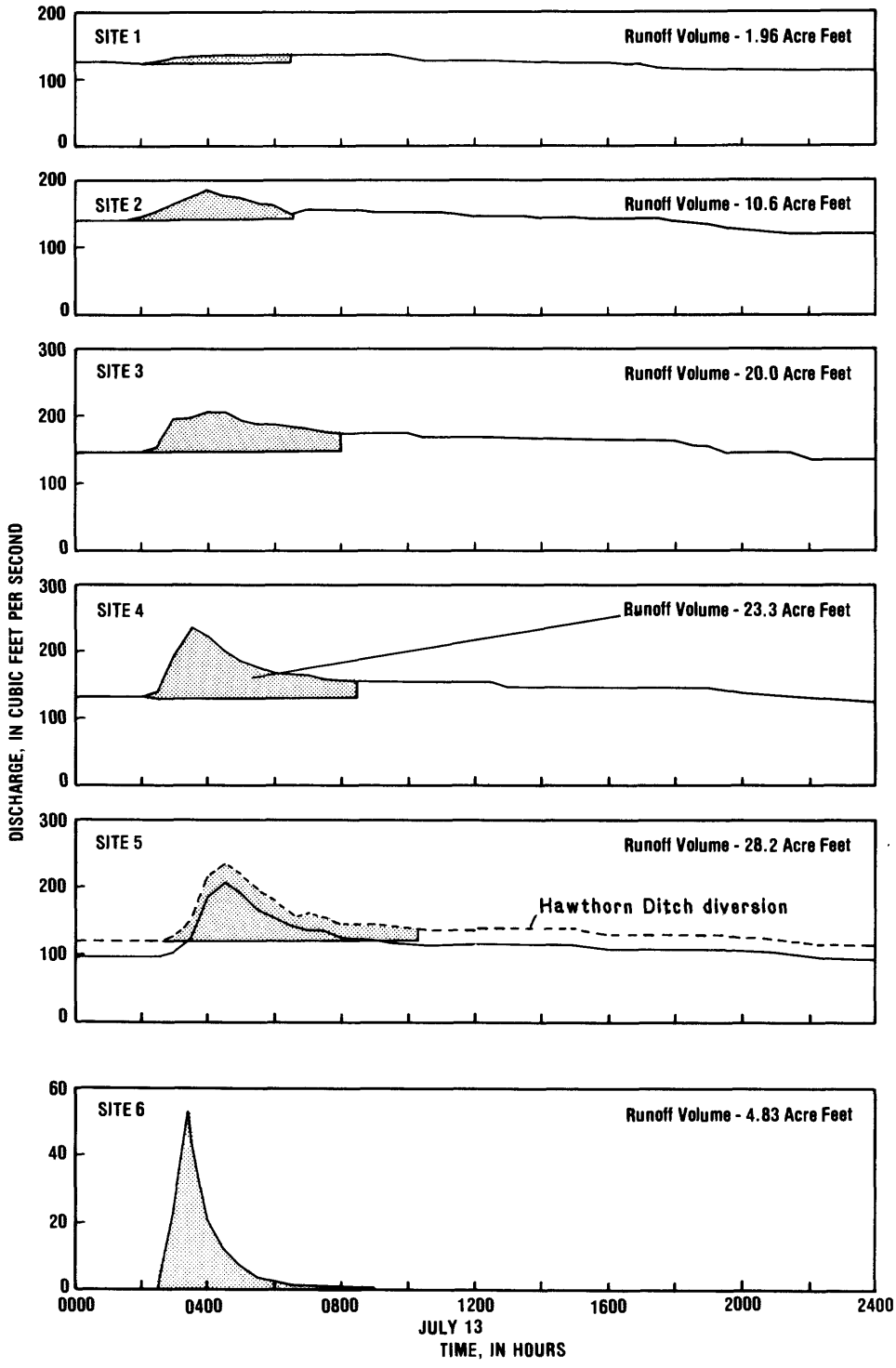

Figure 30.--Stream discharge and storm-runoff volume at sites 1-6 for storm 18, July 13, 1981.

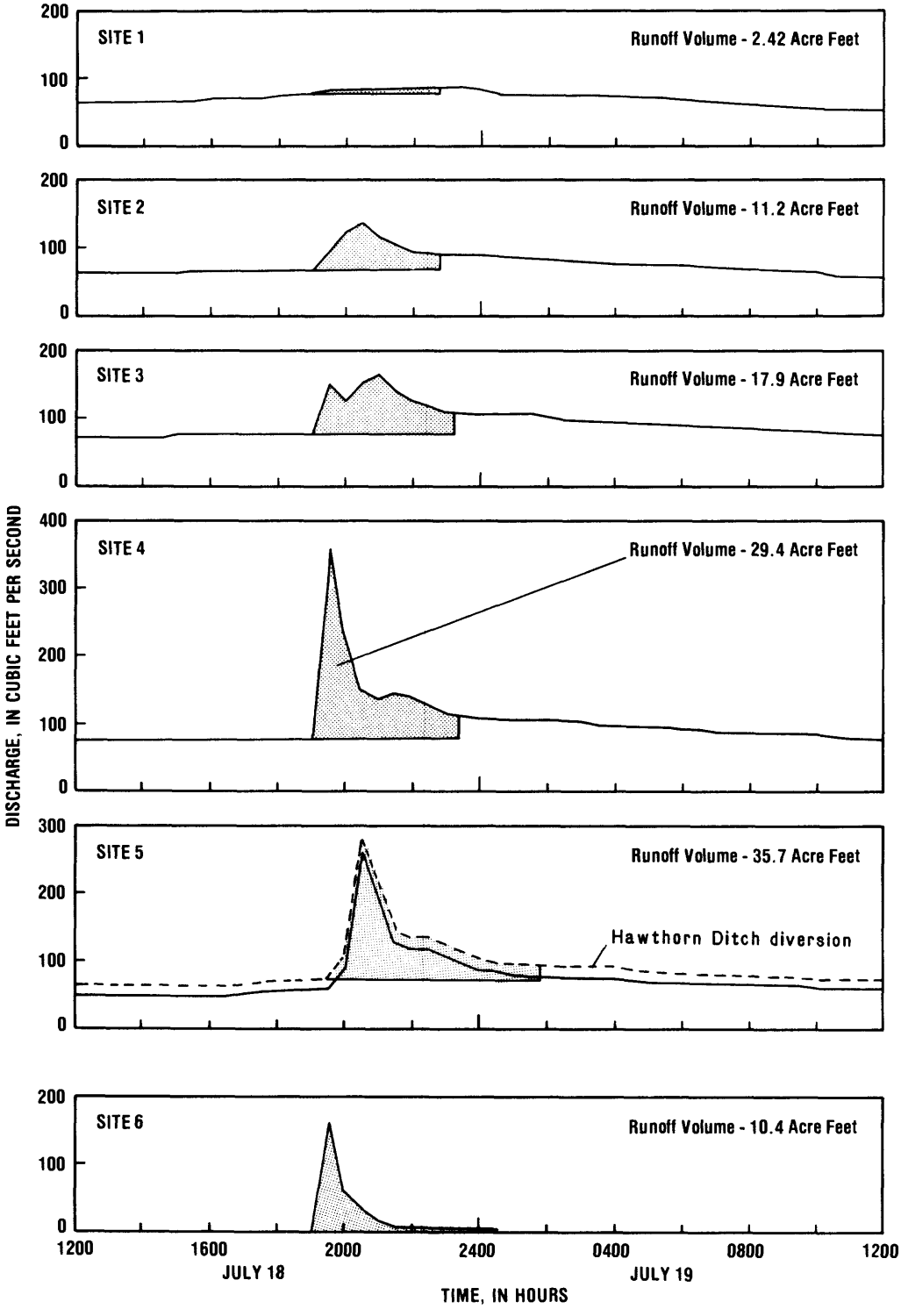

Figure 31.--Stream discharge and storm-runoff volume at sites 1-6 for storm 19, July 18-19, 1981.

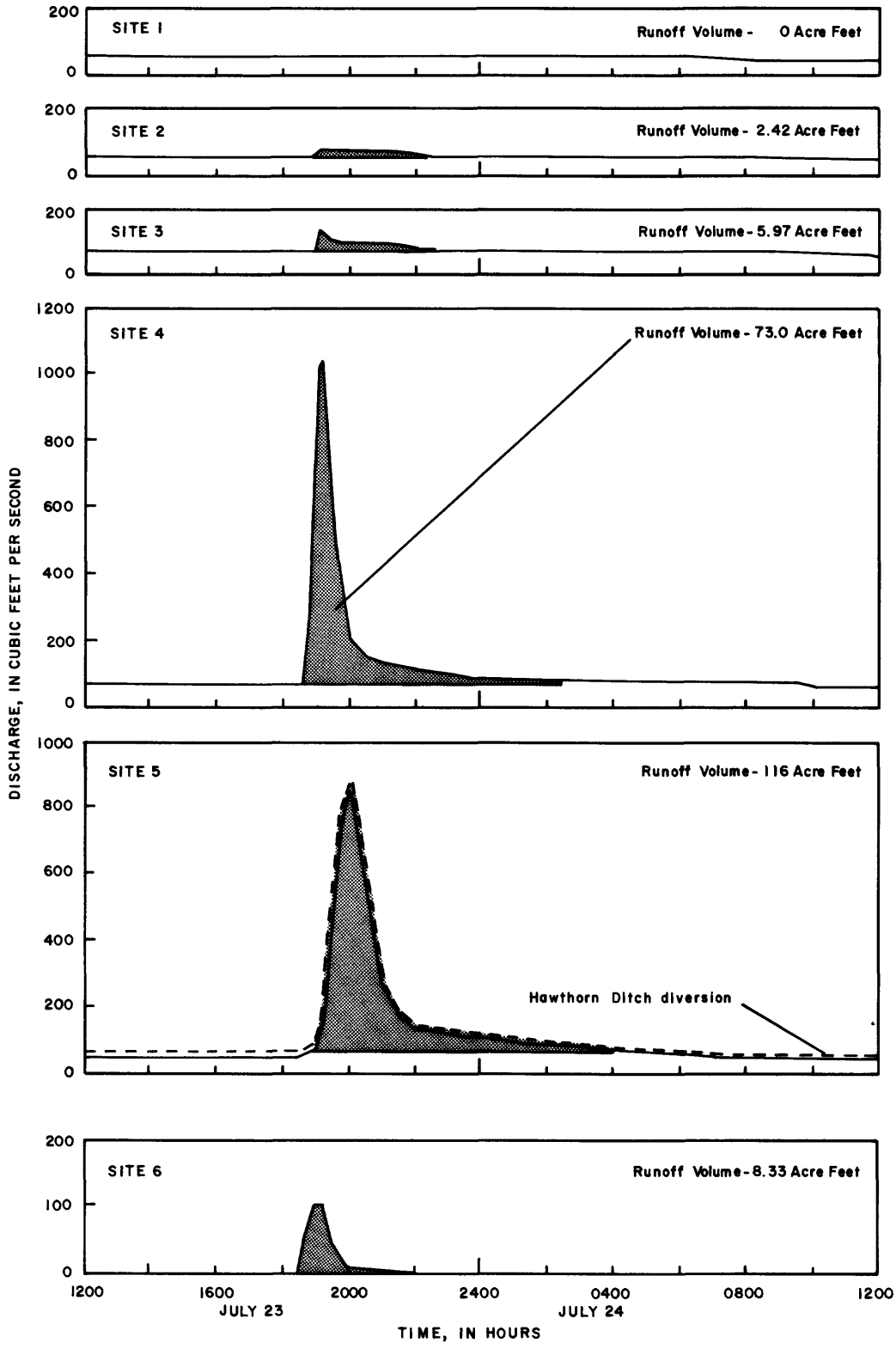

Figure 32.--Stream discharge and storm-runoff volume at sites 1-6 for storm 20, July 23-24, 1981.

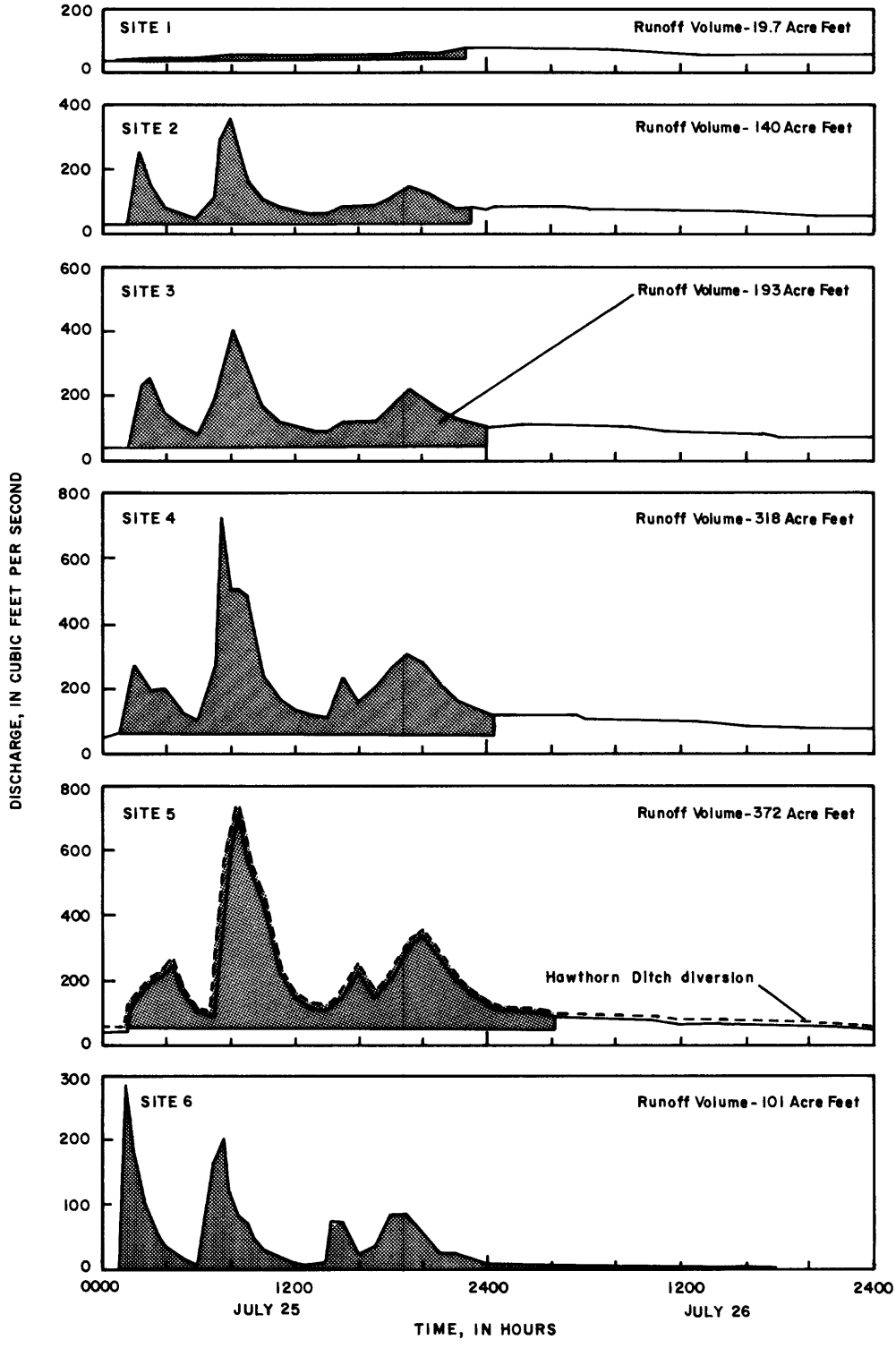

Figure 33.--Stream discharge and storm-runoff volume at sites 1-6 for storm 21, July 25-26, 1981.

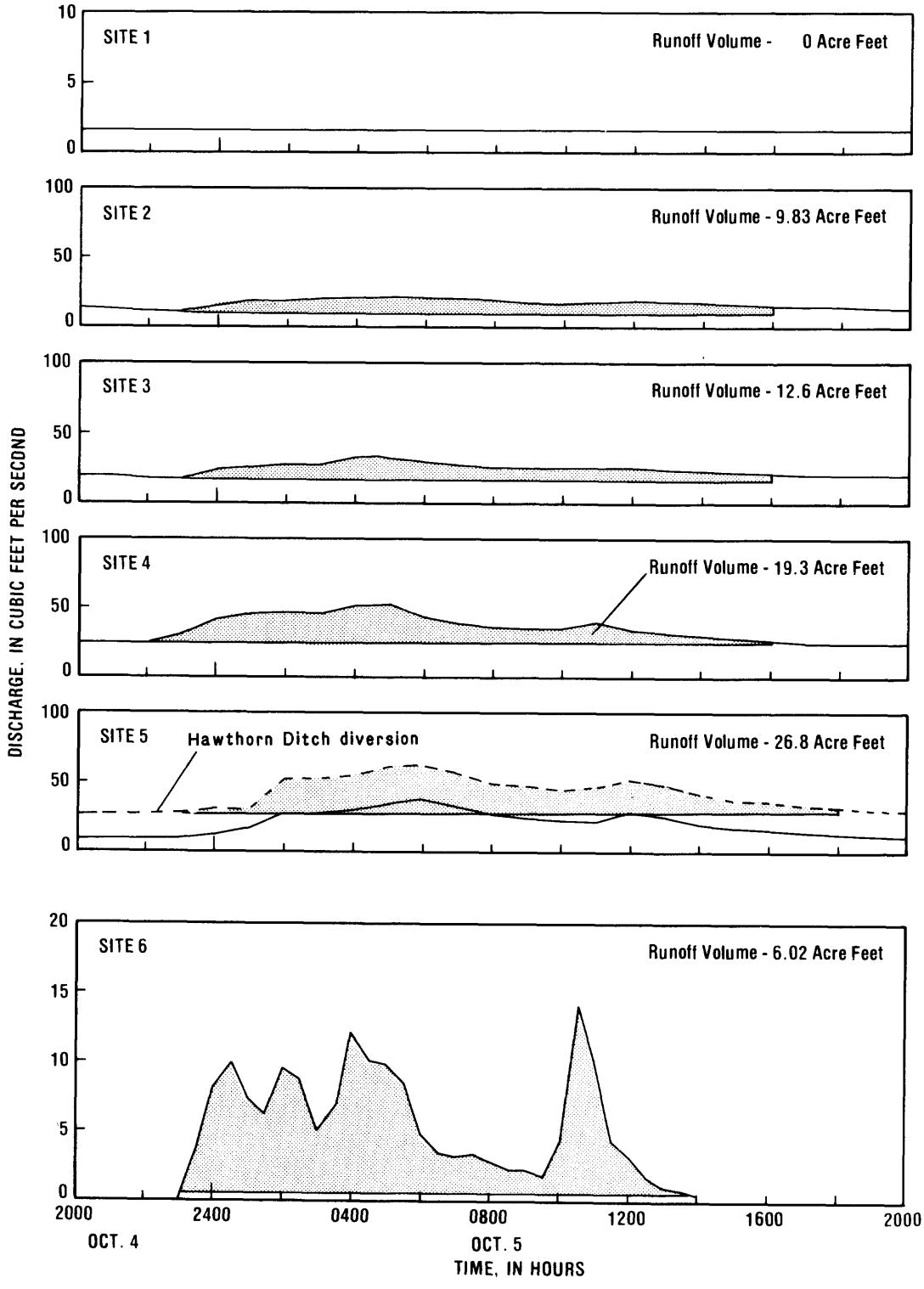

Figure 34.--Stream discharge and storm-runoff volume at sites 1-6 for storm 22, October 4-5, 1981.

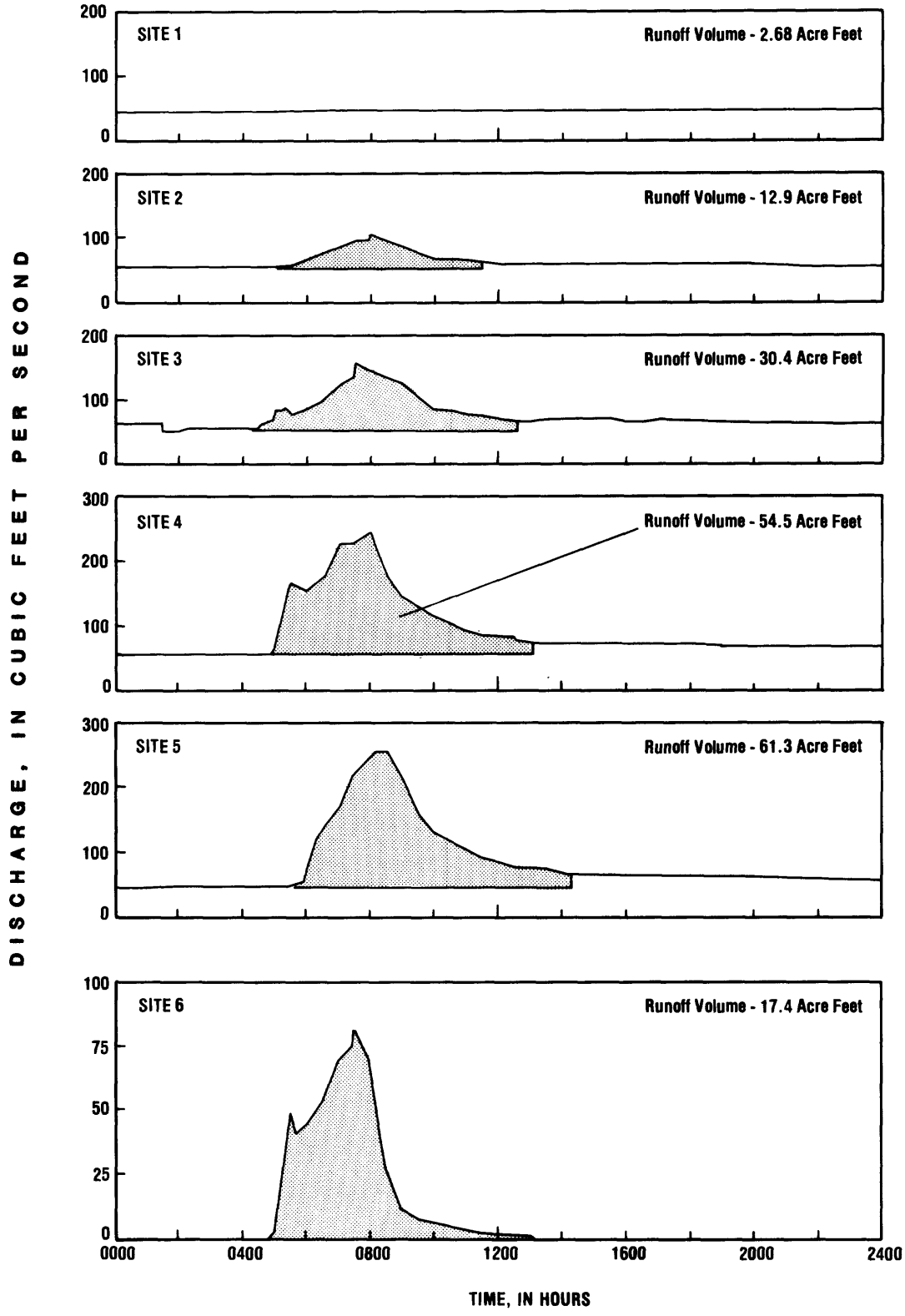

Figure 35.--Stream discharge and storm-runoff volume at sites 1-6 for storm 26, May 10, 1982.

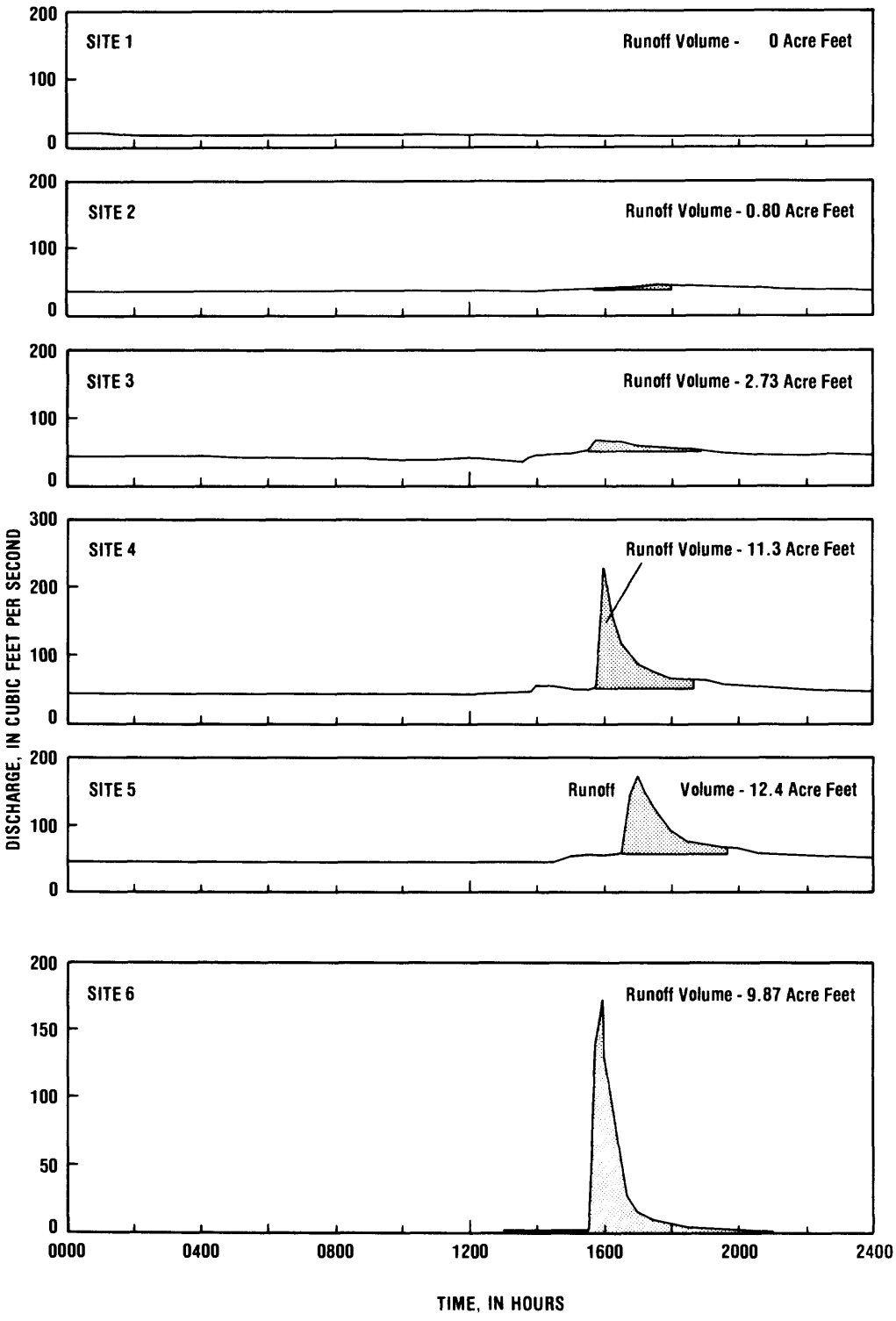

Figure 36.--Stream discharge and storm-runoff volume at sites 1-6 for storm 28, May 17, 1982.

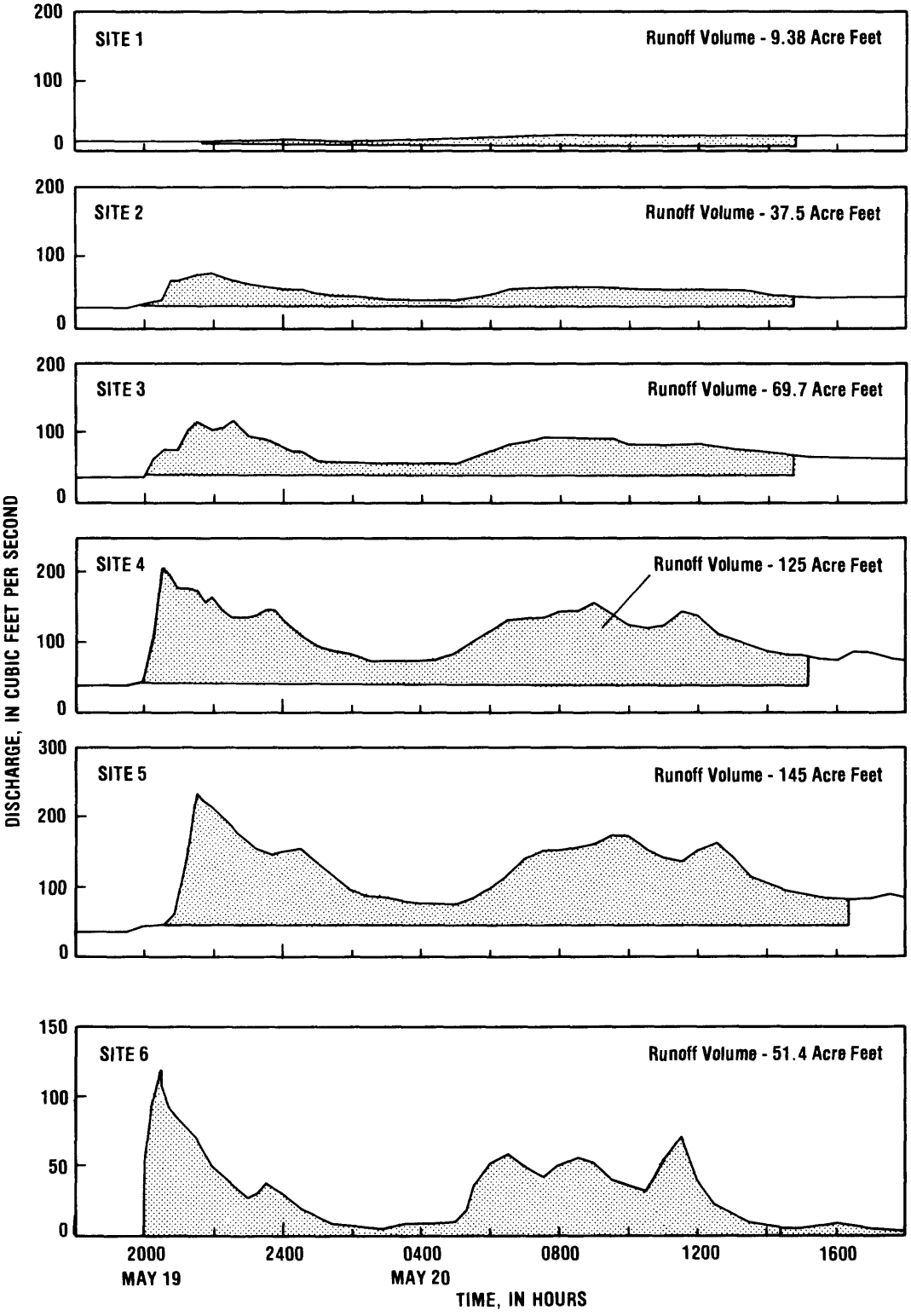

Figure 37.--Stream discharge and storm-runoff volume at sites 1-6 for storm 29, May 19-20, 1982.

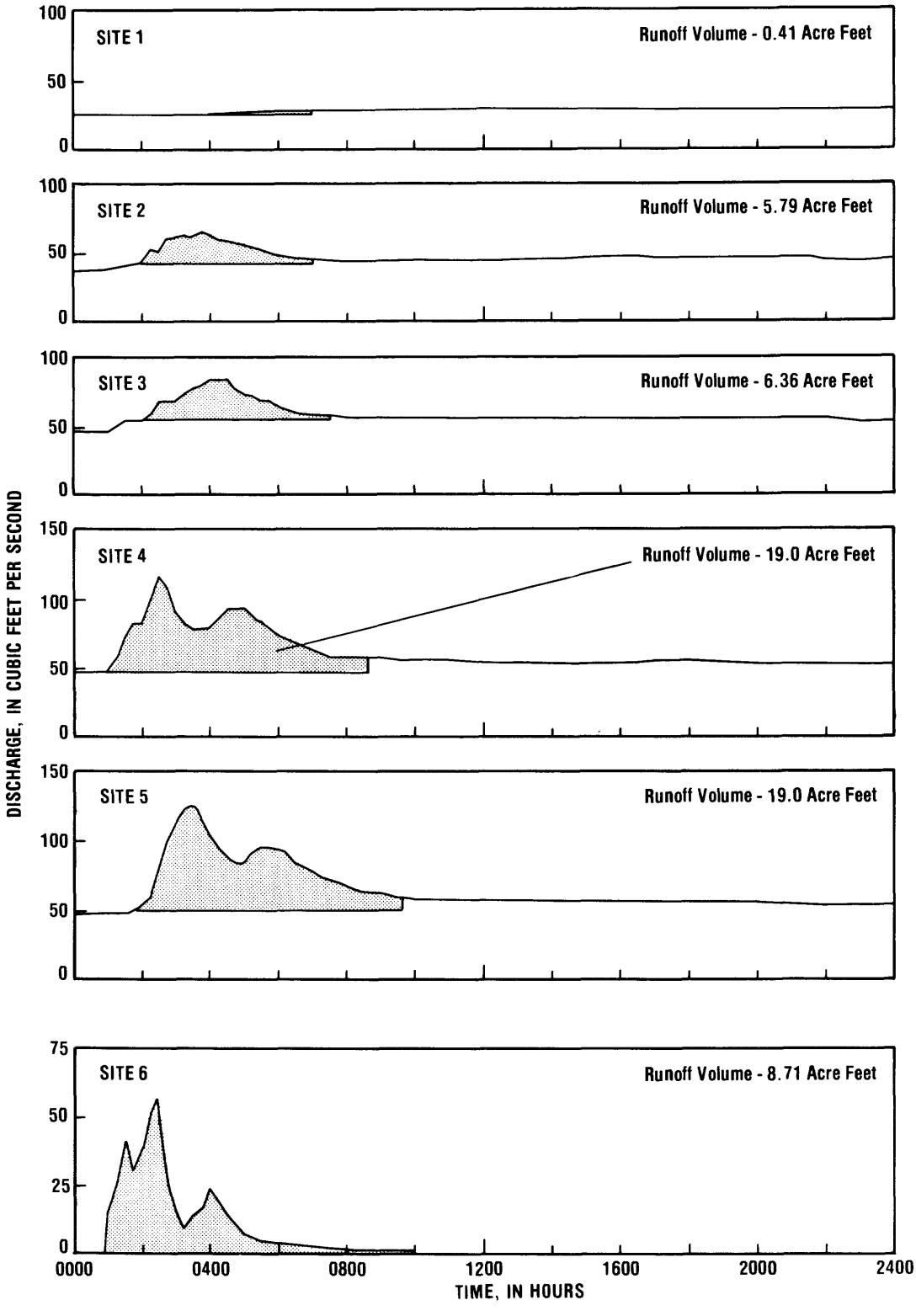

Figure 38.--Stream discharge and storm-runoff volume at sites 1-6 for storm 31, June 15, 1982.

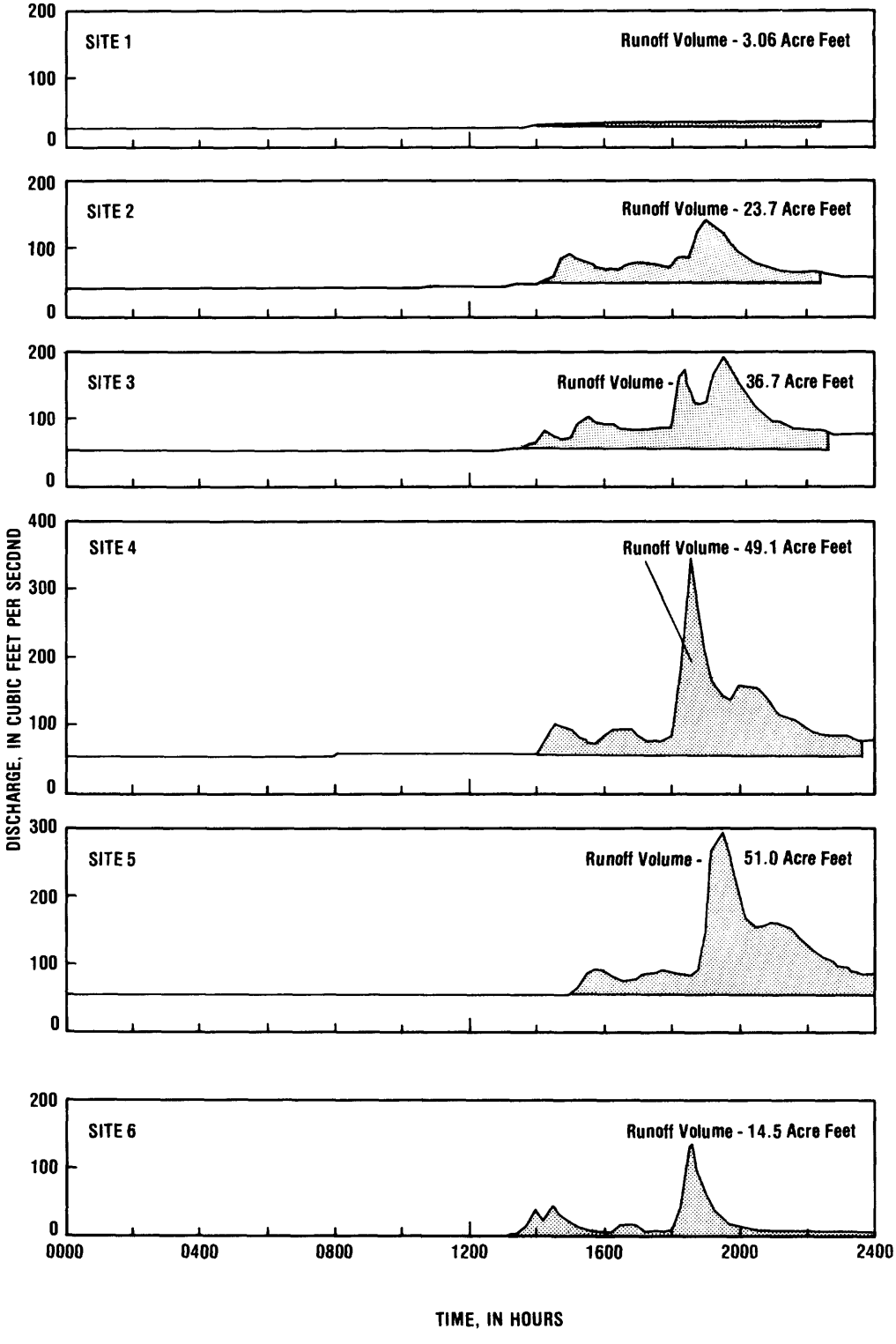

Figure 39.--Stream discharge and storm-runoff volume at sites 1-6 for storm 32, June 16-17, 1982.

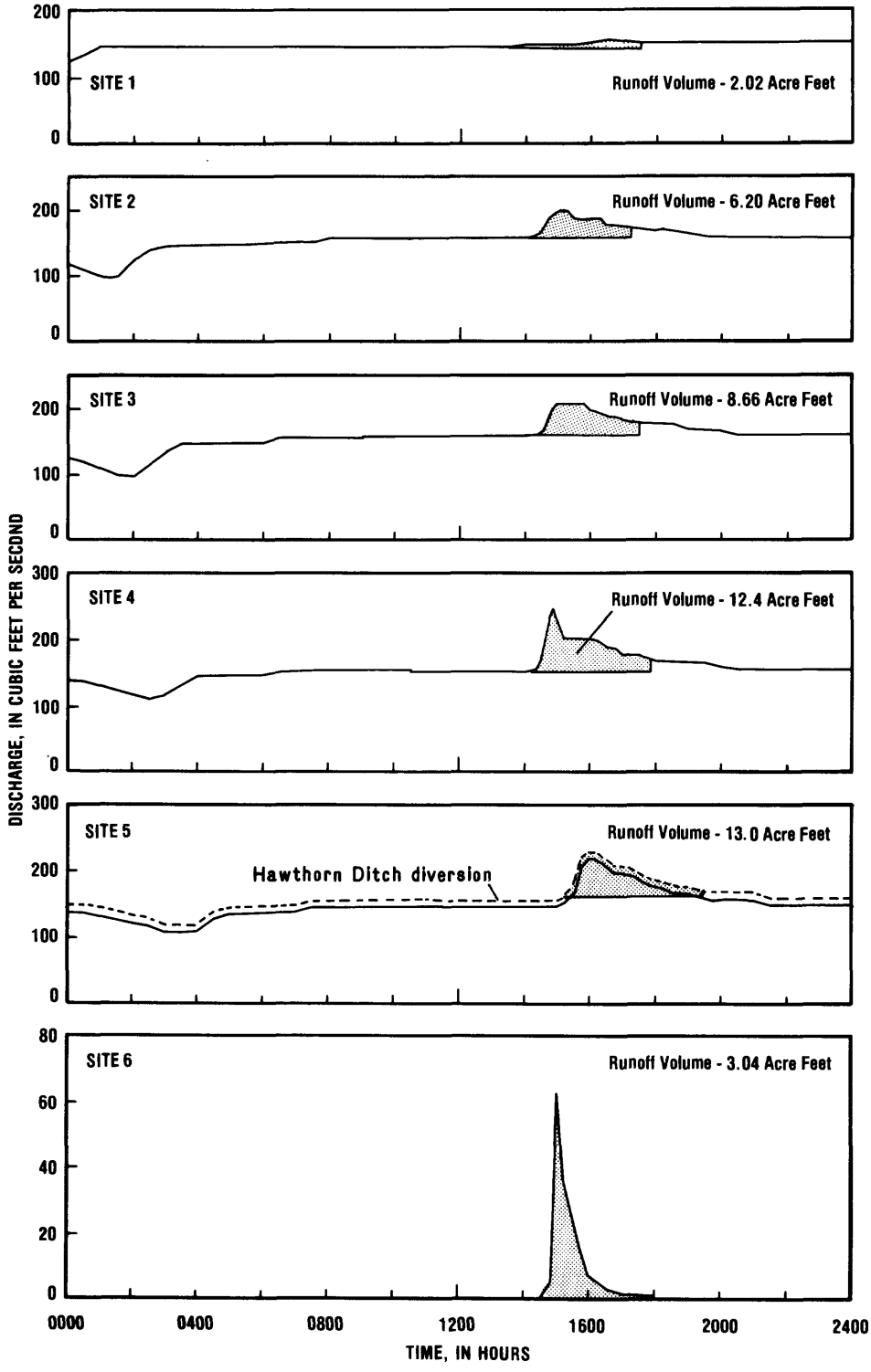

Figure 40.--Stream discharge and storm-runoff volume at sites 1-6 for storm 33, July 8, 1982.

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982

[K, non-ideal count; <, less than; --, not analyzed]

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
1	05-21-80	1600	70.00	18.00	365.0	365.0	8.200	8.700	8.400	218.0
	05-21-80	1605	70.00	--	--	--	--	--	--	--
	06-03-80	0840	66.00	10.50	338.0	--	8.100	7.600	9.300	233.0
	06-03-80	0845	66.00	--	--	--	--	--	--	--
	06-14-80	--	--	--	--	--	--	--	--	--
	06-14-80	1805	80.00	13.50	330.0	--	8.000	8.600	8.200	188.0
	06-14-80	1810	80.00	--	--	--	--	--	--	--
	06-18-80	--	--	--	--	--	--	--	--	--
	06-18-80	2010	26.00	18.00	335.0	--	7.900	8.600	6.500	230.0
	06-18-80	2015	26.00	--	--	--	--	--	--	--
	07-09-80	1030	67.00	16.50	350.0	352.0	8.100	8.500	9.700	202.0
	07-09-80	1035	67.00	--	--	--	--	--	--	--
	07-12-80	1815	110.0	16.50	335.0	--	8.200	--	8.600	--
	07-12-80	1815	--	--	--	291.0	--	8.600	--	219.0
	07-12-80	1915	114.0	16.00	335.0	--	8.100	--	8.500	--
	07-20-80	0905	92.00	14.00	335.0	342.0	7.900	8.300	8.300	223.0
	07-20-80	0908	92.00	--	--	--	--	--	--	--
	07-25-80	1920	88.00	13.00	329.0	361.0	7.800	8.500	8.500	223.0
	07-25-80	1930	88.00	--	--	--	--	--	--	--
	08-20-80	0825	34.00	15.00	--	352.0	7.400	7.700	8.000	222.0
	08-20-80	0830	34.00	--	--	--	--	--	--	--
	09-29-80	0940	11.00	--	--	--	--	--	--	--
	09-29-80	0945	11.00	12.00	348.0	374.0	8.000	8.300	8.800	224.0
	10-05-80	--	--	--	--	--	--	--	--	--
	10-09-80	0400	2.600	11.00	349.0	--	7.700	8.000	7.900	--
	10-15-80	455	--	--	--	--	--	--	--	--
	10-15-80	500	--	--	--	339.0	--	8.200	--	202.0
	10-15-80	0455	12.00	9.000	345.0	--	7.900	--	--	--
	10-15-80	0812	19.00	--	--	--	--	--	--	--
	10-15-80	0815	20.00	8.500	347.0	--	8.100	--	--	--
	10-15-80	1120	25.00	7.000	335.0	--	8.400	--	--	--
	10-15-80	1124	25.00	--	--	--	--	--	--	--
	10-15-80	1716	25.00	--	--	--	--	--	--	--
	02-18-81	0945	10.00	0.500	324.0	375.0	8.800	8.300	11.40	238.0
	04-29-81	1400	20.00	14.50	347.0	371.0	8.300	8.620	9.300	246.0
	05-06-81	830	--	--	--	362.0	--	8.330	--	230.0
	05-06-81	1540	111.0	8.500	342.0	--	8.300	--	10.30	--
	05-06-81	2225	105.0	7.500	345.0	--	8.200	--	10.90	--
	05-17-81	435	--	--	--	340.0	--	8.200	--	220.0
	05-17-81	0941	78.00	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
05-21-80	4.000	--	0.450	--	<15.00	--	--	--	--	--
05-21-80	--	--	--	26.00	--	--	--	--	--	--
06-03-80	6.000	<4.000	0.600	--	--	--	--	--	3.200	--
06-03-80	--	--	--	28.00	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	10.00	<4.000	1.800	--	<15.00	--	--	--	3.600	--
06-14-80	--	--	--	23.00	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	6.000	<4.000	0.750	--	--	<15.00	--	--	3.600	--
06-18-80	--	--	--	22.00	--	--	--	--	--	--
07-09-80	13.00	12.00	0.500	--	<5.000	--	--	--	3.200	--
07-09-80	--	--	--	20.00	--	--	--	--	--	--
07-12-80	--	--	--	53.00	--	--	--	--	--	--
07-12-80	25.00	<4.000	1.700	--	<5.000	--	--	--	3.000	--
07-12-80	--	--	--	67.00	--	--	--	--	--	--
07-20-80	15.00	12.00	0.500	--	<5.000	--	--	--	3.200	--
07-20-80	--	--	--	85.00	--	--	--	--	--	--
07-25-80	7.000	5.000	0.800	--	<5.000	--	--	--	3.200	--
07-25-80	--	--	--	30.00	--	--	--	--	--	--
08-20-80	<4.000	<4.000	0.400	--	7.000	--	--	--	3.400	--
08-20-80	--	--	--	174.0	--	--	--	--	--	--
09-29-80	--	--	--	72.00	--	--	--	--	--	--
09-29-80	<4.000	<4.000	0.450	--	<5.000	--	--	--	3.800	--
10-05-80	--	--	--	--	--	--	--	--	--	--
10-09-80	--	--	--	--	--	--	42.00	21.00	--	3.800
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	4.000	4.000	2.600	--	9.000	--	--	--	3.600	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	21.00	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	25.00	--	--	--	--	--	--
10-15-80	--	--	--	26.00	--	--	--	--	--	--
02-18-81	<4.000	<4.000	0.250	6.000	<5.000	--	--	--	4.200	--
04-29-81	<4.000	<4.000	4.300	9.000	<5.000	--	--	--	4.300	--
05-06-81	4.000	<4.000	1.600	--	9.000	--	--	--	3.100	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-17-81	9.000	<4.000	2.500	--	16.00	--	--	--	3.600	--
05-17-81	--	--	--	20.00	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
05-21-80	--	--	--	2.000	--	--	--	--	<0.030	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	--	--	3.000	--	--	--	--	--	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	1.000	--	--	--	--	0.030	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	3.000	--	--	--	--	<0.030	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	--	--	1.300	--	--	--	--	<0.030	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	2.700	--	--	--	--	0.190	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	1.200	--	--	--	--	0.040	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	2.000	--	--	--	--	0.060	--
07-25-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	2.500	--	--	--	--	<0.030	--
08-20-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	3.800	--	--	--	--	<0.030	--
10-05-80	--	--	--	--	--	--	--	--	--	--
10-09-80	2.800	160.0	41.00	2.800	0.300	9.200	0.600	0.570	--	0.030
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	2.100	--	--	--	--	0.070	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
02-18-81	--	--	--	2.600	--	--	--	--	<0.030	--
04-29-81	--	--	--	2.100	--	--	--	--	<0.030	--
05-06-81	--	--	--	3.000	--	--	--	--	0.200	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	3.900	--	--	--	--	<0.030	--
05-17-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
05-21-80	--	--	--	--	--	--	--	K8.000	--	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	--	--	--	--	--	0.020	K15.00	--	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	0.090	--	0.020	K258.0	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	0.060	--	<0.010	K170.0	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	--	--	--	0.050	--	<0.010	K65.00	--	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	0.250	--	0.090	--	0.010	K700.0	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	0.310	--	0.170	--	<0.010	K100.0	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	0.060	--	0.100	--	<0.010	K162.0	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	0.360	--	0.050	--	<0.010	K200.0	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	0.100	--	0.020	--	<0.010	--	--	--
10-05-80	--	--	--	--	--	--	--	--	--	--
10-09-80	0.000	0.000	0.600	0.000	0.000	1.300	0.040	--	--	1.000
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	0.320	--	0.190	--	<0.010	320.0	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
02-18-81	--	--	0.080	--	0.100	--	<0.010	K190.0	--	<10.00
04-29-81	--	--	0.150	--	0.030	--	<0.010	K20.00	--	<10.00
05-06-81	--	--	0.170	--	0.050	--	0.020	K35.00	<10.00	<10.00
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	0.180	--	0.120	--	0.040	K196.0	<10.00	<10.00
05-17-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	PH (STANDARD UNITS) (00400)	PH LAB (STANDARD UNITS) (00403)
1	05-17-81	0943	--	78.00	8.500	321.0	--	8.100	--
	05-17-81	1404	--	82.00	--	--	--	--	--
	05-17-81	1409	--	82.00	8.500	307.0	--	8.300	--
	05-17-81	2106	--	99.00	8.000	311.0	--	8.200	--
	05-17-81	2113	--	99.00	--	--	--	--	--
	05-18-81	0949	--	66.00	8.000	307.0	--	8.200	--
	05-18-81	0950	--	66.00	--	--	--	--	--
	05-23-81	0926	--	46.00	10.50	385.0	--	8.100	--
	06-24-81	0935	--	47.00	--	--	361.0	--	8.000
	06-24-81	0948	--	47.00	17.50	340.0	--	8.100	--
	07-01-81	2245	--	--	--	--	407.0	--	7.800
	07-01-81	2246	--	98.00	--	--	--	--	--
	07-13-81	305	--	--	--	--	369.0	--	8.000
	07-13-81	0440	--	133.0	11.00	346.0	--	8.000	--
	07-13-81	0445	--	133.0	--	--	--	--	--
	07-17-81	--	--	--	--	--	--	--	--
	07-23-81	--	--	--	--	--	--	--	--
	07-23-81	1915	--	--	--	--	366.0	--	8.700
	07-25-81	720	--	--	--	--	347.0	--	8.200
	07-25-81	0740	--	50.00	--	--	--	--	--
	07-25-81	0955	--	56.00	15.50	322.0	--	7.900	--
	07-25-81	1124	--	52.00	--	--	--	--	--
	07-25-81	1130	--	52.00	15.50	328.0	--	8.000	--
	08-26-81	0950	--	--	--	--	--	--	--
	10-01-81	0855	--	30.00	8.500	337.0	--	--	--
	10-05-81	--	--	--	--	--	--	--	--
	10-05-81	405	3.000	--	--	--	--	--	--
	10-05-81	0405	--	3.000	--	--	--	--	--
	10-05-81	0415	--	--	11.00	--	--	--	--
	10-05-81	0550	--	3.000	--	--	--	--	--
	10-05-81	0555	--	3.000	11.00	--	--	--	--
	10-05-81	0735	--	3.000	--	--	--	--	--
	10-26-81	1050	--	2.200	7.000	350.0	--	--	--
	12-10-81	0850	--	8.400	2.000	--	381.0	--	8.400
	12-10-81	0900	--	9.200	2.000	344.0	--	8.200	--
	12-20-81	--	--	--	--	--	403.0	--	8.200
	12-20-81	1540	--	12.00	--	--	--	--	--
	12-20-81	1540	--	--	--	--	417.0	--	8.200
	12-20-81	1905	--	16.00	--	--	--	--	--
	03-07-82	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	RESIDUE VOLATILE, SUSPENDED (MG/L) (00535)	TURBIDITY (FTU) (00076)	SEDIMENT, SUSPENDED (MG/L) (80154)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
05-17-81	9.800	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	8.000	--	--	--
05-17-81	9.600	--	--	--	--	--	--	--	--
05-17-81	10.00	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	17.00	--	--	--
05-18-81	10.10	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	15.00	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
06-24-81	--	234.0	<4.000	<4.000	1.800	5.000	<5.000	--	--
06-24-81	7.800	--	--	--	--	--	--	--	--
07-01-81	--	236.0	5.000	<4.000	1.500	--	14.00	--	--
07-01-81	--	--	--	--	--	11.00	--	--	--
07-13-81	--	234.0	5.000	<4.000	1.500	--	16.00	--	--
07-13-81	8.100	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	22.00	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--
07-23-81	--	264.0	<4.000	<4.000	0.700	--	<5.000	--	--
07-25-81	--	208.0	6.000	<4.000	4.700	--	12.00	--	--
07-25-81	--	--	--	--	--	9.000	--	--	--
07-25-81	7.100	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	7.000	--	--	--
07-25-81	7.500	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--
12-10-81	--	--	--	--	--	--	--	43.00	22.00
12-10-81	9.100	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	42.00	22.00
12-20-81	--	--	--	--	--	4.000	--	--	--
12-20-81	--	254.0	<4.000	<4.000	0.500	--	<5.000	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
06-24-81	3.500	--	--	--	2.500	--	--	--	<0.030
06-24-81	--	--	--	--	--	--	--	--	--
07-01-81	3.000	--	--	--	2.300	--	--	--	0.040
07-01-81	--	--	--	--	--	--	--	--	--
07-13-81	3.300	--	--	--	1.200	--	--	--	0.060
07-13-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--
07-23-81	3.500	--	--	--	1.400	--	--	--	<0.030
07-25-81	3.100	--	--	--	1.400	--	--	--	0.070
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--
12-10-81	--	4.100	2.400	43.00	3.100	0.200	7.800	0.130	0.080
12-10-81	--	--	--	--	--	--	--	--	--
12-20-81	--	4.300	2.200	44.00	3.700	--	7.200	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	4.500	--	--	--	3.700	--	--	--	<0.030
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
06-24-81	--	--	0.050	--	0.080	<0.010	K50.00	--	<10.00
06-24-81	--	--	--	--	--	--	--	--	--
07-01-81	--	--	0.430	--	<0.010	0.010	440.0	<10.00	<10.00
07-01-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	0.060	--	0.010	0.030	K240.0	<10.00	<10.00
07-13-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	<0.010	--
07-23-81	--	--	--	--	--	--	--	--	--
07-23-81	--	--	<0.050	--	0.010	<0.010	K60.00	--	<10.00
07-25-81	--	--	0.080	--	0.060	0.020	350.0	<10.00	<10.00
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	2.000
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--
12-10-81	0.090	<0.020	0.220	<0.100	<0.100	0.040	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	<0.050	--	--	<0.010	<3.000	--	<10.00
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
1	03-07-82	1300	E6.000	0.500	386.0	--	7.900	--	--
	03-07-82	1530	E6.000	0.500	382.0	--	7.900	--	--
	03-07-82	1800	E6.000	0.500	369.0	--	7.900	--	--
	03-07-82	2115	E6.000	0.500	369.0	--	8.000	--	--
	03-09-82	--	--	--	--	--	--	--	--
	03-09-82	1110	E7.000	0.500	361.0	--	8.000	--	13.30
	03-09-82	1435	11.00	1.500	348.0	--	8.000	--	13.10
	03-09-82	1740	12.00	1.500	347.0	--	8.000	--	13.60
	03-09-82	2050	9.200	0.500	356.0	--	7.800	--	13.00
	04-28-82	0800	4.000	--	--	--	--	--	--
	04-28-82	0805	4.000	7.000	370.0	388.0	7.900	8.300	11.40
	05-10-82	525	--	--	--	386.0	--	7.900	--
	05-10-82	0525	43.00	--	--	386.0	--	8.400	--
	05-10-82	0835	48.00	--	--	383.0	--	8.300	--
	05-10-82	0840	48.00	--	--	--	--	--	--
	05-10-82	0845	48.00	10.50	354.0	--	8.100	--	8.700
	05-10-82	1045	48.00	--	--	385.0	--	8.400	--
	05-10-82	1050	48.00	--	--	--	--	--	--
	05-10-82	1100	48.00	11.50	352.0	--	8.200	--	8.800
	05-13-82	--	--	--	--	--	--	--	--
	05-17-82	1610	--	--	--	--	--	--	--
	05-19-82	0035	16.00	12.00	354.0	--	7.500	--	8.400
	05-19-82	2020	13.00	--	--	--	--	--	--
	05-19-82	2020	--	--	--	377.0	--	8.100	--
	05-19-82	2245	15.00	--	--	--	--	--	--
	05-20-82	0025	16.00	--	--	--	--	--	--
	05-20-82	0615	20.00	--	--	--	--	--	--
	05-20-82	0620	20.00	11.50	351.0	--	7.600	--	8.400
	05-20-82	1305	23.00	--	--	--	--	--	--
	05-20-82	1310	23.00	11.50	353.0	--	8.000	--	10.70
	05-28-82	--	--	--	--	--	--	--	--
	06-15-82	435	--	--	--	346.0	--	8.100	--
	06-15-82	0645	27.00	13.50	322.0	--	7.900	--	9.900
	06-16-82	--	--	--	--	--	--	--	--
	06-16-82	0915	39.00	16.00	327.0	--	8.000	--	10.00
	06-16-82	1430	--	--	--	332.0	--	8.300	--
	06-16-82	1555	30.00	--	--	--	--	--	--
	06-16-82	1605	32.00	16.50	306.0	--	7.900	--	8.500
	06-16-82	1725	33.00	--	--	--	--	--	--
	06-23-82	0900	--	--	--	361.0	--	8.000	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
03-07-82	--	<4.000	<4.000	--	--	--	--	4.200	3.100
03-07-82	236.0	<4.000	<4.000	--	--	--	--	4.100	3.500
03-07-82	238.0	<4.000	<4.000	--	--	--	--	4.200	3.300
03-07-82	--	<4.000	<4.000	--	--	--	--	4.900	3.300
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	226.0	<4.000	<4.000	--	--	--	--	4.300	3.400
03-09-82	--	<4.000	<4.000	--	--	--	--	3.800	3.000
03-09-82	222.0	<4.000	<4.000	--	--	--	--	3.900	3.400
03-09-82	--	<4.000	<4.000	1.800	--	--	--	4.800	4.500
04-28-82	--	--	--	--	1.000	--	--	--	--
04-28-82	230.0	<4.000	<4.000	--	--	<5.000	3.900	--	2.900
05-10-82	--	4.000	<4.000	1.300	--	<5.000	3.300	--	1.600
05-10-82	223.0	12.00	--	--	3.000	--	--	--	--
05-10-82	221.0	5.000	--	--	--	--	--	--	--
05-10-82	--	--	--	--	4.000	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	221.0	<2.000	--	--	--	--	--	--	--
05-10-82	--	--	--	--	4.000	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	6.000	--	--	--	--
05-19-82	226.0	<4.000	<4.000	0.850	--	<5.000	3.900	--	2.200
05-19-82	--	--	--	--	1.000	--	--	--	--
05-20-82	--	--	--	--	1.000	--	--	--	--
05-20-82	--	--	--	--	1.000	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	1.000	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--
06-15-82	218.0	<4.000	<4.000	0.600	--	<5.000	4.000	--	2.600
06-15-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	210.0	5.000	<4.000	1.800	--	<5.000	4.100	--	3.000
06-16-82	--	--	--	--	3.000	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	3.000	--	--	--	--
06-23-82	248.0	<4.000	<4.000	0.370	--	<5.000	4.400	--	3.000

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--
04-28-82	0.030	--	--	<0.050	--	0.050	<0.010	K3.000	<10.00
05-10-82	--	--	--	--	--	--	--	K40.00	--
05-10-82	0.100	<0.060	<0.020	0.450	<0.100	<0.100	0.020	--	25.00
05-10-82	0.080	<0.060	<0.020	0.500	<0.100	<0.100	<0.010	--	4.000
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.090	<0.060	<0.020	0.480	<0.100	<0.100	<0.010	--	12.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	0.040	--	--	<0.050	--	0.020	<0.010	K43.00	<10.00
05-19-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--
06-15-82	<0.030	--	--	<0.050	--	0.020	<0.010	60.00	<10.00
06-15-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	0.040	--	--	<0.050	--	<0.010	0.020	140.0	<10.00
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--
06-23-82	0.040	--	--	<0.050	--	<0.010	<0.010	72.00	<10.00

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
1	06-23-82	0905	27.00	--	--	--	--	--	--	--
	06-23-82	0915	39.00	16.00	327.0	--	8.000	--	10.00	--
	07-08-82	1520	--	--	--	378.0	--	8.300	--	226.0
2	05-21-80	1445	66.00	18.50	383.0	388.0	8.300	8.700	8.700	215.0
	05-21-80	1450	66.00	--	--	--	--	--	--	--
	06-03-80	0950	67.00	14.00	354.0	--	8.200	8.400	9.100	231.0
	06-03-80	0955	67.00	--	--	--	--	--	--	--
	06-14-80	1850	158.0	17.00	336.0	--	7.600	--	7.200	--
	06-14-80	1850	--	--	--	--	--	8.200	--	846.0
	06-14-80	2135	96.00	16.00	378.0	--	7.700	--	7.700	--
	06-18-80	2130	48.00	17.00	377.0	--	7.500	8.300	6.100	298.0
	06-18-80	2135	48.00	--	--	--	--	--	--	--
	07-09-80	0950	79.00	20.00	360.0	352.0	8.100	8.600	9.600	228.0
	07-09-80	0955	79.00	--	--	--	--	--	--	--
	07-12-80	1945	201.0	20.00	595.0	--	7.700	--	6.700	--
	07-12-80	1945	--	--	--	470.0	--	8.200	--	1390.
	07-12-80	2000	183.0	--	--	--	--	--	--	--
	07-12-80	2020	163.0	--	--	--	--	--	--	--
	07-12-80	2030	162.0	19.00	457.0	--	7.800	--	7.200	--
	07-20-80	0930	14.80	16.00	337.0	344.0	7.600	8.000	8.000	252.0
	07-20-80	0935	14.80	--	--	--	--	--	--	--
	07-25-80	2010	134.0	15.50	363.0	--	7.700	--	8.000	--
	07-25-80	2010	--	--	--	371.0	--	7.500	--	286.0
	07-25-80	2030	142.0	15.50	--	--	--	--	8.000	--
	07-25-80	2120	119.0	15.00	353.0	--	7.800	--	8.100	--
	08-20-80	--	--	--	--	--	--	--	--	--
	08-20-80	900	--	--	--	354.0	--	8.300	--	222.0
	08-20-80	0900	55.00	16.00	363.0	--	7.500	--	8.200	--
	08-20-80	1000	52.00	17.00	357.0	--	7.600	--	8.600	--
	09-29-80	1025	22.00	--	--	--	--	--	--	--
	09-29-80	1030	22.00	14.00	389.0	424.0	8.100	8.500	9.600	260.0
	10-03-80	1125	17.00	--	--	--	--	--	--	--
	10-09-80	0440	13.00	11.50	415.0	--	7.600	8.000	7.300	--
	10-15-80	410	--	--	--	372.0	--	8.000	--	493.0
	10-15-80	0410	57.00	10.00	340.0	--	7.800	--	--	--
	10-15-80	0744	117.0	--	--	--	--	--	--	--
	10-15-80	0745	117.0	8.500	363.0	--	7.700	--	--	--
	10-15-80	1045	107.0	6.000	365.0	--	7.500	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
06-23-82	--	--	--	1.000	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--	--
07-08-82	<4.000	<4.000	1.200	--	--	--	--	<5.000	--	--	--
05-21-80	12.00	--	1.100	--	--	--	--	<15.00	--	--	--
05-21-80	--	--	--	29.00	--	--	--	--	--	--	--
06-03-80	8.000	<4.000	1.200	--	--	--	--	--	--	--	--
06-03-80	--	--	--	24.00	--	--	--	--	--	--	--
06-14-80	--	--	--	1390.	32.40	48.10	65.80	--	--	--	--
06-14-80	753.0	66.00	160.0	--	--	--	--	73.00	--	--	--
06-14-80	--	--	--	55.00	--	--	--	--	--	--	--
06-18-80	30.00	8.000	17.00	--	--	--	--	--	18.00	--	--
06-18-80	--	--	--	78.00	--	--	--	--	--	--	--
07-09-80	14.00	5.000	1.500	--	--	--	--	<5.000	--	--	--
07-09-80	--	--	--	25.00	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	990.0	108.0	460.0	--	--	--	--	--	--	--	--
07-12-80	--	--	--	1690.	59.50	69.80	95.60	--	--	--	--
07-12-80	--	--	--	848.0	52.30	65.10	94.80	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	34.00	9.000	14.00	--	--	--	--	--	16.00	--	--
07-20-80	--	--	--	79.00	--	--	--	--	--	--	--
07-25-80	--	--	--	88.00	--	--	--	--	--	--	--
07-25-80	52.00	10.00	22.00	--	--	--	--	--	18.00	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	99.00	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	7.000	4.000	4.200	--	--	--	--	--	<15.00	--	--
08-20-80	--	--	--	470.0	--	--	--	--	--	--	--
08-20-80	--	--	--	74.00	--	--	--	--	--	--	--
09-29-80	--	--	--	116.0	--	--	--	--	--	--	--
09-29-80	<4.000	<4.000	1.300	--	--	--	--	<5.000	--	--	--
10-03-80	--	--	24.00	--	--	--	--	--	--	65.00	24.00
10-09-80	--	--	--	--	--	--	--	--	--	52.00	23.00
10-15-80	252.0	37.00	120.0	--	--	--	--	34.00	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	368.0	64.00	65.00	83.00	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	312.0	57.00	70.30	84.00	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
06-23-82	--	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--	--
07-08-82	3.400	--	--	--	--	1.800	--	--	--	--	<0.030
05-21-80	--	--	--	--	--	3.000	--	--	--	--	<0.030
05-21-80	--	--	--	--	--	--	--	--	--	--	--
06-03-80	3.600	--	--	--	--	5.000	--	--	--	--	--
06-03-80	--	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-14-80	4.400	--	--	--	--	5.000	--	--	--	--	0.090
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	4.700	--	--	--	--	4.000	--	--	--	--	<0.030
06-18-80	--	--	--	--	--	--	--	--	--	--	--
07-09-80	3.800	--	--	--	--	2.000	--	--	--	--	<0.030
07-09-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	3.300	--	--	--	--	3.600	--	--	--	--	0.480
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	3.800	--	--	--	--	1.300	--	--	--	--	<0.030
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	3.900	--	--	--	--	4.200	--	--	--	--	0.080
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	4.100	--	--	--	--	3.500	--	--	--	--	0.070
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	4.500	--	--	--	--	3.200	--	--	--	--	<0.030
10-03-80	--	5.600	4.000	170.0	110.0	4.200	0.300	8.200	--	--	--
10-09-80	--	5.100	2.800	170.0	60.00	3.500	0.300	7.300	1.100	1.100	--
10-15-80	3.200	--	--	--	--	3.100	--	--	--	--	0.310
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
06-23-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	--	--	--	0.080	--	<0.010	--	0.010	K34.00	<10.00
05-21-80	--	--	--	--	--	--	--	--	K6.000	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	--	--	--	--	--	--	0.030	K20.00	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	0.340	--	0.570	K14200.	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	0.160	--	0.040	K700.0	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	--	--	--	--	0.050	--	<0.010	K80.00	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	1.200	--	0.400	--	0.590	K12000.	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	0.310	--	0.140	--	0.040	3200.	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	0.080	--	0.260	--	0.050	K2100.	--
07-25-80	--	--	--	0.670	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	0.320	--	--	--	--	--	--
08-20-80	--	--	--	0.410	--	0.080	--	0.020	K1200.	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	<0.050	--	0.050	--	0.010	--	--
10-03-80	--	--	--	--	--	0.060	--	--	--	--
10-09-80	0.040	0.000	0.000	1.100	0.000	0.000	0.770	0.060	--	3.000
10-15-80	--	--	--	0.550	--	0.450	--	0.230	K1960.	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
2	10-15-80	1610	57.00	--	--	--	--	--	--
	02-18-81	1100	24.80	6.000	410.0	456.0	8.000	8.400	10.10
	04-29-81	1430	27.50	17.50	370.0	381.0	8.500	8.810	9.000
	05-06-81	935	--	--	--	369.0	--	8.300	--
	05-06-81	0930	127.0	11.50	355.0	--	8.100	--	9.500
	05-06-81	1140	127.0	11.50	357.0	--	8.100	--	9.900
	05-06-81	1522	137.0	11.00	355.0	--	8.100	--	9.800
	05-06-81	1820	130.0	10.50	355.0	--	8.300	--	9.600
	05-06-81	2158	123.0	10.00	363.0	--	8.100	--	10.20
	05-07-81	0240	120.0	9.500	365.0	--	8.000	--	8.000
	05-17-81	918	--	--	--	374.0	--	8.130	--
	05-17-81	0910	143.0	10.50	325.0	--	7.900	--	8.800
	05-17-81	0920	149.0	10.50	--	--	--	--	--
	05-17-81	1206	173.0	--	--	--	--	--	--
	05-17-81	1431	175.0	10.50	373.0	--	7.900	--	8.900
	05-17-81	1734	173.0	--	--	--	--	--	--
	05-17-81	2128	156.0	9.500	351.0	--	8.000	--	9.200
	05-18-81	0817	112.0	9.000	363.0	--	7.900	--	9.500
	05-18-81	0820	110.0	9.000	--	--	--	--	--
	05-23-81	--	--	--	--	--	--	--	--
	05-23-81	0950	72.00	12.00	390.0	--	8.300	--	--
	06-24-81	1018	38.00	19.50	353.0	--	8.400	--	8.400
	06-24-81	1020	38.00	19.50	--	373.0	--	8.500	--
	06-24-81	1030	38.00	10.00	--	--	--	--	--
	07-01-81	2300	--	--	--	346.0	--	8.100	--
	07-01-81	2305	121.0	--	--	--	--	--	--
	07-01-81	2350	149.0	--	--	--	--	--	--
	07-02-81	0122	121.0	--	--	--	--	--	--
	07-13-81	325	--	--	--	371.0	--	8.000	--
	07-13-81	0415	183.0	14.50	361.0	--	7.800	--	6.900
	07-13-81	0425	181.0	14.50	--	--	--	--	--
	07-13-81	0530	166.0	14.00	355.0	--	7.800	--	7.100
	07-17-81	--	--	--	--	--	--	--	--
	07-23-81	1925	64.00	--	--	381.0	--	8.600	--
	07-23-81	1940	67.00	19.50	346.0	--	8.100	--	7.300
	07-25-81	721	--	--	--	386.0	--	8.100	--
	07-25-81	0735	328.0	--	--	--	--	--	--
	07-25-81	0950	121.0	--	--	--	--	--	--
	07-25-81	1027	102.0	17.00	415.0	--	7.700	--	6.600
	07-25-81	1220	71.00	17.50	397.0	--	7.900	--	7.000

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)
10-15-80	--	--	--	--	105.0	--	--	--	--	--
02-18-81	286.0	<4.000	<4.000	1.800	14.00	--	--	--	<5.000	--
04-29-81	260.0	<4.000	<4.000	1.600	15.00	--	--	--	6.000	--
05-06-81	232.0	9.000	<4.000	3.900	--	--	--	--	6.000	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--
05-17-81	319.0	67.00	8.000	25.00	--	--	--	--	12.00	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	125.0	52.00	68.00	69.00	--	--
05-17-81	--	--	--	--	226.0	36.00	47.00	60.00	--	--
05-17-81	--	--	--	--	174.0	44.00	50.00	69.00	--	--
05-17-81	--	--	--	--	71.00	61.00	74.00	86.00	--	--
05-17-81	--	--	--	--	56.00	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	20.00	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	244.0	<4.000	4.000	1.800	--	--	--	--	10.00	--
06-24-81	--	--	--	--	8.000	--	--	--	--	--
07-01-81	326.0	100.0	13.00	30.00	--	--	--	--	24.00	--
07-01-81	--	--	--	--	69.00	65.00	74.00	80.00	--	--
07-01-81	--	--	--	--	99.00	59.00	61.00	84.00	--	--
07-02-81	--	--	--	--	90.00	8.000	70.00	84.00	--	--
07-13-81	258.0	23.00	6.000	9.200	--	--	--	--	11.00	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	31.00	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--	--
07-23-81	306.0	10.00	<4.000	4.500	--	--	--	--	6.000	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	858.0	588.0	48.00	220.0	--	--	--	--	--	32.00
07-25-81	--	--	--	--	1292.	27.00	33.00	48.00	--	--
07-25-81	--	--	--	--	225.0	66.00	70.00	84.00	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
10-15-80	--	--	--	--	--	--	--	--	--
02-18-81	5.600	3.900	<0.030	0.090	0.210	0.010	K160.0	--	<10.00
04-29-81	5.100	3.500	<0.030	0.210	0.030	0.020	<5.000	--	<10.00
05-06-81	3.800	4.600	0.130	0.210	0.060	0.030	K45.00	<10.00	<10.00
05-06-81	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--
05-17-81	4.140	5.000	<0.030	0.400	0.120	0.070	K4000.	<10.00	<10.00
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--
06-24-81	4.600	3.500	<0.030	<0.050	0.050	0.010	K160.0	--	<10.00
06-24-81	--	--	--	--	--	--	--	--	--
07-01-81	3.400	3.300	<0.030	0.880	0.080	0.110	--	<10.00	30.00
07-01-81	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--
07-13-81	3.600	2.200	0.070	0.210	0.090	0.050	--	<10.00	<10.00
07-13-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	<0.010	--
07-23-81	4.200	2.000	<0.030	<0.050	0.040	0.020	K650.0	<10.00	<10.00
07-23-81	--	--	--	--	--	--	--	--	--
07-25-81	2.700	1.800	0.070	1.300	0.120	0.440	--	--	26.00
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
2	08-26-81	1200	--	--	--	--	--	--	--
	12-10-81	0915	20.00	--	--	415.0	--	8.200	--
	12-10-81	0920	20.00	4.500	411.0	--	7.800	--	9.600
	12-20-81	--	--	--	--	534.0	--	8.200	--
	12-20-81	1230	22.00	--	--	--	--	--	--
	12-20-81	1230	--	--	--	511.0	--	8.400	--
	12-20-81	1235	23.00	5.500	520.0	--	8.100	--	9.500
	12-20-81	1430	25.00	--	--	--	--	--	--
	12-20-81	1435	25.00	--	--	--	--	--	--
	12-20-81	1440	25.00	5.000	548.0	--	8.100	--	9.200
	12-20-81	1625	29.00	--	--	--	--	--	--
	12-20-81	1630	29.00	4.000	545.0	--	8.000	--	8.800
	03-07-82	--	--	--	--	--	--	--	--
	03-07-82	1250	20.00	6.000	436.0	--	7.800	--	--
	03-07-82	1515	20.00	6.500	473.0	--	7.800	--	--
	03-07-82	1740	19.00	5.500	439.0	--	7.900	--	--
	03-07-82	2100	21.00	3.500	412.0	--	7.700	--	--
	03-09-82	--	--	--	--	--	--	--	--
	03-09-82	1045	17.00	6.000	416.0	--	7.800	--	11.00
	03-09-82	1415	42.00	7.000	664.0	--	7.900	--	10.20
	03-09-82	1720	40.00	5.000	524.0	--	7.800	--	11.30
	03-09-82	2035	27.00	4.000	432.0	--	7.700	--	11.40
	04-28-82	0835	16.00	9.500	426.0	--	7.800	--	10.90
	04-28-82	0840	16.00	--	--	443.0	--	8.300	--
	04-28-82	0845	16.00	--	--	--	--	--	--
	05-10-82	555	--	--	--	385.0	--	8.100	--
	05-10-82	0555	63.00	--	--	383.0	--	8.200	--
	05-10-82	0600	64.00	--	--	--	--	--	--
	05-10-82	0708	92.00	--	--	278.0	--	8.100	--
	05-10-82	0710	92.00	--	--	--	--	--	--
	05-10-82	0720	93.00	12.50	309.0	--	8.100	--	8.100
	05-10-82	0905	83.00	--	--	379.0	--	8.000	--
	05-10-82	0915	78.00	--	--	--	--	--	--
	05-10-82	0920	78.00	12.50	352.0	--	8.000	--	8.800
	05-10-82	1130	60.00	--	--	396.0	--	7.900	--
	05-10-82	1140	59.00	--	--	--	--	--	--
	05-10-82	1145	59.00	14.00	369.0	--	8.300	--	8.900
	05-13-82	--	--	--	--	--	--	--	--
	05-17-82	--	--	--	--	--	--	--	--
	05-19-82	2020	--	--	--	380.0	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
08-26-81	--	--	--	--	--	--	--	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	54.00
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	71.00
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	324.0	8.000	<4.000	7.100	--	--	--	--	9.000	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	14.00	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	7.000	<4.000	2.400	--	--	--	--	--	--
03-07-82	296.0	12.00	<4.000	7.000	--	--	--	--	--	--
03-07-82	292.0	11.00	<4.000	4.800	--	--	--	--	--	--
03-07-82	--	9.000	<4.000	4.600	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	10.00	<4.000	3.100	--	--	--	--	--	--
03-09-82	964.0	514.0	52.00	210.0	--	--	--	--	--	--
03-09-82	551.0	181.0	24.00	190.0	--	--	--	--	--	--
03-09-82	--	32.00	5.000	19.00	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--
04-28-82	270.0	7.000	<4.000	2.100	--	--	--	--	5.000	--
04-28-82	--	--	--	--	3.000	--	--	--	--	--
05-10-82	--	157.0	19.00	60.00	--	--	--	--	26.00	--
05-10-82	245.0	34.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	63.00	--	--	--	--	--
05-10-82	454.0	450.0	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	269.0	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	397.0	174.0	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	167.0	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	253.0	29.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	28.00	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	690.0	43.70	53.80	77.30	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)
08-26-81	--	--	--	--	--	--	--	--	--	--
12-10-81	22.00	--	5.000	2.700	57.00	3.500	0.300	7.600	0.490	0.200
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	24.00	--	25.00	3.900	61.00	21.00	--	7.700	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	17.00	--	--	--	24.00	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	5.400	--	--	5.000	--	--	--	--
03-07-82	--	--	12.00	--	--	16.00	--	--	--	--
03-07-82	--	--	8.600	--	--	10.80	--	--	--	--
03-07-82	--	--	8.100	--	--	9.300	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	4.900	--	--	3.800	--	--	--	--
03-09-82	--	--	53.00	--	--	82.80	--	--	--	--
03-09-82	--	--	20.00	--	--	28.40	--	--	--	--
03-09-82	--	--	8.200	--	--	10.10	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--
04-28-82	--	5.500	--	--	--	4.300	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	4.000	--	--	--	3.200	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	0.930
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	2.100	1.700
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	1.500	1.200
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	0.620
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
08-26-81	--	--	--	--	--	--	--	--	--
12-10-81	<0.070	0.110	<0.020	0.310	0.180	0.160	0.070	--	--
12-10-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	<0.030	--	--	<0.050	--	--	0.020	<20.00	<10.00
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--
04-28-82	0.030	--	--	<0.050	--	0.090	0.020	K20.00	<10.00
04-28-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	560.0	--
05-10-82	<0.060	0.070	<0.020	1.000	<0.100	<0.100	0.060	--	15.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.110	0.200	<0.020	1.900	0.170	0.170	0.210	--	47.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.060	0.170	<0.020	1.400	0.120	0.130	0.190	--	41.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.060	0.080	<0.020	0.700	<0.100	<0.100	0.050	--	16.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
2	05-19-82	2040	--	--	--	406.0	--	8.000	--
	05-19-82	2220	75.00	--	--	--	--	--	--
	05-19-82	2350	52.00	--	--	420.0	--	--	--
	05-19-82	2400	52.00	14.00	399.0	--	7.500	--	9.000
	05-20-82	0140	41.00	--	--	--	--	--	--
	05-20-82	0650	57.00	12.50	364.0	--	7.000	--	7.500
	05-20-82	1040	53.00	13.00	394.0	--	7.700	--	10.50
	05-20-82	1335	50.00	--	--	--	--	--	--
	05-20-82	1340	50.00	13.50	411.0	--	7.900	--	10.70
	05-28-82	--	--	--	--	--	--	--	--
	06-15-82	415	--	--	--	442.0	--	8.000	--
	06-15-82	0610	45.00	15.50	425.0	--	7.700	--	8.900
	06-16-82	--	--	--	--	--	--	--	--
	06-16-82	1420	--	--	--	437.0	--	8.100	--
	06-16-82	1455	93.00	--	--	--	--	--	--
	06-16-82	1530	79.00	19.00	330.0	--	7.500	--	8.200
	06-16-82	1535	78.00	--	--	--	--	--	--
	06-16-82	1625	70.00	--	--	620.0	--	--	--
	06-16-82	1750	72.00	--	--	--	--	--	--
	06-16-82	1847	125.0	--	--	430.0	--	--	--
	06-16-82	1900	141.0	17.50	372.0	--	7.500	--	7.800
	06-23-82	0935	--	--	--	407.0	--	8.400	--
	06-23-82	0945	35.00	--	--	--	--	--	--
	06-23-82	0950	35.00	19.50	380.0	--	8.400	--	10.60
	07-08-82	1500	--	--	--	384.0	--	8.300	--
3	05-21-80	1400	66.00	20.00	430.0	434.0	8.300	8.700	8.800
	05-21-80	1405	66.00	--	--	--	--	--	--
	06-03-80	1055	75.00	15.50	394.0	--	8.300	8.000	9.500
	06-03-80	1100	75.00	--	--	--	--	--	--
	06-14-80	--	--	--	--	--	--	--	--
	06-14-80	1920	170.0	17.00	415.0	--	7.800	--	7.500
	06-14-80	1920	--	--	--	--	--	8.300	--
	06-14-80	2100	115.0	16.50	443.0	--	7.600	--	7.400
	06-18-80	2020	46.00	18.50	445.0	--	8.500	8.400	6.800
	06-18-80	2025	46.00	--	--	--	--	--	--
	07-09-80	0845	52.00	19.50	400.0	387.0	7.900	8.600	9.700
	07-09-80	0850	52.00	--	--	--	--	--	--
	07-12-80	2100	132.0	19.50	525.0	--	7.700	--	7.200
	07-12-80	2100	--	--	--	422.0	--	8.200	--
	07-12-80	2120	127.0	19.00	482.0	--	7.700	--	7.200

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)
05-19-82	358.0	104.0	12.00	45.00	--	--	--	--	--	20.00
05-19-82	--	--	--	--	690.0	44.00	54.00	77.00	--	--
05-19-82	--	--	--	--	113.0	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	44.00	--	--	--	--	--
05-20-82	--	--	--	--	39.00	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	18.00	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--
06-15-82	440.0	149.0	17.00	75.00	--	--	--	--	--	16.00
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	626.0	325.0	32.00	100.0	--	--	--	--	--	--
06-16-82	--	--	--	--	151.0	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	178.0	--	--	--	--	--
06-16-82	--	--	--	--	589.0	58.20	73.80	98.40	99.00	--
06-16-82	--	--	--	--	107.0	--	--	--	--	--
06-16-82	--	--	--	--	514.0	39.10	58.50	83.60	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-23-82	284.0	<4.000	<4.000	1.500	--	--	--	--	--	<5.000
06-23-82	--	--	--	--	4.000	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	258.0	28.00	4.000	12.00	--	--	--	--	--	10.00
05-21-80	247.0	14.00	--	1.300	--	--	--	--	--	<15.00
05-21-80	--	--	--	--	42.00	--	--	--	--	--
06-03-80	275.0	8.000	<4.000	1.600	--	--	--	--	--	--
06-03-80	--	--	--	--	43.00	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	913.0	31.90	44.70	87.40	--	--
06-14-80	884.0	622.0	42.00	250.0	--	--	--	--	--	70.00
06-14-80	--	--	--	--	358.0	--	--	--	--	--
06-18-80	451.0	144.0	20.00	60.00	--	--	--	--	--	--
06-18-80	--	--	--	--	141.0	--	--	--	--	--
07-09-80	284.0	14.00	5.000	2.000	--	--	--	--	--	<5.000
07-09-80	--	--	--	--	55.00	--	--	--	--	--
07-12-80	--	--	--	--	746.0	61.60	61.60	92.00	--	--
07-12-80	822.0	425.0	35.00	250.0	--	--	--	--	--	--
07-12-80	--	--	--	--	516.0	69.90	70.90	88.10	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
05-19-82	--	4.900	3.600	<0.030	0.290	0.120	0.100	--	700.0	14.00
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--
06-15-82	--	4.900	4.300	0.060	0.470	0.140	0.110	--	K3800.	21.00
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	38.00	4.500	3.600	0.100	0.650	0.090	0.250	--	3100.	36.00
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	5.400	4.100	<0.030	0.060	0.040	0.020	--	96.00	<10.00
06-23-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	--	3.800	2.300	0.040	0.170	0.030	0.040	--	660.0	11.00
05-21-80	--	--	4.000	<0.030	--	--	--	3.300	109.0	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	3.900	4.000	--	--	--	0.030	--	K30.00	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	5.000	5.000	0.080	--	0.360	0.450	--	23000.	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	22.00	5.300	4.000	<0.030	--	0.180	0.120	--	K1100.	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	4.000	2.100	<0.030	--	0.070	0.020	--	150.0	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	3.500	3.400	0.360	0.850	0.360	0.300	--	K7100.	--
07-12-80	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
3	07-20-80	--	--	--	--	--	--	--	--	--
	07-20-80	0950	111.0	16.00	365.0	381.0	7.700	7.000	8.300	253.0
	07-20-80	0953	111.0	--	--	--	--	--	--	--
	07-25-80	2040	125.0	15.50	367.0	--	7.800	--	8.000	--
	07-25-80	2040	--	--	--	359.0	--	8.200	--	300.0
	07-25-80	2100	129.0	15.50	--	--	--	--	--	--
	07-25-80	2145	111.0	15.50	379.0	--	7.800	--	8.100	--
	08-20-80	--	--	--	--	--	--	--	--	--
	08-20-80	925	--	--	--	396.0	--	8.200	--	294.0
	08-20-80	0925	66.00	16.00	392.0	--	7.500	--	8.000	--
	08-20-80	1025	61.00	17.00	410.0	--	7.600	--	9.200	--
	09-29-80	1110	24.00	15.00	462.0	500.0	8.100	8.600	10.60	320.0
	09-29-80	1115	24.00	--	--	--	--	--	--	--
	10-03-80	1110	16.00	--	--	--	--	8.300	--	--
	10-09-80	0505	13.00	11.50	548.0	--	7.600	8.000	7.400	--
	10-15-80	400	--	--	--	409.0	--	8.300	--	552.0
	10-15-80	600	--	--	--	--	--	--	--	--
	10-15-80	0400	67.00	10.50	357.0	--	8.100	--	--	--
	10-15-80	0740	153.0	8.000	428.0	--	8.000	--	--	--
	10-15-80	0745	150.0	8.000	--	--	--	--	--	--
	10-15-80	1105	128.0	6.000	450.0	--	7.800	--	--	--
	10-15-80	1110	123.0	6.000	--	--	--	--	--	--
	10-15-80	1610	64.00	10.00	--	--	--	--	--	--
	02-18-81	1125	26.00	6.500	480.0	527.0	7.800	8.400	10.40	366.0
	04-29-81	1450	22.00	18.00	436.0	452.0	8.500	8.700	10.70	336.0
	05-06-81	845	--	--	--	394.0	--	8.320	--	263.0
	05-07-81	0210	141.0	9.500	387.0	--	8.000	--	10.00	--
	05-17-81	530	--	--	--	466.0	--	8.100	--	434.0
	05-17-81	0850	177.0	10.50	--	--	--	--	--	--
	05-17-81	0858	147.0	10.50	373.0	--	8.000	--	8.900	--
	05-17-81	1230	216.0	--	--	--	--	--	--	--
	05-17-81	1458	208.0	10.50	499.0	--	7.900	--	9.000	--
	05-17-81	1749	196.0	--	--	--	--	--	--	--
	05-17-81	2037	191.0	10.00	470.0	--	8.000	--	9.100	--
	05-17-81	2041	191.0	--	--	--	--	--	--	--
	05-18-81	1157	169.0	11.00	435.0	--	8.100	--	9.800	--
	05-18-81	1159	111.0	--	--	--	--	--	--	--
	05-23-81	--	--	--	--	--	--	--	--	--
	05-23-81	0930	94.00	12.00	475.0	--	8.000	--	9.200	--
	06-03-81	2055	49.00	18.00	455.0	464.0	--	8.000	--	364.0

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	36.00	6.000	11.00	--	--	--	--	--	20.00	--	--
07-20-80	--	--	--	42.00	--	--	--	--	--	--	--
07-25-80	--	--	--	70.00	--	--	--	--	--	--	--
07-25-80	60.00	10.00	26.00	--	--	--	--	--	18.00	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	33.00	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	55.00	7.000	27.00	--	--	--	--	--	16.00	--	--
08-20-80	--	--	--	94.00	--	--	--	--	--	--	--
08-20-80	--	--	--	51.00	--	--	--	--	--	--	--
09-29-80	<4.000	<4.000	1.400	--	--	--	--	<5.000	--	--	--
09-29-80	--	--	--	53.00	--	--	--	--	--	--	--
10-03-80	--	--	0.900	--	--	--	--	--	--	48.00	20.00
10-09-80	--	--	--	--	--	--	--	--	--	75.00	26.00
10-15-80	278.0	40.00	150.0	--	--	--	--	--	48.00	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	418.0	62.20	68.00	83.40	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	402.0	58.50	81.10	85.00	--	--	--	--
10-15-80	--	--	--	213.0	--	--	--	--	--	--	--
02-18-81	12.00	<4.000	2.900	21.00	--	--	--	<5.000	--	--	--
04-29-81	6.000	<4.000	1.900	12.00	--	--	--	6.000	--	--	--
05-06-81	14.00	<4.000	5.800	--	--	--	--	25.00	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	104.0	13.00	40.00	--	--	--	--	24.00	--	--	--
05-17-81	--	--	--	212.0	54.00	--	71.00	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	388.0	49.00	49.00	70.00	--	--	--	--
05-17-81	--	--	--	1140.	13.00	14.00	19.00	--	--	--	--
05-17-81	--	--	--	118.0	48.00	62.00	67.00	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	64.00	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	20.00	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	36.00	7.000	16.00	--	--	--	--	16.00	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	3.900	--	--	--	--	1.500	--	--	--	--	0.080
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	3.900	--	--	--	--	2.800	--	--	--	--	0.050
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	4.300	--	--	--	--	3.900	--	--	--	--	0.040
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	4.800	--	--	--	--	3.400	--	--	--	--	<0.030
09-29-80	--	--	--	--	--	--	--	--	--	--	--
10-03-80	--	4.900	2.800	150.0	58.00	3.200	0.300	7.500	--	--	--
10-09-80	--	5.700	4.100	180.0	120.0	4.600	0.300	8.100	0.690	0.540	--
10-15-80	3.900	--	--	--	--	3.900	--	--	--	--	0.210
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	6.100	--	--	--	--	4.500	--	--	--	--	<0.030
04-29-81	5.600	--	--	--	--	4.400	--	--	--	--	<0.030
05-06-81	4.000	--	--	--	--	3.400	--	--	--	--	<0.030
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	5.200	--	--	--	--	3.600	--	--	--	--	<0.030
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	5.000	--	--	--	--	4.500	--	--	--	--	<0.030

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	0.230	--	0.160	--	0.040	K1400.	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	0.120	--	0.240	--	0.050	K2200.	--	--
07-25-80	--	--	--	0.650	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	0.400	--	--	--	--	--	--	--
08-20-80	--	--	--	0.500	--	0.110	--	0.040	3400.	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	<0.050	--	0.060	--	0.010	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--	--
10-03-80	--	--	--	--	--	0.010	--	--	--	--	--
10-09-80	0.050	0.000	0.100	0.590	0.100	0.010	0.950	0.030	--	--	4.000
10-15-80	--	--	--	1.200	--	0.660	--	0.250	3900.	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	--	--	--	0.110	--	0.290	--	0.040	200.0	--	<10.00
04-29-81	--	--	--	0.280	--	0.010	--	0.020	K20.00	--	<10.00
05-06-81	--	--	--	0.260	--	0.060	--	0.030	K80.00	<10.00	<10.00
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	0.280	--	0.180	--	0.100	K2500.	<10.00	<10.00
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	0.360	--	--	--	0.040	500.0	--	10.00

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
3	06-24-81	1055	23.00	20.50	437.0	--	8.400	--	9.200	--
	06-24-81	1100	--	--	--	458.0	--	8.600	--	308.0
	06-24-81	1109	21.00	20.50	--	--	--	--	--	--
	07-01-81	2320	--	--	--	396.0	--	8.100	--	358.0
	07-01-81	2340	151.0	--	--	--	--	--	--	--
	07-01-81	2345	151.0	18.00	--	--	--	--	--	--
	07-02-81	0020	146.0	--	--	--	--	--	--	--
	07-02-81	0100	125.0	--	--	--	--	--	--	--
	07-13-81	255	--	--	--	392.0	--	8.000	--	284.0
	07-13-81	0350	202.0	--	--	--	--	--	--	--
	07-13-81	0353	463.0	15.00	353.0	--	7.800	--	7.100	--
	07-13-81	0505	199.0	14.50	393.0	--	7.700	--	7.100	--
	07-13-81	0508	189.0	14.50	--	--	--	--	--	--
	07-17-81	--	--	--	--	--	--	--	--	--
	07-18-81	1910	--	--	--	363.0	--	--	--	--
	07-18-81	1910	--	--	--	--	--	--	--	--
	07-18-81	2015	--	--	--	417.0	--	--	--	--
	07-18-81	2100	--	--	--	387.0	--	--	--	--
	07-18-81	2145	--	--	--	377.0	--	--	--	--
	07-23-81	1845	--	--	--	412.0	--	8.400	--	376.0
	07-25-81	200	--	--	--	492.0	--	8.000	--	966.0
	08-26-81	1315	--	--	--	--	--	--	--	--
	08-26-81	1330	--	--	--	--	--	--	--	--
	10-01-81	1400	43.00	16.00	432.0	--	--	--	--	--
	10-05-81	--	--	--	--	--	--	--	--	--
	10-05-81	450	--	--	--	--	--	--	--	--
	10-05-81	0450	31.00	--	--	--	--	--	--	--
	10-05-81	0500	33.00	11.00	--	--	--	--	--	--
	10-05-81	0630	29.00	11.00	--	--	--	--	--	--
	10-05-81	0810	25.00	--	--	--	--	--	--	--
	10-05-81	0825	25.00	11.00	530.0	--	7.700	--	8.100	--
	10-26-81	1350	22.00	11.50	600.0	--	--	--	--	--
	12-10-81	0935	25.00	--	--	549.0	--	8.300	--	--
	12-10-81	0940	25.00	4.500	528.0	--	7.800	--	9.900	--
	12-20-81	--	--	--	--	666.0	--	8.300	--	--
	12-20-81	1200	26.00	--	--	--	--	--	--	--
	12-20-81	1200	--	--	--	653.0	--	8.400	--	438.0
	12-20-81	1210	26.00	5.000	536.0	--	8.100	--	10.00	--
	12-20-81	1400	30.00	--	--	--	--	--	--	--
	12-20-81	1405	32.00	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	4.000	<4.000	1.800	--	--	--	--	6.000	--	--
06-24-81	--	--	--	12.00	--	--	--	--	--	--
07-01-81	94.00	14.00	37.00	--	--	--	--	31.00	--	--
07-01-81	--	--	--	211.0	60.00	61.00	83.00	--	--	--
07-01-81	--	--	--	108.0	--	--	--	--	--	--
07-02-81	--	--	--	192.0	50.00	59.00	78.00	--	--	--
07-02-81	--	--	--	284.0	55.00	62.00	86.00	--	--	--
07-13-81	27.00	<4.000	12.00	--	--	--	--	32.00	--	--
07-13-81	--	--	--	24.00	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	30.00	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--	--
07-18-81	278.0	36.00	100.0	--	--	--	--	--	68.00	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	202.0	34.00	80.00	--	--	--	--	--	56.00	--
07-18-81	223.0	25.00	100.0	--	--	--	--	--	41.00	--
07-18-81	292.0	44.00	150.0	--	--	--	--	--	48.00	--
07-23-81	60.00	8.000	28.00	--	--	--	--	22.00	--	--
07-25-81	620.0	70.00	260.0	--	--	--	--	--	42.00	--
08-26-81	--	--	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	75.00
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	53.00
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	18.00	4.000	15.00	--	--	--	--	14.00	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	59.00	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	5.100	--	--	--	4.400	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	3.600	--	--	--	3.800	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	4.200	--	--	--	2.200	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	4.600	--	--	--	3.000	--	--	--	--
07-25-81	--	3.200	--	--	--	2.500	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--	--
12-10-81	25.00	--	5.700	3.500	110.0	4.300	0.300	7.900	0.520	0.190
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	21.00	--	15.00	2.600	100.0	38.00	--	8.200	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	28.00	--	--	--	42.00	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	<0.030	--	--	0.160	--	0.040	0.010	200.0	--	<10.00
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	<0.030	--	--	0.680	--	0.070	0.090	4800.	<10.00	10.00
07-01-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-13-81	0.060	--	--	0.320	--	0.100	0.060	K6800.	<10.00	<10.00
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	<0.010	--
07-18-81	--	--	--	--	--	--	0.190	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	0.170	--	--	--
07-18-81	--	--	--	--	--	--	0.180	--	--	--
07-18-81	--	--	--	--	--	--	0.250	--	--	--
07-23-81	<0.030	--	--	0.340	--	0.090	0.060	K1700.	<10.00	10.00
07-25-81	0.030	--	--	1.300	--	0.160	0.440	7100.	<10.00	20.00
08-26-81	--	--	--	--	--	--	--	--	--	--
08-26-81	--	--	--	--	--	--	--	--	--	--
10-01-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-26-81	--	--	--	--	--	--	--	--	--	--
12-10-81	<0.070	0.090	<0.020	0.280	0.240	0.230	0.050	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	<0.030	--	--	0.130	--	--	0.030	<20.00	--	30.00
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
3	12-20-81	1410	31.00	5.000	686.0	--	8.200	--	9.100	--	--
	12-20-81	1705	35.00	--	--	--	--	--	--	--	--
	12-20-81	1710	35.00	4.500	650.0	--	8.000	--	8.500	--	--
	03-07-82	--	--	--	--	--	--	--	--	--	--
	03-07-82	1135	22.00	4.500	526.0	--	7.800	--	--	--	16.00
	03-07-82	1455	22.00	6.500	573.0	--	7.800	--	--	394.0	18.00
	03-07-82	1725	21.00	5.500	581.0	--	7.800	--	--	--	15.00
	03-07-82	2040	22.00	4.000	534.0	--	7.700	--	--	377.0	12.00
	03-09-82	--	--	--	--	--	--	--	--	--	--
	03-09-82	1020	20.00	5.500	523.0	--	7.700	--	12.00	--	19.00
	03-09-82	1355	33.00	8.000	614.0	--	8.100	--	10.50	604.0	186.0
	03-09-82	1700	58.00	5.000	693.0	--	7.800	--	10.10	--	439.0
	03-09-82	1955	42.00	4.000	668.0	--	7.700	--	11.00	--	82.00
	03-10-82	0110	29.00	--	--	566.0	--	--	--	390.0	20.00
	03-10-82	0510	28.00	--	--	550.0	--	--	--	--	13.00
	03-10-82	0910	26.00	--	--	596.0	--	--	--	--	11.00
	04-28-82	0905	20.00	--	--	--	--	--	--	--	--
	04-28-82	0910	20.00	9.500	564.0	--	7.900	--	11.80	--	--
	04-28-82	0915	--	--	--	587.0	--	8.300	--	385.0	4.000
	05-10-82	620	--	--	--	432.0	--	8.000	--	--	286.0
	05-10-82	0620	96.00	--	--	415.0	--	7.800	--	505.0	73.00
	05-10-82	0625	98.00	--	--	--	--	--	--	--	--
	05-10-82	0720	134.0	--	--	383.0	--	7.800	--	480.0	292.0
	05-10-82	0750	148.0	--	--	426.0	--	8.000	--	668.0	358.0
	05-10-82	0800	141.0	--	--	--	--	--	--	--	--
	05-10-82	0810	143.0	12.00	390.0	--	7.800	--	8.200	--	--
	05-10-82	0820	148.0	--	--	421.0	--	8.000	--	602.0	304.0
	05-10-82	0850	129.0	--	--	416.0	--	7.700	--	794.0	416.0
	05-10-82	0920	111.0	--	--	326.0	--	7.800	--	698.0	364.0
	05-10-82	0955	94.00	--	--	--	--	--	--	--	--
	05-10-82	1000	89.00	12.50	441.0	--	7.900	--	7.700	--	--
	05-10-82	1050	79.00	--	--	319.0	--	8.100	--	406.0	115.0
	05-10-82	1150	75.00	--	--	483.0	--	8.400	--	345.0	51.00
	05-10-82	1210	70.00	--	--	--	--	--	--	--	--
	05-10-82	1215	68.00	14.50	458.0	--	8.100	--	9.000	--	--
	05-13-82	--	--	--	--	--	--	--	--	--	--
	05-13-82	0910	86.00	10.00	406.0	--	7.800	--	11.30	--	--
	05-17-82	1545	--	--	--	--	--	--	--	--	--
	05-19-82	2025	--	--	--	619.0	--	8.000	--	564.0	129.0
	05-19-82	2200	101.0	--	--	440.0	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE VOLATILE, SUSPENDED (MG/L) (00535)	TURBIDITY (FTU) (00076)	SEDIMENT, SUSPENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, TOTAL (MG/L AS N) (00600)
12-20-8	--	--	--	--	--	--	--	--	--	--	--	--
12-20-8	--	--	--	--	--	--	--	--	--	--	--	--
12-20-8	--	--	--	--	--	--	--	--	--	--	--	--
03-07-8	--	--	--	--	--	--	--	--	--	--	--	--
03-07-8	<4.000	6.100	--	--	--	--	--	--	--	6.000	5.600	--
03-07-8	<4.000	13.00	--	--	--	--	--	--	--	15.00	19.90	--
03-07-8	<4.000	8.400	--	--	--	--	--	--	--	18.00	27.10	--
03-07-8	<4.000	6.000	--	--	--	--	--	--	--	10.00	13.00	--
03-09-8	--	--	--	--	--	--	--	--	--	--	--	--
03-09-8	<4.000	5.400	--	--	--	--	--	--	--	4.500	3.200	--
03-09-8	23.00	100.0	--	--	--	--	--	--	--	30.00	43.30	--
03-09-8	54.00	220.0	--	--	--	--	--	--	--	38.00	56.60	--
03-09-8	12.00	37.00	--	--	--	--	--	--	--	14.00	18.00	--
03-10-8	6.000	9.100	--	--	--	--	--	--	--	7.700	7.600	--
03-10-8	<4.000	6.800	--	--	--	--	--	--	--	6.400	5.400	--
03-10-8	<4.000	5.900	--	--	--	--	--	--	--	6.400	5.700	--
04-28-8	--	--	--	--	--	--	--	--	--	--	--	--
04-28-8	--	--	--	--	--	--	--	--	--	--	--	--
04-28-8	<4.000	2.300	--	--	--	--	--	<5.000	6.400	--	5.800	--
05-10-8	36.00	110.0	--	--	--	--	--	56.00	5.200	--	5.300	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	1.600
05-10-8	--	--	248.0	--	--	--	--	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	2.600
05-10-8	--	--	--	--	--	--	--	--	--	--	--	3.400
05-10-8	--	--	552.0	33.00	43.00	68.00	96.00	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	2.400
05-10-8	--	--	--	--	--	--	--	--	--	--	--	3.200
05-10-8	--	--	--	--	--	--	--	--	--	--	--	2.700
05-10-8	--	--	274.0	--	--	--	--	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	1.200
05-10-8	--	--	--	--	--	--	--	--	--	--	--	--
05-10-8	--	--	57.00	--	--	--	--	--	--	--	--	--
05-10-8	--	--	--	--	--	--	--	--	--	--	--	--
05-13-8	--	--	--	--	--	--	--	--	--	--	--	--
05-13-8	--	--	--	--	--	--	--	--	--	--	--	--
05-17-8	--	--	--	--	--	--	--	--	--	--	--	--
05-19-8	17.00	60.00	--	--	--	--	--	28.00	6.200	--	7.300	--
05-19-8	--	--	369.0	49.80	65.60	87.30	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--	--
04-28-82	--	<0.030	--	--	--	<0.050	--	0.110	0.020	K8.000	<10.00
05-10-82	--	--	--	--	--	--	--	--	--	K950.0	--
05-10-82	1.400	0.130	0.120	<0.020	--	1.500	0.140	0.140	0.180	--	42.00
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	2.200	<0.060	0.190	0.020	0.150	2.400	0.170	0.180	0.270	--	58.00
05-10-82	3.000	0.090	0.160	<0.020	--	3.200	0.210	0.220	0.280	--	67.00
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	2.000	0.110	0.160	0.020	0.200	2.200	0.220	0.240	0.290	--	65.00
05-10-82	2.800	0.110	0.190	0.020	0.210	3.000	0.230	0.250	0.340	--	74.00
05-10-82	2.300	0.090	0.240	0.020	0.210	2.500	0.230	0.230	0.280	--	69.00
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	1.000	<0.060	0.100	<0.020	--	1.100	0.100	0.100	0.110	--	27.00
05-10-82	--	0.060	<0.060	<0.020	--	0.860	<0.100	<0.100	0.070	--	13.00
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	--	<0.030	--	--	--	0.500	--	0.200	0.110	1150.	29.00
05-19-82	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
3	05-19-82	2315	89.00	--	--	460.0	--	--	--	--
	05-20-82	0105	71.00	--	--	--	--	--	--	--
	05-20-82	0115	70.00	14.00	580.0	--	7.300	--	9.100	--
	05-20-82	0715	91.00	--	--	--	--	--	--	--
	05-20-82	0720	94.00	12.50	606.0	--	7.600	--	7.900	--
	05-20-82	1415	73.00	--	--	--	--	--	--	--
	05-20-82	1420	71.00	13.00	742.0	--	7.800	--	10.80	--
	05-28-82	--	--	--	--	--	--	--	--	--
	06-15-82	515	--	--	--	517.0	--	8.000	--	434.0
	06-15-82	0725	57.00	15.50	548.0	--	7.700	--	9.900	--
	06-16-82	--	--	--	--	--	--	--	--	--
	06-16-82	1510	86.00	--	--	--	--	--	--	--
	06-16-82	1510	--	--	--	507.0	--	8.200	--	710.0
	06-16-82	1645	84.00	--	--	500.0	--	--	--	--
	06-16-82	1655	82.00	19.00	500.0	--	7.400	--	7.600	--
	06-16-82	1825	172.0	17.50	417.0	--	7.500	--	8.100	--
	06-16-82	2010	141.0	--	--	--	--	--	--	--
	06-23-82	1020	--	--	--	490.0	--	8.400	--	356.0
	06-23-82	1025	42.00	--	--	--	--	--	--	--
	06-23-82	1035	42.00	20.50	465.0	--	8.300	--	11.10	--
	07-08-82	1500	--	--	--	413.0	--	8.200	--	321.0
4	05-21-80	1300	68.00	19.50	420.0	440.0	8.500	8.900	10.60	266.0
	05-21-80	1305	68.00	--	--	--	--	--	--	--
	06-03-80	1310	68.00	18.50	403.0	--	8.300	8.700	9.100	282.0
	06-03-80	1315	68.00	--	--	--	--	--	--	--
	06-14-80	--	--	--	--	--	--	--	--	--
	06-14-80	1905	146.0	18.00	280.0	--	7.500	--	--	--
	06-14-80	1905	--	--	--	--	--	8.200	--	900.0
	06-14-80	2000	116.0	17.00	384.0	--	7.500	--	6.800	--
	06-18-80	2100	54.00	19.00	402.0	--	8.600	8.300	5.900	453.0
	06-18-80	2105	54.00	--	--	--	--	--	--	--
	07-09-80	1140	48.00	22.50	392.0	390.0	8.100	8.900	8.800	294.0
	07-09-80	1145	48.00	--	--	--	--	--	--	--
	07-12-80	--	--	--	--	--	--	--	--	--
	07-12-80	1905	288.0	22.50	257.0	--	7.800	--	6.300	--
	07-12-80	1905	--	--	--	340.0	--	8.100	--	1400.
	07-12-80	1910	267.0	--	--	--	--	--	--	--
	07-12-80	2050	175.0	20.50	547.0	--	7.700	--	6.200	--
	07-20-80	0940	122.0	17.00	335.0	352.0	7.500	8.100	6.700	323.0
	07-20-80	0945	122.0	--	--	--	--	--	--	--
	07-25-80	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)
05-19-82	--	--	--	489.0	45.90	60.70	--	87.60	--	--
05-20-82	--	--	--	130.0	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	98.00	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	55.00	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--
06-15-82	88.00	12.00	50.00	--	--	--	--	--	--	13.00
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	43.00	--	--	--	--	--	--
06-16-82	364.0	36.00	180.0	--	--	--	--	--	--	--
06-16-82	--	--	--	165.0	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	872.0	32.00	43.00	57.00	77.00	99.00	--
06-16-82	--	--	--	783.0	38.00	53.00	75.00	90.00	99.00	--
06-23-82	4.000	<4.000	1.500	--	--	--	--	--	--	<5.000
06-23-82	--	--	--	6.000	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	57.00	9.000	22.00	--	--	--	--	--	--	26.00
05-21-80	19.00	--	2.300	--	--	--	--	--	--	<15.00
05-21-80	--	--	--	41.00	--	--	--	--	--	--
06-03-80	12.00	<4.000	3.000	--	--	--	--	--	--	--
06-03-80	--	--	--	38.00	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	709.0	60.00	320.0	--	--	--	--	--	--	72.00
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	162.0	24.00	100.0	--	--	--	--	--	--	--
06-18-80	--	--	--	138.0	--	--	--	--	--	--
07-09-80	14.00	7.000	3.200	--	--	--	--	--	--	<5.000
07-09-80	--	--	--	34.00	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	1160.	96.00	440.0	--	--	--	--	--	--	--
07-12-80	--	--	--	1530.	53.40	54.80	--	82.50	--	--
07-12-80	--	--	--	1970.	51.20	56.90	--	94.00	--	--
07-20-80	83.00	15.00	40.00	--	--	--	--	--	--	--
07-20-80	--	--	--	223.0	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
05-19-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--
06-15-82	--	5.600	5.900	0.030	0.290	0.200	0.070	--	1300.	12.00
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	49.00	5.400	5.100	0.030	0.570	0.160	0.260	--	K2100.	40.00
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	6.500	5.200	<0.030	0.090	0.190	0.010	--	91.00	<10.00
06-23-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	--	4.100	4.400	0.100	0.200	0.080	0.070	--	1800.	20.00
05-21-80	--	--	4.000	<0.030	--	--	--	3.600	K592.0	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	5.000	5.000	--	--	--	0.040	--	K70.00	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	5.300	6.000	0.100	--	0.440	0.490	--	25000.	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	58.00	7.300	6.000	<0.030	--	0.390	0.200	--	4100.	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	4.200	2.700	<0.030	--	0.080	0.020	--	K90000.	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	4.300	4.400	0.670	2.700	0.650	0.720	--	41000.	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	28.00	4.200	0.600	0.030	0.550	0.220	0.100	--	K14200.	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
4	07-25-80	1935	175.0	17.50	346.0	--	7.400	--	6.900	--
	07-25-80	1935	--	--	--	360.0	--	8.200	--	439.0
	07-25-80	2000	157.0	17.00	--	--	--	--	6.900	--
	07-25-80	2035	134.0	16.50	353.0	--	7.500	--	6.900	--
	08-20-80	--	--	--	--	--	--	--	--	--
	08-20-80	915	--	--	--	378.0	--	8.300	--	384.0
	08-20-80	0915	92.00	16.50	371.0	--	7.600	--	7.300	--
	08-20-80	1020	65.00	16.50	376.0	--	7.700	--	7.800	--
	08-20-80	1350	55.00	18.00	423.0	--	8.100	--	9.600	--
	09-29-80	1130	21.00	--	--	--	--	--	--	--
	09-29-80	1135	21.00	15.50	490.0	514.0	8.200	8.600	10.10	337.0
	10-09-80	0530	12.00	12.50	585.0	--	7.600	8.000	7.000	--
	10-15-80	--	--	--	--	--	--	--	--	--
	10-15-80	520	--	--	--	327.0	--	8.200	--	804.0
	10-15-80	0520	189.0	10.00	250.0	--	8.000	--	--	--
	10-15-80	0810	217.0	8.000	300.0	--	7.700	--	--	--
	10-15-80	0815	214.0	8.000	--	--	--	--	--	--
	10-15-80	1130	144.0	5.000	480.0	--	7.500	--	--	--
	10-15-80	1135	142.0	5.000	--	--	--	--	--	--
	10-15-80	1730	62.00	10.00	--	--	--	--	--	--
	02-18-81	1200	28.00	6.500	495.0	549.0	8.200	8.510	10.90	460.0
	04-29-81	1520	24.00	18.50	455.0	475.0	8.600	8.300	10.30	342.0
	05-06-81	0955	120.0	12.00	377.0	--	8.200	--	9.800	--
	05-06-81	1000	--	--	--	391.0	--	8.300	--	292.0
	05-06-81	1205	120.0	11.50	383.0	--	8.200	--	9.800	--
	05-06-81	1500	143.0	11.50	365.0	--	8.200	--	9.400	--
	05-06-81	1740	135.0	11.00	385.0	--	8.200	--	9.800	--
	05-06-81	2114	120.0	10.00	394.0	--	8.100	--	9.600	--
	05-07-81	--	--	--	--	--	--	--	--	--
	05-07-81	0200	122.0	10.00	397.0	--	8.000	--	9.300	--
	05-07-81	0930	162.0	9.500	365.0	370.0	8.000	8.400	9.500	518.0
	05-17-81	1008	--	--	--	403.0	--	7.940	--	528.0
	05-17-81	1016	285.0	--	--	--	--	--	--	--
	05-17-81	1018	289.0	10.50	316.0	--	8.000	--	8.900	--
	05-17-81	1305	282.0	--	--	--	--	--	--	--
	05-17-81	1518	248.0	10.50	422.0	--	7.900	--	9.000	--
	05-17-81	1812	227.0	--	--	--	--	--	--	--
	05-17-81	2154	206.0	10.00	441.0	--	7.900	--	9.200	--
	05-17-81	2156	206.0	--	--	--	--	--	--	--
	05-18-81	0843	128.0	9.500	446.0	--	7.900	--	9.800	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
07-25-80	--	--	--	497.0	75.20	75.90	88.70	--	--	--	--
07-25-80	208.0	29.00	120.0	--	--	--	--	--	63.00	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	343.0	79.80	83.10	91.00	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	91.00	14.00	60.00	--	--	--	--	--	30.00	--	--
08-20-80	--	--	--	241.0	--	--	--	--	--	--	--
08-20-80	--	--	--	272.0	--	--	--	--	--	--	--
08-20-80	--	--	--	197.0	--	--	--	--	--	--	--
09-29-80	--	--	--	83.00	--	--	--	--	--	--	--
09-29-80	<4.000	<4.000	1.800	--	--	--	--	<5.000	--	--	--
10-09-80	--	--	--	--	--	--	--	--	--	76.00	28.00
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	526.0	48.00	220.0	--	--	--	--	--	63.00	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	655.0	52.00	65.00	84.00	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	417.0	69.00	80.20	90.00	--	--	--	--
10-15-80	--	--	--	1120.	50.10	59.10	79.00	--	--	--	--
02-18-81	91.00	9.000	30.00	113.0	49.10	66.40	72.50	6.000	--	--	--
04-29-81	8.000	<4.000	3.000	15.00	--	--	--	7.000	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	32.00	6.000	14.00	--	--	--	--	11.00	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	223.0	28.00	130.0	--	--	--	--	--	--	--	--
05-17-81	218.0	26.00	90.00	--	--	--	--	31.00	--	--	--
05-17-81	--	--	--	520.0	37.00	48.10	65.00	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	505.0	11.00	14.10	27.00	--	--	--	--
05-17-81	--	--	--	279.0	51.30	61.00	73.20	--	--	--	--
05-17-81	--	--	--	163.0	41.20	52.00	57.40	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	145.0	27.00	43.30	87.00	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	4.600	--	--	--	--	4.400	--	--	--	--	0.050
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	5.500	--	--	--	--	5.200	--	--	--	--	0.050
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	5.700	--	--	--	--	4.300	--	--	--	--	<0.030
10-09-80	--	6.700	4.400	180.0	140.0	6.000	0.300	7.200	0.600	0.470	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	5.100	--	--	--	--	5.000	--	--	--	--	0.310
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	6.500	--	--	--	--	5.400	--	--	--	--	<0.030
04-29-81	6.100	--	--	--	--	6.000	--	--	--	--	<0.030
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	5.100	--	--	--	--	5.400	--	--	--	--	<0.030
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	5.500	--	--	--	--	--
05-17-81	5.300	--	--	--	--	5.800	--	--	--	--	0.060
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	0.320	--	0.460	--	0.190	26000.	--	--
07-25-80	--	--	--	0.870	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	0.630	--	0.160	--	0.080	38000.	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--	--
09-29-80	--	--	--	0.080	--	0.040	--	0.010	--	--	--
10-09-80	0.060	0.000	0.070	0.530	0.070	0.000	1.200	0.040	--	--	3.000
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	1.900	--	0.540	--	0.460	K6900.	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	--	--	--	0.220	--	0.230	--	0.040	K70.00	--	<10.00
04-29-81	--	--	--	0.260	--	0.010	--	0.030	K60.00	--	<10.00
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	0.460	--	0.090	--	0.050	K380.0	<10.00	10.00
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	3700.	--	--
05-17-81	--	--	--	0.900	--	0.300	--	0.200	K10400.	<10.00	20.00
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
4	05-18-81	0847	128.0	--	--	--	--	--	--	--
	05-23-81	0845	--	--	--	--	--	--	--	--
	05-23-81	0857	92.00	11.50	--	--	8.300	--	--	--
	06-03-81	1950	--	--	--	288.0	--	9.000	--	1290.
	06-03-81	1955	195.0	--	--	--	--	--	--	--
	06-03-81	2035	86.00	20.50	255.0	--	8.500	--	5.600	--
	06-03-81	2125	54.00	--	--	--	--	--	--	--
	06-24-81	1143	32.00	22.00	469.0	--	8.300	--	9.200	--
	06-24-81	1150	32.00	--	--	491.0	--	8.500	--	338.0
	06-24-81	1200	32.00	22.00	--	--	--	--	--	--
	07-01-81	2315	174.0	--	--	--	--	--	--	--
	07-01-81	2315	--	--	--	380.0	--	8.200	--	476.0
	07-01-81	2400	145.0	--	--	--	--	--	--	--
	07-02-81	0109	145.0	20.00	383.0	--	7.800	--	5.700	--
	07-02-81	0110	145.0	--	--	--	--	--	--	--
	07-02-81	0615	104.0	--	--	--	--	--	--	--
	07-13-81	325	--	--	--	351.0	--	8.000	--	363.0
	07-13-81	0330	238.0	--	--	--	--	--	--	--
	07-13-81	0432	200.0	--	--	--	--	--	--	--
	07-13-81	0440	192.0	16.00	310.0	--	7.700	--	7.200	--
	07-13-81	0545	169.0	--	--	--	--	--	--	--
	07-13-81	0800	155.0	--	--	--	--	--	--	--
	07-17-81	--	--	--	--	--	--	--	--	--
	07-23-81	1903	--	--	--	--	--	--	--	--
	07-23-81	1903	--	--	--	217.0	--	8.400	--	3030.
	07-23-81	1904	1060.	--	--	--	--	--	--	--
	07-23-81	2005	187.0	--	--	--	--	--	--	--
	07-23-81	2015	169.0	14.50	294.0	--	8.000	--	6.900	--
	07-23-81	2115	132.0	--	--	--	--	--	--	--
	07-25-81	654	--	--	--	413.0	--	8.000	--	888.0
	07-25-81	0855	506.0	17.00	302.0	--	7.800	--	6.400	--
	07-25-81	1056	190.0	17.00	510.0	--	7.600	--	6.400	--
	08-27-81	1245	--	--	--	--	--	--	--	--
	08-27-81	1300	--	--	--	--	--	--	--	--
	12-10-81	1000	23.00	--	--	577.0	--	8.300	--	--
	12-10-81	1005	23.00	3.500	556.0	--	8.000	--	9.800	--
	12-20-81	--	--	--	--	780.0	--	7.800	--	--
	12-20-81	1300	39.00	--	639.0	--	8.100	--	9.000	--
	12-20-81	1300	--	--	--	935.0	--	8.300	--	680.0
	12-20-81	1515	43.00	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
05-18-81	--	--	--	43.00	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-03-81	1020.	102.0	380.0	--	--	--	--	--	152.0	--
06-03-81	--	--	--	1340.	6.000	15.00	35.00	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	301.0	45.00	60.00	93.00	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	<4.000	<4.000	2.300	--	--	--	--	9.000	--	--
06-24-81	--	--	--	10.00	--	--	--	--	--	--
07-01-81	--	--	--	676.0	22.00	35.00	70.00	--	--	--
07-01-81	216.0	23.00	85.00	--	--	--	--	39.00	--	--
07-01-81	--	--	--	366.0	42.00	60.00	81.00	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	213.0	51.00	53.00	72.00	--	--	--
07-02-81	--	--	--	32.00	--	--	--	--	--	--
07-13-81	124.0	18.00	45.00	--	--	--	--	34.00	--	--
07-13-81	--	--	--	251.0	61.00	62.00	66.00	--	--	--
07-13-81	--	--	--	67.00	72.00	76.00	83.00	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	41.00	--	--	--	--	--	--
07-13-81	--	--	--	24.00	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	2300.	235.0	800.0	--	--	--	--	--	228.0	--
07-23-81	--	--	--	4190.	26.00	36.00	61.00	--	--	--
07-23-81	--	--	--	1620.	57.00	71.00	91.00	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	666.0	64.00	76.00	91.00	--	--	--
07-25-81	575.0	65.00	260.0	--	--	--	--	--	45.00	--
07-25-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	77.00
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	74.00
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	104.0	18.00	80.00	--	--	--	--	--	73.00	--
12-20-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)
05-18-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	6.200	--	--	--	6.500	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	6.200	--	--	--	5.500	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	4.200	--	--	--	4.800	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	3.800	--	--	--	3.300	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	4.500	--	--	--	3.400	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	5.500	--	--	--	3.000	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
12-10-81	27.00	--	6.400	3.600	130.0	5.100	0.300	7.600	0.630	0.240
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	23.00	--	82.00	5.700	96.00	150.0	--	6.100	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	87.00	--	--	--	134.0	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
05-18-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-03-81	0.130	--	--	3.500	--	--	0.750	5100.	--	190.0
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
06-24-81	<0.030	--	--	0.170	--	0.010	0.010	200.0	--	<10.00
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-01-81	<0.030	--	--	1.200	--	0.140	0.190	3600.	<10.00	30.00
07-01-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-13-81	0.080	--	--	0.560	--	0.190	0.140	K10000.	<10.00	29.00
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-17-81	--	--	--	--	--	--	--	--	<0.010	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	0.220	--	--	5.400	--	0.490	2.180	K68000.	--	280.0
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	<0.030	--	--	1.500	--	0.210	0.490	25000.	<10.00	31.00
07-25-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
12-10-81	<0.070	0.120	<0.020	0.360	0.270	0.250	0.010	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	0.050	--	--	0.290	--	--	0.120	400.0	--	67.00
12-20-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
4	12-20-81	1520	43.00	--	--	--	--	--	--
	12-20-81	1525	43.00	2.500	1145.	--	8.200	--	8.600
	12-20-81	1735	35.00	--	--	--	--	--	--
	12-20-81	1740	35.00	3.000	933.0	--	8.000	--	8.400
	03-07-82	--	--	--	--	--	--	--	--
	03-07-82	1110	24.00	3.000	565.0	--	7.100	--	--
	03-07-82	1415	25.00	5.500	645.0	--	7.800	--	--
	03-07-82	1700	25.00	5.500	815.0	--	7.800	--	--
	03-07-82	2025	24.00	4.000	718.0	--	7.700	--	--
	03-07-82	2300	24.00	3.000	615.0	--	7.700	--	--
	03-09-82	--	--	--	--	--	--	--	--
	03-09-82	1000	21.00	2.500	545.0	--	7.700	--	12.50
	03-09-82	1335	58.00	6.000	881.0	--	7.800	--	10.30
	03-09-82	1640	70.00	6.000	665.0	--	7.800	--	9.800
	03-09-82	1935	45.00	4.000	698.0	--	7.600	--	10.60
	04-28-82	0940	21.00	9.000	614.0	623.0	7.800	8.300	11.30
	04-28-82	0945	--	--	--	--	--	--	--
	05-10-82	630	--	--	--	376.0	--	7.900	--
	05-10-82	0610	159.0	--	--	--	--	--	--
	05-10-82	0630	177.0	--	--	308.0	--	7.400	--
	05-10-82	0740	229.0	--	--	292.0	--	7.600	--
	05-10-82	0830	174.0	--	--	--	--	--	--
	05-10-82	0835	167.0	11.50	352.0	--	7.700	--	9.700
	05-10-82	0840	162.0	--	--	393.0	--	7.800	--
	05-10-82	1035	97.00	--	--	482.0	--	7.900	--
	05-10-82	1150	84.00	--	--	494.0	--	7.100	--
	05-10-82	1155	83.00	--	--	--	--	--	--
	05-10-82	1310	72.00	--	--	507.0	--	8.300	--
	05-13-82	--	--	--	--	--	--	--	--
	05-17-82	--	--	--	--	--	--	--	--
	05-19-82	2015	--	--	--	484.0	--	8.000	--
	05-19-82	2055	177.0	--	--	380.0	--	--	--
	05-19-82	2100	177.0	15.50	236.0	--	7.200	--	7.600
	05-19-82	2330	145.0	--	--	440.0	--	--	--
	05-20-82	0740	139.0	--	--	--	--	--	--
	05-20-82	0745	139.0	12.50	464.0	--	7.600	--	7.900
	05-20-82	1430	84.00	--	--	--	--	--	--
	05-20-82	1440	84.00	13.00	668.0	--	8.000	--	8.000
	05-28-82	--	--	--	--	--	--	--	--
	06-15-82	220	--	--	--	473.0	--	7.900	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)
12-20-81	--	--	--	--	139.0	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	17.00	9.000	7.100	--	--	--	--	--
03-07-82	--	28.00	6.000	17.00	--	--	--	--	--
03-07-82	586.0	64.00	10.00	40.00	--	--	--	--	--
03-07-82	--	27.00	5.000	16.00	--	--	--	--	--
03-07-82	434.0	18.00	4.000	8.000	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	12.00	<4.000	5.300	--	--	--	--	--
03-09-82	1170.	562.0	81.00	290.0	--	--	--	--	--
03-09-82	--	563.0	68.00	240.0	--	--	--	--	--
03-09-82	770.0	273.0	38.00	180.0	--	--	--	--	--
04-28-82	426.0	9.000	4.000	2.800	--	--	--	--	--
04-28-82	--	--	--	--	4.000	--	--	--	--
05-10-82	--	532.0	58.00	220.0	--	--	--	--	--
05-10-82	--	--	--	--	711.0	31.00	44.00	56.00	70.00
05-10-82	736.0	418.0	--	--	--	--	--	--	--
05-10-82	1060.	552.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	660.0	42.00	55.00	--	75.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	907.0	590.0	--	--	--	--	--	--	--
05-10-82	659.0	342.0	--	--	--	--	--	--	--
05-10-82	492.0	158.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	145.0	--	--	--	--
05-10-82	414.0	58.00	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	666.0	313.0	32.00	130.0	--	--	--	--	--
05-19-82	--	--	--	--	1430.	48.00	61.30	72.20	84.40
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	299.0	--	--	--	--
05-20-82	--	--	--	--	144.0	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	63.00	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--
06-15-82	518.0	201.0	26.00	80.00	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	7.200	6.100	--	--	--
03-07-82	--	--	--	--	25.00	35.50	--	--	--
03-07-82	--	--	--	--	62.00	91.40	--	--	--
03-07-82	--	--	--	--	40.00	56.00	--	--	--
03-07-82	--	--	--	--	20.00	23.00	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	6.600	5.400	--	--	--
03-09-82	--	--	--	--	86.00	128.0	--	--	--
03-09-82	--	--	--	--	50.00	68.00	--	--	--
03-09-82	--	--	--	--	36.00	49.40	--	--	--
04-28-82	--	<5.000	--	7.100	--	6.800	--	--	<0.030
04-28-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	97.00	9.400	--	6.200	--	--	--
05-10-82	95.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	3.500	2.800	0.190
05-10-82	--	--	--	--	--	--	3.700	3.200	0.190
05-10-82	96.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	3.100	2.500	0.120
05-10-82	--	--	--	--	--	--	3.000	2.200	0.120
05-10-82	--	--	--	--	--	--	1.900	1.400	0.070
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	1.000	--	0.110
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	44.00	9.300	--	7.200	--	--	0.040
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--
06-15-82	--	43.00	--	8.000	--	6.100	--	--	0.140

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	<0.050	--	0.120	0.020	K670.0	<10.00
04-28-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	K1200.	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.290	0.030	0.340	3.100	0.370	0.380	0.400	--	180.0
05-10-82	0.240	0.040	0.220	3.400	0.260	0.280	0.490	--	230.0
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.240	0.030	0.320	2.700	0.350	0.360	0.360	--	110.0
05-10-82	0.180	0.020	0.560	2.400	0.580	0.610	0.270	--	90.00
05-10-82	0.150	0.020	0.400	1.500	0.420	0.430	0.180	--	46.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	<0.060	<0.020	--	0.810	0.220	0.230	0.090	--	18.00
05-13-82	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	1.040	--	0.610	0.280	K14200.	64.00
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--
06-15-82	--	--	--	0.830	--	0.230	0.210	3300.	57.00

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
4	06-15-82	0755	58.00	15.50	569.0	--	7.700	--	8.600	--
	06-16-82	--	--	--	--	--	--	--	--	--
	06-16-82	1525	75.00	--	--	500.0	--	--	--	--
	06-16-82	1530	--	--	--	442.0	--	8.000	--	1090.
	06-16-82	1625	94.00	20.00	442.0	--	7.700	--	7.300	--
	06-16-82	1630	94.00	--	--	--	--	--	--	--
	06-16-82	1850	247.0	--	--	--	--	--	--	--
	06-23-82	1110	--	--	--	555.0	--	8.400	--	384.0
	06-23-82	1115	45.00	--	--	--	--	--	--	--
	06-23-82	1125	45.00	22.00	474.0	--	8.300	--	10.60	--
	07-08-82	1460	--	--	--	408.0	--	8.200	--	376.0
5	05-21-80	1050	59.00	16.50	460.0	465.0	8.400	8.600	10.00	288.0
	05-21-80	1055	59.00	--	--	--	--	--	--	--
	06-03-80	1520	56.00	20.00	414.0	--	8.400	7.700	9.500	291.0
	06-03-80	1525	56.00	--	--	--	--	--	--	--
	06-14-80	1920	300.0	18.50	332.0	--	7.400	--	6.200	--
	06-14-80	1920	--	--	--	--	--	8.100	--	1120.
	06-14-80	2025	143.0	18.00	227.0	--	7.400	--	6.400	--
	06-18-80	2045	60.00	21.00	463.0	--	7.300	--	4.900	--
	06-18-80	2045	--	--	--	--	--	--	--	--
	06-18-80	2200	65.00	20.50	475.0	--	7.500	--	5.000	--
	07-09-80	1040	36.00	21.00	422.0	419.0	7.700	8.600	7.300	302.0
	07-09-80	1045	36.00	--	--	--	--	--	--	--
	07-12-80	1915	189.0	22.50	350.0	--	8.300	--	6.700	--
	07-12-80	1915	--	--	--	331.0	--	8.200	--	934.0
	07-12-80	2120	152.0	21.00	336.0	--	7.600	--	6.300	--
	07-20-80	1015	105.0	17.00	358.0	--	7.500	--	6.600	--
	07-20-80	1015	--	--	--	357.0	--	8.000	--	377.0
	07-20-80	1020	105.0	--	--	--	--	--	--	--
	07-20-80	1030	100.0	17.00	--	--	--	--	6.700	--
	07-20-80	1110	95.00	17.00	342.0	--	7.700	--	6.900	--
	07-20-80	1115	95.00	--	--	--	--	--	--	--
	07-25-80	2000	86.00	17.50	385.0	--	7.800	--	7.500	--
	07-25-80	2000	--	--	--	375.0	--	8.300	--	398.0
	07-25-80	2030	104.0	17.00	--	--	--	--	7.500	--
	07-25-80	2050	125.0	17.00	408.0	--	7.800	--	7.600	--
	08-20-80	--	--	--	--	--	--	--	--	--
	08-20-80	940	--	--	--	414.0	--	7.400	--	332.0
	08-20-80	0940	58.00	17.00	467.0	--	7.600	--	7.800	--
	08-20-80	1040	73.00	17.00	460.0	--	7.600	--	7.800	--
	08-20-80	1420	49.00	18.00	386.0	--	7.700	--	7.900	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	166.0	--	--	--	--	--	--
06-16-82	763.0	76.00	330.0	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	95.00	--	--	--	--	--	--
06-16-82	--	--	--	1810.	49.00	52.00	64.00	81.00	99.00	--
06-23-82	12.00	<4.000	3.500	--	--	--	--	--	--	6.000
06-23-82	--	--	--	14.00	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	122.0	17.00	36.00	--	--	--	--	--	--	35.00
05-21-80	25.00	--	2.900	--	--	--	--	--	--	<15.00
05-21-80	--	--	--	52.00	--	--	--	--	--	--
06-03-80	10.00	<4.000	2.100	--	--	--	--	--	--	--
06-03-80	--	--	--	37.00	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	1040.	92.00	370.0	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	158.0	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	150.0	--	--	--	--	--	--
07-09-80	32.00	9.000	10.00	--	--	--	--	--	--	<5.000
07-09-80	--	--	--	41.00	--	--	--	--	--	--
07-12-80	--	--	--	946.0	37.70	42.70	--	57.20	--	--
07-12-80	732.0	--	210.0	--	--	--	--	--	--	--
07-12-80	--	--	--	673.0	54.90	63.20	--	78.90	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	142.0	22.00	45.00	--	--	--	--	--	--	--
07-20-80	--	--	--	141.0	--	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	165.0	--	--	--	--	--	--
07-25-80	--	--	--	108.0	--	--	--	--	--	--
07-25-80	148.0	17.00	38.00	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	175.0	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	75.00	13.00	35.00	--	--	--	--	--	--	--
08-20-80	--	--	--	48.00	--	--	--	--	--	--
08-20-80	--	--	--	72.00	--	--	--	--	--	--
08-20-80	--	--	--	213.0	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
06-15-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	83.00	7.600	5.800	0.090	1.300	0.280	0.610	--	12000.	116.0
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	7.100	6.100	0.060	0.130	0.040	0.020	--	170.0	<10.00
06-23-82	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--
07-08-82	--	5.100	6.100	0.110	0.510	0.100	0.140	--	7500.	46.00
05-21-80	--	--	5.000	<0.030	--	--	--	3.200	K340.0	--
05-21-80	--	--	--	--	--	--	--	--	--	--
06-03-80	--	5.900	5.000	--	--	--	0.040	--	K35.00	--
06-03-80	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-14-80	118.0	5.300	6.000	0.140	--	0.480	0.840	--	35000.	--
06-14-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--
07-09-80	--	5.000	3.300	<0.030	--	0.070	0.020	--	K690.0	--
07-09-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	4.700	4.000	0.340	2.000	0.380	0.490	--	29000.	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	44.00	5.000	2.600	0.130	0.900	0.280	0.150	--	22000.	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	1.000	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	28.00	4.800	3.600	<0.030	0.580	0.210	0.100	--	2900.	--
07-25-80	--	--	--	--	0.490	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	0.480	--	--	--	--	--
08-20-80	<15.00	6.400	8.000	0.120	0.680	0.140	0.070	--	K9500.	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
5	09-29-80	1205	16.00	15.00	532.0	560.0	8.200	8.400	10.20	362.0
	09-29-80	1210	16.00	--	--	--	--	--	--	--
	10-09-80	0610	4.500	13.00	686.0	--	7.400	7.900	5.700	--
	10-15-80	450	--	--	--	--	--	--	--	--
	10-15-80	505	--	--	--	341.0	--	8.000	--	748.0
	10-15-80	0505	148.0	9.500	401.0	--	7.600	--	8.300	--
	10-15-80	0825	244.0	7.500	238.0	--	7.800	--	8.500	--
	10-15-80	0845	244.0	7.500	--	--	--	--	--	--
	10-15-80	1244	132.0	--	--	--	--	--	--	--
	10-15-80	1245	132.0	5.000	335.0	--	8.100	--	8.200	--
	10-15-80	1708	153.0	9.500	--	--	--	--	--	--
	02-18-81	1245	25.00	5.000	513.0	570.0	8.200	8.520	12.10	395.0
	04-29-81	1550	22.00	--	--	544.0	--	8.500	--	388.0
	04-29-81	1600	22.00	17.00	523.0	--	8.300	--	9.900	--
	05-02-81	1820	--	--	--	414.0	--	8.100	--	1250.
	05-06-81	905	--	--	--	408.0	--	8.310	--	324.0
	05-06-81	1610	13.00	11.50	387.0	--	8.000	--	8.200	--
	05-06-81	2055	107.0	10.50	400.0	--	8.100	--	9.600	--
	05-07-81	720	--	--	--	410.0	--	8.300	--	348.0
	05-07-81	0130	108.0	10.00	405.0	--	8.100	--	9.100	--
	05-16-81	2145	--	--	--	418.0	--	8.000	--	476.0
	05-17-81	1000	302.0	--	330.0	--	8.200	--	--	--
	05-17-81	1116	325.0	--	--	--	--	--	--	--
	05-17-81	1230	318.0	10.00	350.0	--	8.200	--	--	--
	05-17-81	1750	237.0	--	--	--	--	--	--	--
	05-17-81	1755	235.0	10.50	--	--	--	--	--	--
	05-18-81	0835	115.0	10.00	490.0	--	8.200	--	--	--
	05-23-81	420	--	--	--	409.0	--	7.800	--	426.0
	05-23-81	0905	92.00	12.00	393.0	--	7.700	--	8.700	--
	06-03-81	2030	--	--	--	429.0	--	8.500	--	558.0
	06-03-81	2035	126.0	20.50	--	--	--	--	--	--
	06-03-81	2058	155.0	20.50	--	--	--	--	--	--
	06-03-81	2146	79.00	20.50	--	--	--	--	--	--
	06-24-81	1224	20.00	22.50	594.0	--	8.000	--	10.00	--
	06-24-81	1225	--	--	--	610.0	--	8.400	--	441.0
	06-24-81	1240	20.00	22.50	--	--	--	--	--	--
	07-01-81	2330	77.00	--	--	--	--	--	--	--
	07-01-81	2345	--	--	--	398.0	--	8.000	--	392.0
	07-02-81	0035	156.0	--	--	--	--	--	--	--
	07-02-81	0042	150.0	20.50	370.0	--	7.800	--	5.400	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
09-29-80	7.000	<4.000	3.100	--	--	--	--	<5.000	--	--	--
09-29-80	--	--	--	367.0	--	--	--	--	--	--	--
10-09-80	--	--	--	--	--	--	--	--	--	84.00	33.00
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	492.0	56.00	180.0	--	--	--	--	--	74.00	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	667.0	43.40	58.30	70.50	--	--	--	--
10-15-80	--	--	--	453.0	75.00	83.20	95.40	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	732.0	33.00	41.00	56.40	--	--	--	--
02-18-81	6.000	<4.000	2.300	10.00	--	--	--	6.000	--	--	--
04-29-81	12.00	4.000	3.800	10.00	--	--	--	7.000	--	--	--
04-29-81	--	--	--	--	--	--	--	--	--	--	--
05-02-81	865.0	115.0	320.0	--	--	--	--	--	133.0	--	--
05-06-81	60.00	8.000	24.00	--	--	--	--	16.00	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	90.00	12.00	55.00	--	--	--	--	24.00	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-16-81	181.0	22.00	70.00	--	--	--	--	35.00	--	--	--
05-17-81	--	--	--	418.0	36.20	46.40	66.30	--	--	--	--
05-17-81	--	--	--	479.0	47.20	57.00	74.50	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	233.0	59.20	67.00	75.50	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	38.00	--	--	--	--	--	--	--
05-23-81	145.0	20.00	85.00	--	--	--	--	36.00	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	251.0	32.00	90.00	--	--	--	--	--	45.00	--	--
06-03-81	--	--	--	237.0	26.00	35.00	65.00	--	--	--	--
06-03-81	--	--	--	359.0	32.00	47.00	79.00	--	--	--	--
06-03-81	--	--	--	365.0	34.00	46.00	92.00	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--	--
06-24-81	9.000	<4.000	3.700	--	--	--	--	6.000	--	--	--
06-24-81	--	--	--	22.00	--	--	--	--	--	--	--
07-01-81	--	--	--	48.00	--	--	--	--	--	--	--
07-01-81	135.0	19.00	55.00	--	--	--	--	40.00	--	--	--
07-02-81	--	--	--	299.0	56.00	70.00	86.00	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
09-29-80	7.300	--	--	--	--	5.600	--	--	--	--	<0.030
09-29-80	--	--	--	--	--	--	--	--	--	--	--
10-09-80	--	12.00	4.800	190.0	160.0	10.00	0.300	7.100	1.100	0.850	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	6.300	--	--	--	--	5.800	--	--	--	--	0.340
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	7.300	--	--	--	--	6.400	--	--	--	--	<0.030
04-29-81	7.800	--	--	--	--	7.600	--	--	--	--	<0.030
04-29-81	--	--	--	--	--	--	--	--	--	--	--
05-02-81	11.20	--	--	--	--	13.00	--	--	--	--	0.240
05-06-81	5.740	--	--	--	--	6.600	--	--	--	--	<0.030
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	7.630	--	--	--	--	7.400	--	--	--	--	0.160
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-16-81	6.500	--	--	--	--	5.000	--	--	--	--	0.040
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	7.800	--	--	--	--	6.600	--	--	--	--	0.030
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	7.300	--	--	--	--	7.100	--	--	--	--	<0.030
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--	--
06-24-81	9.000	--	--	--	--	9.100	--	--	--	--	<0.030
06-24-81	--	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--	--
07-01-81	5.100	--	--	--	--	5.400	--	--	--	--	<0.030
07-02-81	--	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHATE, TOTAL (MG/L AS PO4) (00650)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
09-29-80	--	--	--	0.120	--	0.060	--	0.010	--	--	--
09-29-80	--	--	--	--	--	--	--	--	--	--	--
10-09-80	0.110	0.010	0.140	0.960	0.150	0.110	0.580	0.060	--	--	6.000
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	1.950	--	0.540	--	0.460	2500.	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	--	--	--	0.140	--	0.260	--	<0.010	280.0	--	<10.00
04-29-81	--	--	--	0.270	--	0.020	--	0.030	280.0	--	<10.00
04-29-81	--	--	--	--	--	--	--	--	--	--	--
05-02-81	--	--	--	4.000	--	0.460	--	1.200	2000.	--	260.0
05-06-81	--	--	--	0.530	--	0.100	--	0.070	K1500.	<10.00	<10.00
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	0.760	--	0.160	--	0.110	K1500.	<10.00	10.00
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-16-81	--	--	--	0.590	--	0.320	--	0.190	3900.	<10.00	20.00
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	0.450	--	2.200	--	0.170	3200.	<10.00	20.00
05-23-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	1.100	--	--	--	0.210	3700.	--	30.00
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--	--
06-24-81	--	--	--	0.370	--	0.020	--	0.020	270.0	--	<10.00
06-24-81	--	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--	--
07-01-81	--	--	--	1.100	--	0.120	--	0.140	K8700.	<10.00	30.00
07-02-81	--	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
5	07-13-81	315	--	--	--	381.0	--	8.000	--	372.0
	07-13-81	0348	153.0	--	--	--	--	--	--	--
	07-13-81	0458	194.0	15.50	--	--	--	--	--	--
	07-13-81	0510	184.0	16.50	303.0	--	7.700	--	6.200	--
	07-13-81	0845	121.0	--	--	--	--	--	--	--
	07-13-81	0855	120.0	15.50	383.0	--	7.600	--	7.600	--
	07-16-81	--	--	--	--	--	--	--	--	--
	07-18-81	2005	--	--	--	406.0	--	--	--	--
	07-18-81	2005	--	--	--	--	--	--	--	--
	07-18-81	2010	--	--	--	398.0	--	--	--	--
	07-18-81	2015	--	--	--	376.0	--	--	--	--
	07-18-81	2020	--	--	--	375.0	--	--	--	--
	07-18-81	2105	--	--	--	321.0	--	--	--	--
	07-18-81	2125	--	--	--	284.0	--	--	--	--
	07-18-81	2210	--	--	--	288.0	--	--	--	--
	07-18-81	2255	--	--	--	332.0	--	--	--	--
	07-23-81	1910	--	--	--	248.0	--	8.300	--	2200.
	07-23-81	1953	840.0	--	--	--	--	--	--	--
	07-23-81	2002	838.0	--	--	--	--	--	--	--
	07-23-81	2017	678.0	--	--	--	--	--	--	--
	07-23-81	2025	593.0	12.00	165.0	--	8.300	--	7.500	--
	07-23-81	2046	352.0	--	--	--	--	--	--	--
	07-23-81	2051	309.0	11.50	193.0	--	8.300	--	7.700	--
	07-23-81	2118	213.0	--	--	--	--	--	--	--
	07-23-81	2126	191.0	11.00	235.0	--	8.100	--	8.000	--
	07-25-81	155	--	--	--	364.0	--	8.000	--	1020.
	07-25-81	0917	531.0	16.50	224.0	--	7.700	--	6.500	--
	08-27-81	1400	--	--	--	--	--	--	--	--
	08-27-81	1415	--	--	--	--	--	--	--	--
	10-05-81	--	--	--	--	--	--	--	--	--
	10-05-81	510	--	--	--	--	--	--	--	--
	10-05-81	0510	34.00	--	--	--	--	--	--	--
	10-05-81	0525	34.00	11.50	476.0	--	7.500	--	7.700	--
	10-05-81	0655	34.00	11.00	422.0	--	7.600	--	7.800	--
	10-05-81	0710	33.00	--	--	--	--	--	--	--
	10-05-81	0910	24.00	--	--	--	--	--	--	--
	12-10-81	1025	23.00	3.000	563.0	589.0	7.900	8.300	10.20	--
	12-20-81	--	--	--	--	699.0	--	7.900	--	--
	12-20-81	1410	32.00	--	--	--	--	--	--	--
	12-20-81	1410	--	--	--	691.0	--	8.200	--	494.0

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
07-13-81	113.0	14.00	38.00	--	--	--	--	30.00	--	--
07-13-81	--	--	--	173.0	50.00	50.00	59.00	--	--	--
07-13-81	--	--	--	287.0	51.00	61.00	81.00	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	48.00	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	--	--
07-18-81	114.0	13.00	38.00	--	--	--	--	--	27.00	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	244.0	24.00	60.00	--	--	--	--	--	33.00	--
07-18-81	402.0	36.00	95.00	--	--	--	--	--	40.00	--
07-18-81	470.0	42.00	100.0	--	--	--	--	--	48.00	--
07-18-81	534.0	60.00	210.0	--	--	--	--	--	92.00	--
07-18-81	553.0	61.00	240.0	--	--	--	--	--	92.00	--
07-18-81	580.0	64.00	300.0	--	--	--	--	--	87.00	--
07-18-81	394.0	44.00	220.0	--	--	--	--	--	58.00	--
07-23-81	1800.	175.0	700.0	--	--	--	--	--	174.0	--
07-23-81	--	--	--	3600.	42.00	45.00	58.00	--	--	--
07-23-81	--	--	--	3340.	47.00	51.00	72.00	--	--	--
07-23-81	--	--	--	3010.	52.00	55.00	70.00	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	1950.	73.00	82.00	91.00	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	1700.	75.00	76.00	88.00	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	738.0	80.00	320.0	--	--	--	--	--	64.00	--
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
12-10-81	--	--	--	--	--	--	--	--	--	78.00
12-20-81	--	--	--	--	--	--	--	--	--	70.00
12-20-81	--	--	--	13.00	--	--	--	--	--	--
12-20-81	38.00	6.000	28.00	--	--	--	--	22.00	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)
07-13-81	--	4.700	--	--	--	3.300	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	6.100	--	--	--	5.000	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	--	5.100	--	--	--	4.200	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
12-10-81	28.00	--	7.600	3.600	130.0	11.00	0.300	7.600	0.590	0.210
12-20-81	24.00	--	23.00	3.300	120.0	34.00	--	7.000	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	27.00	--	--	--	41.00	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
07-13-81	0.050	--	--	0.590	--	0.170	0.130	K8000.	<10.00	16.00
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	<0.010	--
07-18-81	--	--	--	--	--	--	0.120	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	0.230	--	--	--
07-18-81	--	--	--	--	--	--	0.320	--	--	--
07-18-81	--	--	--	--	--	--	0.370	--	--	--
07-18-81	--	--	--	--	--	--	0.520	--	--	--
07-18-81	--	--	--	--	--	--	0.530	--	--	--
07-18-81	--	--	--	--	--	--	0.550	--	--	--
07-18-81	--	--	--	--	--	--	0.350	--	--	--
07-23-81	0.210	--	--	4.400	--	0.480	1.590	51000.	<10.00	230.0
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--
07-25-81	0.040	--	--	2.500	--	0.260	0.620	20000.	<10.00	64.00
07-25-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--
12-10-81	0.070	0.100	<0.020	0.310	0.280	0.280	0.010	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	<0.030	--	--	0.200	--	--	0.050	K40.00	--	32.00

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
5	12-20-81	1645	48.00	--	--	--	--	--	--
	12-20-81	1750	43.00	--	--	--	--	--	--
	03-07-82	1050	23.00	1.500	587.0	--	7.700	--	--
	03-07-82	1350	25.00	3.000	598.0	--	7.400	--	--
	03-07-82	1645	25.00	3.000	590.0	--	7.800	--	--
	03-07-82	2000	25.00	3.500	683.0	--	7.900	--	--
	03-07-82	2335	24.00	2.500	818.0	--	--	--	--
	03-08-82	0140	24.00	--	--	860.0	--	8.150	--
	03-08-82	0340	23.00	--	--	764.0	--	8.190	--
	03-08-82	0540	23.00	--	--	690.0	--	8.220	--
	03-08-82	0740	23.00	--	--	644.0	--	8.210	--
	03-08-82	0940	23.00	--	--	629.0	--	8.230	--
	03-09-82	--	--	--	--	--	--	--	--
	03-09-82	0940	21.00	1.000	569.0	--	7.700	--	13.00
	03-09-82	1315	25.00	4.000	586.0	--	7.900	--	12.50
	03-09-82	1620	69.00	4.500	774.0	828.0	7.700	--	10.50
	03-09-82	1910	54.00	4.000	666.0	701.0	7.700	--	10.50
	03-09-82	2325	37.00	--	--	747.0	--	--	--
	03-10-82	0125	32.00	--	--	743.0	--	--	--
	03-10-82	0325	30.00	--	--	720.0	--	--	--
	03-10-82	0525	30.00	--	--	681.0	--	--	--
	03-10-82	0725	29.00	--	--	639.0	--	--	--
	03-10-82	0925	29.00	--	--	621.0	--	--	--
	04-28-82	1000	21.00	--	--	--	--	--	--
	04-28-82	1010	21.00	9.500	646.0	648.0	7.700	8.200	11.80
	04-28-82	1015	21.00	--	--	--	--	--	--
	05-10-82	600	--	--	--	395.0	--	7.600	--
	05-10-82	0600	70.00	--	--	486.0	--	8.100	--
	05-10-82	0640	147.0	--	--	--	--	--	--
	05-10-82	0645	152.0	--	--	462.0	--	7.900	--
	05-10-82	0655	166.0	12.50	446.0	--	7.600	--	8.700
	05-10-82	0730	218.0	--	--	346.0	--	7.500	--
	05-10-82	0830	253.0	--	--	241.0	--	7.600	--
	05-10-82	0855	227.0	--	--	--	--	--	--
	05-10-82	0930	159.0	--	--	316.0	--	7.600	--
	05-10-82	1030	116.0	--	--	371.0	--	7.700	--
	05-10-82	1130	90.00	--	--	373.0	--	7.900	--
	05-10-82	1210	80.00	--	--	--	--	--	--
	05-10-82	1230	76.00	--	--	472.0	--	7.900	--
	05-10-82	1255	74.00	--	--	483.0	--	7.900	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)
12-20-81	--	--	--	--	49.00	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	4.000	<4.000	2.900	--	--	--	--	--
03-07-82	--	7.000	<4.000	3.700	--	--	--	--	--
03-07-82	--	11.00	<4.000	7.400	--	--	--	--	--
03-07-82	--	17.00	4.000	15.00	--	--	--	--	--
03-07-82	532.0	29.00	7.000	23.00	--	--	--	--	--
03-08-82	--	19.00	<4.000	19.00	--	--	--	--	--
03-08-82	--	15.00	<4.000	12.00	--	--	--	--	--
03-08-82	450.0	11.00	<4.000	12.00	--	--	--	--	--
03-08-82	--	10.00	<4.000	12.00	--	--	--	--	--
03-08-82	--	7.000	<4.000	5.400	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	8.000	<4.000	5.300	--	--	--	--	--
03-09-82	--	21.00	<4.000	5.000	--	--	--	--	--
03-09-82	--	453.0	55.00	260.0	--	--	--	--	--
03-09-82	832.0	365.0	40.00	240.0	--	--	--	--	--
03-09-82	--	222.0	33.00	160.0	--	--	--	--	--
03-10-82	--	124.0	17.00	75.00	--	--	--	--	--
03-10-82	568.0	72.00	13.00	40.00	--	--	--	--	--
03-10-82	--	43.00	8.000	26.00	--	--	--	--	--
03-10-82	--	25.00	4.000	15.00	--	--	--	--	--
03-10-82	--	17.00	<4.000	10.00	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--
04-28-82	444.0	7.000	<4.000	3.400	--	--	--	--	--
04-28-82	--	--	--	--	4.000	--	--	--	--
05-10-82	--	639.0	69.00	250.0	--	--	--	--	--
05-10-82	461.0	145.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	604.0	32.00	44.00	--	65.00
05-10-82	819.0	512.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	1200.	856.0	--	--	--	--	--	--	--
05-10-82	1150.	850.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	892.0	42.00	53.00	60.00	72.00
05-10-82	910.0	564.0	--	--	--	--	--	--	--
05-10-82	724.0	384.0	--	--	--	--	--	--	--
05-10-82	588.0	272.0	--	--	--	--	--	--	--
05-10-82	--	--	--	--	245.0	--	--	--	--
05-10-82	559.0	240.0	--	--	--	--	--	--	--
05-10-82	581.0	188.0	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	10.00	11.60	--	--	--
03-07-82	--	--	--	--	10.00	10.40	--	--	--
03-07-82	--	--	--	--	12.00	13.30	--	--	--
03-07-82	--	--	--	--	32.00	45.10	--	--	--
03-07-82	--	--	--	--	59.00	92.30	--	--	--
03-08-82	--	--	--	--	60.00	88.60	--	--	--
03-08-82	--	--	--	--	39.00	56.80	--	--	--
03-08-82	--	--	--	--	28.00	34.40	--	--	--
03-08-82	--	--	--	--	18.00	25.20	--	--	--
03-08-82	--	--	--	--	15.00	19.60	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	9.600	10.20	--	--	--
03-09-82	--	--	--	--	10.00	10.00	--	--	--
03-09-82	--	--	--	--	72.00	104.0	--	--	--
03-09-82	--	--	--	--	39.00	55.00	--	--	--
03-09-82	--	--	--	--	39.00	56.80	--	--	--
03-10-82	--	--	--	--	31.00	42.00	--	--	--
03-10-82	--	--	--	--	20.00	27.60	--	--	--
03-10-82	--	--	--	--	16.00	19.20	--	--	--
03-10-82	--	--	--	--	12.00	14.30	--	--	--
03-10-82	--	--	--	--	11.00	11.60	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--
04-28-82	--	<5.000	--	9.100	--	8.800	--	--	<0.030
04-28-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	110.0	11.00	--	11.00	--	--	--
05-10-82	--	--	--	--	--	--	--	1.600	0.070
05-10-82	95.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	2.500	0.120
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	5.100	4.200	0.230
05-10-82	--	--	--	--	--	--	4.800	4.100	0.190
05-10-82	97.00	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	3.600	3.000	0.150
05-10-82	--	--	--	--	--	--	2.800	2.200	0.180
05-10-82	--	--	--	--	--	--	2.900	2.300	0.180
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	3.100	2.400	0.100
05-10-82	--	--	--	--	--	--	3.100	2.400	0.120

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
12-20-81	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--
03-10-82	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	<0.050	--	0.100	0.020	--	<10.00
04-28-82	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	K2000.	--
05-10-82	0.120	<0.020	--	1.700	<0.100	<0.100	0.160	--	38.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.190	<0.020	--	2.700	<0.100	0.100	0.340	--	98.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.400	0.040	0.450	4.600	0.490	0.520	0.580	--	320.0
05-10-82	0.270	0.030	0.320	4.400	0.350	0.370	0.550	--	240.0
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.300	0.040	0.250	3.300	0.290	0.330	0.480	--	170.0
05-10-82	0.280	0.030	0.250	2.500	0.280	0.310	0.330	--	100.0
05-10-82	0.210	0.030	0.380	2.500	0.410	0.420	0.240	--	56.00
05-10-82	--	--	--	--	--	--	--	--	--
05-10-82	0.230	0.030	0.430	2.600	0.460	0.480	0.260	--	51.00
05-10-82	0.220	0.020	0.470	2.600	0.490	0.510	0.200	--	14.00

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
5	05-13-82	--	--	--	--	--	--	--	--	--	--
	05-13-82	0935	112.0	10.00	343.0	--	7.700	--	8.500	--	--
	05-17-82	1635	--	--	--	--	--	--	--	--	--
	05-19-82	2100	--	--	--	495.0	--	7.900	--	664.0	314.0
	05-19-82	2115	194.0	--	--	560.0	--	--	--	--	--
	05-19-82	2120	217.0	16.00	531.0	--	7.700	--	7.600	--	--
	05-19-82	2345	147.0	--	--	450.0	--	--	--	--	--
	05-20-82	0810	153.0	--	--	--	--	--	--	--	--
	05-20-82	0815	153.0	12.50	470.0	--	7.500	--	7.800	--	--
	05-20-82	1600	84.00	--	--	--	--	--	--	--	--
	05-20-82	1605	84.00	13.00	588.0	--	7.700	--	7.800	--	--
	05-28-82	--	--	--	--	--	--	--	--	--	--
	06-15-82	230	--	--	--	506.0	--	7.900	--	487.0	166.0
	06-15-82	0820	65.00	15.50	494.0	--	7.400	--	--	--	--
	06-16-82	--	--	--	--	--	--	--	--	--	--
	06-16-82	1540	90.00	--	--	--	--	--	--	--	--
	06-16-82	1540	--	--	--	458.0	--	8.100	--	866.0	548.0
	06-16-82	1710	83.00	20.00	516.0	--	7.800	--	7.400	--	--
	06-16-82	1740	90.00	--	--	535.0	--	--	--	--	--
	06-16-82	1920	288.0	--	--	--	--	--	--	--	--
	06-23-82	1150	--	--	--	574.0	--	8.300	--	406.0	7.000
	06-23-82	1155	44.00	--	--	--	--	--	--	--	--
	06-23-82	1200	44.00	21.50	546.0	--	8.100	--	12.10	--	--
	07-08-82	1540	--	--	--	417.0	--	8.200	--	360.0	103.0
6	05-21-80	0945	E0.020	18.50	2600.	2270.	6.700	7.800	5.700	2420.	15.00
--	05-21-80	0950	E0.020	--	--	--	--	--	--	--	--
	06-03-80	1540	E0.050	24.00	2280.	--	6.600	7.400	3.600	2080.	28.00
	06-03-80	1545	E0.050	--	--	--	--	--	--	--	--
	06-14-80	1810	174.0	18.00	317.0	--	7.400	--	6.600	--	--
	06-14-80	1810	--	--	--	--	--	8.000	--	10500.	10700.
	06-14-80	1835	77.00	18.00	288.0	--	7.300	--	7.200	--	--
	06-18-80	--	--	--	--	--	--	--	--	--	--
	06-18-80	2015	25.00	20.00	866.0	--	7.500	--	6.300	--	--
	06-18-80	2030	23.00	20.00	305.0	--	7.100	--	6.700	--	--
	07-09-80	0850	E0.020	19.50	2300.	2300.	6.600	7.700	5.800	2140.	18.00
	07-09-80	0855	E0.020	--	--	--	--	--	--	--	--
	07-09-80	1220	--	--	--	--	--	--	--	--	--
	07-12-80	1815	52.00	25.00	710.0	--	7.300	--	6.100	--	--
	07-12-80	1815	--	--	--	449.0	--	7.800	--	6240.	6120.

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE VOLATILE, SUSPENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	TURBIDITY (FTU) (00076)	SEDIMENT, SUSPENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	32.00	--	140.0	--	--	--	--	--	--	--	52.00
05-19-82	--	--	--	997.0	34.10	43.20	52.20	68.90	94.00	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	536.0	56.10	68.60	--	88.00	--	--	--
05-20-82	--	--	--	170.0	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	129.0	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--	--
06-15-82	20.00	--	80.00	--	--	--	--	--	--	26.00	--
06-15-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	36.00	--	--	--	--	--	--	--
06-16-82	60.00	--	250.0	--	--	--	--	--	--	--	65.00
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	92.60	--	--	--	--	--	--	--
06-16-82	--	--	--	745.0	43.00	50.00	58.00	71.00	96.00	--	--
06-23-82	<4.000	--	2.400	--	--	--	--	--	--	6.000	--
06-23-82	--	--	--	11.00	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--	--
07-08-82	13.00	--	28.00	--	--	--	--	--	--	25.00	--
05-21-80	--	--	13.00	--	--	--	--	--	--	20.00	--
05-21-80	--	--	--	188.0	--	--	--	--	--	--	--
06-03-80	<4.000	--	2.800	--	--	--	--	--	--	--	--
06-03-80	--	--	--	302.0	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-14-80	798.0	--	3300.	--	--	--	--	--	--	--	341.0
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	2420.	40.70	49.20	--	61.60	--	--	--
06-18-80	--	--	--	925.0	--	--	--	--	--	--	--
07-09-80	5.000	--	7.200	--	--	--	--	--	--	27.00	--
07-09-80	--	--	--	43.00	--	--	--	--	--	--	--
07-09-80	--	<1.000	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	11400.	42.20	46.10	--	70.70	--	--	--
07-12-80	462.0	--	1600.	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	10.30	--	--	10.20	0.050	0.890	0.570	0.320	--	K13000.	56.00
05-19-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--	--
06-15-82	10.00	--	--	8.600	0.050	0.590	0.160	0.150	--	K2500.	36.00
06-15-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	8.400	--	--	7.300	0.030	1.100	0.170	0.470	--	K6000.	98.00
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-23-82	8.500	--	--	7.800	0.030	0.100	0.060	0.020	--	K120.0	<10.00
06-23-82	--	--	--	--	--	--	--	--	--	--	--
06-23-82	--	--	--	--	--	--	--	--	--	--	--
07-08-82	5.100	--	--	3.500	0.050	0.450	0.060	0.110	--	K6300.	31.00
05-21-80	--	--	--	64.00	0.700	--	--	--	12.00	--	--
05-21-80	--	--	--	--	--	--	--	--	--	--	--
06-03-80	104.0	268.0	--	64.00	--	--	--	0.920	--	K1020000	<10.00
06-03-80	--	--	--	--	--	--	--	--	--	--	--
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-14-80	12.40	56.00	116.0	7.000	--	--	0.640	6.420	--	27000.	2000.
06-14-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	--	--	--
06-18-80	--	--	--	--	--	--	--	--	43.00	--	--
07-09-80	112.0	219.0	1030.	65.00	0.550	1.300	0.270	0.030	15.00	K6700.	<10.00
07-09-80	--	--	--	--	--	--	--	--	--	--	--
07-09-80	--	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	140.0	--	--
07-12-80	14.00	66.00	156.0	8.800	1.000	9.400	0.810	2.860	--	K197000.	460.0

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
6	07-12-80	1820	--	--	--	--	--	--	--	--
	07-12-80	1850	72.00	25.00	256.0	--	7.500	--	6.500	--
	07-20-80	850	--	--	--	234.0	--	8.000	--	2040.
	07-20-80	0850	30.00	19.00	221.0	--	7.000	--	6.900	--
	07-20-80	0855	23.00	--	--	--	--	--	--	--
	07-20-80	0900	15.00	19.00	--	--	--	--	--	--
	07-20-80	0920	10.00	18.50	246.0	--	7.300	--	7.000	--
	07-25-80	1910	4.400	20.00	404.0	--	6.700	--	6.500	--
	07-25-80	1910	--	--	--	289.0	--	8.000	--	810.0
	07-25-80	1915	20.00	--	--	--	--	--	--	--
	07-25-80	1930	33.00	19.50	--	--	--	--	6.800	--
	07-25-80	2015	14.00	19.00	217.0	--	7.000	--	7.200	--
	07-25-80	2020	12.00	--	--	--	--	--	--	--
	08-20-80	--	--	--	--	--	--	--	--	--
	08-20-80	820	--	--	--	310.0	--	7.300	--	3860.
	08-20-80	0820	2.300	17.00	138.0	--	7.700	--	8.300	--
	08-20-80	0830	20.00	--	--	--	--	--	--	--
	08-20-80	0835	25.00	16.00	280.0	--	7.300	--	8.400	--
	08-20-80	1005	3.500	16.50	216.0	--	7.400	--	7.900	--
	09-29-80	1225	E0.010	16.00	2610.	2780.	6.600	7.300	2.100	2440.
	10-15-80	402	--	--	--	--	--	--	--	--
	10-15-80	410	--	--	--	170.0	--	8.300	--	1350.
	10-15-80	0410	63.00	9.000	135.0	--	7.900	--	8.400	--
	10-15-80	0415	70.00	--	--	--	--	--	--	--
	10-15-80	0735	57.00	7.500	143.0	--	7.700	--	9.000	--
	10-15-80	0736	57.00	--	--	--	--	--	--	--
	10-15-80	1044	30.00	--	--	--	--	--	--	--
	10-15-80	1045	30.00	3.000	176.0	--	7.500	--	9.800	--
	02-18-81	1325	E0.030	4.000	2620.	2450.	7.800	7.400	7.000	2490.
	04-03-81	0820	E0.100	6.500	--	1120.	--	7.500	--	1120.
	04-03-81	0825	0.110	6.500	1140.	--	7.000	--	--	--
	04-21-81	1600	--	--	--	--	--	--	--	--
	04-21-81	1603	0.900	--	--	--	--	--	--	--
	04-21-81	1610	1.600	--	--	--	--	--	--	--
	04-21-81	1623	2.400	--	--	--	--	--	--	--
	04-21-81	1626	2.700	13.50	1104.	--	--	--	--	--
	04-21-81	1630	2.900	--	--	--	--	--	--	--
	04-21-81	1644	23.20	--	--	--	--	--	--	--
	04-21-81	1700	24.00	--	--	--	--	--	--	--
	04-21-81	1704	22.00	14.50	596.0	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)
07-12-80	--	--	6.000	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	5090.	57.10	58.30	80.70	--	--	--
07-20-80	1770.	185.0	--	550.0	--	--	--	--	--	127.0	6.200
07-20-80	--	--	11.00	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	2320.	62.10	66.60	80.00	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	1230.	64.30	70.40	84.70	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	645.0	108.0	--	260.0	--	--	--	--	--	127.0	7.800
07-25-80	--	--	6.000	--	2970.	52.10	58.80	73.90	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	941.0	70.50	79.00	84.70	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	3700.	330.0	--	800.0	--	--	--	--	--	165.0	9.300
08-20-80	--	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	1320.	76.40	80.00	88.50	--	--	--
08-20-80	--	--	--	--	4300.	44.50	50.10	70.20	--	--	--
08-20-80	--	--	--	--	516.0	75.90	82.60	--	--	--	--
09-29-80	9.000	5.000	<1.000	9.800	--	--	--	--	16.00	--	131.0
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	1120.	100.0	--	400.0	--	--	--	--	--	92.00	3.000
10-15-80	--	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	3300.	31.00	40.00	59.00	--	--	--
10-15-80	--	--	<1.000	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	1790.	42.20	54.00	76.00	--	--	--
10-15-80	--	--	--	--	1110.	75.00	78.00	80.20	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--	--
02-18-81	7.000	<4.000	<1.000	8.100	--	--	--	--	21.00	--	174.0
04-03-81	147.0	38.00	8.000	250.0	--	--	--	--	--	283.0	80.00
04-03-81	--	--	--	--	243.0	81.10	91.50	95.50	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	3360.	43.30	67.20	90.00	--	--	--
04-21-81	--	--	8.000	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	315.0	37.30	51.20	84.00	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	11500.	41.00	53.00	84.30	--	--	--
04-21-81	--	--	4.000	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
07-12-80	--	--	--	--	--	--	--	--	--	--
07-12-80	--	--	--	--	--	--	--	--	--	--
07-20-80	65.00	55.40	2.900	0.090	2.700	0.460	1.150	--	K94000.	210.0
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-20-80	--	--	--	--	2.400	--	--	37.00	--	--
07-20-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	60.00	56.00	6.600	0.090	3.100	0.780	0.490	--	47000.	230.0
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	1.100	--	--	72.00	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
07-25-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	11.00	--	--	36.00	--	--
08-20-80	90.00	84.10	7.200	0.590	3.900	0.350	1.760	--	K94000.	280.0
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
08-20-80	--	--	--	--	--	--	--	--	--	--
09-29-80	256.0	1380.	106.0	0.600	0.920	0.240	0.020	14.00	--	<10.00
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	54.00	49.00	3.600	0.400	2.200	0.620	0.720	--	--	130.0
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
10-15-80	--	--	--	--	--	--	--	--	--	--
02-18-81	217.0	1270.	132.0	0.580	0.870	1.100	0.020	40.00	K1900.	<10.00
04-03-81	121.0	337.0	65.00	0.540	2.600	1.340	0.350	63.00	K400.0	560.0
04-03-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	72.00	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	61.00	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
6	04-21-81	1714	17.00	14.50	631.0	--	7.600	--	7.300	--
	04-21-81	1735	8.200	--	266.0	--	--	--	--	--
	04-21-81	1740	6.900	14.00	270.0	--	--	--	--	--
	04-21-81	1745	5.200	12.00	287.0	--	--	--	--	--
	04-29-81	1620	0.010	18.50	2630.	2680.	7.000	7.900	12.20	2510.
	05-02-81	--	--	--	--	--	--	--	--	--
	05-02-81	1730	11.00	--	--	--	--	7.720	--	--
	05-02-81	1740	42.00	--	--	1010.	--	7.720	--	17700.
	05-02-81	1755	29.00	--	--	702.0	--	7.300	--	9580.
	05-02-81	1810	14.00	--	--	668.0	--	7.730	--	5850.
	05-02-81	1855	11.00	--	--	639.0	--	7.730	--	2480.
	05-02-81	1905	29.00	--	--	642.0	--	7.720	--	5740.
	05-02-81	1920	35.00	--	--	459.0	--	7.800	--	5650.
	05-02-81	1935	25.00	--	--	417.0	--	7.810	--	4260.
	05-02-81	1950	16.00	--	--	424.0	--	7.820	--	3050.
	05-06-81	1440	9.300	--	--	--	--	--	--	--
	05-06-81	1443	9.300	14.00	283.0	--	7.600	--	8.500	--
	05-06-81	1720	23.00	11.50	350.0	--	7.500	--	8.500	--
	05-06-81	2040	1.500	10.50	449.0	--	7.500	--	9.600	--
	05-07-81	--	--	--	--	--	--	--	--	--
	05-07-81	850	--	--	--	275.0	--	8.210	--	2440.
	05-07-81	0030	3.100	10.00	370.0	--	7.500	--	9.900	--
	05-12-81	2330	--	--	--	308.0	--	8.120	--	1180.
	05-16-81	2115	--	--	--	270.0	--	8.000	--	1990.
	05-17-81	0840	61.00	--	--	--	--	--	--	--
	05-17-81	0850	61.00	--	--	--	--	--	--	--
	05-17-81	0910	69.00	9.500	210.0	--	8.150	--	--	--
	05-17-81	0922	76.00	--	--	--	--	--	--	--
	05-17-81	1025	71.00	--	--	--	--	--	--	--
	05-17-81	1035	69.00	9.500	210.0	--	8.200	--	--	--
	05-17-81	1110	58.00	--	--	--	--	--	--	--
	05-17-81	1200	62.00	--	--	--	--	--	--	--
	05-17-81	1205	61.00	10.00	225.0	--	8.150	--	--	--
	05-17-81	1350	47.00	--	--	--	--	--	--	--
	05-17-81	1400	46.00	--	--	--	--	--	--	--
	05-17-81	1405	46.00	--	--	--	--	--	--	--
	05-17-81	1408	46.00	10.00	268.0	--	8.000	--	--	--
	05-17-81	1820	37.00	10.00	--	--	--	--	--	--
	05-17-81	1826	34.00	10.00	290.0	--	7.850	--	--	--
	05-17-81	1835	35.00	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	5100.	57.50	70.20	92.50	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--	--
04-29-81	20.00	5.000	1.000	12.00	117.0	--	--	--	32.00	140.0	266.0
05-02-81	--	--	--	--	--	--	--	--	--	--	--
05-02-81	--	--	--	--	--	--	--	--	--	--	--
05-02-81	13300.	1120.	--	4900.	--	--	--	--	1150.	46.00	125.0
05-02-81	8360.	725.0	--	3400.	--	--	--	--	716.0	32.00	142.0
05-02-81	5200.	480.0	--	2400.	--	--	--	--	593.0	33.00	121.0
05-02-81	1920.	200.0	--	1100.	--	--	--	--	366.0	32.50	133.0
05-02-81	4710.	400.0	--	1800.	--	--	--	--	445.0	34.50	140.0
05-02-81	4860.	385.0	--	2000.	--	--	--	--	366.0	23.00	111.0
05-02-81	3680.	320.0	--	1500.	--	--	--	--	222.0	20.50	100.0
05-02-81	2620.	245.0	--	1200.	--	--	--	--	217.0	21.00	98.00
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-07-81	1940.	185.0	--	900.0	--	--	--	--	154.0	14.00	91.00
05-07-81	--	--	--	--	--	--	--	--	--	--	--
05-12-81	812.0	90.00	--	390.0	--	--	--	--	130.0	14.00	69.00
05-16-81	1480.	122.0	--	550.0	--	--	--	--	110.0	7.630	67.00
05-17-81	--	--	4.000	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	3580.	28.40	35.50	49.00	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	4610.	38.20	48.00	68.00	--	--	--
05-17-81	--	--	--	--	2950.	37.50	50.00	70.00	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	1970.	45.40	54.00	76.00	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	1870.	46.00	55.00	70.00	--	--	--
05-17-81	--	--	4.000	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	1620.	37.00	47.00	70.00	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-21-81	--	--	--	--	--	--	--	--	--	--
04-29-81	1330.	82.40	0.280	1.000	0.180	0.070	--	5500.	--	<10.00
05-02-81	--	--	--	--	--	--	--	--	--	--
05-02-81	--	--	--	--	--	--	--	--	--	--
05-02-81	398.0	32.50	0.770	2.600	0.930	3.550	--	--	--	2440.
05-02-81	244.0	29.00	0.780	1.700	1.250	5.580	--	--	--	1730.
05-02-81	228.0	32.50	0.830	10.50	2.000	4.030	--	--	--	1170.
05-02-81	192.0	40.00	0.800	5.500	1.330	1.260	--	--	--	560.0
05-02-81	148.0	38.10	0.760	11.10	1.600	--	--	--	--	880.0
05-02-81	92.40	23.00	0.500	11.00	0.780	--	--	--	--	680.0
05-02-81	81.00	20.10	0.460	6.600	0.700	0.540	--	--	--	500.0
05-02-81	85.00	18.50	0.440	7.200	0.630	1.450	--	--	--	440.0
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-06-81	--	--	--	--	--	--	--	--	--	--
05-07-81	--	--	--	--	--	--	--	--	--	--
05-07-81	36.00	14.00	0.070	3.700	0.320	0.160	--	K9600.	<10.00	320.0
05-07-81	--	--	--	--	--	--	--	--	--	--
05-12-81	52.00	11.30	0.170	--	0.430	0.530	--	K9100.	<10.00	80.00
05-16-81	39.20	6.100	0.150	3.000	0.410	1.040	--	K10000.	<10.00	80.00
05-17-81	--	--	--	--	--	--	8.500	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	9.300	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	23.00	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	24.00	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)
6	05-17-81	2120	22.00	8.500	--	--	--	--	--
	05-17-81	2128	20.00	8.500	350.0	--	7.800	--	--
	05-18-81	0920	0.760	10.50	1200.	--	7.600	--	--
	05-22-81	2120	--	--	--	316.0	--	7.820	--
	05-23-81	0845	8.000	12.00	--	--	--	--	--
	05-23-81	0846	6.700	12.00	314.0	--	7.500	--	8.900
	05-23-81	1045	3.200	12.00	461.0	--	7.400	--	8.800
	06-03-81	1930	--	--	--	368.0	--	8.200	--
	06-03-81	1950	79.00	--	--	--	--	--	--
	06-03-81	2000	65.00	--	--	--	--	--	--
	06-03-81	2015	25.00	20.50	--	--	--	--	--
	06-03-81	2021	17.30	20.50	302.0	--	7.700	--	5.800
	06-08-81	2340	12.50	--	890.0	--	--	--	--
	06-09-81	0010	29.20	--	254.0	--	--	--	--
	06-09-81	0040	18.00	--	198.0	--	--	--	--
	06-09-81	0110	29.20	--	193.0	--	--	--	--
	06-09-81	0140	29.20	--	172.0	--	--	--	--
	06-09-81	0210	18.00	--	188.0	--	--	--	--
	06-09-81	0240	14.00	--	209.0	--	--	--	--
	06-09-81	0310	13.10	--	214.0	--	--	--	--
	06-09-81	0340	13.10	--	205.0	--	--	--	--
	06-09-81	0410	12.00	--	212.0	--	--	--	--
	06-09-81	0555	12.00	--	252.0	--	--	--	--
	06-09-81	0750	11.30	--	252.0	--	--	--	--
	06-09-81	0815	29.00	--	202.0	--	--	--	--
	06-09-81	0845	20.40	--	166.0	--	--	--	--
	06-09-81	0915	12.20	--	208.0	--	--	--	--
	06-24-81	1300	0.010	18.50	--	2530.	--	7.200	--
	06-24-81	1304	0.001	18.60	239.0	--	6.600	--	2.200
	07-01-81	2240	--	--	--	325.0	--	8.000	--
	07-01-81	2325	57.00	--	--	--	--	--	--
	07-02-81	0020	8.700	--	--	--	--	--	--
	07-13-81	--	--	--	--	--	--	--	--
	07-13-81	250	--	--	--	346.0	--	7.800	--
	07-13-81	0250	16.00	--	--	861.0	--	7.100	--
	07-13-81	0300	23.00	--	--	574.0	--	6.700	--
	07-13-81	0305	33.00	--	--	452.0	--	6.600	--
	07-13-81	0310	48.00	--	--	368.0	--	7.000	--
	07-13-81	0340	36.00	--	--	247.0	--	6.900	--
	07-13-81	0357	22.00	20.50	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)
05-17-81	--	--	--	--	--	1214.	41.00	47.00	67.00	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--
05-22-81	1280.	992.0	100.0	--	350.0	--	--	--	--	--
05-23-81	--	--	--	--	--	203.0	72.00	79.00	87.00	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-03-81	4940.	4220.	360.0	--	1500.	--	--	--	--	--
06-03-81	--	--	--	--	--	7820.	20.00	31.00	46.00	--
06-03-81	--	--	--	2.000	--	--	--	--	--	--
06-03-81	--	--	--	--	--	4580.	41.00	55.00	83.00	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-08-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-24-81	2300.	10.00	4.000	<1.000	4.900	50.00	--	--	87.00	22.00
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	3080.	2780.	235.0	--	900.0	--	--	--	--	--
07-01-81	--	--	--	--	--	3520.	47.00	58.00	78.00	--
07-02-81	--	--	--	--	--	905.0	67.00	76.00	84.00	--
07-13-81	--	--	--	--	--	--	72.00	--	--	--
07-13-81	2090.	1680.	162.0	--	550.0	--	--	--	--	--
07-13-81	--	876.0	--	--	--	--	--	--	--	--
07-13-81	--	1300.	--	--	--	--	--	--	--	--
07-13-81	--	2020.	--	--	--	--	--	--	--	--
07-13-81	--	2410.	--	--	--	--	--	--	--	--
07-13-81	--	1270.	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	1410.	57.00	67.00	83.00	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)
05-17-81	--	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--	--
05-22-81	157.0	10.30	78.10	63.00	9.900	--	--	<0.030	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--	--
06-03-81	350.0	12.00	93.00	85.00	7.500	--	--	0.210	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--	--
06-08-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--	--
06-24-81	--	117.0	221.0	1270.	68.40	--	--	0.800	--	--
06-24-81	--	--	--	--	--	--	--	--	--	--
07-01-81	227.0	8.200	82.00	69.40	6.200	--	--	0.480	--	--
07-01-81	--	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--
07-13-81	179.0	9.100	66.00	77.20	6.000	--	--	0.190	--	--
07-13-81	--	--	--	--	--	8.600	6.300	0.290	0.360	0.130
07-13-81	--	--	--	--	--	10.00	8.100	0.280	0.150	0.180
07-13-81	--	--	--	--	--	4.000	2.400	0.260	0.150	0.170
07-13-81	--	--	--	--	--	8.500	7.300	0.220	0.140	0.150
07-13-81	--	--	--	--	--	3.900	3.100	0.160	0.200	0.120
07-13-81	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
05-17-81	--	--	--	--	--	--	--	--	--
05-17-81	--	--	--	--	--	--	--	--	--
05-18-81	--	--	--	--	--	--	--	--	--
05-22-81	--	2.000	--	0.620	0.770	--	K16000.	<10.00	90.00
05-23-81	--	1.200	--	--	--	14.00	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
05-23-81	--	--	--	--	--	--	--	--	--
06-03-81	--	7.600	--	--	3.300	--	K15000.	--	--
06-03-81	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--
06-03-81	--	--	--	--	--	--	--	--	--
06-08-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-09-81	--	--	--	--	--	--	--	--	--
06-24-81	--	1.400	--	0.530	0.040	7.400	2800.	--	--
06-24-81	--	--	--	--	--	--	--	--	--
07-01-81	--	6.800	--	0.600	2.110	--	41000.	<10.00	--
07-01-81	--	--	--	--	--	--	--	--	--
07-02-81	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--
07-13-81	--	3.700	--	0.840	1.420	--	58000.	<10.00	160.0
07-13-81	1.800	6.700	1.900	1.800	0.780	--	--	5.000	170.0
07-13-81	1.800	8.200	2.000	2.000	0.390	--	--	2.000	230.0
07-13-81	1.300	2.500	1.500	1.400	0.590	--	--	2.000	290.0
07-13-81	0.950	7.400	1.100	1.100	1.100	--	--	3.000	320.0
07-13-81	0.500	3.300	0.620	0.600	0.770	--	--	1.000	190.0
07-13-81	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
6	07-13-81	0400	21.00	--	--	255.0	--	7.000	--	--
	07-13-81	0405	18.00	--	--	--	--	--	--	--
	07-13-81	0410	15.00	20.50	233.0	--	7.500	--	6.500	--
	07-13-81	0430	12.00	--	--	269.0	--	7.100	--	--
	07-13-81	0518	4.900	--	--	--	--	--	--	--
	07-13-81	0520	46.00	--	--	--	--	--	--	--
	07-16-81	--	--	--	--	--	--	--	--	--
	07-18-81	1905	10.00	--	--	--	--	--	--	--
	07-18-81	1905	--	--	--	--	--	--	--	--
	07-18-81	1910	12.00	--	--	162.0	--	--	--	--
	07-18-81	1915	47.00	--	--	361.0	--	--	--	--
	07-18-81	1930	132.0	--	--	264.0	--	--	--	--
	07-18-81	1945	117.0	--	--	241.0	--	--	--	--
	07-18-81	1955	74.00	--	--	254.0	--	--	--	--
	07-18-81	2020	45.00	--	--	257.0	--	--	--	--
	07-18-81	2040	25.00	--	--	281.0	--	--	--	--
	07-18-81	2105	13.00	--	--	310.0	--	--	--	--
	07-23-81	1845	--	--	--	235.0	--	8.300	--	5370.
	07-23-81	1923	71.00	--	--	--	--	--	--	--
	07-23-81	1925	66.00	--	--	--	--	--	--	--
	07-23-81	1926	60.00	--	--	--	--	--	--	--
	07-25-81	105	--	--	--	226.0	--	8.100	--	4020.
	07-25-81	0805	111.0	--	--	--	--	--	--	--
	07-25-81	0907	67.00	17.00	206.0	--	7.300	--	8.000	--
	07-25-81	1105	18.00	18.00	319.0	319.0	7.300	--	7.000	--
	08-11-81	0855	--	--	--	1810.	--	7.500	--	--
	08-27-81	1450	--	--	--	--	--	--	--	--
	10-05-81	--	--	--	--	--	--	--	--	--
	10-05-81	430	--	--	--	--	--	--	--	--
	10-05-81	0430	10.00	--	--	--	--	--	--	--
	10-05-81	0455	9.500	10.50	164.0	--	--	--	8.400	--
	10-05-81	0630	3.600	--	--	--	--	--	--	--
	10-05-81	0635	3.600	10.50	227.0	--	8.000	--	7.900	--
	10-05-81	0830	2.000	--	--	--	--	--	--	--
	12-20-81	--	--	--	--	2340.	--	7.300	--	--
	12-20-81	1330	0.850	--	--	--	--	--	--	--
	12-20-81	1330	--	--	--	2310.	--	7.600	--	2010.
	12-20-81	1332	0.900	--	--	--	--	--	--	--
	12-20-81	1334	1.500	0.500	2190.	--	7.000	--	8.800	--
	12-20-81	1540	5.400	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
07-13-81	920.0	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	1.000	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	460.0	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	391.0	72.00	80.00	86.00	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	4620.	340.0	--	1300.	--	--	--	--	--	322.0	--
07-18-81	7780.	580.0	--	2300.	--	--	--	--	--	393.0	--
07-18-81	7630.	620.0	--	2200.	--	--	--	--	--	447.0	--
07-18-81	5030.	410.0	--	1900.	--	--	--	--	--	319.0	--
07-18-81	3890.	330.0	--	1400.	--	--	--	--	--	240.0	--
07-18-81	2410.	200.0	--	1000.	--	--	--	--	--	151.0	--
07-18-81	1830.	148.0	--	850.0	--	--	--	--	--	113.0	--
07-18-81	1350.	120.0	--	700.0	--	--	--	--	--	99.00	--
07-23-81	4300.	360.0	--	1400.	--	--	--	--	--	257.0	--
07-23-81	--	--	--	--	5310.	45.00	59.00	81.00	--	--	--
07-23-81	--	--	5.000	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	3300.	255.0	--	1200.	--	--	--	--	--	149.0	--
07-25-81	--	--	6.000	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
08-11-81	4.000	<4.000	--	3.200	--	--	--	--	27.00	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	96.00
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	520.0	115.0	--	450.0	--	--	--	--	--	273.0	--
12-20-81	--	--	7.000	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)
07-13-81	--	--	--	--	--	--	--	--	2.300	1.500	0.140
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	2.600	1.900	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-23-81	--	6.000	--	--	67.00	37.00	3.500	--	--	--	0.210
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	--	4.400	--	--	56.00	22.00	3.600	--	--	--	0.140
07-25-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
08-11-81	--	81.00	--	--	--	--	38.10	--	--	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	29.00	--	290.0	9.300	--	270.0	520.0	3.900	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	352.0	--	--	92.00	286.0	537.0	--	--	--	0.380
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
07-13-81	0.160	0.070	0.490	1.700	0.560	0.600	0.610	--	--	2.000	130.0
07-13-81	--	--	--	--	--	--	--	26.00	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	0.150	0.100	0.520	2.000	0.620	--	0.470	--	--	1.000	65.00
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-13-81	--	--	--	--	--	--	--	--	--	--	--
07-16-81	--	--	--	--	--	--	--	--	--	<0.010	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	--	--	--	--	--
07-18-81	--	--	--	--	--	--	3.200	--	--	--	--
07-18-81	--	--	--	--	--	--	4.340	--	--	--	--
07-18-81	--	--	--	--	--	--	5.500	--	--	--	--
07-18-81	--	--	--	--	--	--	7.550	--	--	--	--
07-18-81	--	--	--	--	--	--	3.260	--	--	--	--
07-18-81	--	--	--	--	--	--	1.960	--	--	--	--
07-18-81	--	--	--	--	--	--	1.590	--	--	--	--
07-18-81	--	--	--	--	--	--	1.110	--	--	--	--
07-23-81	--	--	--	6.100	--	0.620	3.300	--	27000.	<10.00	660.0
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	--	--	--	--
07-23-81	--	--	--	--	--	--	--	77.00	--	--	--
07-25-81	--	--	--	5.800	--	0.380	3.130	--	37000.	<10.00	260.0
07-25-81	--	--	--	--	--	--	--	14.00	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
07-25-81	--	--	--	--	--	--	--	--	--	--	--
08-11-81	--	--	--	--	--	--	--	--	K3950.	--	--
08-27-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
10-05-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	2.800	--	--	0.560	--	5300.	--	735.0
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)
6	12-20-81	1545	5.400	0.500	2300.	--	7.800	--	8.900	--
	12-20-81	1810	0.560	--	--	--	--	--	--	--
	12-20-81	1814	0.530	0.000	2300.	--	7.400	--	8.800	--
	03-07-82	--	--	--	--	--	--	--	--	--
	03-07-82	1040	0.100	1.000	2770.	--	6.700	--	--	--
	03-07-82	1335	0.200	0.500	2760.	--	7.100	--	--	--
	03-07-82	1635	1.100	0.500	3220.	--	7.600	--	--	2390.
	03-07-82	1955	0.300	0.500	3190.	--	7.400	--	--	--
	03-07-82	2315	0.100	0.500	3290.	--	7.400	--	--	2160.
	03-08-82	1040	--	--	--	--	--	--	--	--
	03-08-82	1335	--	--	--	--	--	--	--	--
	03-08-82	1635	--	--	--	--	--	--	--	--
	03-08-82	1955	--	--	--	--	--	--	--	--
	03-08-82	2315	--	--	--	--	--	--	--	--
	03-09-82	--	--	--	--	--	--	--	--	--
	03-09-82	0925	0.050	1.000	2930.	--	6.900	--	9.200	--
	03-09-82	1255	12.00	0.500	1710.	--	8.000	--	12.50	2920.
	03-09-82	1605	7.700	1.500	660.0	--	7.700	--	12.20	--
	03-09-82	1855	1.200	1.000	840.0	--	7.600	--	11.90	1010.
	04-28-82	1025	0.020	--	--	--	--	--	--	--
	04-28-82	1035	0.020	9.500	2720.	2740.	6.800	7.700	11.80	2520.
	05-10-82	515	--	--	--	327.0	--	7.800	--	--
	05-10-82	0515	23.00	--	--	911.0	--	7.400	--	636.0
	05-10-82	0520	44.00	--	--	658.0	--	7.300	--	10300.
	05-10-82	0550	42.00	12.00	274.0	--	7.800	--	9.800	--
	05-10-82	0620	52.00	--	--	291.0	--	7.300	--	3490.
	05-10-82	0720	81.00	--	--	229.0	--	7.700	--	2980.
	05-10-82	0810	54.00	--	--	--	--	--	--	--
	05-10-82	0820	39.00	--	--	261.0	--	7.500	--	2570.
	05-10-82	0850	15.00	--	--	331.0	--	7.400	--	1890.
	05-10-82	0905	10.00	--	--	--	--	--	--	--
	05-10-82	0925	7.400	--	--	397.0	--	7.400	--	1360.
	05-13-82	--	--	--	--	--	--	--	--	--
	05-17-82	1540	--	--	--	--	--	--	--	--
	05-19-82	2000	--	--	--	353.0	--	7.800	--	1600.
	05-19-82	2030	106.0	--	--	400.0	--	--	--	--
	05-19-82	2035	97.00	16.00	239.0	--	6.900	--	8.100	--
	05-19-82	2315	30.00	--	--	400.0	--	--	--	--
	05-20-82	0835	55.00	--	--	340.0	--	--	--	--
	05-20-82	0845	56.00	12.00	279.0	--	7.500	--	8.300	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	TUR-BID-ITY (FTU) (00076)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	25.00	6.000	--	22.00	--	--	--	--	--	--
03-07-82	269.0	50.00	--	275.0	--	--	--	--	--	--
03-07-82	355.0	50.00	--	350.0	--	--	--	--	--	--
03-07-82	250.0	43.00	--	275.0	--	--	--	--	--	--
03-07-82	46.00	12.00	--	81.00	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	15.00	<4.000	--	6.000	--	--	--	--	--	--
03-09-82	1510.	164.0	--	800.0	--	--	--	--	--	--
03-09-82	981.0	108.0	--	600.0	--	--	--	--	--	--
03-09-82	390.0	56.00	--	370.0	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--
04-28-82	15.00	<4.000	10.00	6.800	7.000	--	--	--	--	--
05-10-82	3630.	310.0	12.00	1000.	--	--	--	--	--	--
05-10-82	7710.	--	--	--	--	--	--	--	--	--
05-10-82	10500.	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	4080.	57.00	61.00	71.00	80.00	95.00
05-10-82	4400.	--	--	--	--	--	--	--	--	--
05-10-82	1950.	--	--	--	3870.	52.00	62.00	66.00	77.00	92.00
05-10-82	--	--	--	--	2610.	61.00	65.00	69.00	76.00	91.00
05-10-82	1820.	--	--	--	--	--	--	--	--	--
05-10-82	1620.	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	1140.	62.00	71.00	82.00	88.00	99.00
05-10-82	920.0	--	--	--	--	--	--	--	--	--
05-13-82	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--
05-19-82	1320.	116.0	3.000	500.0	--	--	--	--	--	--
05-19-82	--	--	--	--	5380.	49.60	57.10	67.70	74.70	88.20
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	802.0	67.40	71.30	74.70	81.60	91.20
05-20-82	--	--	--	--	1090.	57.50	61.70	65.20	72.00	86.20
05-20-82	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA) (00929)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	227.0	--	--	--	288.0	--	--	--
03-07-82	--	--	305.0	--	--	--	467.0	--	--	--
03-07-82	--	--	464.0	--	--	--	797.0	--	--	--
03-07-82	--	--	492.0	--	--	--	849.0	--	--	--
03-07-82	--	--	530.0	--	--	--	770.0	--	--	--
03-08-82	--	--	--	227.0	--	--	--	--	--	--
03-08-82	--	--	--	305.0	--	--	--	--	--	--
03-08-82	--	--	--	464.0	--	--	--	--	--	--
03-08-82	--	--	--	492.0	--	--	--	--	--	--
03-08-82	--	--	--	530.0	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	280.0	--	--	404.0	--	--	--
03-09-82	--	--	--	295.0	--	--	459.0	--	--	--
03-09-82	--	--	--	83.00	--	--	113.0	--	--	--
03-09-82	--	--	--	87.00	--	--	121.0	--	--	--
04-28-82	--	--	--	--	--	--	--	--	--	--
04-28-82	19.00	--	153.0	--	220.0	1400.	82.00	--	--	0.330
05-10-82	--	249.0	14.00	--	70.00	87.00	8.600	--	--	--
05-10-82	--	--	--	--	--	--	--	8.900	8.200	0.300
05-10-82	--	--	--	--	--	--	--	8.100	6.900	0.370
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	4.300	3.300	0.190
05-10-82	--	--	--	--	--	--	--	3.000	2.300	0.190
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	3.800	3.100	0.180
05-10-82	--	--	--	--	--	--	--	2.900	2.100	0.190
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	--	--	--	--	--	--	--	3.400	2.500	0.200
05-13-82	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	87.00	8.100	--	70.00	99.00	6.600	--	--	0.130
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLIFORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
12-20-81	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-07-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-08-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
03-09-82	--	--	--	--	--	--	--	--	--	--
04-28-82	--	--	--	--	--	--	--	6.700	--	--
04-28-82	--	--	--	0.710	--	0.540	0.030	--	2800.	<10.00
05-10-82	--	--	--	--	--	--	--	--	K4000.	--
05-10-82	0.500	0.080	0.080	8.700	0.160	0.860	3.000	--	--	82.00
05-10-82	0.450	0.080	0.670	7.300	0.750	0.820	2.000	--	--	110.0
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	0.370	0.040	0.530	3.700	0.570	0.600	1.000	--	--	440.0
05-10-82	0.310	0.050	0.370	2.600	0.420	0.460	0.800	--	--	67.00
05-10-82	--	--	--	--	--	--	--	34.00	--	--
05-10-82	0.280	0.040	0.390	3.400	0.430	0.440	0.810	--	--	210.0
05-10-82	0.260	0.040	0.470	2.400	0.510	0.510	0.600	--	--	91.00
05-10-82	--	--	--	--	--	--	--	--	--	--
05-10-82	0.260	0.030	0.520	2.800	0.550	0.570	0.470	--	--	97.00
05-13-82	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	1.700	--	0.410	1.000	--	21000.	158.0
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-19-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

SITE NUMBER	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	PH (STAND-ARD UNITS) (00400)	PH LAB (STAND-ARD UNITS) (00403)	OXYGEN, DIS-SOLVED (MG/L) (00300)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
6	05-20-82	1215	27.00	--	--	400.0	--	--	--	--	--
	05-20-82	1220	--	--	--	--	--	--	--	--	--
	05-20-82	1225	24.00	12.50	401.0	--	7.400	--	8.000	--	--
	05-28-82	--	--	--	--	--	--	--	--	--	--
	06-15-82	100	--	--	--	299.0	--	7.800	--	1890.	1640.
	06-15-82	0830	0.800	16.00	816.0	--	7.300	--	8.200	--	--
	06-16-82	--	--	--	--	--	--	--	--	--	--
	06-16-82	1350	--	--	--	286.0	--	7.900	--	4180.	3920.
	06-16-82	1640	23.00	--	--	410.0	--	--	--	--	--
	06-16-82	1645	18.00	--	--	--	--	--	--	--	--
	06-16-82	1655	12.00	22.00	282.0	--	7.500	--	7.300	--	--
	06-16-82	1835	138.0	--	--	--	--	--	--	--	--
	06-16-82	1945	18.00	--	--	410.0	--	--	--	--	--
	06-23-82	1220	--	--	--	3090.	--	7.700	--	3010.	4.000
	06-23-82	1225	0.050	24.00	2930.	--	6.900	--	8.700	--	--
	07-08-82	1460	--	--	--	505.0	--	7.700	--	2690.	2350.

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	RESIDUE VOLATILE, SUSPENDED (MG/L) (00535)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	TURBIDITY (FTU) (00076)	SEDIMENT, SUSPENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)
05-20-82	--	--	--	829.0	60.30	65.00	67.40	75.60	87.50	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--	--
06-15-82	142.0	--	650.0	--	--	--	--	--	--	--	139.0
06-15-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	315.0	4.000	1300.	--	--	--	--	--	--	--	249.0
06-16-82	--	--	--	1460.	68.30	79.80	84.40	91.10	99.00	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	6020.	--	56.00	65.00	75.00	92.00	--	--
06-16-82	--	--	--	1020.	69.90	78.40	84.20	88.60	97.40	--	--
06-23-82	<4.000	--	2.100	--	--	--	--	--	--	20.00	--
06-23-82	--	--	--	4.000	--	--	--	--	--	--	--
07-08-82	221.0	--	700.0	--	--	--	--	--	--	--	265.0

Table 21.--Physical, chemical and biological, and sediment data for low-flow and storm-runoff samples collected at sites 1-6, May 1980 to July 1982--Continued

DATE	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA) (00929)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	COLI-FORM, FECAL, 0.45 UM-MF (COLS./ 100 ML) (31616)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-20-82	--	--	--	--	--	--	--	--	16.00	--	--
05-20-82	--	--	--	--	--	--	--	--	--	--	--
05-28-82	--	--	--	--	--	--	--	--	--	--	--
06-15-82	8.700	59.00	86.00	5.900	0.130	1.800	0.400	1.060	--	K20000.	200.0
06-15-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	8.200	70.00	71.00	5.500	0.150	4.900	0.340	2.570	--	36000.	442.0
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	44.00	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-16-82	--	--	--	--	--	--	--	--	--	--	--
06-23-82	164.0	193.0	1880.	74.00	1.100	1.200	0.820	0.040	--	2800.	<10.00
06-23-82	--	--	--	--	--	--	--	--	7.400	--	--
07-08-82	15.00	78.00	178.0	9.800	0.210	4.400	0.500	1.980	--	38000.	493.0

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982

[<, less than; --, not analyzed]

SITE NUMBER	DATE	TIME	DI-CHLORO-BROMO-METHANE TOTAL (UG/L) (32101)	CARBON-TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	BROMO-FORM TOTAL (UG/L) (32104)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L) (32105)	CHLORO-FORM TOTAL (UG/L) (32106)	TOLUENE TOTAL (UG/L) (34010)	ACE-NAPHTH-YLENE TOTAL (UG/L) (34200)	ACE-NAPHTH-ENE TOTAL (UG/L) (34205)
1	10-15-80	455	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	10-05-81	405	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	05-17-82	1610	<10.00	--	<10.00	<10.00	<10.00	<10.00	--	<10.00	<10.00
3	10-15-80	600	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	10-05-81	450	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	05-17-82	1545	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	--	<10.00	<10.00
5	10-15-80	450	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	10-05-81	0510	--	--	--	--	--	--	--	--	--
	05-17-82	1635	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	--	<10.00	<10.00
6	10-15-80	402	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
	10-05-81	0430	--	--	--	--	--	--	--	--	--
	05-17-82	1540	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	--	<10.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	ANTHRACENE TOTAL (UG/L) (34220)	BENZO B FLUORANTHENE TOTAL (UG/L) (34230)	BENZENE SUSP. (UG/L) (34236)	BENZO K FLUORANTHENE TOTAL (UG/L) (34242)	BENZO-A-PYRENE TOTAL (UG/L) (34247)	DELTA BENZENE HEXACHLORIDE TOTAL (UG/L) (34259)	BIS 2-CHLOROETHYL ETHER TOTAL (UG/L) (34273)	BIS (2-CHLOROETHOXY) METHANE TOTAL (UG/L) (34278)	BIS (2-CHLOROISOPROPYL) ETHER TOTAL (UG/L) (34283)	N-BUTYL BENZYL PHTHALATE TOTAL (UG/L) (34292)	CHLOROBENZENE TOTAL (UG/L) (34301)	CHLOROETHANE TOTAL (UG/L) (34311)
10-15-80	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	--	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<10.00	5.000	<10.00	<10.00	<10.00	--	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<10.00	<5.000	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	CHRY-SENE TOTAL (UG/L) (34320)	DIETHYL PHTHAL-ATE TOTAL (UG/L) (34336)	DI-METHYL PHTHAL-ATE TOTAL (UG/L) (34341)	ENDO-SULFAN SULFATE TOTAL (UG/L) (34351)	ENDO-SULFAN BETA TOTAL (UG/L) (34356)	ENDRIN ALDE-HYDE TOTAL (UG/L) (34366)	ETHYL-BENZENE TOTAL (UG/L) (34371)	FLUOR-ANTHENE TOTAL (UG/L) (34376)	FLUOR-ENE TOTAL (UG/L) (34381)	HEXA-CHLORO-ETHANE TOTAL (UG/L) (34396)	INDENO (1,2,3-CD) PYRENE TOTAL (UG/L) (34403)	ISO-PHORONE TOTAL (UG/L) (34408)
10-15-80	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
05-17-82	<10.00	--	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
05-17-82	<10.00	--	<10.00	5.000	5.000	5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	--	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	--	<10.00	<5.000	<5.000	<5.000	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	METHYL-BROMIDE TOTAL (UG/L) (34413)	METHYL-CHLORIDE TOTAL (UG/L) (34418)	N-NITROSODI-N-PROPYLAMINE TOTAL (UG/L) (34428)	NITROBENZENE TOTAL (UG/L) (34447)	PARACHLORO-META CRESOL TOTAL (UG/L) (34452)	PHENANTHRENE TOTAL (UG/L) (34461)	PYRENE TOTAL (UG/L) (34469)	TETRACHLOROETHYLENE TOTAL (UG/L) (34475)	TRICHLOROFLUOROMETHANE TOTAL (UG/L) (34488)	1,1-DICHLOROETHANE TOTAL (UG/L) (34496)	1,1-DICHLOROETHYLENE TOTAL (UG/L) (34501)
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	--	<10.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	1,1,1-TRICHLOROETHANE TOTAL (UG/L) (34506)	1,1,2-TRICHLOROETHANE TOTAL (UG/L) (34511)	1,1,2,2 TETRACHLOROETHANE TOTAL (UG/L) (34516)	BENZOGH I PERYLENE1,12-BENZOPERYLENE TOTAL (UG/L) (34521)	BENZO A ANTHRACENE1,2-BENZANTHRACENE TOTAL (UG/L) (34526)	1,2-DICHLOROBENZENE TOTAL (UG/L) (34536)	1,2-DICHLOROPROPANE TOTAL (UG/L) (34541)	1,2-TRANSDICHLOROETHENE TOTAL (UG/L) (34546)	1,2,4-TRICHLOROBENZENE TOTAL (UG/L) (34551)	1,2,5,6-DIBENZ-ANTHRACENE TOTAL (UG/L) (34556)	1,3-DICHLOROPROPENE TOTAL (UG/L) (34561)
10-15-80	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<25.00	<10.00	<10.00	<10.00	<10.00	<10.00	<25.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	1,3-DI-CHLORO-BENZENE TOTAL (UG/L) (34566)	1,4-DI-CHLORO-BENZENE TOTAL (UG/L) (34571)	2-CHLORO-ETHYL-VINYL-ETHER TOTAL (UG/L) (34576)	2-CHLORO-NAPH-THALENE TOTAL (UG/L) (34581)	2-CHLORO-PHENOL TOTAL (UG/L) (34586)	2-NITRO-PHENOL TOTAL (UG/L) (34591)	2,4-DI-CHLORO-PHENOL TOTAL (UG/L) (34601)	2,4-DI-NITRO-TOLUENE TOTAL (UG/L) (34611)	2,4,-DI-NITRO-PHENOL TOTAL (UG/L) (34616)	2,4,6-TRI-CHLORO-PHENOL TOTAL (UG/L) (34621)	2,6-DI-NITRO-TOLUENE TOTAL (UG/L) (34626)
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-05-81	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-15-80	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	<10.00	<10.00	<10.00	<25.00	<25.00	<25.00	<10.00	<250.0	<25.00	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	4-BROMO-PHENYL PHENYL ETHER TOTAL (UG/L) (34636)	4-CHLORO-PHENYL PHENYL ETHER TOTAL (UG/L) (34641)	4-NITRO-PHENOL TOTAL (UG/L) (34646)	4,6-DINITRO-ORTHO-CRESOL TOTAL (UG/L) (34657)	DI-CHLORO-DI-FLUORO-METHANE TOTAL (UG/L) (34668)	AROCLOR 1016 PCB TOTAL (UG/L) (34671)	2,3,7,8 TETRACH LORODI-BENZO-P-DIOXIN TOTAL (UG/L) (34675)	PHENOL (C6H-5OH) TOTAL (UG/L) (34694)	PENTA-CHLORO-PHENOL TOTAL (UG/L) (39032)	BIS(2-ETHYL HEXYL) PHTHAL-ATE TOTAL (UG/L) (39100)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)
10-15-80	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
10-05-81	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
05-17-82	--	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	--	<10.00
10-15-80	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
10-05-81	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
05-17-82	--	<10.00	<25.00	<250.0	<10.00	5.000	<5.000	<25.00	<25.00	--	<10.00
10-15-80	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	--	<10.00
10-15-80	<10.00	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	<10.00	<25.00	<250.0	<10.00	<5.000	<5.000	<25.00	<25.00	--	<10.00

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L) (39250)	P,P' DDT, TOTAL (UG/L) (39300)	P,P' DDD, TOTAL (UG/L) (39310)	P,P' DDE, TOTAL (UG/L) (39320)	ALDRIN, TOTAL (UG/L) (39330)	ALPHA BHC TOTAL (UG/L) (39337)	BETA BENZENE HEXA-CHLOR-IDE TOTAL (UG/L) (39338)	LINDANE TOTAL (UG/L) (39340)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDRIN, TOTAL (UG/L) (39390)
10-15-80	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-05-81	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
05-17-82	<10.00	--	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-15-80	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-05-81	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
05-17-82	<10.00	--	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
10-15-80	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<10.00	--	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-15-80	<10.00	<10.00	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	--	--	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000

Table 22.--Laboratory analysis of priority-pollutant samples collected at sites 1, 3, 5, and 6 on October 15, 1980, October 5, 1981, and May 17, 1982--Continued

DATE	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	AROCLOR 1221 PCB TOTAL (UG/L) (39488)	AROCLOR 1232 PCB TOTAL (UG/L) (39492)	AROCLOR 1242 PCB TOTAL (UG/L) (39496)	AROCLOR 1248 PCB TOTAL (UG/L) (39500)	AROCLOR 1254 PCB TOTAL (UG/L) (39504)	AROCLOR 1260 PCB TOTAL (UG/L) (39508)	HEXA-CHLORO-BENZENE TOTAL (UG/L) (39700)	HEXA-CHLORO-BUT-ADIENE TOTAL (UG/L) (39702)
10-15-80	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-05-81	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
05-17-82	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-15-80	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-05-81	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
05-17-82	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	<10.00	<10.00
10-15-80	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-15-80	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00
10-05-81	--	--	--	--	--	--	--	--	--	--	--
05-17-82	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<5.000	<10.00	<10.00

GPO 755-025/84