WATER AND SEDIMENT BUDGETS FOR THE STORMWATER-DRAINAGE CHANNEL AT THE NAVY SHIPS PARTS CONTROL CENTER NEAR MECHANICSBURG, PENNSYLVANIA, WATER YEAR 1993

by Lloyd A. Reed, Randall R. Durlin, and Jeffrey K. Bender

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CONVERSION FACTORS, ABBREVIATED WATER-QUALITY UNIT, AND VERTICAL DATUM

Multiply	by	To obtain
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
acre	0.4047	hectare
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
acre-foot	1,233	cubic meter
pound (lb)	0.4536	kilogram
ton, short (T)	0.9072	megagram

One acre-foot is equivalent to 43,560 cubic feet, or a daily mean discharge of 0.5042 cubic feet per second.

Abbreviated water-quality unit used in this report: milligrams per liter (mg/L)

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 -- a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

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ABSTRACT

The Navy Ships Parts Control Center near Mechanicsburg, Pa., occupies an area of 824 acres, of which 358 are covered by impervious surfaces. Most of the impervious area is drained by stormwater systems that discharge to an open channel that extends about 7,900 feet from its headwaters to its confluence with Trindle Spring Run. The channel drains an area of 992 acres, of which 435 are covered by impervious surfaces. The entire area of the Center including the stormwater-drainage channel is situated in karst terrane. Parts of the drainage channel contain large sinkholes and most of the storm runoff that enters the channel drains to the sinkholes.

From 1992 to 1994, the U.S. Geological Survey, in cooperation with the Department of the Navy, conducted a detailed study of water and sediment flows in the stormwater-drainage channel. The purpose of this study was to quantify the discharge of stormwater and suspended sediment to the ground-water system, by way of sinkholes, and to Trindle Spring Run. From October 1, 1992, to September 30, 1993, the data-collection period for the study, discharge and suspended-sediment concentrations were measured at three sites along the drainage channel. During the period, water inflow to the channel totaled 679 acre-feet and outflow to Trindle Spring Run totaled 131 acre-feet. Water loss to sinkholes in the drainage channel totaled 548 acre-feet or 81 percent of inflow. Total sediment inflow to the drainage channel was 97 tons, outflow to Trindle Spring Run was 22 tons, sediment loss to sinkholes was 63 tons, and the residual 12 tons of sediment was deposited in the channel.

The effect of filling the sinkholes on flooding was estimated through use of a step-backwater model. This model was used to simulate undampened water-surface elevations that would result from the maximum instantaneous discharge recorded during October 1992-September 1993. The model is constrained by uncertainty in the values of the channel-roughness parameter. Analysis of the model results indicates that during high flows, inflow to sinkholes results in a moderate reduction in discharge and water-surface elevations in the drainage channel. This analysis shows that filling the sinkholes will result in increased frequency and magnitude of flooding in downstream parts of the drainage channel and increased discharge of storm runoff and suspended sediment to Trindle Spring Run.

INTRODUCTION

Stormwater runoff from impervious surfaces at the 824-acre Navy Ships Parts Control Center (SPCC) near Mechanicsburg, Pa., drains by overland flow and through subsurface culverts to the open channel along the western boundary of the Center. The drainage channel is in karst terrane and most of the stormwater that flows into the channel drains to sinkholes in the channel. Trace metals and polychlorinated biphenyls in sediments in the drainage channel were identified in previous studies (EA Engineering, Science, and Technology, Inc., 1990). During high flows, these sediments and associated chemical substances in the channel may be remobilized and transported to sinkholes in the channel and to Trindle Spring Run, a high-quality cold-water fishery. Because surface water entering the sinkholes can affect the quality of local ground water, the Pennsylvania Department of Environmental Resources has asked the Department of the Navy to fill the sinkholes with impermeable material. If the sinkholes are filled, however, increased flows in the drainage channel may affect the quality of water in Trindle Spring Run and result in increased frequency and magnitude of flooding in downstream parts of the channel.

From 1992 to 1994, the U.S. Geological Survey (USGS), in cooperation with the Department of the Navy, conducted a detailed study of water and sediment flows in the stormwater-drainage channel at the SPCC. The primary purpose of this study was to quantify the discharge of stormwater and suspended sediment to the ground-water system, by way of sinkholes, and to Trindle Spring Run. The secondary purpose was to estimate the effect of filling the sinkholes on flooding along the drainage channel.

Purpose and Scope

This report describes the results of a study to quantify the discharge of stormwater and suspended sediment from the SPCC and adjoining areas to the drainage channel, to sinkholes in the channel, and to Trindle Spring Run. The study was conducted by collecting, analyzing, and interpreting data on precipitation, streamflow, ground-water levels, suspended-sediment concentration, and bedload. These data were used to compute budgets (mass balances) for the drainage channel in order to quantify water loss and sediment loss to sinkholes. This report also describes simulated effects of filling the sinkholes on flooding along the drainage channel.

Description of Study Area

Location

The study area is in Cumberland County, Pa., and is about 1 mi northeast of Mechanicsburg (fig. 1). The area consists of the entire drainage basin of the stormwater-drainage channel, which encompasses 992 acres. The channel originates along the western boundary of the SPCC and extends about 7,900 ft from its headwaters to its confluence with Trindle Spring Run, a tributary of Conodoguinet Creek (fig. 1). Flow in the channel is intermittent and results from precipitation. During storms, much of the basin drains to the channel by way of overland flow and through a network of stormwater-drainage systems (fig. 2).

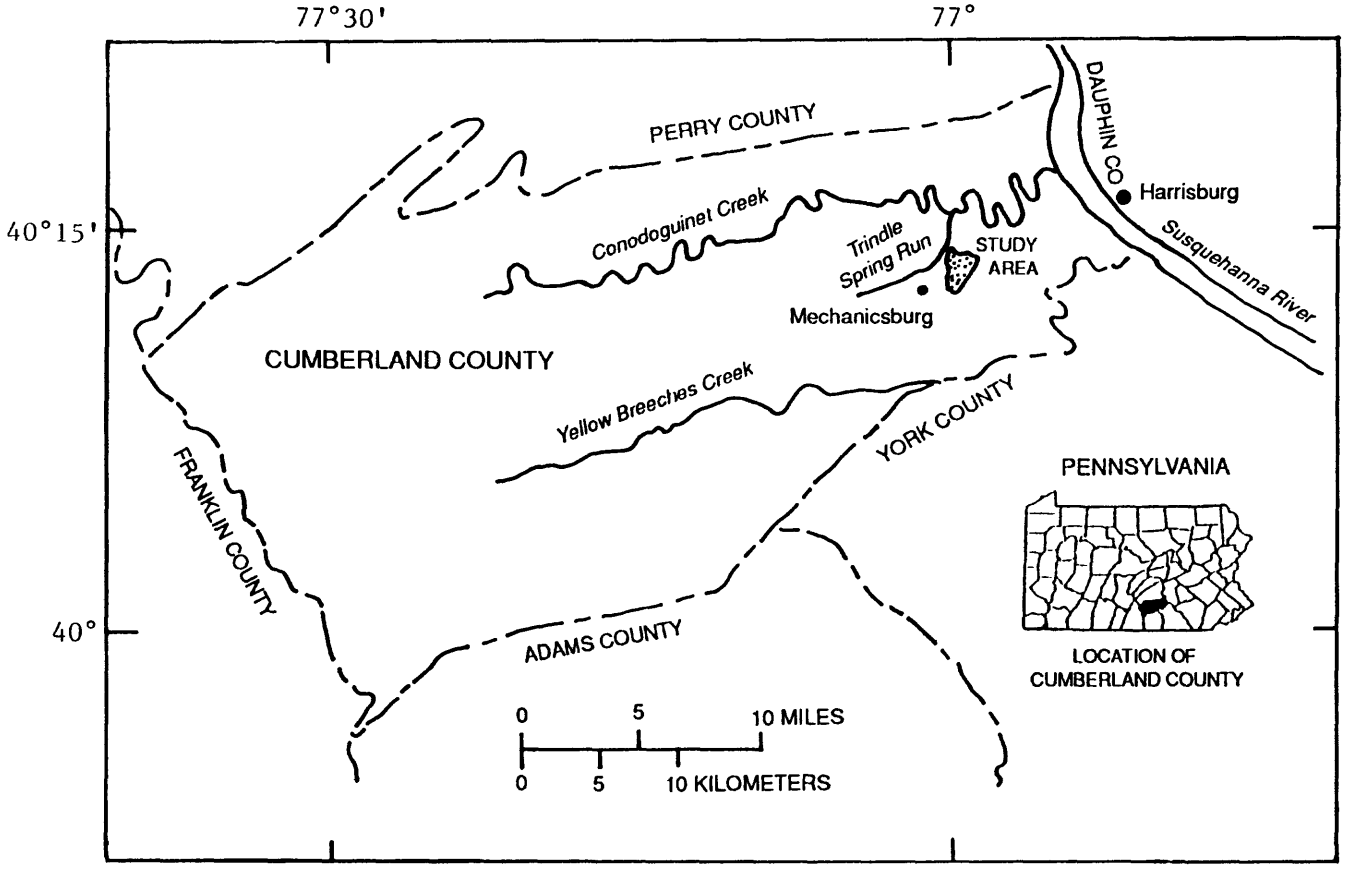
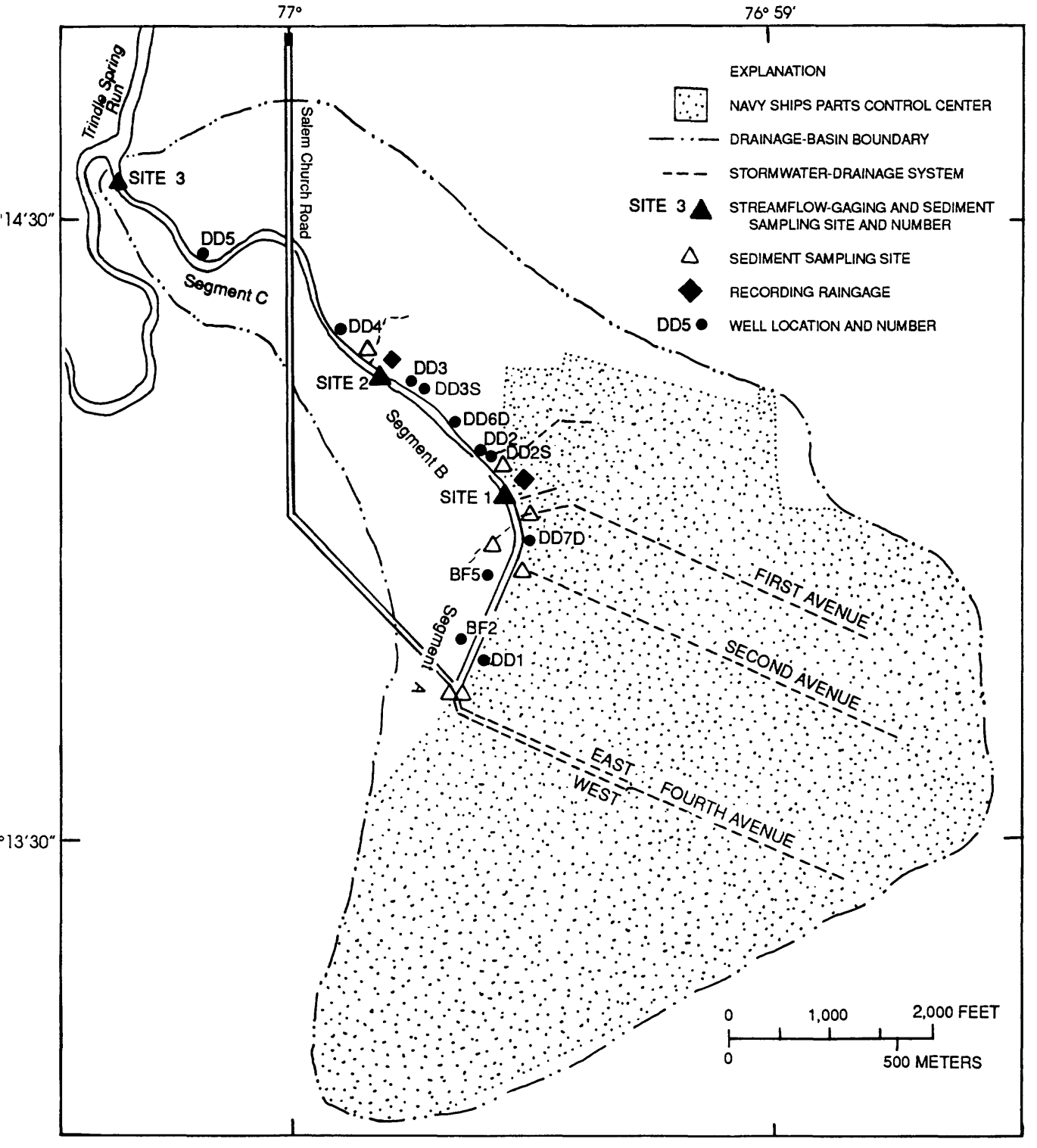


Figure 1. Location of the study area.



Base from U.S. Geological Survey
Lemoyne 1:24,000 1987;
Mechanicsburg 1:24,000 1987

Figure 2. The Navy Ships Parts Control Center near Mechanicsburg, Pennsylvania, and the drainage area of the stormwater-drainage channel.

Physiographic Setting

The study area is situated in the Great Valley Section of the Ridge and Valley physiographic province (Berg and others, 1989) in an area of karst topography. The elevation of the drainage channel ranges from 406 ft above sea level in the headwaters area to 371 ft above sea level at a spring near the confluence with Trindle Spring Run. Few streams are present in the area because precipitation on unpaved surfaces rapidly infiltrates to ground water through permeable soils and soluble carbonate bedrock. Dozens of sinkholes and closed depressions have been mapped in the vicinity of the SPCC (Kochanov, 1989).

The karst topography was formed on the carbonate bedrock that lies beneath the entire study area (fig. 3). About one-half of the area is underlain by rocks of the Rockdale Run Formation and the remainder is underlain mostly by rocks of the Pinesburg Station Formation, Saint Paul Group, and Chambersburg Formation (Becher and Root, 1981). The Rockdale Run Formation is composed of light-gray medium- to thick-bedded, detrital to detrital-skeletal and micrograined limestone. The Pinesburg Station Formation contains thick-bedded, light- to medium-gray, laminated to banded dolomites that contain sparse black chert nodules and small white quartz rosettes, as well as interbeds of blue-gray limestone. The St. Paul Group contains a light-gray thick-bedded high-calcium "birdseye" micritic limestone with prominent beds and zones of medium-gray granular black chert-bearing limestone. The Chambersburg Formation is composed of a dark-gray, thin- to medium-bedded nodular limestone.

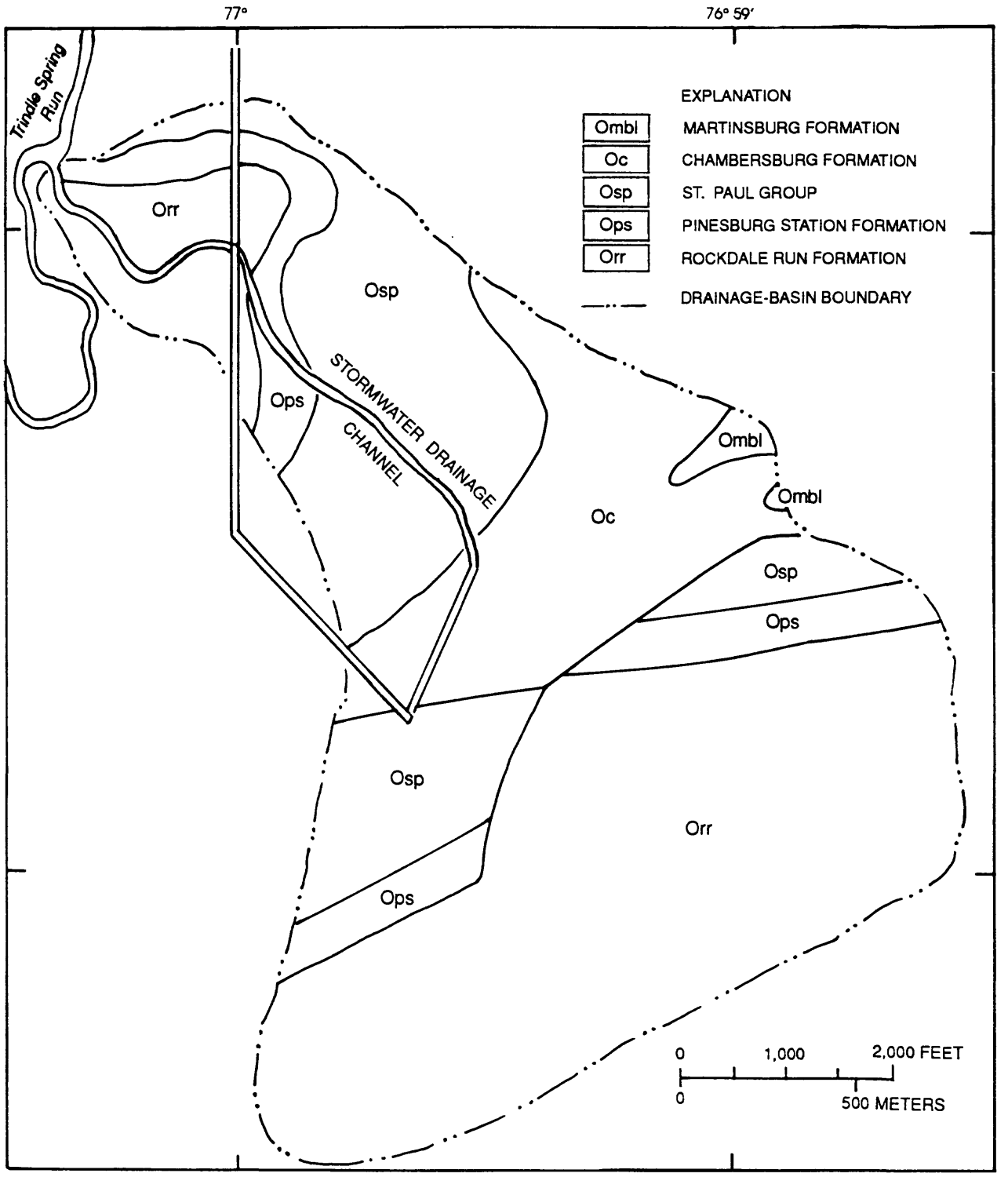
Channel Segments

In order to compute water and sediment budgets, the drainage channel was subdivided into three segments identified alphabetically (A, B, and C) in downstream order (fig. 2). Each segment terminates at a streamflow-gaging station so that outflow from specific segments can be quantified.

The upstream segment (segment A) of the channel is 2,130 ft long. This segment receives water from four major and one minor stormwater-drainage systems that drain an area of 621 acres, of which 352 acres are covered by impervious surfaces (fig. 4). An additional 38 acres drain to channel segment A but only about 6 acres are covered by impervious surfaces and none are drained by stormwater-drainage systems. Thus, the total drainage area at the downstream end of channel segment A is 659 acres, of which 358 acres are covered by impervious surfaces. Nearly the entire length of channel segment A is underlain by rocks of the Chambersburg Formation. Two small sinkholes are present in this segment (fig. 5).

The middle segment (segment B) of the channel is 1,650 ft long. This segment receives runoff from channel segment A, from one minor stormwater-drainage system, and from direct drainage from areas along both sides of the channel (fig. 4). The stormwater system drains 70 acres along the north side of the SPCC, about 6 acres of which are covered by impervious surfaces. An additional 77 acres drain to segment B. About 26 of the 77 acres are covered by impervious surfaces, but only a small amount of water from this impervious area drains directly into the channel. Most runoff from this 26-acre area flows overland for some distance before reaching the channel and can drain to sinkholes before reaching the channel. The total drainage area at the downstream end of channel segment B is 806 acres, of which 390 acres are covered by impervious surfaces. Most of channel segment B is underlain by rocks of the St. Paul Group. Five sinkholes are present in this segment (fig. 5).

The downstream segment of the channel (segment C) is 4,120 ft long. This segment receives runoff from channel segment B and from an additional area of 186 acres (fig. 4). Several other separate areas covered by impervious surfaces together contain about 45 acres that drain to segment C. The remaining 141 acres is in woodland, lawns, and a small corn field. The total drainage area at the downstream end of channel segment C is 992 acres, of which 435 acres are covered by impervious surfaces. The upper part of channel segment C is underlain by rocks of the Pinesburg Station Formation and the lower part is underlain by rocks of the Rockdale Run Formation. Two sinkholes are present in this segment (fig. 5).



Base from U.S. Geological Survey
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Mechanicsburg 1:24,000 1987

Figure 3. Geology of the study area near Mechanicsburg, Pennsylvania.

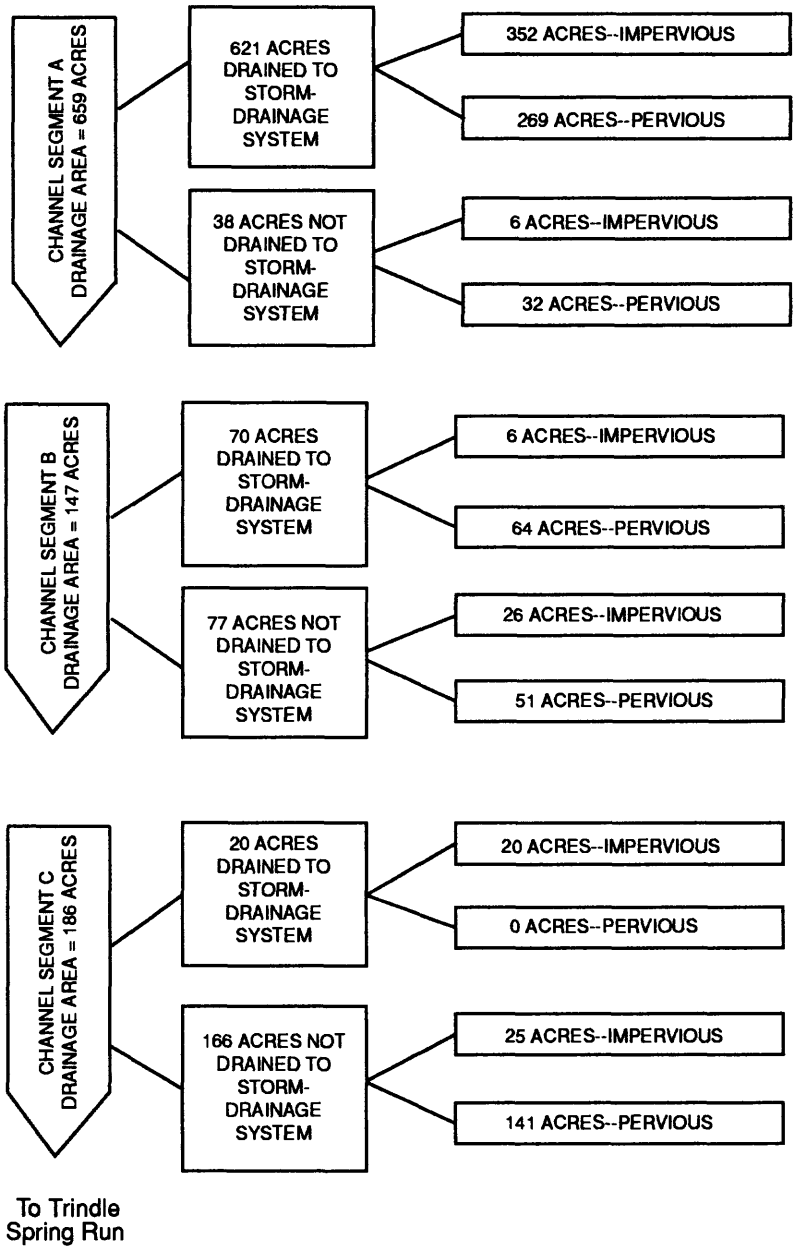
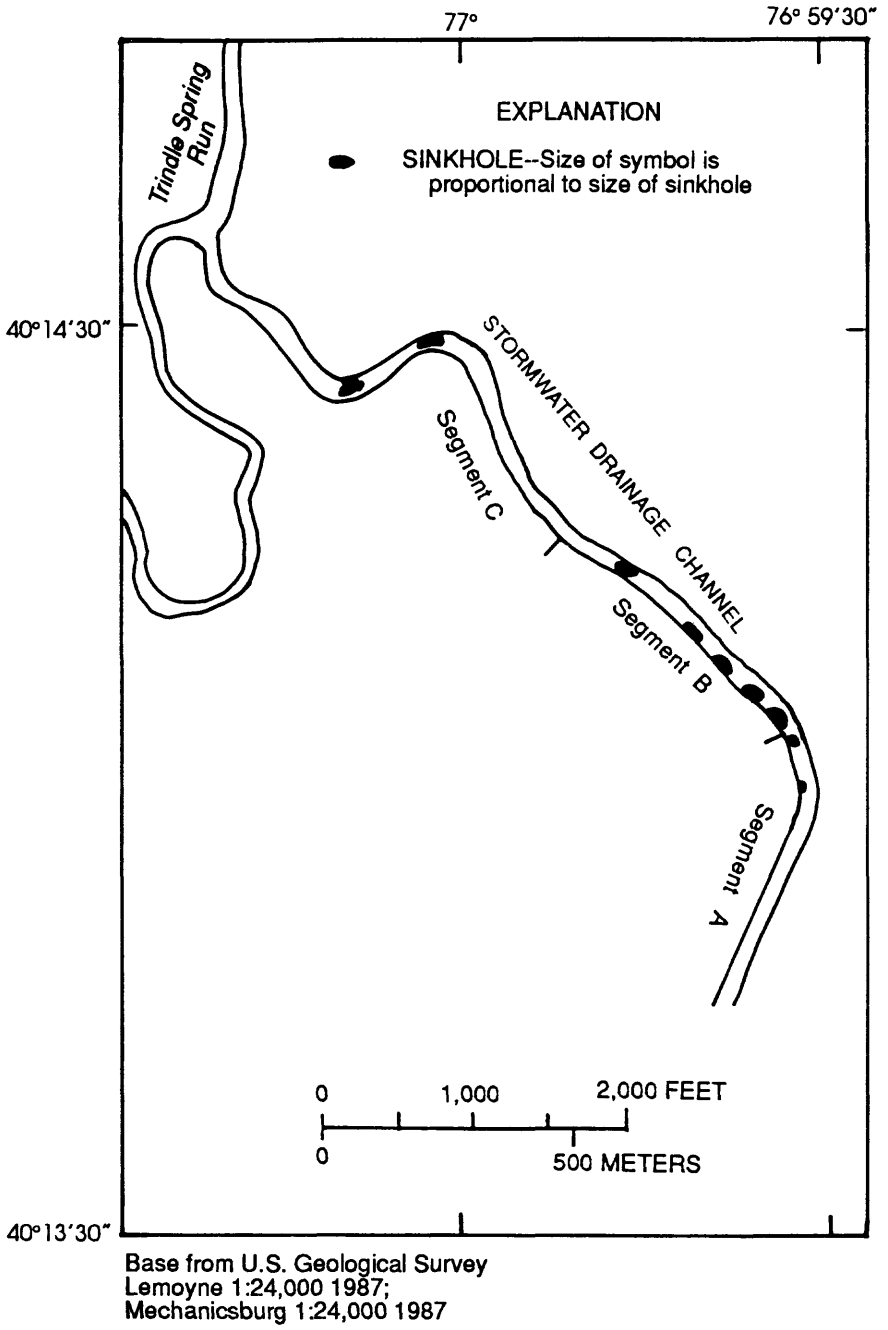


Figure 4. Drainage area and characteristics of stormwater-drainage channel segments at the Navy Ships Parts Control Center.

Methods of Data Collection

As part of the study, hydrologic data were collected in and along the stormwater-drainage channel during water year 1993 (October 1, 1992, to September 30, 1993). In this report, this interval is called the data-collection period. The hydrologic data were analyzed and interpreted during 1993-94. Methods for collection of precipitation, streamflow, ground-water level, suspended-sediment, and bedload data are described in this section. These data and related computations are presented in tables and appendixes in this report.



Base from U.S. Geological Survey
Lemoyne 1:24,000 1987;
Mechanicsburg 1:24,000 1987

Figure 5. Stormwater-drainage channel and location of sinkholes at the Navy Ships Parts Control Center.

Precipitation

For the study, two recording weighing-bucket raingages were installed along the drainage channel (fig. 2). One raingage was near the streamflow-gaging station at the downstream end of channel segment A and one was near the streamflow-gaging station at the downstream end of channel segment B. The raingage near channel segment A was connected to an electronic data logger that recorded precipitation at 5-minute intervals; the raingage near channel segment B recorded precipitation continuously on a graphic chart. Precipitation during the data-collection period totaled 45.01 in. Data on daily snowfall and accumulated snow on the ground measured at the Middletown-Harrisburg Airport, Pa., were obtained from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration. The Airport is located about 13 mi east of the SPCC. Daily precipitation and snowfall data are presented in Appendixes 1 and 2.

Streamflow

Streamflow data were collected by standard techniques of the USGS (Buchanan and Somers, 1968, 1969) at three gaging stations on the drainage channel (fig. 2). Discharge was computed at each streamflow-gaging station by use of current-meter and flow-over-dam measurements. A total of 58 current-meter measurements were made for the study--21 at the streamflow-gaging station at the end of channel segment A (site 1), 21 at the streamflow-gaging station at the end of channel segment B (site 2), and 16 at the streamflow-gaging station at the end of channel segment C (site 3). In addition to the current-meter measurements, flow-over-dam computations (Hulsing, 1967) were used to establish stage-discharge relations for flows greater than 191 ft^3/s at site 1 and for flows greater than 160 ft^3/s at site 2. Several flow-over-dam computations also were made for which corresponding current-meter measurements were used to verify coefficients incorporated in the flow-over-dam computations.

Electronic data loggers were used at each of the three streamflow-gaging stations to record stage, or water-surface elevation, at 5-minute intervals. The stage data were adjusted as needed for shifts and backwater conditions, then the stage-discharge relations were used to compute discharge in the channel for each 5-minute period. These discharges were then used to compute daily mean discharge (Appendix 3).

In addition to measurements of discharge at the three streamflow-gaging stations, peak discharges through the culverts (Bodhaine, 1968) under Salem Church Road (fig. 2) were computed for each storm on the basis of upstream and downstream peak water-surface elevations recorded with crest-stage gages (Appendix 4). No current-meter measurements were made at Salem Church Road.

Ground-Water Levels

Nine wells (SPCC local numbers DD1, BF5, DD7D, DD2S, DD2, DD6D, DD3, DD4, DD5) along the drainage channel (fig. 2) were equipped with pressure transducers and electronic data loggers that recorded water-level elevations at 5-minute intervals. The water-level data are summarized in Appendix 5. Water levels in these wells were measured manually on a weekly basis to verify the calibration of the data loggers. In addition, water levels were measured manually on a weekly basis in two other wells (BF2 and DD2S) that were not equipped with data loggers (fig. 2). Three wells equipped with data loggers (DD1, BF5, and DD7D) are located along channel segment A, four wells (DD2S, DD2, DD6D, and DD3) are located along channel segment B, and two wells (DD4 and DD5) are located along channel segment C.

Suspended Sediment

Suspended-sediment samples were collected at 10 sites (fig. 2). These samples were collected by automatic-pumping samplers installed at the streamflow-gaging stations at the downstream end of each channel segment. Replicate samples were collected manually at these stations to verify the automatic samplers were collecting representative samples. Sediment samples also were collected from the major inflows to the drainage channel. These inflows include discharge from the four major storm-drainage

systems that drain directly to channel segment A, runoff from an open area adjacent to channel segment A, discharge from the storm-drainage system that drains the northeastern side of the SPCC and drains to channel segment B, and runoff from an impervious area that drains to channel segment C.

The automatic-pumping samplers were programmed to collect suspended-sediment samples at 5-minute intervals during stormflows. Generally, about 20-40 samples per stormflow were collected in this manner. All samples were visually inspected and only those samples required to define the sediment-concentration hydrograph were submitted for analysis. The remainder of the samples collected automatically were not analyzed.

During the data-collection period, about 500 suspended-sediment samples were collected by the automatic sampler at the downstream end of channel segment A and about 30 samples were collected manually. Nine of the samples collected manually were gathered concurrent with samples collected automatically to verify the representativeness of the samples collected automatically. All samples collected manually and 128 samples collected automatically were analyzed for suspended-sediment concentration. Eight of the nine samples collected manually for verification had about the same suspended-sediment concentration as that of samples collected automatically; the mean suspended-sediment concentration of the eight samples collected automatically was 38.8 mg/L, the mean concentration of the eight samples collected manually was 38.4 mg/L, and the root mean squared error was 3.8 mg/L. The other sample collected manually was obtained on October 9, 1992, at 0755 hours, a time when suspended-sediment concentrations were changing rapidly; the suspended-sediment concentration in the sample collected automatically was 126 mg/L and the concentration in the sample collected manually was 104 mg/L.

About 400 suspended-sediment samples were collected by the automatic sampler at the downstream end of channel segment B and about 20 samples were collected manually. All samples collected manually and about 139 samples collected automatically were analyzed for suspended-sediment concentration. Nine samples collected manually were gathered concurrent with samples collected automatically. The mean concentration of suspended sediment in the nine samples collected automatically was 57.7 mg/L, the mean concentration in the samples collected manually was 57.4 mg/L, and the root mean squared error was 7.0 mg/L.

About 300 suspended-sediment samples were collected by the automatic sampler at the downstream end of channel segment C and 10 samples were collected manually. Five samples collected manually were gathered concurrent with samples collected automatically. All samples collected manually and 98 samples collected automatically were analyzed for suspended-sediment concentration. Four samples collected automatically had about the same suspended-sediment concentration as concurrent samples collected manually. The mean concentration in the four samples collected automatically was 108 mg/L, the mean concentration in the four samples collected manually was 106 mg/L, and the root mean squared error was 2.5 mg/L. Suspended-sediment concentrations in samples collected on April 26, 1993, at 1310 hours were significantly different, however, as the concentration in the samples collected automatically was 248 mg/L and the concentration in the sample collected manually was 321 mg/L.

In addition to the suspended-sediment samples collected at the streamflow-gaging stations at the downstream end of each channel segment, the following additional samples were collected manually for the study: 7 samples from the public athletic fields adjacent to segment A; 22 samples from the west Fourth Avenue storm drain; 22 samples from the east Fourth Avenue storm drain; 15 samples from the Second Avenue storm drain; 19 samples from the First Avenue storm drain; 12 samples from the culvert that drains to the upper end of channel segment B; and 7 samples from the outflow from the impervious area that drains to the upper end of segment C. Data on suspended-sediment concentrations and related computations are presented in Appendixes 6 and 7.

Bedload

Bedload samples were collected at the downstream end of each channel segment (fig. 2). At each site, a bedload sampler was anchored to the channel bottom near the center line of flow. The sampler was inspected after each stormflow and any accumulated bedload excluding leaves and other organic matter was gathered for analysis. Bedload samples also were collected manually at the downstream end of channel segment C to verify the operation of the sampler at site 3.

WATER BUDGET

A water budget for the drainage channel was developed on the basis of measurements and estimates of water inflow and outflow from October 1, 1992, to September 30, 1993. Loss to sinkholes was computed as:

$$\text{Loss to Sinkholes} = \text{Inflow} - \text{Outflow} \quad (1)$$

Streamflow data for the outflow ends of channel segments A, B, and C allow computation of an overall water budget and estimation of net water loss to sinkholes in channel segments B and C.

A summary of gains and losses of water in the drainage channel during the data-collection period is presented in figure 6. Inflow to the channel during the period totaled 679 acre-feet and outflow to Trindle Spring Run totaled 131 acre-feet. The difference between inflow and outflow is the estimated net loss of water to sinkholes. The loss of 548 acre-feet of water to sinkholes represents about 81 percent of total inflow to the channel during the data-collection period. Computations and discussions of inflow, outflow, and water loss to sinkholes are presented in the following sections.

Inflow

Inflow to the drainage channel consists primarily of runoff from impervious surfaces that are connected directly to the channel by stormwater systems. Additional inflow could be contributed from impervious surfaces not connected to storm drains; pervious areas either connected or not connected to storm drains; and ground-water discharge to the drainage channel. The amount of impervious and pervious areas, and drained and undrained areas, by channel segment, is shown in figure 4.

Runoff From Impervious Surfaces

The most obvious source of water inflow to the drainage channel is discharge from stormwater systems. In the study area, seven storm drains collect water from 378 acres of impervious land surface. Most of this impervious area, about 352 acres, drains to channel segment A through five storm drains (fig. 2). During the data-collection period, runoff from this area contributed 633 acre-feet of water to the drainage channel, as measured at the streamflow-gaging station at site 1.

Additional inputs to the drainage channel in segments B and C can be estimated by assuming that only the impervious surfaces that drain directly to a stormwater system contribute water to the drainage channel. If the 352-acre impervious surface above site 1 contributed all 633 acre-feet of runoff measured at the streamflow-gaging station at site 1, then that area would have yielded 22 in. of runoff, which is about 48 percent of precipitation during the data-collection period. If other impervious surfaces connected to stormwater systems contributed a similar proportion of precipitation to the channel, then during the data-collection period, the 6-acre impervious surface within segment B and the 20-acre impervious surface within segment C would have contributed approximately 11 and 35 acre-feet of water, respectively. These additional small inputs to channel segments B and C are shown in the schematic representation of the water budget (fig. 6).

Runoff From Other Sources

Inflow to the drainage channel could be provided by runoff from impervious surfaces not connected to storm drains; pervious surfaces either connected or not connected to storm drains; and ground-water discharge to the drainage channel. If any of these sources contributed water to the drainage channel, then the quantity of runoff measured at site 1 could, during certain storms, exceed the quantity of precipitation on the contributing 352-acre impervious surface described previously. Inflow from these other sources would result mainly when the water table is high and soil moisture is near field capacity.

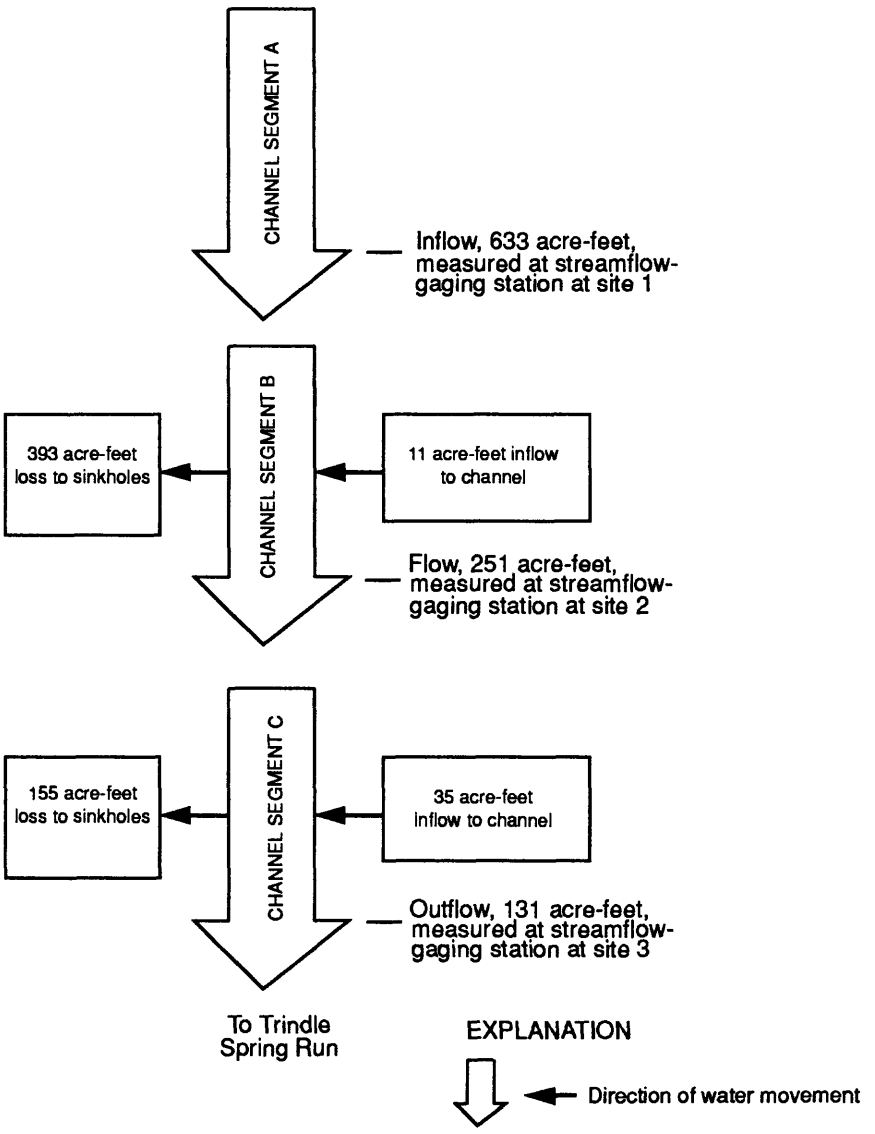


Figure 6. Inflow, outflow, and loss of water to sinkholes in the stormwater-drainage channel at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993.

Theoretical maximum runoff from the impervious surface and measured runoff at site 1 for storms during periods of high water table and surplus soil moisture are shown in table . Only one storm produced more runoff at site 1 than could be delivered by precipitation on the 352 acres of impervious area that drain to channel segment A. Runoff in excess of the theoretical maximum, produced during the March 31-April 6, 1993, storm, was caused by melting of snow that fell on March 13, 1993.

Further evidence that water inputs to the channel downstream of segment A probably are not significant is available from observations of flow in the channel and from ground-water levels. During the data-collection period, water did not discharge from channel segment B until water from segment A arrived at segment B and water did not discharge from channel segment C until water from segment B arrived at segment C.

Table 1. Precipitation and runoff in channel segment A for selected storms at the Navy Ships Parts Control Center, October 9, 1992, to September 25, 1993

Date	Precipitation (inches)	Measured runoff (acre-feet)	Change in channel storage (acre-feet)	Total runoff (acre-feet)	Theoretical maximum runoff from 352 acres of impervious surface (acre-feet)	$\left(\frac{\text{Total runoff}}{\text{Theoretical maximum runoff}}\right) \times 100$ (dimensionless)
October 9	1.67	25.8	2.4	28.2	49.0	58
November 2	1.66	28.2	2.4	30.6	49.7	62
November 21	1.98	23.6	2.4	26.0	58.1	45
December 10	1.76	21.6	2.4	24.0	51.6	46
March 4	2.42	44.6	2.4	47.0	71.0	66
March 31-April 6	1.97	72.0	0.0	72.0	57.8	124
April 10-12	1.42	24.6	2.4	27.0	41.7	65
April 16-18	1.45	27.9	2.4	30.3	42.5	71
April 21-25	1.69	45.8	1.9	47.7	49.6	96
April 26-29	1.26	35.9	.3	36.2	37.0	98
July 2	1.55	23.8	2.4	26.2	45.4	58
August 11	1.05	8.3	2.4	10.7	30.8	35
August 17	1.56	35.7	2.4	38.1	45.7	83
September 3	1.63	28.2	2.4	30.6	47.8	64
September 25	1.32	21.8	2.4	24.2	38.7	62

Analysis of ground-water levels in observation wells adjacent to the drainage channel does not indicate any net shallow ground-water flow to channel segments B and C during the data-collection period. The maximum and minimum water-level elevations in wells and maximum water-level elevations in the drainage channel are presented in table . Only the maximum water-level elevation in well BF5 exceeded the corresponding maximum water-level elevation in the drainage channel. During specific storms, water-level elevations in wells BF5 and DD1 sometimes exceeded the corresponding water-level elevations in the drainage channel. Therefore, any ground-water discharge to the channel would have been measured at the streamflow-gaging station at the downstream end of channel segment A, and would not have affected computations of water loss to sinkholes in channel segments B and C.

Table 2. Maximum and minimum recorded water-level elevations in observation wells and maximum water-level elevations in the stormwater-drainage channel near each well at the Navy Ships Parts Control Center, October 1992 through September 1993

[All elevations in feet above sea level]

Well number	Maximum water-level elevation in		Minimum water-level elevation in well	Elevation of stream bed
	Well	Drainage channel		
DD1	410.93	412.93	391.04	406.39
BF5	413.21	412.93	394.56	406.39
DD7D	410.13	412.93	384.49	406.39
DD2S	408.09	411.9	379.18	402.0
DD2	407.93	411.1	378.24	402.0
DD6D	407.08	409.0	376.94	402.5
DD3	405.57	407.1	374.34	396.0
DD4	396.48	401.8	387.21	394.0
DD5	382.28	387.77	369.04	382.11

Outflow

Outflow from the drainage channel to Trindle Spring Run was measured at the streamflow-gaging station at the downstream end of channel segment C (fig. 2). Outflow during the data-collection period totaled 131 acre-feet (fig. 6) and ranged from 0 to 22 acre-feet per day. Daily mean flow in the channel measured at site 1 always exceeded daily mean flow measured at site 3, as shown in figure 7. Generally, water did not flow from the drainage channel to Trindle Spring Run unless the daily mean flow at site 1 exceeded about 4 ft^3/s (fig. 7).

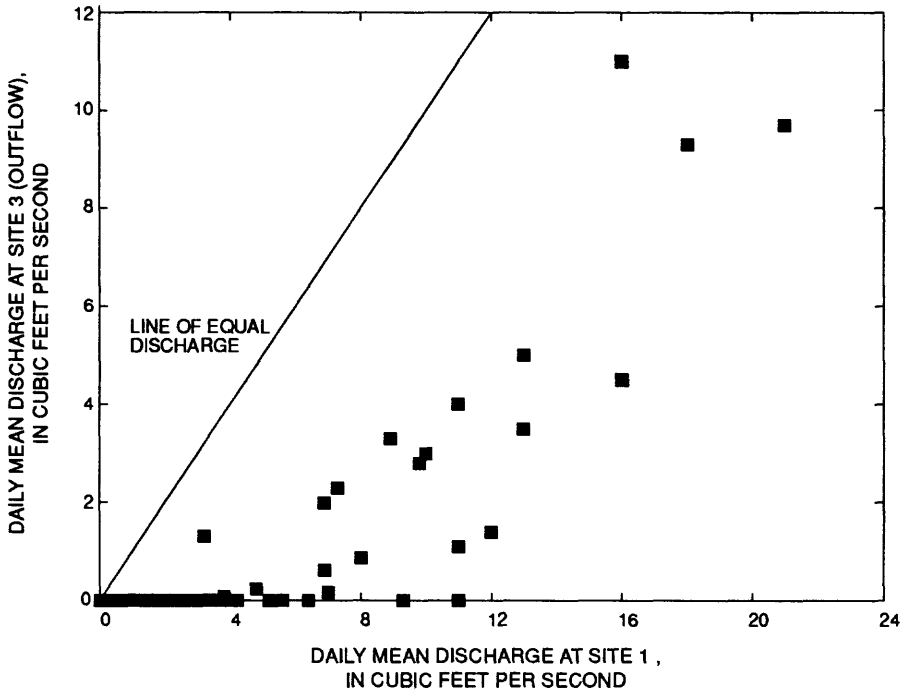


Figure 7. Relation between discharge in the stormwater-drainage channel at the Navy Ships Parts Control Center, at upstream (site 1) and downstream (site 3) streamflow-gaging stations.

Loss to Sinkholes

Water loss to sinkholes was computed as a residual in the budget equation by subtracting outflow to Trindle Spring Run from inflow to the drainage channel. During the data-collection period, water loss to sinkholes in channel segments B and C totaled 548 acre-feet, which is about 81 percent of total inflow to the channel. About 393 acre-feet or 72 percent of total water loss to sinkholes was in channel segment B; the remainder of 155 acre-feet or 28 percent of total water loss to sinkholes was in channel segment C (fig. 6).

Water drained to sinkholes during every major stormflow and for the entire duration of each storm. Water loss to sinkholes during 15 major storms is summarized in table . Loss varied depending on inflow, antecedent conditions, and duration of flow in the channel. Water loss to sinkholes generally increases with increased inflow to the drainage channel. At daily mean inflows less than about 4 ft^3/s measured at the downstream end of channel segment A, nearly all inflow drained to sinkholes (fig. 7).

Table 3. Inflow, water loss to sinkholes, and outflow for the stormwater-drainage channel during major storms at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993

[All flow and loss values in acre-feet]

Date of storm	Water inflow from channel segment A	Estimated water inflow from areas adjacent to channel segment B[1]	Total water inflow to channel segment B	Water loss to sinkholes in channel segment B	Water discharge from channel segment B	Estimated water inflow from areas adjacent to channel segment C[2]	Total water inflow to channel segment C	Water loss to sinkholes in channel segment C	Water outflow from channel segment C to Trindle Spring Run	Total water loss to sinkholes
Oct. 9	25.8	0.5	26.3	13.2	13.1	1.6	14.7	4.8	9.9	18.0
Nov. 2-3	28.2	.5	28.7	16.8	11.9	1.7	13.6	7.6	6.0	24.4
Nov. 21-23	24.2	.4	24.6	13.1	11.5	1.4	12.9	6.4	6.5	19.5
Dec. 10-11	21.2	.4	21.6	20.3	1.3	1.3	2.6	2.6	0	22.9
Mar. 4-6	44.6	.8	45.4	26.6	18.8	2.6	21.4	12.5	8.9	39.1
Mar. 31-Apr. 6	72.0	1.2	73.2	31.8	41.4	4.0	45.4	24.9	20.5	56.7
Apr. 10-12	24.6	.4	25.0	15.4	9.6	1.5	11.1	8.9	2.2	24.3
Apr. 16-18	27.9	.4	28.3	14.5	13.8	1.7	15.5	7.6	7.9	22.1
Apr. 21-25	45.8	.8	46.6	26.2	20.4	2.7	23.1	14.4	8.7	40.6
Apr. 26-29	35.9	.6	36.5	10.7	25.8	2.0	27.8	6.0	21.8	16.7
July 2	23.8	.4	24.2	16.5	7.7	1.5	9.2	6.4	2.8	22.9
Aug. 11	10.3	.2	10.5	9.9	.6	.6	1.2	1.2	0	11.1
Aug. 17	35.7	.6	36.3	12.5	23.8	2.1	25.9	7.5	18.4	20.0
Sept. 3-4	28.2	.5	28.7	19.4	9.3	1.8	11.1	8.5	2.6	27.9
Sept. 25-26	21.8	.4	22.2	16.8	5.4	1.3	6.7	6.4	.34	23.2

[1] Assuming that water discharge from 6 acres of impervious surface reached the channel and runoff was equivalent to 48 percent of precipitation.

[2] Assuming that water discharge from 20 acres of impervious surface reached the channel and runoff was equivalent to 48 percent of precipitation.

Comparison of two storms that resulted in similar discharges, one on April 26, 1993, and the other on August 17, 1993, shows the combined effect of antecedent conditions and storm intensity on water loss to sinkholes. The April storm followed wet antecedent conditions and was less intense than the August storm, which followed dry antecedent conditions. Total inflow to the channel during each storm was about 38 acre-feet (table 3); water loss to sinkholes, however, was 20 acre-feet during the August storm and 16.7 acre-feet during the April storm. Discharge hydrographs for these storms (fig. 8) show greater attenuation of total and peak discharge during the August storm than during the April storm.

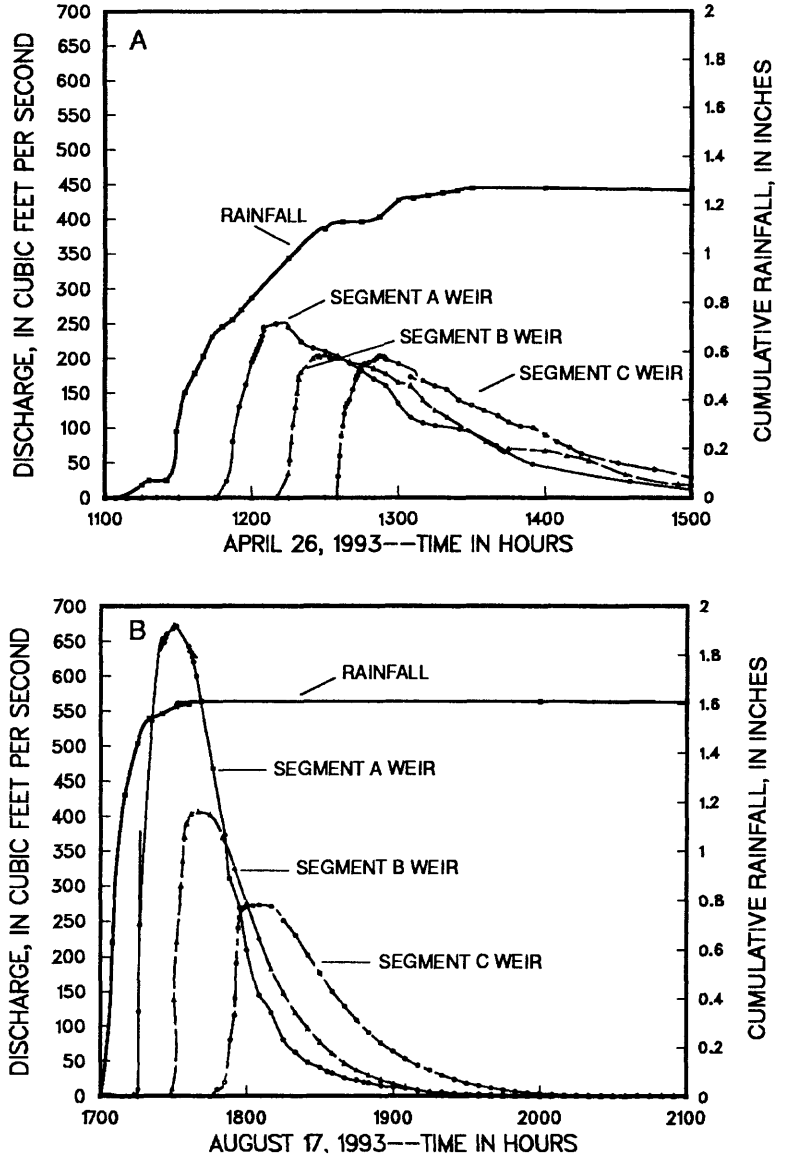


Figure 8. Cumulative rainfall and discharge in the stormwater-drainage channel at the Navy Ships Parts Control Center during storms when water table was high (A) and low (B).

Storm duration appears to have a substantial effect on quantity of water draining to sinkholes. More water drains to sinkholes during flows that result from long-duration inflow of water to the drainage channel than during flows that result from short-duration inflows that provide the same quantity of water in less time (table 3).

Effect of Filling Sinkholes

The effect of filling the sinkholes in the stormwater-drainge channel on flooding along the north side of channel segment C was estimated during this study through use of a step-backwater model (Shearman, 1990). Water-surface profiles for discharges of 670 ft^3/s, the maximum instantaneous discharge recorded at site 1 during the data-collection period, and 273 ft^3/s, the maximum instantaneous discharge recorded at site 3 during the data-collection period, were simulated with the model. These maximum discharges were recorded on August 17, 1993.

Selected input data for the step-backwater model were collected by surveying the channel from Trindle Spring Run to Salem Church Road (fig. 2). Values of the channel-roughness parameter used in the model were selected on the basis of a visual inspection of channel segment C and are comparable to values obtained from published sources (Barnes, 1967). The values of the channel-roughness parameter used in the model do not comprehensively account for all spatial variations of roughness in the channel segment and were not verified by particle-size analysis of channel material. In addition, the values do not reflect any temporal variations in roughness that result from seasonal changes in vegetation in the channel. Bailey and Ray (1966) indicate that trained engineers can select roughness coefficients with an accuracy of plus or minus 15 percent under most conditions. This uncertainty in the actual values of the channel-roughness parameter constrains the step-backwater model and must be considered when interpreting water-surface profiles computed by the model. During model calibration, the channel-roughness values were adjusted so that the water-surface profile computed by the model closely matched the profile recorded by eight crest-stage gages during the maximum instantaneous discharge on August 17, 1993.

Figure 9 shows profiles of the streambed, top of the north bank, and model-computed water surfaces for discharges of 670 and 273 ft^3/s. The mean increase in simulated water-surface elevation was about 1.8 ft for the maximum instantaneous discharge, assuming all sinkholes were completely filled with impermeable material.

Analysis of the model results indicates that filling the sinkholes to prevent water loss to the sinkholes will result in increased frequency and magnitude of flooding in downstream parts of the stormwater-drainage channel and increased discharge of storm runoff to Trindle Spring Run. In addition, filling the sinkholes will result in increased discharge of suspended sediment from the drainage channel. If the sinkholes had been filled prior to the maximum recorded discharge on August 17, 1993, then the discharge hydrographs for channel segments B and C would have been similar to the hydrograph for channel segment A (fig. 8B). Thus, peak water discharge to Trindle Spring Run would have been about 670 ft^3/s instead of 273 ft^3/s, and total water volume would have been about 38.4 acre-feet instead of 18.4 acre-feet. Suspended-sediment discharge to Trindle Spring Run also would have increased during the period of increased water discharge.

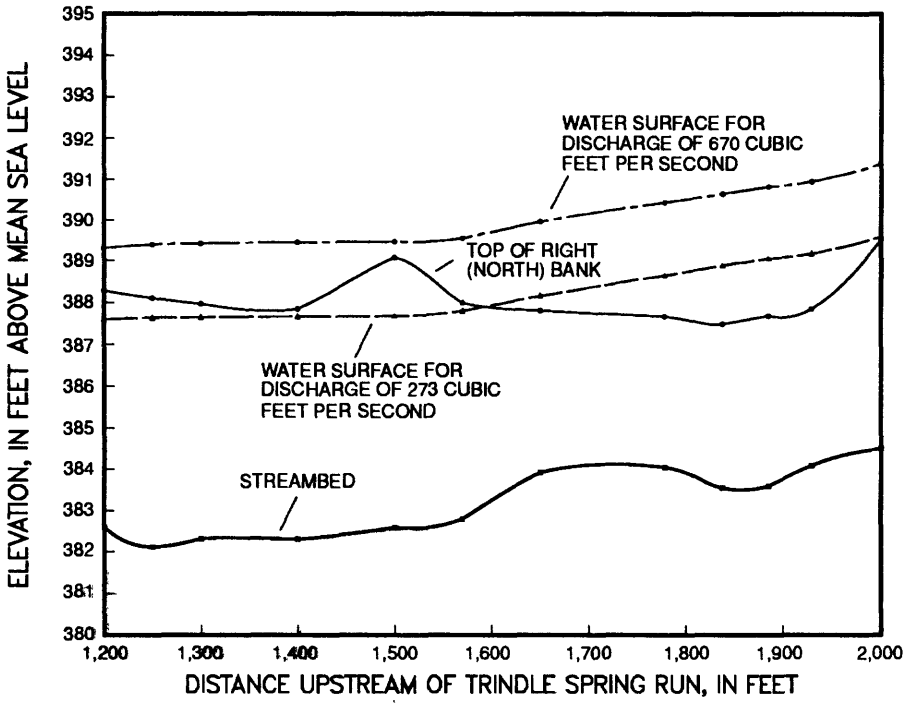


Figure 9. Water-surface, bank, and streambed profiles for a selected reach of channel segment C at the Navy Ships Parts Control Center.

SEDIMENT BUDGET

A sediment budget for the drainage channel was computed on the basis of measurements of water inflow, water outflow, and sediment concentrations during the data-collection period. Gains and losses of sediment in each segment of the drainage channel are summarized in figure . Sediment inflow to the drainage channel during the period totaled about 97 tons and sediment outflow to Trindle Spring Run totaled about 22 tons. Sediment loss to sinkholes was about 63 tons. Most of the residual, 12 tons, probably was deposited in and along channel segment B.

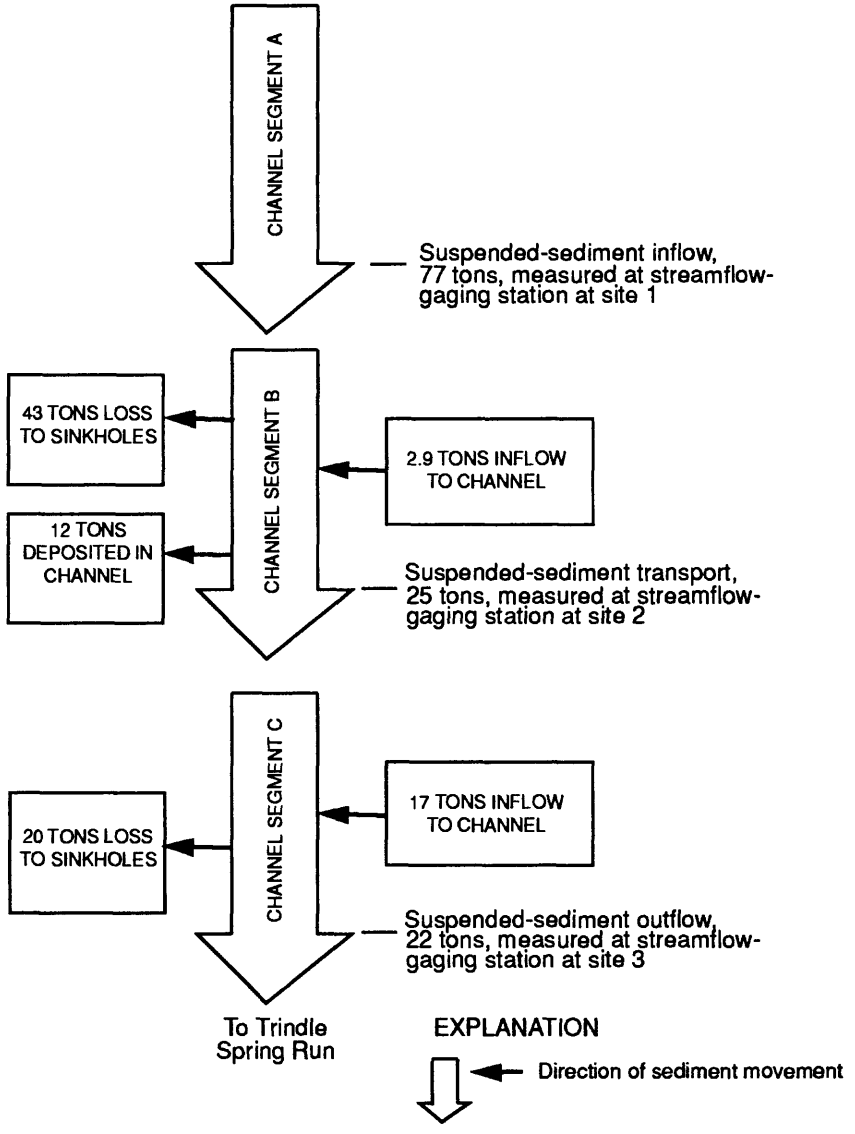


Figure 10. Inflow, outflow, and loss to sinkholes of suspended sediment in the stormwater-drainage channel at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993.

A seven-parameter log-linear model (Cohn and others, 1989) was used to estimate suspended-sediment loads for each of the three channel segments. The standard errors of prediction for the model ranged from 24 to 33 percent. Daily suspended-sediment load is given in Appendix 7 along with daily mean discharge and mean suspended-sediment concentration. Sediment loads for each of the inflow areas adjacent to channel segments B and C were computed on the basis of impervious area and mean

suspended-sediment concentration in samples collected at the downstream ends of the segments. Table lists sample-collection sites, drainage areas, suspended-sediment concentration in the samples, and estimated sediment load at each site.

During the data-collection period, the total suspended-sediment load computed for the downstream end of channel segment A was 77 tons or 0.11 ton per acre. Total outflow from channel segment A was 633 acre-feet and mean concentration of suspended sediment was 90 mg/L. This yield of suspended sediment is relatively low compared to yields from other areas in Pennsylvania. Ott and others (1991) reported a sediment yield of 0.095 ton per acre from the totally forested Young Womans Creek Basin in northern Pennsylvania and 0.054 ton per acre from the totally forested Stony Creek Basin in central Pennsylvania. Sediment yield of 1.13 tons per acre from a suburban basin near Harrisburg, Pa., and 0.56 ton per acre from an agricultural basin in Lancaster County, Pa., also were reported (fig. 11).

The suspended-sediment load computed for the downstream end of channel segment B was 25 tons, total outflow was 251 acre-feet, and mean concentration of suspended sediment was 73 mg/L. Channel segment B receives water and sediment inflow from segment A and from a 6-acre impervious area along the north side of the SPCC that contributes storm runoff directly to the channel. During the data-collection period, total inflow to channel segment B was about 644 acre-feet (633 acre-feet from channel segment A plus 11 acre-feet from the storm drain at the upper end of segment B). Total sediment inflow to channel segment B was 80 tons (77 tons from segment A plus 2.9 tons from the storm drain). No sediment transport to the channel from areas adjacent to channel segment B was observed.

Water discharging to channel segment B had a mean suspended-sediment concentration of 91 mg/L and water discharging from segment B had a mean concentration of 73 mg/L. The mean suspended-sediment concentration in water that drained to sinkholes in segment B was about 80 mg/L. About 393 acre-feet of water drained to these sinkholes, so the load of sediment that drained to the sinkholes was about 43 tons. Some sediment in channel segment B was deposited on the bottom, sides, and overbank parts of the channel, however, and did not drain to the sinkholes. The amount of channel and overbank sediment deposition, computed as a residual in the budget equation, was about 12 tons.

Table 4. Drainage area, suspended-sediment concentration, and estimated suspended-sediment load of inflows to the stormwater-drainage channel at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993

Sampling site	Drainage area, in acres	Number of water samples	Suspended-sediment concentration in water samples, in milligrams per liter		Estimated suspended-sediment load, in tons
			Mean	Range	
Fourth Avenue					
West culvert	122	22	67	18-334	32.0
East culvert	109	22	40	13-247	17.1
Second Avenue	64	15	66	10-213	15.5
First Avenue	58	20	24	3-88	5.8
Area adjacent to segment A	6	7	1,410	85-3,720	6.8
Culvert at segment B	6	13	97	15-362	2.9
Culvert at segment C	20	7	238	74-539	17.2

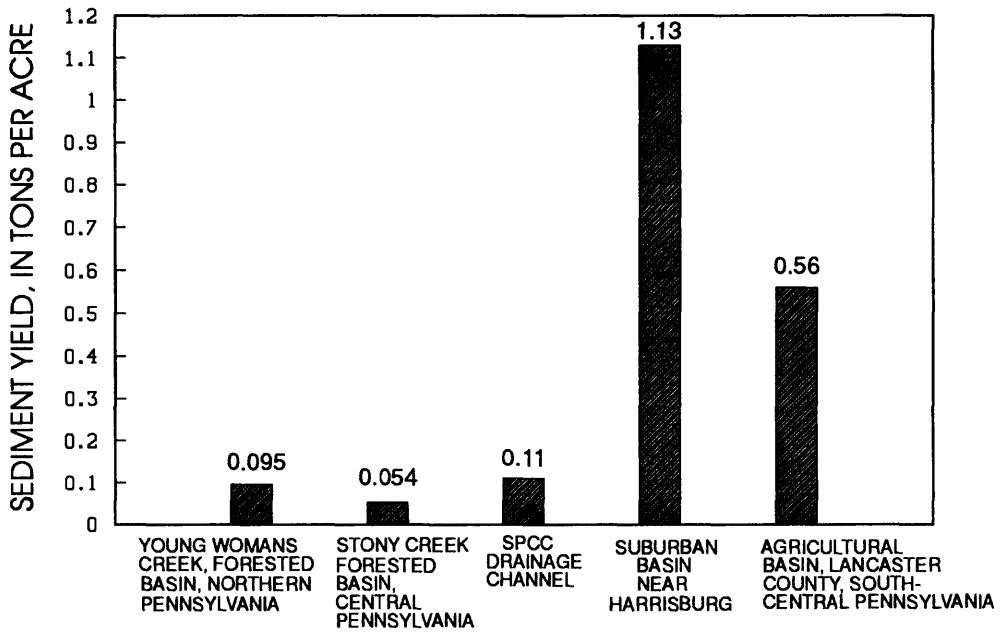


Figure 11. Sediment yields computed for the stormwater-drainage channel at the Navy Ships Parts Control Center at the downstream end of channel segment A and for selected forested, suburban, and agricultural basins in Pennsylvania.

The suspended-sediment load computed for the downstream end of channel segment C was 22 tons, total outflow was 131 acre-feet, and mean concentration of suspended sediment was 123 mg/L. Inflow to channel segment C was 269 acre-feet and consisted of 251 acre-feet of water from channel segment B plus 18 acre-feet of water from the impervious area. The total suspended-sediment load transported in the channel segment was 42 tons and consisted of 25 tons from channel segment B and 17 tons from the impervious area. About 138 acre-feet or 51 percent of incoming water drained to sinkholes in this segment. Sediment loss to sinkholes in this segment was about 20 tons, assuming the loss was proportional to water loss.

During the data-collection period, no bedload was transported from channel segment A to channel segment B or from channel segment B to channel segment C. Bedload movement in channel segment C was measured, however, during most storms where discharge resulted from channel segment C to Trindle Spring Run, and total bedload transport from channel segment C to Trindle Spring Run was about 70 lb. Most bedload material was about 1 to 2 in. in length and probably originated from a limestone outcrop along channel segment C.

SUMMARY AND CONCLUSIONS

The Navy Ships Parts Control Center near Mechanicsburg, Pa., occupies an area of 824 acres, of which 358 are covered by impervious surfaces. Most of the impervious area is drained by stormwater systems that discharge to an open channel that extends about 7,900 ft from its headwaters to its confluence with Trindle Spring Run. The Center and the channel are situated in karst terrane. Parts of the drainage channel contain large sinkholes and most of the storm runoff that enters the channel drains to the sinkholes.

From 1992 to 1994, the U.S. Geological Survey, in cooperation with the Department of the Navy, conducted a detailed study of water and sediment flows in the stormwater-drainage channel. The purpose of this study was to quantify the discharge of stormwater and suspended sediment to the ground-water system, by way of sinkholes, and to Trindle Spring Run. The study involved the collection, analysis, and interpretation of data on precipitation, streamflow, ground-water levels, suspended-sediment concentrations, and bedload. Discharge of water and sediment to sinkholes and to Trindle Spring Run was estimated through use of hydrologic budgets.

From October 1, 1992, to September 30, 1993, the data-collection period for the study, water and suspended-sediment discharge were measured at three sites along the drainage channel. During this period, discharge from the upstream segment (segment A) of the channel totaled 633 acre-feet, discharge from the middle segment (segment B) of the channel totaled 251 acre-feet, and discharge from the downstream segment (segment C) of the channel to Trindle Spring Run totaled 131 acre-feet. Precipitation during the data-collection period totaled 45.01 in., and if all water discharged from segment A of the channel was runoff from the impervious areas drained by stormwater systems, then runoff totaled 21.6 in. or 48 percent of precipitation.

During the data-collection period, total suspended-sediment inflow to the drainage channel was 97 tons, outflow to Trindle Spring Run was 22 tons, sediment loss to sinkholes was 63 tons, and the residual 12 tons of sediment was deposited in parts of channel segment B and nearby overbank areas. Suspended-sediment yield from the drainage area of channel segment A was slightly greater than yields from selected forested areas and much less than yields from selected suburban and agricultural lands in Pennsylvania. No bedload was transported from channel segment A to segment B or from segment B to segment C. About 70 lb of bedload were transported from channel segment C to Trindle Spring Run.

The effect of filling the sinkholes on flooding was estimated through use of a step-backwater model. Analysis of the model results indicates that filling the sinkholes will result in increased frequency and magnitude of flooding in downstream parts of the drainage channel and increased discharge of storm runoff and suspended sediment to Trindle Spring Run.

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Appendix 1. Daily precipitation measured at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993

[All values in inches; Normal precipitation is based on 100 years of record at Middletown-Harrisburg Airport]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.0	0.0	0.0	0.0	0.0	0.0	1.40	0.0	0.0	0.04	0.0	0.0
2	0.0	.81	0.0	0.0	0.0	0.0	.20	0.0	0.0	1.51	0.0	.12
3	0.0	.85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.05	.71	.83
4	0.0	0.0	.03	0.0	0.0	1.96	0.0	0.0	.09	0.0	.19	.80
5	0.0	.14	.04	.53	0.0	.41	0.0	.72	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	.06	.05	0.0	0.0	0.0	.12	.40	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.34	0.0	0.0
8	0.0	0.0	0.0	.18	0.0	.05	0.0	0.0	.40	0.0	0.0	.32
9	1.67	0.0	0.0	.05	0.0	0.0	.04	0.0	.10	0.0	0.0	0.0
10	0.0	0.0	1.19	.12	0.0	.05	1.35	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	.57	.09	0.0	0.0	.03	0.0	0.0	.18	1.05	0.0
12	0.0	.62	.05	.25	.98	0.0	0.0	.50	0.0	0.0	0.0	0.0
13	0.0	.04	0.0	.40	.41	1.83	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.36
16	0.0	0.0	.07	0.0	.87	0.0	1.34	0.0	0.0	0.0	0.0	.58
17	0.0	0.0	.65	0.0	0.0	.35	.11	0.0	0.0	0.0	1.56	.05
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.18	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.17	0.0	.12
20	0.0	0.0	.18	0.0	0.0	.03	0.0	.06	.85	.05	.13	.13
21	0.0	.48	0.0	.28	.59	.20	.98	0.0	0.0	0.0	0.0	0.0
22	0.0	.85	0.0	.13	.02	0.0	.71	0.0	0.0	0.0	0.0	0.0
23	0.0	.65	0.03	0.0	0.0	0.99	0.0	0.0	0.0	0.0	0.0	0.10
24	.12	.15	0.0	.16	0.0	.10	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.85
26	0.0	.05	0.0	0.0	.12	0.0	1.26	0.0	.10	0.0	0.0	.47
27	0.0	0.0	0.0	0.0	0.0	.11	0.0	0.0	0.0	0.0	0.0	.60
28	0.0	0.0	.20	0.0	0.0	.07	0.0	0.0	.23	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0		.38	0.0	.15	0.0	.47	0.0	0.0
30	0.0	0.0	.09	0.0		.04	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0		0.0	0.0		.37		.15		0.0	0.0	
Total	1.79	4.64	3.10	2.19	3.05	6.99	7.42	1.76	1.77	2.93	4.04	5.33
Normal	2.73	3.24	3.23	2.96	2.73	3.50	3.19	3.67	3.63	3.32	3.29	3.60

Total for Water Year 45.01

Normal for Water Year 39.09

Appendix 2. Daily snowfall and accumulated snow on ground measured at the Middletown-Harrisburg Airport, Pennsylvania, December 1, 1992, to March 31, 1993 [1]

[All values in inches; T, trace]

	December		January		February		March	
Day	Snowfall	Snow on ground	Snowfall	Snow on ground	Snowfall	Snow on ground	Snowfall	Snow on ground
1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	4
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
3	0.0	0.0	T	0.0	0.0	0.0	0.0	1
4	T	0.0	0.0	0.0	0.0	0.0	.3	T
5	T	0.0	0.0	0.0	0.0	0.0	.7	T
6	0.0	0.0	0.0	0.0	.6	0.0	.5	T
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	T	0.0	.5	T	0.0	0.0	0.0	0.0
10	3.8	0.0	.8	0.0	0.0	0.0	.5	0.0
11	0.0	0.0	T	1	0.0	0.0	T	0.0
12	T	0.0	0.0	T	3.8	1	0.0	0.0
13	0.0	0.0	0.0	0.0	3.3	6	20.3	3
14	0.0	0.0	0.0	0.0	0.0	2	.1	20
15	0.0	0.0	0.0	0.0	T	2	0.0	20
16	0.0	0.0	0.0	0.0	5.3	4	0.0	18
17	0.0	0.0	0.0	0.0	0.0	3	.3	13
18	0.0	0.0	T	0.0	0.0	2	0.0	7
19	0.0	0.0	0.0	0.0	0.0	2	0.0	5
20	0.0	0.0	0.0	0.0	T	2	T	4
21	0.0	0.0	.1	0.0	3.2	2	.1	3
22	0.0	0.0	0.0	0.0	0.0	5	0.0	2
23	0.0	0.0	0.0	0.0	0.0	3	0.0	1
24	T	0.0	0.0	0.0	0.0	3	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	3	0.0	0.0
26	0.0	0.0	0.0	0.0	2.2	4	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	5	0.0	0.0
28	.1	0.0	T	0.0	0.0	4	0.0	0.0
29	0.0	0.0	0.0	0.0			0.0	0.0
30	0.0	0.0	0.0	0.0			0.0	0.0
31	0.0	0.0	0.0	0.0			0.0	0.0
Total	3.9		1.4		18.5		22.8	

Total for period 46.6

[1] Data from U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

Appendix 3. Daily mean discharge at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993

CONODOGUINET CREEK BASIN

01570010 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 1, NEAR MECHANICSBURG, PA

LOCATION.--Lat 40°14'05", long 76°59'32", Cumberland County, Hydrologic Unit 02050305, at downstream end of channel segment A, on left bank 1.1 mi upstream from Trindle Spring Run and 1.5 mi northeast of Mechanicsburg.

DRAINAGE AREA.--1.03 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 406.39 feet above sea level.

REMARKS.--Records good. Several measurements of water temperature made during period of record.

	Daily mean discharge, in cubic feet per second											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.00	0.00	0.00	.00	0.00	21	0.00	0.00	0.00	0.00	0.00
2	.00	4.2	.00	.00	.00	.00	6.9	.00	.00	12	.00	.00
3	.00	10	.00	.00	.00	.00	2.7	.00	.00	.00	4.2	3.2
4	.00	.00	.00	.00	.00	16	1.5	.00	.00	.00	.00	11
5	.00	.00	.00	1.5	.00	6.4	.69	6.9	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.10	.12	.00	.00	.00	1.0	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	1.2	.00	.00	.00
9	13	.00	.00	.00	.00	.00	.00	.00	3.2	.00	.00	.00
10	.00	.00	1.4	.00	.00	.00	11	.00	.00	.00	.00	.00
11	.00	.00	9.3	.00	.00	.00	1.3	.00	.00	.00	5.2	.00
12	.00	3.7	.18	.00	.00	.00	.08	3.8	.00	.00	.00	.00
13	.00	.01	.00	1.1	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23
16	.00	.00	.00	.00	.00	.00	11	.00	.00	.00	.00	2.0
17	.00	.00	3.6	.00	.00	2.8	3.0	.00	.00	.00	18	.00
18	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	7.3	.00	.00	.00
21	.00	.3	.00	.00	.00	.06	8.0	.00	.00	.00	.00	.00
22	.00	3.0	.00	.41	.32	.00	13	.00	.00	.00	.00	.00
23	.00	8.9	.00	.00	.00	9.8	1.5	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	4.8	.53	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	3.0	.07	.00	.00	.00	.00	7.0
26	.00	.00	.00	.00	.00	2.3	16	.00	.00	.00	.00	4.0
27	.00	.00	.00	.00	.00	2.2	1.5	.00	.00	.00	.00	.24
28	.00	.00	.00	.00	.00	3.0	.55	.00	1.4	.00	.00	.00
29	.00	.00	.00	.00	--	5.6	.03	.00	.00	2.6	.00	.00
30	.00	.00	.00	.00	--	1.8	.00	.00	.00	.00	.00	.00
31	.00	--	.00	.00	--	3.9	--	.00	--	.00	.00	--
Total	13	30.11	14.48	3.01	0.32	61.76	100.53	10.70	13.10	16.30	28.40	27.67
Mean	.42	1.00	.47	.097	.011	1.99	3.35	.35	.44	.53	.92	.92
Maximum	.13	10	9.3	1.5	.32	16	21	6.9	7.3	12	18	11
Minimum	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Water year 1993 Total 319.38 Mean 0.88 Maximum 21 Minimum 0.00

Appendix 3. Daily mean discharge at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993–Continued

CONODOGUINET CREEK BASIN

01570030 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 2, NEAR MECHANICSBURG, PA

LOCATION.--Lat 40°14'17", long 76°59'49", Cumberland County, Hydrologic Unit 02050305, at downstream end of channel segment B, on right bank 0.8 mi upstream from Trindle Spring Run and 1.8 mi northeast of Mechanicsburg.
DRAINAGE AREA.--1.26 mi^2.
GAGE.--Water-stage recorder. Datum of gage is 400.74 feet above sea level.
REMARKS.--Records good. Several measurements of water temperature made during period of record.

	Daily mean discharge, in cubic feet per second											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.00	0.00	0.00	.000	0.00	16	0.00	0.00	0.00	0.00	0.00
2	.00	.00	.00	.00	.00	.00	3.9	.00	.00	3.9	.00	.00
3	.00	6.0	.00	.00	.00	.00	.21	.00	.00	.00	1.1	.00
4	.00	.00	.00	.00	.00	7.7	.00	.00	.00	.00	.00	4.7
5	.00	.00	.00	.00	.00	1.8	.00	3.2	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	6.6	.00	.00	.00	.00	.00	.00	.00	.47	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	4.7	.00	.00	.00	.00	.00
11	.00	.00	.66	.00	.00	.00	.13	.00	.00	.00	.31	.00
12	.00	.50	.05	.00	.00	.00	.00	1.3	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	6.5	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.46	.00	.00	.00	12	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	3.8	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	2.9	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	7.3	.00	.00	.00	.00	.00
23	.00	5.8	.00	.00	.00	5.3	.08	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	1.1	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00	1.9
26	.00	.00	.00	.00	.00	.00	13	.00	.00	.00	.00	.83
27	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	--	1.5	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	--	.00	.00	.00	.00	.00	.00	.00
31	.00	--	.00	.00	--	.81	--	.00	--	.00	.00	--
Total	6.60	12.30	.71	.00	.00	18.42	55.20	4.50	4.27	3.90	13.41	7.43
Mean	.21	.41	.023	.00	.00	.59	1.84	.15	.14	.13	.43	.25
Maximum	6.6	6.0	.66	.00	.00	7.7	16	3.2	3.8	3.9	12	4.7
Minimum	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Water year 1993 Total 126.74 Mean 0.35 Maximum 16 Minimum 0.00

Appendix 3. Daily mean discharge at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

CONODOGUINET CREEK BASIN

01570060 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 3, NEAR MECHANICSBURG, PA

LOCATION.--Lat 40°14'33", long 77°00'19", Cumberland County, Hydrologic Unit 02050305, at downstream end of channel segment C, on right bank 225 feet upstream from Trindle Spring Run and 2.2 mi northeast of Mechanicsburg.
DRAINAGE AREA.--1.55 mi^2.
GAGE.--Water-stage recorder. Datum of gage is 350.00 feet above sea level.
REMARKS.--Records good.

	Daily mean discharge, in cubic feet per second											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.00	0.00	0.00	0.00	0.00	9.7	0.00	0.00	0.00	0.00	0.00
2	.00	.00	.00	.00	.00	.00	.63	.00	.00	1.4	.00	.00
3	.00	3.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	4.5	.00	.00	.00	.00	.00	1.3
5	.00	.00	.00	.00	.00	.00	.00	2.0	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	5.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	1.1	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	4.0	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.3	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	2.3	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.87	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00
23	.00	3.3	.00	.00	.00	2.8	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.23	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.17
26	.00	.00	.00	.00	.00	.00	11	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	--	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	--	.00	.00	.00	.00	.00	.00	.00
31	.00	--	.00	.00	--	.00	--	.00	.00	.00	.00	--
Total	5.00	6.30	.00	.00	.00	7.53	30.80	2.08	2.30	1.40	9.30	1.47
Mean	.16	.21	.00	.00	.00	.24	1.03	.067	.077	.045	.30	.049
Maximum	5.0	3.3	.00	.00	.00	4.5	11	2.0	2.3	1.4	9.3	1.3
Minimum	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Water year 1993 Total 66.18 Mean 0.18 Maximum 111 Minimum 0.00

Appendix 4. Peak discharge at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center and at culverts under Salem Church Road, October 9, 1992, to September 26, 1993

[All values in cubic feet per second]

Date	Peak discharge			
	From channel segment A	From channel segment B	At Salem Church Road	From channel segment C
Oct. 9	435	360	306	157
Nov. 2-3	120	83	68	62
Nov. 21-23	144	105	88	81
Dec. 10-11	44	7.1	0	0
Mar. 4-6	92	68	70	61
Mar. 31	95	77	83	62
Apr. 10	67	39	39	18
Apr. 16	144	108	111	70
Apr. 21	57	42	44	22
Apr. 26	269	206	217	210
July 2	81	46	46	31
Aug. 11	130	16	0	0
Aug. 17	670	406	340	273
Sept. 3-4	104	58	49	34
Sept. 25-26	88	44	40	8

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993
[Water-level elevations are in feet above sea level; ---, no data]

Cumberland County
U.S. Geological Survey identification number 401350076593601
U.S. Geological Survey local well number CU 106
Ships Parts Control Center well number DD1

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	398.41	405.45	399.78	393.65	391.72	392.43	400.46	399.46	399.95	403.96	402.05	402.99
2	396.50	405.61	402.73	408.92	391.56	400.38	399.46	398.60	399.02	402.05	400.46	401.22
3	395.31	402.73	400.55	409.85	407.10	408.42	398.60	397.78	398.19	400.46	399.24	399.81
4	394.40	---	---	407.10	404.61	405.92	397.78	397.17	397.47	407.43	398.47	399.90
5	393.68	---	---	406.41	402.54	403.97	397.18	396.79	397.06	408.28	406.07	407.33
6	392.98	392.55	392.75	406.41	403.36	404.99	396.79	396.13	396.45	406.07	403.85	404.94
7	392.55	392.16	392.36	403.36	400.80	402.05	396.13	395.50	395.81	403.85	401.98	402.91
8	392.16	391.80	391.98	400.80	398.30	399.53	395.50	395.02	395.25	406.55	401.72	405.25
9	409.33	391.72	403.05	398.30	396.19	397.16	395.02	394.55	394.78	405.30	402.81	403.91
10	408.70	405.89	407.16	396.19	395.04	395.56	407.24	394.21	395.56	402.81	400.92	401.81
11	405.89	404.03	404.82	395.04	394.16	394.59	409.73	407.24	409.04	405.76	399.93	401.08
12	404.03	401.18	402.49	407.62	393.72	396.23	409.68	407.33	408.22	408.98	405.76	407.15
13	401.18	398.84	400.02	407.97	404.78	406.60	407.33	406.06	406.76	409.17	407.98	408.88
14	398.84	396.91	397.83	404.78	401.77	403.25	406.06	404.76	405.39	407.98	406.56	407.23
15	396.91	395.60	396.22	401.77	398.99	400.38	404.76	403.67	404.20	406.56	404.93	405.72
16	395.60	394.73	395.15	398.99	396.39	397.62	404.01	403.22	403.52	404.93	403.61	404.24
17	394.73	393.94	394.32	396.39	395.02	395.62	409.11	403.03	407.44	403.61	402.60	403.11
18	393.94	393.35	393.63	395.02	394.10	394.55	407.83	406.64	407.22	402.60	401.62	402.10
19	393.35	392.90	393.11	394.10	393.44	393.75	406.64	405.38	405.97	401.62	400.82	401.20
20	392.90	392.58	392.73	393.44	392.98	393.18	407.70	405.15	406.76	400.82	400.09	400.44
21	392.58	392.22	392.40	407.90	392.77	397.48	406.85	405.33	406.03	406.86	399.66	401.15
22	392.22	391.88	392.05	409.19	407.28	408.07	405.33	404.21	404.71	408.49	406.83	407.64
23	391.88	391.64	391.75	409.87	407.44	408.83	404.21	403.30	403.72	406.83	404.68	405.71
24	403.87	391.49	394.54	407.44	406.17	406.89	403.30	402.51	402.89	406.86	403.57	404.86
25	403.49	395.04	398.23	407.44	406.05	406.90	402.51	401.85	402.18	406.80	404.55	405.75
26	395.04	392.73	393.69	406.77	405.54	406.36	401.85	401.19	401.52	404.55	402.77	403.60
27	392.73	391.90	392.29	406.68	404.54	405.58	401.19	400.45	400.78	402.77	401.21	401.96
28	391.90	391.49	391.66	404.54	402.98	403.70	406.72	400.30	404.30	401.21	399.98	400.58
29	391.49	391.25	391.37	402.98	401.61	402.29	406.98	405.53	406.54	399.98	399.03	399.49
30	391.25	391.05	391.15	401.61	400.46	401.02	407.16	405.44	406.68	399.03	398.31	398.66
31	401.57	391.04	396.45	---	---	---	406.22	403.96	405.05	398.31	397.69	398.00
Month	409.33	391.04	396.08	409.87	391.56	401.11	409.73	394.21	402.53	409.17	397.69	403.18
		February			March			April			May	
1	397.69	397.16	397.41	402.37	398.59	399.99	410.73	409.67	410.14	408.56	407.81	408.10
2	---	---	---	406.61	398.24	402.91	410.17	409.63	409.82	407.81	407.74	407.77
3	---	---	---	407.47	406.25	406.91	409.63	409.51	409.55	407.74	407.69	407.71
4	---	---	---	410.83	407.33	409.05	409.51	409.44	409.47	407.69	407.63	407.66
5	395.85	395.47	395.65	409.91	409.44	409.71	409.44	409.37	409.40	410.08	407.62	408.91
6	395.47	395.10	395.28	409.44	409.04	409.27	409.37	409.25	409.32	409.31	407.84	408.53
7	395.10	394.76	394.93	409.04	408.34	408.56	409.25	408.69	409.00	407.84	407.69	407.74
8	394.76	394.40	394.58	408.39	407.91	408.15	408.69	407.93	408.30	407.69	407.60	407.64
9	394.40	394.04	394.21	408.18	407.84	407.94	407.93	407.71	407.76	407.60	407.47	407.54
10	394.04	393.71	393.87	407.84	407.76	407.80	410.22	407.70	409.22	407.47	407.28	407.38
11	393.71	393.39	393.55	407.81	407.69	407.73	409.85	409.33	409.47	407.28	406.94	407.13
12	393.39	393.16	393.24	407.69	407.64	407.65	409.33	409.12	409.25	408.88	406.64	407.31
13	407.21	393.27	404.10	407.66	407.62	407.64	409.12	408.44	408.80	408.73	407.31	407.71
14	407.58	407.21	407.39	407.62	407.57	407.59	408.44	407.73	408.02	407.31	406.70	407.03
15	407.61	406.92	407.33	407.73	407.54	407.61	407.73	407.62	407.66	406.70	406.07	406.38
16	408.01	407.24	407.45	407.80	407.52	407.65	410.09	407.60	408.65	406.07	405.41	405.73
17	408.16	407.52	407.88	409.70	407.71	408.84	409.92	409.35	409.52	405.41	404.91	405.11
18	407.52	406.97	407.26	409.28	408.04	408.60	409.36	409.14	409.27	407.28	404.52	405.21
19	---	---	---	408.04	407.67	407.75	409.14	408.55	408.87	407.38	406.36	407.06
20	404.65	403.36	403.78	407.69	407.62	407.66	408.55	407.75	408.13	406.36	404.94	405.61
21	403.81	400.26	401.88	409.34	407.67	408.49	410.15	407.68	408.76	404.94	403.86	404.36
22	408.69	399.82	405.29	409.16	408.32	408.60	410.30	409.61	409.89	403.86	403.08	403.45
23	408.39	407.03	407.43	410.76	407.91	408.88	409.63	409.42	409.49	403.08	402.45	402.75
24	407.03	405.41	406.17	410.49	409.77	409.94	409.42	409.37	409.39	402.45	401.89	402.15
25	406.08	403.15	404.56	409.79	409.61	409.67	409.37	409.20	409.30	401.89	401.38	401.63
26	403.71	401.38	402.60	409.62	409.52	409.57	410.93	408.98	409.56	401.38	400.92	401.15
27	404.38	400.64	402.97	409.66	409.48	409.54	409.61	409.41	409.48	400.92	400.43	400.67
28	404.08	400.67	402.13	409.72	409.47	409.57	409.41	409.34	409.37	400.43	399.95	400.18
29	---	---	---	410.01	409.46	409.63	409.39	409.25	409.33	405.64	399.84	403.30
30	---	---	---	409.54	409.43	409.49	409.25	408.56	408.95	403.12	401.00	401.86
31	---	---	---	410.26	409.38	409.45	---	---	---	405.55	399.93	401.34
Month	408.69	393.16	401.29	410.83	398.24	408.12	410.93	407.60	409.10	410.08	399.84	405.36

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401350076593601
U.S. Geological Survey local well number CU 106
Ships Parts Control Center well number DD1

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	405.51	401.97	403.64	398.33	395.57	396.78	396.07	393.84	394.86	392.70	392.39	392.55
2	401.97	400.13	400.99	409.42	395.19	403.79	393.84	392.75	393.16	403.36	392.13	393.56
3	400.13	398.87	399.45	408.44	405.73	406.93	407.10	392.74	405.34	407.57	395.14	400.47
4	404.48	398.68	402.22	405.73	403.45	404.57	407.19	400.96	403.67	409.02	406.89	408.16
5	401.12	399.11	399.95	403.45	401.58	402.52	406.55	402.41	404.37	406.89	404.15	405.55
6	399.11	397.83	398.43	401.58	399.92	400.75	407.84	400.55	403.85	404.15	401.60	402.86
7	397.83	397.00	397.36	407.18	398.70	399.98	407.22	403.68	405.47	401.60	399.23	400.41
8	406.94	396.53	398.14	407.34	403.89	405.76	403.68	400.59	402.14	406.90	398.77	404.50
9	408.40	406.18	407.45	403.89	401.46	402.64	400.59	397.22	398.94	405.54	402.18	403.68
10	407.70	405.11	406.41	401.46	399.40	400.41	397.22	394.79	395.75	402.18	399.60	400.89
11	405.11	402.72	403.88	403.94	398.13	399.69	408.81	394.42	403.67	399.60	397.05	398.33
12	402.72	400.62	401.63	403.82	398.69	400.62	408.75	405.59	407.03	397.05	395.44	396.16
13	400.62	398.85	399.68	398.69	396.79	397.68	405.59	402.78	404.13	395.44	394.54	394.97
14	398.85	397.47	398.13	396.79	395.75	396.22	402.78	400.10	401.42	394.54	393.79	394.15
15	397.47	396.60	396.98	395.75	395.12	395.42	400.10	397.55	398.83	406.92	393.45	395.77
16	396.60	396.01	396.29	395.12	394.59	394.84	397.55	395.63	396.48	408.70	406.31	407.80
17	396.01	395.53	395.76	394.59	394.10	394.34	409.35	394.93	398.80	408.38	406.46	407.24
18	395.53	395.13	395.33	394.10	393.67	393.88	407.97	404.65	406.24	406.68	405.58	406.35
19	395.13	394.78	394.94	405.91	393.44	397.18	404.65	402.29	403.43	405.58	402.62	404.02
20	407.19	394.53	397.12	405.81	400.44	402.89	406.44	401.02	402.79	402.62	400.04	401.29
21	407.20	403.29	405.27	400.44	396.60	398.56	406.20	402.85	404.43	406.97	400.04	405.67
22	403.29	400.51	401.87	396.60	394.43	395.32	402.85	400.54	401.65	404.44	401.40	402.85
23	400.51	398.01	399.22	394.43	393.24	393.76	400.54	398.50	399.48	404.22	399.07	400.52
24	398.01	396.16	396.96	393.24	392.79	392.99	398.50	396.87	397.63	404.26	399.62	402.43
25	396.16	395.29	395.67	392.79	392.46	392.62	396.87	395.85	396.34	408.34	397.44	400.77
26	402.06	394.81	396.05	392.46	392.15	392.30	395.85	395.14	395.47	409.14	407.14	408.25
27	402.05	394.84	396.38	392.15	391.87	392.01	395.14	394.54	394.84	---	---	---
28	406.79	394.27	397.63	391.87	391.66	391.75	394.54	393.98	394.26	407.80	405.81	406.79
29	406.61	401.56	403.92	407.59	391.65	405.13	393.98	393.46	393.71	405.81	403.86	404.82
30	401.56	398.33	399.95	404.21	400.31	402.19	393.46	393.02	393.24	403.86	402.27	403.05
31	---	---	---	400.31	396.07	398.25	393.02	392.70	392.85	---	---	---
Month	408.40	394.27	399.56	409.42	391.65	398.44	409.35	392.70	399.82	409.14	392.13	401.86
YEAR	410.93	391.04	402.25									

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401353076593701
U.S. Geological Survey local well number CU 848
Ships Parts Control Center well number BF2

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
						Daily Instantaneous Values						
1	407.63	400.28	400.36	---	---	---	---	---	---	---	---	---
2	407.63	406.86	---	---	---	---	409.82	---	---	---	399.83	---
3	---	408.06	400.15	---	---	407.64	---	---	---	---	---	---
4	---	405.62	---	---	---	---	---	---	---	---	---	---
5	---	403.64	---	---	---	---	409.35	---	---	---	---	---
6	---	404.64	---	405.63	---	---	---	---	---	---	---	---
7	---	402.08	---	---	---	---	---	---	---	---	---	---
8	---	400.38	---	---	---	---	---	---	---	406.14	---	407.14
9	405.23	400.26	---	---	---	---	---	407.58	---	---	---	---
10	407.37	399.95	---	---	---	407.69	---	---	---	---	---	---
11	405.19	---	409.56	---	---	---	---	---	403.67	---	---	---
12	402.19	---	407.64	---	---	---	---	---	---	---	---	---
13	400.50	406.57	---	409.16	---	---	---	407.66	---	---	403.65	---
14	400.28	404.03	405.35	---	---	---	407.98	---	---	---	---	---
15	---	400.45	---	---	---	---	---	---	---	---	---	---
16	---	400.30	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	407.38	408.38	409.23	---	---	---	---	---
19	---	---	---	---	---	---	---	407.29	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	407.61	404.91	---	---	---	---	---	---	---	---	402.65
23	---	409.30	403.85	---	---	408.16	---	---	---	---	---	---
24	---	406.99	---	---	---	---	---	---	400.28	---	---	---
25	400.48	407.08	---	---	---	409.71	---	---	---	---	---	---
26	400.21	---	---	403.89	---	---	---	---	---	---	---	---
27	399.91	405.57	---	---	---	409.56	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	402.00	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	401.66	---	---	---	---	409.35	---	---	---	---	---	---
Mean	---	---	---	---	---	---	---	---	---	---	---	---
Maximum	---	---	---	---	---	---	---	---	---	---	---	---
Minimum	---	---	---	---	---	---	---	---	---	---	---	---

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401357076593401
U.S. Geological Survey local well number CU 847
Ships Parts Control Center well number BF5

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	---	---	---	---	---	---	398.73	397.82	398.24	401.27	399.59	400.31
2	---	---	---	---	---	---	397.82	397.21	397.50	399.59	398.53	399.07
3	---	---	---	---	---	---	397.21	396.57	396.88	398.53	397.60	398.01
4	---	---	---	---	---	---	396.57	396.03	396.28	397.60	396.98	397.28
5	---	---	---	---	---	---	396.04	395.62	395.90	404.16	396.96	402.51
6	---	---	---	---	---	---	395.62	395.18	395.36	403.32	401.30	402.33
7	---	---	---	---	---	---	395.24	395.13	395.19	401.30	399.69	400.40
8	---	---	---	---	---	---	395.20	395.16	395.18	401.38	399.29	400.31
9	---	---	---	---	---	---	395.16	395.12	395.14	401.36	400.10	400.77
10	---	---	---	---	---	---	398.63	395.09	395.25	400.10	398.76	399.37
11	---	---	---	394.92	394.90	394.91	408.89	398.63	405.75	398.76	397.85	398.23
12	---	---	---	401.15	394.90	395.50	408.88	406.52	407.56	402.09	397.85	400.44
13	---	---	---	402.80	401.15	402.15	406.52	405.20	405.87	407.12	402.09	406.04
14	---	---	---	401.16	398.33	399.61	405.20	403.59	404.46	406.66	404.79	405.60
15	---	---	---	398.33	396.75	397.53	403.59	402.24	402.84	404.79	403.32	404.03
16	---	---	---	396.75	395.54	396.10	402.24	401.38	401.76	403.32	401.83	402.57
17	---	---	---	395.54	395.05	395.22	407.60	401.24	405.57	401.83	400.72	401.25
18	---	---	---	395.05	394.94	394.98	406.92	405.61	406.16	400.72	399.85	400.26
19	---	---	---	394.94	394.56	394.82	405.61	404.50	405.05	399.85	399.16	399.49
20	---	---	---	394.68	394.63	394.65	406.03	404.18	405.28	399.16	398.53	398.85
21	---	---	---	401.66	394.63	395.99	405.31	404.19	404.75	400.29	398.01	398.45
22	---	---	---	406.46	401.66	403.55	404.19	402.71	403.43	404.09	400.29	403.40
23	---	---	---	408.84	406.46	407.86	402.71	401.73	402.21	403.28	401.64	402.43
24	---	---	---	406.60	405.13	405.75	401.73	400.86	401.27	402.31	400.81	401.36
25	---	---	---	405.73	404.48	405.17	400.86	400.23	400.54	402.34	401.28	401.94
26	---	---	---	404.48	403.46	403.93	400.23	399.56	399.89	401.28	400.09	400.68
27	---	---	---	403.46	401.67	402.48	399.56	399.01	399.28	400.09	399.14	399.60
28	---	---	---	401.67	400.49	401.05	401.42	398.76	399.77	399.14	398.16	398.67
29	---	---	---	400.49	399.55	400.00	402.43	401.42	402.16	398.16	397.44	397.77
30	---	---	---	399.55	398.73	399.13	402.83	401.80	402.39	397.44	396.91	397.17
31	---	---	---	---	---	---	402.76	401.27	402.10	396.91	396.42	396.68
Month	---	---	---	408.84	394.56	399.52	408.89	395.09	400.94	407.12	396.42	400.49
		February			March			April			May	
1	396.42	395.96	396.18	396.07	395.31	395.67	412.62	410.52	412.00	---	---	---
2	395.96	395.61	395.78	399.79	395.10	396.49	412.56	411.20	411.83	---	---	---
3	395.61	395.25	395.43	402.60	399.79	400.72	411.20	410.31	410.70	---	---	---
4	395.25	395.09	395.14	411.67	402.60	407.23	410.31	409.90	410.08	407.37	407.08	407.23
5	395.11	395.07	395.09	411.17	410.48	410.72	409.90	409.65	409.77	408.99	407.01	408.13
6	395.07	395.05	395.06	410.51	409.89	410.10	409.65	409.40	409.53	408.87	407.89	408.38
7	395.05	395.01	395.03	410.05	409.21	409.67	409.40	408.92	409.18	407.89	407.40	407.61
8	395.01	394.98	395.00	410.18	409.17	409.65	408.92	408.29	408.60	407.40	407.02	407.21
9	394.99	394.95	394.97	410.02	409.21	409.61	408.29	407.83	408.01	407.02	406.59	406.81
10	394.95	394.91	394.93	409.36	408.61	408.93	410.82	407.79	409.21	406.59	406.13	406.36
11	394.91	394.86	394.88	408.61	407.98	408.25	410.76	409.84	410.18	406.13	405.61	405.88
12	394.86	394.81	394.84	407.98	407.68	407.81	409.84	409.40	409.64	407.27	405.22	405.84
13	399.29	394.80	396.61	407.77	407.62	407.69	409.40	408.80	409.13	407.27	406.25	406.72
14	401.18	399.29	400.32	407.63	407.16	407.34	408.80	408.10	408.45	406.25	405.50	405.91
15	401.77	401.04	401.33	407.16	407.00	407.06	408.10	407.75	407.91	405.50	404.71	405.10
16	403.35	401.67	401.87	407.18	406.89	407.01	410.15	407.62	408.82	404.71	403.75	404.23
17	404.48	403.35	404.15	409.19	407.12	408.23	410.44	409.85	410.16	404.08	403.29	403.69
18	404.02	402.43	403.15	409.10	408.29	408.67	409.85	409.46	409.66	404.14	403.40	403.71
19	402.43	400.23	401.30	408.29	407.73	407.92	409.46	408.91	409.20	404.49	404.10	404.38
20	400.23	398.75	399.38	407.73	407.54	407.60	408.91	408.22	408.56	404.10	403.05	403.56
21	398.75	397.29	397.96	409.16	407.52	408.24	410.23	408.00	408.76	403.05	402.01	402.50
22	403.79	397.03	399.80	409.07	408.55	408.84	411.68	410.23	411.02	402.01	401.21	401.59
23	403.89	402.28	403.05	413.21	408.51	409.68	411.04	410.05	410.47	401.21	400.61	400.91
24	402.28	400.22	401.26	413.21	412.05	412.53	410.05	409.70	409.85	400.61	400.08	400.34
25	400.22	398.54	399.37	412.23	411.13	411.56	409.70	409.42	409.57	400.08	399.58	399.82
26	398.54	397.69	398.05	411.13	410.53	410.76	411.33	409.20	410.13	399.58	399.13	399.35
27	398.04	397.12	397.50	410.53	410.23	410.33	---	---	---	399.13	398.67	398.91
28	397.37	396.07	396.62	410.36	410.02	410.21	---	---	---	398.67	398.09	398.38
29	---	---	---	410.61	409.96	410.31	---	---	---	400.39	397.97	399.41
30	---	---	---	410.27	409.89	410.09	---	---	---	399.95	398.91	399.45
31	---	---	---	410.52	409.71	409.82	---	---	---	399.86	398.04	398.61
Month	404.48	394.80	398.00	413.21	395.10	408.02	412.62	407.62	409.63	408.99	397.97	403.57

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401357076593401
U.S. Geological Survey local well number CU 847
Ships Parts Control Center well number BF5

Day	June			July			August			September		
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
1	400.26	399.28	399.82	395.85	395.21	395.34	395.24	395.19	395.21	394.96	394.90	394.93
2	399.28	398.09	398.71	404.25	395.19	399.46	395.19	395.13	395.16	394.90	394.83	394.86
3	398.09	397.20	397.63	404.29	401.79	403.23	401.22	395.13	399.73	400.46	394.77	395.56
4	398.29	397.03	397.75	401.79	399.92	400.77	401.81	396.91	398.85	404.23	400.46	403.42
5	397.79	397.19	397.50	399.92	398.61	399.24	401.56	398.41	399.88	403.42	399.98	401.64
6	397.19	396.27	396.69	398.61	397.48	398.00	402.75	397.16	399.20	399.98	398.13	399.03
7	396.27	395.73	395.98	400.58	396.72	397.27	402.52	399.20	400.78	398.13	396.70	397.40
8	400.40	395.31	395.96	402.22	400.30	401.45	399.20	397.28	398.19	401.54	396.44	399.81
9	404.21	400.40	402.57	400.30	398.39	399.30	397.28	395.55	396.37	401.17	398.45	399.62
10	404.04	401.14	402.61	398.39	397.03	397.67	395.55	395.23	395.28	398.45	396.82	397.62
11	401.14	399.32	400.19	398.73	396.20	396.87	404.03	395.22	399.58	396.82	395.54	396.13
12	399.32	397.88	398.57	398.85	397.13	398.00	404.19	401.23	403.04	395.54	395.19	395.25
13	397.88	396.80	397.32	397.13	395.81	396.42	401.23	399.01	400.00	395.19	395.15	395.17
14	396.80	395.96	396.34	395.81	395.23	395.39	399.01	397.33	398.13	395.15	395.12	395.13
15	395.96	395.34	395.65	395.23	395.18	395.20	397.33	395.92	396.58	399.23	395.08	395.41
16	395.34	395.07	395.16	395.18	395.13	395.15	395.92	395.24	395.46	404.49	399.23	402.55
17	395.07	394.92	394.99	395.13	395.08	395.11	402.58	395.21	396.63	404.52	402.71	403.63
18	394.92	394.82	394.86	395.08	395.04	395.06	402.88	400.57	402.01	402.71	400.19	401.55
19	394.82	394.75	394.79	398.46	395.00	395.57	400.57	398.80	399.58	400.19	398.26	399.19
20	400.93	394.69	395.53	398.90	396.28	397.81	401.44	398.37	399.20	398.26	396.85	397.53
21	401.47	399.28	400.56	396.28	395.22	395.53	401.44	399.44	400.53	401.64	396.87	400.65
22	399.28	397.27	398.16	395.22	395.18	395.20	399.44	397.83	398.59	400.19	397.90	398.96
23	397.27	395.81	396.48	395.18	395.12	395.15	397.83	396.55	397.17	397.90	396.54	397.21
24	395.81	395.20	395.38	395.12	395.06	395.09	396.55	395.63	396.05	398.79	397.03	397.99
25	395.20	395.09	395.14	395.06	395.00	395.03	395.63	395.21	395.32	402.40	395.96	397.40
26	395.09	395.03	395.06	395.00	394.92	394.96	395.21	395.18	395.20	405.37	402.40	404.57
27	395.03	394.96	395.00	394.92	394.82	394.87	395.18	395.15	395.16	406.08	403.99	405.03
28	400.86	394.89	395.93	394.82	394.69	394.76	395.15	395.10	395.13	405.94	403.46	404.64
29	400.86	398.05	399.51	401.57	394.68	399.63	395.10	395.06	395.08	403.46	401.41	402.44
30	398.05	395.85	396.83	399.43	396.27	397.74	395.06	395.01	395.04	401.41	399.90	400.61
31	---	---	---	396.27	395.24	395.51	395.01	394.96	394.99	---	---	---
Month	404.21	394.69	397.22	404.29	394.68	396.96	404.19	394.96	397.65	406.08	394.77	399.16
YEAR	413.21	394.56	400.95									

Daily Instantaneous Values

Oct.	1	396.39	Oct.	12	398.32	Oct.	22	393.41	Nov.	2	398.97
Oct.	2	396.39	Oct.	13	397.23	Oct.	25	393.95	Nov.	3	405.22
Oct.	3	394.02	Oct.	14	395.61	Oct.	26	393.96	Nov.	4	401.78
Oct.	4	393.60	Oct.	15	394.12	Oct.	27	393.67	Nov.	5	399.53
Oct.	5	393.73	Oct.	16	393.95	Oct.	28	393.56	Nov.	6	400.90
Oct.	7	393.65	Oct.	17	393.66	Oct.	29	393.67	Nov.	7	398.68
Oct.	9	393.47	Oct.	19	393.71	Oct.	30	393.47	Nov.	8	397.17
Oct.	10	403.92	Oct.	20	393.61	Oct.	31	393.41	Nov.	9	395.54
Oct.	11	400.72	Oct.	21	393.55	Nov.	1	393.36	Nov.	10	394.00

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401402076593201
U.S. Geological Survey local well number CU 846
Ships Parts Control Center well number DD7D

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	---	---	---	384.84	384.53	384.67	393.62	393.28	393.46	393.93	393.56	393.74
2	---	---	---	401.36	384.49	390.52	393.28	392.90	393.10	393.56	393.26	393.41
3	---	---	---	404.52	396.40	401.84	392.90	392.49	392.67	393.26	392.96	393.11
4	---	---	---	396.40	393.08	394.14	392.49	392.10	392.27	392.96	392.66	392.80
5	---	---	---	396.38	392.18	392.78	392.12	391.70	391.93	402.33	392.66	399.61
6	---	---	---	396.82	391.97	393.56	391.70	391.22	391.45	396.45	394.07	394.79
7	---	---	---	391.97	391.03	391.47	391.22	390.67	390.96	394.07	393.57	393.80
8	---	---	---	391.03	390.37	390.69	390.67	390.17	390.44	397.05	393.49	394.72
9	---	---	---	390.37	389.80	390.09	390.17	389.74	389.95	394.37	393.40	393.71
10	402.73	394.27	398.28	---	---	---	397.80	389.34	389.92	393.40	393.08	393.24
11	394.27	392.80	393.41	389.17	388.69	388.93	405.96	397.80	403.90	393.08	392.82	392.95
12	392.80	391.80	392.28	400.37	388.43	389.92	405.95	400.54	404.17	398.74	392.83	396.30
13	391.80	390.96	391.37	401.07	392.94	397.25	400.54	397.69	398.75	403.55	396.31	402.28
14	390.96	390.37	390.65	392.94	391.22	391.94	397.69	396.60	397.10	403.08	396.24	398.87
15	390.37	389.72	390.05	391.22	390.37	390.77	396.60	395.86	396.20	396.24	395.47	395.76
16	389.72	389.08	389.39	390.37	389.77	390.06	395.86	395.46	395.65	395.47	395.06	395.25
17	389.08	388.56	388.80	389.77	389.19	389.47	404.94	395.39	401.93	395.06	394.69	394.86
18	388.56	388.16	388.35	389.19	388.67	388.92	404.18	398.46	400.65	394.69	394.35	394.52
19	388.16	387.78	387.97	388.67	388.27	388.46	398.46	397.24	397.78	394.35	394.08	394.21
20	387.78	387.42	387.59	388.27	387.93	388.09	402.05	397.08	399.61	394.08	393.82	393.94
21	387.42	387.14	387.28	400.33	387.77	390.91	398.36	396.61	397.23	398.37	393.62	394.20
22	387.14	386.82	386.98	402.62	397.56	400.74	396.61	396.04	396.30	402.24	396.00	400.11
23	386.82	386.47	386.65	405.31	402.34	404.35	396.35	395.86	396.07	396.00	394.47	395.01
24	386.55	386.30	386.43	402.34	397.10	398.59	396.04	395.26	395.63	398.07	394.15	394.93
25	386.54	386.10	386.32	400.72	396.25	398.19	395.26	394.90	395.07	397.88	394.18	395.12
26	386.10	385.81	385.96	396.25	395.48	395.80	394.90	394.49	394.70	394.18	393.83	393.98
27	385.81	385.58	385.70	395.48	394.90	395.19	394.49	394.16	394.33	393.83	393.54	393.68
28	385.58	385.32	385.46	394.90	394.38	394.63	396.04	394.05	394.59	393.54	393.30	393.41
29	385.32	385.08	385.19	394.38	393.97	394.17	395.00	394.16	394.53	393.30	393.00	393.13
30	385.08	384.83	384.94	393.97	393.62	393.81	397.57	394.08	395.28	393.00	392.69	392.84
31	385.16	384.84	385.03	---	---	---	394.82	393.93	394.23	392.69	392.45	392.57
Month	402.73	384.83	388.37	405.31	384.49	393.10	405.96	389.34	395.48	403.55	392.45	394.87
		February			March			April			May	
1	392.45	392.09	392.27	390.43	390.17	390.29	410.13	408.71	409.61	406.13	405.06	405.64
2	392.09	391.75	391.92	396.76	390.05	392.23	409.95	409.15	409.54	405.06	403.34	404.09
3	391.75	391.41	391.58	397.70	392.29	394.99	409.15	408.52	408.82	403.34	402.33	402.82
4	391.41	391.05	391.23	406.71	395.28	401.29	408.52	408.03	408.25	402.33	401.41	401.88
5	391.05	390.70	390.88	407.98	406.71	407.52	408.03	407.62	407.82	406.67	401.23	404.45
6	390.70	390.34	390.52	407.86	407.51	407.73	407.62	406.98	407.33	406.53	405.21	405.92
7	390.34	390.01	390.18	407.51	406.83	407.05	406.98	406.24	406.62	405.21	402.71	403.87
8	390.01	389.63	389.84	406.91	406.46	406.68	406.24	405.38	405.82	402.71	401.16	401.91
9	389.63	389.24	389.43	406.67	406.07	406.37	405.38	403.73	404.65	401.16	400.14	400.61
10	389.24	388.91	389.07	406.07	405.23	405.52	408.43	403.50	406.20	400.14	399.45	399.78
11	388.91	388.62	388.76	405.33	403.90	404.59	408.41	407.74	408.03	399.45	398.90	399.18
12	388.62	388.47	388.53	403.90	402.69	403.26	407.74	406.91	407.35	403.87	398.54	399.84
13	394.89	388.51	390.33	402.69	402.10	402.41	406.91	406.08	406.51	403.96	400.53	402.73
14	395.97	393.75	394.88	402.10	401.22	401.60	406.08	405.06	405.59	400.53	398.93	399.60
15	396.08	391.16	393.68	401.79	400.73	401.13	405.06	403.39	404.18	398.93	398.08	398.48
16	397.17	391.59	393.67	403.13	400.65	401.61	407.85	402.95	405.22	398.08	397.43	397.74
17	399.61	397.17	398.97	406.69	403.13	404.96	408.15	407.81	408.02	397.43	396.98	397.20
18	398.68	392.46	394.36	406.63	405.56	406.08	407.81	407.07	407.46	398.60	396.62	396.88
19	392.46	391.44	391.88	405.56	403.46	404.49	407.07	406.28	406.68	400.05	396.93	398.52
20	391.44	390.91	391.15	403.46	402.42	402.73	406.28	405.34	405.83	396.93	396.16	396.47
21	390.91	390.57	390.76	405.91	402.41	404.10	408.09	404.89	406.07	396.16	395.80	395.96
22	400.80	390.47	394.73	405.90	405.39	405.61	409.53	408.09	408.84	395.80	395.51	395.65
23	400.69	393.18	396.49	409.25	405.24	406.29	408.93	408.20	408.59	395.51	395.21	395.36
24	393.18	391.98	392.47	409.62	409.05	409.28	408.20	407.66	407.90	395.21	394.93	395.06
25	391.98	391.40	391.68	409.34	409.03	409.17	407.66	407.01	407.36	394.93	394.64	394.78
26	391.40	390.99	391.18	409.03	408.73	408.86	409.42	406.66	407.88	394.64	394.36	394.50
27	390.99	390.76	390.86	408.75	408.41	408.58	408.67	408.04	408.36	394.36	394.12	394.24
28	390.76	390.43	390.58	408.82	408.33	408.60	408.04	407.58	407.81	394.12	393.90	394.00
29	---	---	---	409.03	408.19	408.62	407.58	406.92	407.26	395.42	393.83	394.31
30	---	---	---	408.52	408.03	408.35	406.92	406.13	406.54	393.93	393.57	393.72
31	---	---	---	408.71	407.64	407.84	---	---	---	397.25	393.38	393.96
Month	400.80	388.47	391.85	409.62	390.05	404.45	410.13	402.95	407.20	406.67	393.38	398.68

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401402076593201
U.S. Geological Survey local well number CU 846
Ships Parts Control Center well number DD7D

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	397.13	393.43	394.32	389.80	389.22	389.47	387.78	387.34	387.54	387.89	387.59	387.74
2	393.44	393.06	393.23	404.22	389.04	397.23	387.34	387.03	387.19	387.61	387.37	387.49
3	393.07	392.74	392.90	403.08	395.28	398.54	399.87	387.03	395.33	400.13	387.30	389.67
4	392.79	392.60	392.71	395.28	393.87	394.44	398.64	389.05	392.30	404.08	396.95	402.30
5	392.60	392.35	392.49	393.87	393.21	393.51	397.97	389.42	391.87	396.95	393.23	394.39
6	392.36	392.00	392.18	393.21	392.68	392.95	400.12	388.76	392.78	393.23	392.16	392.67
7	392.00	391.67	391.84	399.46	392.27	392.91	399.70	390.52	393.42	392.16	391.31	391.76
8	399.70	391.42	392.47	400.37	393.58	396.70	390.52	389.21	389.78	399.86	391.18	395.64
9	401.05	395.96	399.82	393.58	392.63	393.05	389.21	388.54	388.84	393.77	391.59	392.36
10	400.67	394.03	396.40	392.63	392.03	392.31	388.54	388.12	388.35	391.59	390.80	391.16
11	394.03	393.16	393.53	392.19	391.63	391.87	403.00	388.04	396.61	390.80	390.20	390.48
12	393.16	392.57	392.85	391.94	391.27	391.57	402.91	393.67	397.98	390.20	389.64	389.92
13	392.57	392.07	392.30	391.27	390.78	391.03	393.67	392.05	392.74	389.64	389.06	389.32
14	392.07	391.63	391.84	390.78	390.36	390.56	392.05	391.03	391.50	389.06	388.62	388.83
15	391.63	391.23	391.43	390.36	389.95	390.15	391.03	390.29	390.64	397.92	388.38	389.23
16	391.23	390.85	391.03	389.95	389.50	389.74	390.29	389.70	389.99	402.71	397.92	401.08
17	390.85	390.51	390.67	389.50	389.09	389.27	401.30	389.24	392.46	402.45	393.46	397.39
18	390.51	390.18	390.34	389.09	388.71	388.89	---	---	---	393.46	392.05	392.66
19	390.18	389.89	390.03	394.43	388.52	389.36	---	---	---	392.05	391.16	391.59
20	399.75	389.59	391.53	394.43	388.94	390.16	398.52	392.72	394.01	391.16	390.55	390.84
21	399.75	392.82	395.64	388.94	388.43	388.64	398.12	392.75	394.01	399.31	390.65	395.19
22	392.82	391.63	392.15	388.43	388.12	388.27	392.75	392.01	392.36	392.27	390.79	391.35
23	391.63	390.92	391.25	388.12	387.83	387.98	392.01	391.42	391.71	390.79	390.23	390.46
24	390.92	390.41	390.65	387.83	387.56	387.70	391.42	390.87	391.15	390.40	389.97	390.14
25	390.41	389.99	390.19	387.56	387.33	387.44	390.87	390.37	390.62	402.76	389.67	392.32
26	389.99	389.65	389.79	387.33	387.15	387.26	390.37	389.92	390.14	404.66	398.82	403.20
27	389.68	389.25	389.46	387.15	386.93	387.05	389.92	389.42	389.68	403.65	397.12	400.91
28	399.01	389.01	391.34	386.93	386.70	386.83	389.42	388.92	389.16	---	---	---
29	398.97	390.82	393.55	401.37	386.67	396.50	388.92	388.53	388.72	---	---	---
30	390.82	389.80	390.21	391.68	388.54	389.60	388.53	388.19	388.36	394.44	393.82	394.10
31	---	---	---	388.54	387.78	388.11	388.19	387.89	388.04	---	---	---
Month	401.05	389.01	392.27	404.22	386.67	390.94	403.00	387.03	391.29	404.66	387.30	393.01
YEAR	410.13	384.49	395.35									

Daily Instantaneous Values

Oct. 2	389.70	Oct. 7	387.10	Oct. 15	390.07

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401407076593501
U.S. Geological Survey local well number CU 840
Ships Parts Control Center well number DD2S

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
	October			November			December			January		
1	---	---	---	---	---	---	---	---	---	387.31	386.76	387.02
2	---	---	---	---	---	---	---	---	---	386.76	386.32	386.54
3	---	---	---	---	---	---	---	---	---	386.32	385.93	386.12
4	---	---	---	---	---	---	---	---	---	385.93	385.66	385.78
5	---	---	---	---	---	---	---	---	---	395.29	385.64	391.52
6	---	---	---	---	---	---	---	---	---	390.86	388.17	389.26
7	---	---	---	---	---	---	---	---	---	388.17	387.14	387.60
8	---	---	---	---	---	---	---	---	---	388.28	386.96	387.56
9	---	---	---	---	---	---	---	---	---	387.78	386.77	387.17
10	---	---	---	---	---	---	---	---	---	386.77	386.25	386.50
11	---	---	---	---	---	---	---	---	---	386.25	385.93	386.07
12	---	---	---	---	---	---	---	---	---	388.66	385.93	387.38
13	---	---	---	---	---	---	---	---	---	396.05	388.50	393.37
14	---	---	---	---	---	---	---	---	---	393.80	391.22	392.50
15	---	---	---	---	---	---	---	---	---	391.22	389.94	390.52
16	---	---	---	---	---	---	390.67	389.91	390.26	389.94	389.25	389.58
17	---	---	---	---	---	---	400.48	389.78	396.24	389.25	388.66	388.96
18	---	---	---	---	---	---	397.32	393.86	395.45	388.66	388.14	388.39
19	---	---	---	---	---	---	393.86	392.21	392.97	388.14	387.64	387.90
20	---	---	---	---	---	---	393.14	391.95	392.60	387.64	387.19	387.42
21	---	---	---	---	---	---	392.50	391.15	391.73	388.37	386.93	387.18
22	---	---	---	---	---	---	391.15	390.38	390.74	393.83	388.37	391.63
23	---	---	---	---	---	---	390.38	389.77	390.07	390.27	388.41	389.18
24	---	---	---	---	---	---	389.77	389.18	389.47	389.27	387.91	388.29
25	---	---	---	---	---	---	389.18	388.68	388.93	389.32	387.92	388.58
26	---	---	---	---	---	---	388.68	388.16	388.42	387.92	387.29	387.58
27	---	---	---	---	---	---	388.16	387.68	387.92	387.29	386.86	387.07
28	---	---	---	---	---	---	388.15	387.47	387.76	386.86	386.49	386.67
29	---	---	---	---	---	---	388.05	387.66	387.93	386.49	386.09	386.29
30	---	---	---	---	---	---	388.71	387.53	388.07	386.09	385.79	385.93
31	---	---	---	---	---	---	388.24	387.31	387.72	385.79	385.51	385.65
Month	---	---	---	---	---	---	400.48	387.31	390.39	396.05	385.51	388.10
	February			March			April			May		
1	385.51	385.20	385.35	383.96	383.81	383.86	408.09	405.84	407.07	---	---	---
2	385.20	384.92	385.06	386.58	383.68	384.54	407.38	406.57	406.94	---	---	---
3	384.92	384.71	384.82	388.22	385.31	386.45	406.57	405.79	406.19	---	---	---
4	384.71	384.48	384.60	404.67	388.02	396.56	405.79	404.60	405.21	---	---	---
5	384.48	384.26	384.37	406.04	404.67	405.49	---	---	---	---	---	---
6	384.26	383.98	384.12	405.61	403.06	404.15	---	---	---	---	---	---
7	383.98	383.75	383.87	403.06	401.60	402.05	---	---	---	---	---	---
8	383.75	383.50	383.63	401.60	400.65	400.99	---	---	---	---	---	---
9	383.50	383.26	383.37	400.65	399.78	400.18	---	---	---	---	---	---
10	383.26	383.02	383.13	399.78	398.80	399.25	---	---	---	---	---	---
11	383.02	382.82	382.91	398.80	397.53	398.17	---	---	---	---	---	---
12	382.82	382.67	382.72	397.53	396.43	396.96	---	---	---	---	---	---
13	384.14	382.68	383.05	396.43	395.71	396.06	---	---	---	---	---	---
14	385.44	384.01	384.47	395.71	394.76	395.21	---	---	---	394.81	393.11	393.85
15	385.68	384.10	384.70	394.76	394.25	394.42	398.05	396.78	397.42	393.11	392.07	392.54
16	386.06	384.38	384.87	394.54	393.93	394.16	404.71	396.29	400.18	392.07	391.33	391.69
17	388.10	386.06	387.46	402.49	394.54	398.12	405.58	403.88	405.07	391.33	390.85	391.09
18	388.08	385.50	386.60	400.80	398.29	399.26	403.88	401.03	402.34	390.85	390.49	390.65
19	385.50	384.74	385.07	398.29	396.68	397.46	401.03	399.43	400.17	391.46	390.74	391.16
20	384.74	384.34	384.53	396.68	395.55	396.02	399.43	398.28	398.84	390.74	390.08	390.38
21	384.34	384.05	384.20	397.63	395.41	396.18	405.08	397.90	400.07	390.08	389.61	389.84
22	390.49	383.97	386.07	397.67	397.31	397.48	407.21	405.08	406.21	389.61	389.18	389.39
23	389.30	386.32	387.85	406.49	397.52	399.80	406.32	404.96	405.75	389.18	388.77	388.97
24	386.32	385.17	385.64	406.91	406.20	406.56	404.96	402.74	403.93	388.77	388.40	388.58
25	385.17	384.69	384.90	406.66	406.27	406.44	402.74	400.43	401.52	388.40	388.06	388.23
26	384.69	384.38	384.52	406.27	405.80	405.99	406.24	399.70	402.83	388.06	387.71	387.88
27	384.38	384.22	384.30	405.80	405.25	405.46	405.80	404.43	405.24	387.71	387.34	387.52
28	384.22	383.96	384.08	405.95	405.25	405.72	404.43	402.30	403.44	387.34	387.00	387.17
29	---	---	---	406.39	404.99	405.78	---	---	---	387.51	386.93	387.20
30	---	---	---	405.83	404.70	405.39	---	---	---	387.02	386.58	386.78
31	---	---	---	405.84	402.89	403.79	---	---	---	387.56	386.31	386.55
Month	390.49	382.67	384.65	406.91	383.68	398.97	408.09	396.29	403.25	394.81	386.31	389.41

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401407076593501
U.S. Geological Survey local well number CU 840
Ships Parts Control Center well number DD2S

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	387.70	386.45	387.03	383.60	383.20	383.36	382.25	381.88	382.06	382.19	381.95	382.07
2	---	---	---	401.53	383.07	392.23	381.88	381.66	381.77	382.23	381.77	381.91
3	---	---	---	398.04	391.65	394.40	393.55	381.66	388.59	387.98	381.75	382.41
4	---	---	---	391.65	388.62	389.97	386.41	383.64	384.78	401.35	387.98	396.46
5	---	---	---	388.62	386.97	387.71	386.39	383.42	384.46	392.73	388.06	390.11
6	---	---	---	386.97	386.05	386.48	391.62	383.00	385.47	388.06	386.00	386.89
7	---	---	---	392.48	385.47	386.19	388.94	384.33	386.05	386.00	384.96	385.43
8	---	---	---	392.43	387.49	389.63	384.33	383.37	383.78	388.04	384.83	386.58
9	---	---	---	387.49	385.93	386.57	383.37	382.82	383.07	386.72	385.05	385.63
10	---	---	---	385.93	385.20	385.52	382.82	382.46	382.64	385.05	384.41	384.71
11	---	---	---	385.73	384.85	385.13	396.24	382.39	389.55	384.41	383.95	384.17
12	---	---	---	385.43	384.67	384.94	395.22	388.81	391.66	383.95	383.53	383.73
13	---	---	---	384.67	384.29	384.47	388.81	386.08	387.21	383.53	383.15	383.33
14	---	---	---	384.29	383.94	384.11	386.08	384.92	385.43	383.15	382.83	382.99
15	---	---	---	383.94	383.63	383.78	384.92	384.21	384.54	386.26	382.64	382.96
16	---	---	---	383.63	383.33	383.49	384.21	383.70	383.94	394.97	386.26	390.17
17	---	---	---	383.33	383.05	383.18	399.35	383.35	387.17	391.31	387.33	389.48
18	---	---	---	383.05	382.79	382.92	---	---	---	387.33	385.62	386.37
19	---	---	---	384.04	382.65	382.92	---	---	---	385.62	384.75	385.13
20	---	---	---	384.04	382.83	383.21	---	---	---	384.75	384.22	384.46
21	---	---	---	382.83	382.50	382.65	---	---	---	387.14	384.28	385.99
22	---	---	---	---	---	---	386.02	385.21	385.58	385.16	384.29	384.65
23	---	---	---	382.28	382.03	382.15	385.21	384.73	384.95	384.29	383.89	384.08
24	---	---	---	382.03	381.82	381.93	384.73	384.34	384.53	384.19	383.75	383.87
25	---	---	---	381.82	381.65	381.73	384.34	383.99	384.16	398.36	383.60	386.21
26	383.64	383.40	383.51	381.65	381.50	381.59	383.99	383.66	383.81	399.97	394.25	396.91
27	383.46	383.15	383.30	381.50	381.32	381.40	383.70	383.34	383.51	395.96	393.08	394.01
28	391.88	382.97	384.82	381.32	381.18	381.27	383.34	382.98	383.16	---	---	---
29	389.01	384.43	386.12	392.86	381.17	387.97	382.98	382.71	382.85	---	---	---
30	384.43	383.60	383.94	384.84	382.89	383.62	382.71	382.46	382.59	388.88	387.67	388.25
31	---	---	---	382.89	382.25	382.54	382.46	382.19	382.31	---	---	---
Month	391.88	382.97	384.79	401.53	381.17	384.90	399.35	381.66	384.80	401.35	381.75	386.39
YEAR	408.09	381.17	389.48									

Daily Instantaneous Values

Oct. 1	384.32	Oct. 20	381.97	Nov. 5	386.64	Nov. 22	390.61
Oct. 2	386.79	Oct. 21	381.75	Nov. 6	386.14	Nov. 23	400.08
Oct. 3	383.41	Oct. 22	381.04	Nov. 7	385.15	Nov. 24	394.45
Oct. 4	383.01	Oct. 23	379.20	Nov. 8	384.51	Nov. 25	392.40
Oct. 5	382.58	Oct. 24	381.20	Nov. 9	383.99	Nov. 27	389.69
Oct. 7	381.68	Oct. 25	380.88	Nov. 10	383.51	Nov. 29	387.97
Oct. 9	390.76	Oct. 26	380.70	Nov. 11	383.08	Dec. 1	386.98
Oct. 10	493.56	Oct. 27	380.42	Nov. 12	383.77	Dec. 3	385.71
Oct. 11	388.76	Oct. 28	380.21	Nov. 13	389.62	Dec. 5	385.06
Oct. 12	386.28	Oct. 29	380.06	Nov. 14	386.56	Dec. 7	384.46
Oct. 13	383.15	Oct. 30	379.76	Nov. 15	384.70	Dec. 11	400.11
Oct. 14	384.46	Oct. 31	379.82	Nov. 16	384.05	Dec. 12	398.23
Oct. 15	384.05	Nov. 1	379.65	Nov. 18	383.14	Dec. 14	392.43
Oct. 16	383.49	Nov. 2	383.00	Nov. 19	382.79		
Oct. 17	382.99	Nov. 3	395.91	Nov. 20	382.47		
Oct. 19	380.26	Nov. 4	389.42	Nov. 21	382.28		

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401408076593601
U.S. Geological Survey local well number CU 107
Ships Parts Control Center well number DD2

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	384.20	383.55	383.86	378.52	378.27	378.40	386.83	386.31	386.58	386.96	386.10	386.57
2	383.55	383.03	383.32	395.87	378.24	380.84	386.31	385.76	386.03	386.10	385.54	385.73
3	383.03	382.56	382.81	402.47	392.27	396.81	385.76	385.20	385.50	385.88	385.31	385.42
4	382.56	382.15	382.39	392.27	387.98	389.89	385.20	384.86	385.02	395.24	385.88	391.55
5	382.15	381.58	381.92	387.98	386.20	386.90	384.89	384.56	384.75	389.99	387.75	388.67
6	381.58	381.13	381.35	387.28	385.38	386.28	384.56	384.28	384.42	387.75	386.75	387.20
7	381.13	380.84	381.00	385.38	384.45	384.88	384.28	383.84	384.07	387.83	386.64	387.25
8	380.84	380.53	380.69	384.45	383.83	384.13	383.84	383.50	383.69	387.28	386.37	386.74
9	402.08	380.42	390.90	383.83	383.34	383.57	383.50	383.17	383.33	386.37	385.88	386.12
10	397.31	390.32	393.15	383.34	382.89	383.10	391.68	382.92	383.28	385.88	385.59	385.71
11	390.32	387.07	388.54	382.89	382.52	382.69	402.70	391.68	399.46	388.54	385.69	387.18
12	387.07	385.41	386.19	396.26	382.30	384.01	402.70	396.02	398.76	---	---	---
13	385.41	384.42	384.87	396.24	387.53	390.62	396.02	393.02	394.28	---	---	---
14	384.42	383.80	384.11	387.53	385.07	386.07	393.02	391.26	392.06	393.02	390.73	391.90
15	383.80	383.27	383.53	385.07	384.07	384.52	391.26	390.16	390.68	390.73	389.51	390.06
16	383.27	382.81	383.04	384.07	383.44	383.73	390.16	389.44	389.77	389.51	388.83	389.15
17	382.81	382.41	382.59	383.44	382.95	383.19	400.48	389.31	395.85	388.83	388.25	388.54
18	382.41	382.03	382.21	382.95	382.54	382.74	396.54	393.26	394.78	388.25	387.75	388.00
19	382.03	381.51	381.79	382.54	382.22	382.38	393.26	391.69	392.45	387.75	387.27	387.52
20	381.51	381.17	381.33	382.22	381.83	382.04	392.43	391.42	391.98	387.27	386.75	387.01
21	381.18	380.90	381.06	390.27	381.61	383.05	391.91	390.64	391.20	387.78	386.49	386.72
22	380.90	380.65	380.80	396.70	387.14	389.49	390.64	389.95	390.29	393.43	387.78	390.94
23	380.65	380.35	380.52	402.63	396.70	399.80	389.95	389.36	389.66	389.76	388.05	388.77
24	380.68	380.15	380.36	396.74	393.01	394.49	389.36	388.80	389.08	388.71	387.54	387.89
25	380.41	379.93	380.16	393.16	391.32	392.42	388.80	388.34	388.57	388.76	387.57	388.16
26	379.93	379.57	379.76	391.32	389.99	390.61	388.34	387.85	388.08	387.57	386.87	387.21
27	379.57	379.26	379.43	389.99	389.01	389.49	387.85	387.37	387.60	386.87	386.45	386.65
28	379.29	379.04	379.18	389.01	388.15	388.57	387.74	387.13	387.41	386.45	386.08	386.27
29	379.04	378.78	378.92	388.15	387.47	387.82	387.70	387.34	387.59	386.08	385.69	385.88
30	378.78	378.56	378.65	387.47	386.83	387.16	388.24	387.20	387.68	385.69	385.37	385.53
31	378.76	378.52	378.65	---	---	---	387.89	386.96	387.39	385.37	385.10	385.24
Month	402.08	378.52	382.49	402.63	378.24	386.66	402.70	382.92	389.07	395.24	385.10	387.57
		February			March			April			May	
1	385.10	384.80	384.95	383.81	383.65	383.71	407.93	405.72	406.86	398.38	397.40	397.89
2	384.80	384.53	384.66	386.21	383.53	384.29	407.12	406.36	406.72	397.40	396.20	396.80
3	384.53	384.31	384.42	387.87	385.15	386.18	406.36	405.57	405.99	396.20	395.24	395.70
4	384.31	384.06	384.18	404.85	387.78	396.65	405.57	404.25	404.92	395.24	394.37	394.79
5	384.06	383.82	383.95	406.06	404.73	405.47	404.25	402.12	403.32	402.75	394.20	397.66
6	383.82	383.54	383.69	405.45	402.37	403.64	402.12	399.68	400.74	400.86	397.74	399.03
7	383.54	383.30	383.43	402.37	400.97	401.43	399.68	398.40	398.98	397.74	395.73	396.70
8	383.30	383.04	383.18	400.97	400.03	400.38	398.40	397.41	397.89	395.73	394.36	395.01
9	383.04	382.79	382.91	400.03	399.15	399.56	397.41	396.34	396.92	394.36	393.38	393.83
10	382.79	382.56	382.67	399.15	398.18	398.64	405.81	396.13	400.84	393.38	392.80	393.11
11	382.56	382.37	382.46	398.18	396.98	397.59	405.78	403.33	404.90	392.80	392.22	392.50
12	382.37	382.19	382.26	396.98	395.89	396.41	403.33	400.25	401.56	398.86	391.86	393.53
13	383.45	382.21	382.51	395.89	395.21	395.53	400.25	398.66	399.39	397.03	394.31	395.63
14	385.07	383.42	383.92	395.21	394.25	394.71	398.66	397.49	398.06	394.31	392.72	393.41
15	385.33	383.91	384.45	394.25	393.75	393.92	397.49	396.25	396.88	392.72	391.71	392.17
16	385.70	384.21	384.65	393.94	393.45	393.64	404.52	395.76	399.82	391.71	391.00	391.33
17	387.68	385.70	387.02	402.33	393.94	397.64	405.39	403.36	404.78	391.00	390.51	390.75
18	387.67	385.36	386.39	400.07	397.63	398.59	403.36	400.43	401.70	390.51	390.16	390.31
19	385.36	384.61	384.93	397.63	396.11	396.85	400.43	398.86	399.59	391.01	390.41	390.76
20	384.61	384.20	384.39	396.11	395.02	395.50	398.86	397.73	398.28	390.41	389.78	390.06
21	384.20	383.90	384.05	396.77	394.88	395.52	405.02	397.36	399.60	389.78	389.33	389.55
22	390.11	383.82	385.65	397.00	396.63	396.77	407.07	405.02	406.06	389.33	388.92	389.12
23	388.46	386.15	387.46	406.36	396.87	399.32	406.16	404.66	405.54	388.92	388.53	388.72
24	386.15	385.03	385.49	406.71	406.05	406.38	404.66	402.12	403.48	388.53	388.17	388.34
25	385.03	384.54	384.76	406.44	406.07	406.24	402.12	399.81	400.85	388.17	387.84	388.01
26	384.54	384.25	384.38	406.07	405.58	405.78	406.05	399.11	402.43	387.84	387.50	387.67
27	384.25	384.06	384.15	405.58	404.94	405.18	405.63	404.06	404.99	387.50	387.13	387.32
28	384.06	383.81	383.93	405.75	404.96	405.49	404.06	401.62	402.92	387.13	386.82	386.97
29	---	---	---	406.23	404.66	405.55	401.62	399.62	400.49	387.24	386.74	386.98
30	---	---	---	405.61	404.33	405.11	399.62	398.38	398.96	386.83	386.41	386.61
31	---	---	---	405.72	402.25	403.31	---	---	---	387.20	386.15	386.36
Month	390.11	382.19	384.32	406.71	383.53	398.55	407.93	395.76	401.78	402.75	386.15	391.83

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401408076593601
U.S. Geological Survey local well number CU 107
Ships Parts Control Center well number DD2

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	387.36	386.29	386.81	383.24	382.82	383.00	381.99	381.57	381.75	381.84	381.58	381.71
2	386.29	385.81	386.01	402.08	382.68	392.36	381.57	381.31	381.43	381.79	381.39	381.52
3	385.81	385.48	385.63	397.82	391.38	394.08	394.24	381.31	388.46	390.07	381.36	381.97
4	385.71	385.37	385.52	391.38	388.38	389.71	385.86	383.44	384.50	402.47	390.07	396.61
5	385.37	385.18	385.30	388.38	386.68	387.45	385.86	383.18	384.17	392.45	387.90	389.89
6	385.18	384.88	385.02	386.68	385.73	386.18	391.71	382.74	385.13	387.90	385.80	386.70
7	384.88	384.65	384.76	392.56	385.14	385.92	388.34	384.10	385.76	385.80	384.75	385.22
8	392.39	384.46	385.46	392.19	387.23	389.17	384.10	383.12	383.54	387.57	384.60	386.19
9	396.03	388.55	391.16	387.23	385.62	386.28	383.12	382.58	382.81	386.41	384.80	385.38
10	392.78	388.35	390.36	385.62	384.88	385.21	382.58	382.22	382.41	384.80	384.16	384.46
11	388.35	386.51	387.26	385.24	384.53	384.78	396.42	382.15	389.40	384.16	383.67	383.91
12	386.51	385.60	386.01	385.05	384.32	384.60	394.69	388.62	391.29	383.67	383.25	383.46
13	385.60	385.06	385.31	384.32	383.91	384.11	388.62	385.89	387.03	383.25	382.86	383.05
14	385.06	384.66	384.85	383.91	383.56	383.73	385.89	384.69	385.21	382.86	382.56	382.71
15	384.66	384.36	384.51	383.56	383.24	383.40	384.69	383.94	384.29	385.85	382.39	382.64
16	384.36	384.10	384.23	383.24	382.93	383.09	383.94	383.42	383.67	395.19	385.85	389.57
17	384.10	383.84	383.97	382.93	382.66	382.79	400.91	383.07	387.19	390.70	387.11	389.09
18	383.84	383.60	383.72	382.66	382.40	382.53	394.83	389.61	391.89	387.11	385.39	386.15
19	383.60	383.41	383.50	383.35	382.25	382.47	389.61	387.01	388.17	385.39	384.49	384.89
20	398.22	383.22	385.72	383.35	382.40	382.73	387.68	386.08	386.63	384.49	383.94	384.19
21	392.91	386.94	389.45	382.40	382.03	382.20	387.74	385.78	386.66	386.55	383.97	385.55
22	386.94	384.99	385.81	382.03	381.69	381.86	385.78	384.98	385.34	384.87	384.00	384.36
23	384.99	384.14	384.53	381.69	381.39	381.52	384.98	384.49	384.72	384.00	383.60	383.79
24	384.14	383.64	383.87	381.39	381.13	381.25	384.49	384.08	384.28	383.87	383.47	383.58
25	383.64	383.26	383.43	381.13	380.91	381.01	384.08	383.71	383.89	399.10	383.29	386.15
26	383.26	383.00	383.11	380.91	380.76	380.84	383.71	383.37	383.54	400.35	393.83	396.63
27	383.05	382.75	382.90	380.76	380.57	380.67	383.37	383.04	383.22	---	---	---
28	392.48	382.57	384.47	380.57	380.38	380.48	383.04	382.71	382.86	---	---	---
29	388.21	384.12	385.74	392.83	380.37	387.62	382.71	382.45	382.58	390.58	388.67	389.52
30	384.12	383.24	383.61	384.64	382.66	383.39	382.45	382.18	382.33	388.67	387.49	388.05
31	---	---	---	382.66	381.99	382.31	382.18	381.84	382.01	---	---	---
Month	398.22	382.57	385.40	402.08	380.37	384.41	400.91	381.31	385.04	402.47	381.36	385.96
YEAR	407.93	378.24	388.63									

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401410076594001
U.S. Geological Survey local well number CU 845
Ships Parts Control Center well number DD6D

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	---	---	---	---	---	---	384.00	383.49	383.74	384.16	383.63	383.88
2	---	---	---	---	---	---	383.49	383.03	383.26	383.63	383.23	383.43
3	---	---	---	---	---	---	383.03	382.62	382.82	383.23	382.92	383.07
4	---	---	---	390.27	385.73	387.71	382.62	382.30	382.46	382.92	382.71	382.81
5	---	---	---	385.73	383.82	384.53	382.30	382.04	382.19	396.43	382.71	387.70
6	---	---	---	384.02	382.95	383.57	382.04	381.69	381.86	386.96	385.04	385.91
7	---	---	---	382.95	382.00	382.45	381.69	381.40	381.55	385.04	384.04	384.50
8	---	---	---	382.00	381.33	381.65	381.40	381.07	381.24	384.37	383.82	384.09
9	---	---	---	381.33	380.87	381.10	381.07	380.75	380.92	384.31	383.61	383.96
10	---	---	---	380.87	380.41	380.61	392.45	380.51	380.81	383.61	383.14	383.36
11	---	---	---	380.41	380.03	380.22	404.40	392.45	400.47	383.14	382.85	382.98
12	---	---	---	400.51	379.82	382.14	404.41	393.42	397.21	384.71	382.84	383.59
13	---	---	---	399.58	385.29	388.79	393.42	390.07	391.58	392.98	384.71	388.83
14	---	---	---	385.29	382.82	383.85	390.07	388.17	389.03	388.87	387.41	388.16
15	---	---	---	382.82	381.71	382.22	388.17	387.02	387.55	387.41	386.33	386.82
16	---	---	---	381.71	381.09	381.36	387.02	386.32	386.63	386.33	385.71	385.99
17	---	---	---	381.09	380.56	380.82	402.82	386.23	394.51	385.71	385.18	385.44
18	---	---	---	380.56	380.17	380.36	393.58	390.27	391.72	385.18	384.74	384.95
19	---	---	---	380.17	379.79	379.99	390.27	388.45	389.25	384.74	384.31	384.52
20	---	---	---	379.79	379.49	379.64	388.51	388.18	388.40	384.31	383.91	384.11
21	---	---	---	382.79	379.29	379.90	388.28	387.37	387.82	384.35	383.64	383.80
22	---	---	---	396.36	382.79	385.07	387.37	386.67	387.00	387.07	384.35	386.47
23	---	---	---	404.33	394.47	399.91	386.67	386.15	386.41	386.23	385.04	385.60
24	---	---	---	394.47	390.27	392.04	386.15	385.67	385.91	385.06	384.57	384.80
25	---	---	---	390.27	388.34	389.33	385.67	385.24	385.45	385.11	384.56	384.91
26	---	---	---	388.34	386.98	387.60	385.24	384.81	385.03	384.56	383.98	384.25
27	---	---	---	386.98	386.00	386.46	384.81	384.41	384.61	383.98	383.58	383.77
28	---	---	---	386.00	385.22	385.60	384.58	384.23	384.38	383.58	383.25	383.41
29	---	---	---	385.22	384.56	384.88	384.70	384.46	384.62	383.25	382.93	383.08
30	---	---	---	384.56	384.00	384.28	384.84	384.34	384.59	382.93	382.68	382.80
31	---	---	---	---	---	---	384.78	384.16	384.47	382.68	382.44	382.56
Month	---	---	---	404.33	379.29	384.30	404.41	380.51	386.37	396.43	382.44	384.63
		February			March			April			May	
1	382.44	382.18	382.31	381.10	380.92	381.00	407.08	405.42	406.11	394.53	393.57	394.04
2	382.18	381.93	382.05	382.35	380.83	381.17	406.25	405.67	405.91	393.57	392.57	393.09
3	381.93	381.71	381.83	384.35	382.35	383.00	405.67	404.62	405.30	392.57	391.56	392.05
4	381.71	381.49	381.60	405.70	384.35	395.50	404.62	400.61	402.66	391.56	390.75	391.14
5	381.49	381.26	381.37	405.96	404.72	405.41	400.61	397.62	398.94	403.38	390.59	394.97
6	---	---	---	404.72	399.34	401.34	397.62	395.57	396.51	398.84	393.91	395.71
7	380.99	380.73	380.86	399.34	397.41	398.08	395.57	394.29	394.88	393.91	391.96	392.89
8	380.73	380.48	380.60	397.41	396.17	396.66	394.29	393.35	393.81	391.96	390.66	391.26
9	380.48	380.24	380.35	396.18	395.22	395.64	393.35	392.43	392.90	390.66	389.69	390.15
10	380.24	380.01	380.12	395.22	394.26	394.75	405.64	392.26	398.31	389.69	388.93	389.28
11	380.01	379.81	379.91	394.26	393.15	393.70	405.52	399.87	402.93	388.93	388.37	388.64
12	379.81	379.63	379.70	393.15	392.12	392.62	399.87	396.56	398.00	401.47	388.04	390.84
13	380.23	379.62	379.79	392.12	391.36	391.72	396.56	394.84	395.64	395.66	391.00	392.56
14	381.09	380.23	380.55	391.36	390.49	390.89	394.84	393.66	394.23	391.00	389.25	390.07
15	381.31	380.86	381.02	390.49	389.87	390.15	393.66	392.60	393.13	389.25	388.23	388.70
16	381.76	381.19	381.33	389.87	389.62	389.72	404.81	392.11	397.93	388.23	387.56	387.87
17	383.36	381.76	382.69	402.22	389.77	394.27	405.38	400.15	403.36	387.56	387.08	387.30
18	383.38	382.49	383.02	396.64	393.49	394.68	400.15	396.70	398.18	387.08	386.76	386.88
19	382.49	381.77	382.08	393.49	392.10	392.75	396.70	394.99	395.77	387.16	386.85	387.07
20	381.77	381.34	381.54	392.10	391.04	391.52	394.99	393.84	394.39	386.94	386.63	386.82
21	381.34	381.05	381.20	392.10	390.84	391.27	405.45	393.48	396.64	386.63	386.24	386.43
22	383.38	380.96	381.61	392.53	392.10	392.24	406.56	405.16	405.71	386.24	385.90	386.07
23	383.79	383.25	383.62	405.98	392.45	396.02	---	---	---	385.90	385.58	385.74
24	383.25	382.30	382.71	405.83	405.54	405.69	---	---	---	385.58	385.27	385.42
25	382.30	381.82	382.03	405.69	405.33	405.49	---	---	---	385.27	384.97	385.13
26	381.82	381.51	381.65	405.33	404.17	404.74	---	---	---	384.98	384.69	384.83
27	381.51	381.30	381.39	404.30	402.16	403.15	---	---	---	384.69	384.39	384.54
28	381.30	381.10	381.20	405.20	402.80	404.49	---	---	---	384.39	384.09	384.23
29	---	---	---	405.92	401.97	404.47	---	---	---	384.19	384.00	384.11
30	---	---	---	404.95	401.27	403.52	395.78	394.53	395.12	384.08	383.73	383.89
31	---	---	---	405.42	397.81	399.44	---	---	---	383.79	383.49	383.61
Month	383.79	379.62	381.41	405.98	380.83	395.65	407.08	392.11	398.54	403.38	383.49	388.56

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401410076594001
U.S. Geological Survey local well number CU 845
Ships Parts Control Center well number DD6D

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	384.00	383.59	383.85	380.77	380.27	380.49	379.07	378.55	378.81	378.65	378.35	378.49
2	383.59	383.21	383.38	404.54	380.16	392.57	378.55	378.24	378.38	378.35	378.14	378.24
3	383.21	382.94	383.07	397.84	389.02	392.27	398.80	378.24	387.11	382.50	378.11	378.47
4	383.00	382.87	382.94	389.02	385.82	387.22	382.85	380.98	381.70	403.78	382.50	395.93
5	382.87	382.69	382.77	385.82	384.15	384.91	381.84	380.41	381.15	389.89	385.30	387.33
6	382.69	382.40	382.54	384.15	383.16	383.61	387.22	379.90	381.67	385.30	383.10	384.05
7	382.40	382.15	382.27	395.16	382.61	383.66	383.94	381.30	382.51	383.10	381.94	382.48
8	392.24	381.94	382.95	391.15	384.59	386.21	381.30	380.24	380.70	383.24	381.76	382.55
9	399.80	385.27	389.03	384.59	383.09	383.72	380.24	379.61	379.91	383.06	381.85	382.39
10	390.46	385.84	387.70	383.09	382.40	382.71	379.61	379.10	379.34	381.85	381.22	381.53
11	385.84	383.96	384.78	382.40	382.03	382.22	398.85	379.00	388.43	381.22	380.71	380.96
12	383.96	383.07	383.46	382.35	381.81	382.07	393.20	385.89	388.45	380.71	380.27	380.49
13	383.07	382.55	382.80	381.81	381.40	381.59	385.89	383.21	384.37	380.27	379.92	380.08
14	382.55	382.13	382.33	381.40	381.08	381.24	383.21	381.93	382.50	379.92	379.53	379.73
15	382.13	381.80	381.97	381.08	380.75	380.92	381.93	381.11	381.49	380.41	379.26	379.47
16	381.80	381.54	381.67	380.76	380.43	380.60	381.11	380.57	380.83	395.96	380.41	385.33
17	381.54	381.30	381.42	380.43	380.17	380.30	401.61	380.20	385.39	386.65	384.21	385.47
18	381.30	381.06	381.19	380.17	379.90	380.03	394.77	386.82	389.59	384.21	382.65	383.35
19	381.06	380.85	380.95	380.21	379.74	379.85	386.82	384.15	385.33	382.65	381.64	382.10
20	399.75	380.66	383.92	380.30	379.90	380.12	384.15	383.08	383.49	381.64	381.07	381.33
21	393.03	384.57	387.15	379.90	379.54	379.70	383.55	382.75	383.23	382.21	381.09	381.88
22	384.57	382.50	383.38	---	---	---	382.75	382.01	382.35	381.82	381.10	381.42
23	382.50	381.53	381.97	379.29	379.04	379.16	382.01	381.47	381.72	381.10	380.68	380.86
24	381.53	381.04	381.27	379.04	378.78	378.91	381.47	381.06	381.26	380.77	380.39	380.58
25	381.04	380.63	380.83	378.78	378.54	378.65	381.06	380.65	380.86	402.14	380.21	384.07
26	380.63	380.34	380.46	378.55	378.39	378.48	380.65	380.30	380.46	403.20	391.20	395.77
27	380.35	380.11	380.25	378.39	378.22	378.30	380.30	379.94	380.11	391.20	389.51	390.23
28	393.74	379.95	381.86	378.22	378.08	378.14	379.94	379.61	379.77	---	---	---
29	384.70	381.65	382.91	394.69	378.06	384.24	379.61	379.25	379.44	---	---	---
30	381.65	380.77	381.14	382.01	379.99	380.79	379.25	378.95	379.11	385.45	384.31	384.84
31	---	---	---	379.99	379.07	379.48	378.95	378.65	378.79	---	---	---
Month	399.80	379.95	382.87	404.54	378.06	382.07	401.61	378.24	382.20	403.78	378.11	383.19
YEAR	407.08	378.06	386.18									

Daily Instantaneous Values

Oct. 1	381.47	Oct. 11	386.24	Oct. 20	379.16	Oct. 28	377.47
Oct. 2	380.93	Oct. 12	383.59	Oct. 21	378.84	Oct. 29	377.29
Oct. 3	380.37	Oct. 13	382.66	Oct. 22	378.06	Oct. 30	377.10
Oct. 4	379.93	Oct. 14	381.67	Oct. 23	377.79	Oct. 31	377.14
Oct. 5	379.54	Oct. 15	380.74	Oct. 24	378.18	Nov. 1	376.95
Oct. 7	378.65	Oct. 16	378.74	Oct. 25	378.11	Nov. 2	378.32
Oct. 9	393.24	Oct. 17	380.29	Oct. 26	377.88	Nov. 3	395.11
Oct. 10	391.26	Oct. 19	377.48	Oct. 27	377.65		

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401353076593701
U.S. Geological Survey local well number CU 842
Ships Parts Control Center well number DD3S

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
						Daily Instantaneous Values						
1	378.54	374.67	380.06	---	---	---	---	---	---	---	---	---
2	378.04	375.83	---	---	---	---	404.94	---	380.22	---	376.12	---
3	377.54	391.71	379.34	---	---	380.25	---	386.79	---	---	---	---
4	377.07	382.91	---	379.67	378.80	---	---	---	---	---	---	---
5	376.77	380.49	378.96	---	---	404.97	393.00	---	---	---	---	---
6	---	379.95	---	---	---	---	---	---	---	---	---	---
7	374.05	379.15	378.56	---	---	---	---	---	---	---	---	---
8	---	378.71	---	---	---	391.18	---	---	---	382.10	---	380.26
9	383.34	378.24	---	---	---	---	---	---	---	---	---	---
10	386.94	377.77	---	---	---	---	---	---	---	---	---	---
11	382.13	377.35	393.06	---	---	---	---	---	381.10	---	---	---
12	380.04	377.09	390.16	---	---	---	---	---	---	---	---	---
13	379.29	382.71	---	385.24	---	---	---	387.52	---	378.80	380.58	---
14	378.71	380.45	384.37	---	---	---	388.87	---	---	---	---	---
15	378.39	378.87	---	---	---	---	---	---	---	---	---	---
16	377.78	378.41	---	---	---	---	---	---	---	---	---	---
17	377.34	---	---	---	379.64	---	---	---	---	---	---	---
18	---	377.42	---	---	---	389.05	392.67	---	378.60	---	---	---
19	376.71	377.08	---	---	---	---	---	382.70	---	---	---	---
20	376.47	376.80	---	---	---	---	---	---	---	---	---	---
21	376.15	376.58	---	---	---	---	---	---	---	---	---	---
22	375.93	381.78	382.87	---	378.71	---	---	---	---	377.01	---	378.76
23	375.75	396.52	382.45	---	---	---	---	---	---	---	---	---
24	375.54	386.72	---	---	---	---	---	---	---	---	---	---
25	375.45	384.29	---	---	---	403.20	---	381.37	378.49	---	---	---
26	375.35	---	---	380.76	---	---	---	---	---	---	---	---
27	375.11	382.08	---	---	---	395.80	---	---	---	---	---	---
28	375.00	---	---	---	---	---	---	---	377.65	---	---	---
29	374.93	380.87	---	---	---	---	390.92	---	---	---	---	---
30	374.77	---	---	---	---	---	---	---	---	---	---	---
31	374.80	---	---	---	---	392.81	---	---	---	---	---	---
Mean	---	---	---	---	---	---	---	---	---	---	---	---
Maximum	---	---	---	---	---	---	---	---	---	---	---	---
Minimum	---	---	---	---	---	---	---	---	---	---	---	---

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401416076594701
U.S. Geological Survey local well number CU 841
Ships Parts Control Center well number DD3

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	---	---	---	374.52	374.38	374.45	---	---	---	380.78	380.41	380.58
2	---	---	---	386.98	374.34	375.50	---	---	---	380.41	380.11	380.24
3	---	---	---	405.12	386.24	395.11	---	---	---	380.11	379.85	379.98
4	---	---	---	386.24	382.02	383.76	---	---	---	379.85	379.73	379.80
5	---	---	---	382.02	380.52	381.08	---	---	---	392.55	379.73	383.94
6	---	---	---	380.67	379.79	380.31	---	---	---	383.08	381.52	382.21
7	---	---	---	379.79	379.10	379.41	---	---	---	381.52	380.70	381.08
8	---	---	---	379.10	378.65	378.88	378.70	378.37	378.55	380.98	380.54	380.78
9	---	---	---	378.65	378.20	378.42	378.37	378.07	378.23	380.92	380.37	380.64
10	---	---	---	378.20	377.80	377.95	401.87	377.84	378.68	380.37	380.02	380.18
11	---	---	---	377.80	377.35	377.58	404.47	392.48	398.22	380.02	379.78	379.89
12	---	---	---	403.78	377.19	380.17	404.38	388.77	393.45	381.37	379.78	380.45
13	---	---	---	402.34	381.52	385.44	388.77	385.63	387.01	386.96	381.37	384.71
14	---	---	---	381.52	379.59	380.38	385.63	384.01	384.73	384.81	383.52	384.17
15	378.59	378.09	378.34	379.59	378.86	379.17	384.01	383.08	383.53	383.52	382.61	383.03
16	378.09	377.64	377.85	378.86	378.31	378.60	383.08	382.54	382.80	382.61	382.08	382.32
17	377.64	377.25	377.43	378.31	377.82	378.07	401.74	382.46	390.39	382.08	381.64	381.86
18	377.25	376.91	377.04	377.82	377.38	377.62	388.94	385.78	387.12	381.64	381.28	381.46
19	376.91	376.55	376.75	377.39	377.03	377.23	385.78	384.27	384.93	381.28	380.93	381.11
20	376.62	376.35	376.49	377.05	376.84	376.94	384.52	384.06	384.30	380.93	380.61	380.78
21	376.35	375.99	376.18	---	---	---	384.16	383.38	383.77	381.32	380.40	380.57
22	376.08	375.82	375.95	---	---	---	383.39	382.73	383.04	383.08	381.32	382.71
23	375.82	375.61	375.71	---	---	---	382.73	382.29	382.52	382.49	381.52	381.97
24	375.61	375.39	375.54	---	---	---	382.31	381.90	382.10	381.62	381.15	381.38
25	375.57	375.29	375.43	---	---	---	381.90	381.57	381.74	381.63	381.15	381.44
26	375.40	375.12	375.25	---	---	---	381.58	381.24	381.41	381.15	380.68	380.90
27	375.12	374.91	375.00	---	---	---	381.24	380.94	381.08	380.68	380.38	380.53
28	374.91	374.78	374.84	---	---	---	381.13	380.81	380.94	380.38	380.14	380.25
29	374.78	374.64	374.71	---	---	---	381.25	381.02	381.17	380.14	379.89	380.01
30	374.64	374.52	374.57	---	---	---	381.35	380.92	381.16	379.89	379.70	379.79
31	374.61	374.52	374.57	---	---	---	381.28	380.78	381.04	379.70	379.51	379.61
Month	378.59	374.52	375.98	405.12	374.34	379.80	404.47	377.84	383.83	392.55	379.51	381.24
		February			March			April			May	
1	379.53	379.33	379.42	378.57	378.37	378.47	405.57	404.51	404.92	389.40	388.56	388.97
2	379.34	379.16	379.25	379.51	378.29	378.63	404.99	404.62	404.81	388.56	387.71	388.15
3	379.18	379.03	379.11	381.04	379.51	380.00	404.62	398.89	402.46	387.71	386.86	387.28
4	379.04	378.89	378.96	405.41	381.04	393.82	398.89	394.92	396.77	386.86	386.17	386.51
5	378.89	378.68	378.79	404.89	401.26	403.98	394.92	392.32	393.47	404.37	386.04	391.70
6	378.68	378.44	378.57	401.26	394.23	396.67	392.32	390.53	391.37	394.49	388.97	390.83
7	378.44	378.18	378.31	394.23	392.27	392.96	390.53	389.40	389.92	388.97	387.22	388.03
8	378.20	377.96	378.09	392.27	391.15	391.59	389.40	388.54	388.95	387.22	386.10	386.63
9	377.96	377.70	377.83	391.15	390.28	390.67	388.54	387.72	388.14	386.10	385.31	385.69
10	377.71	377.49	377.59	390.28	389.35	389.82	404.78	387.57	394.84	385.31	384.72	384.99
11	377.50	377.33	377.41	389.35	388.27	388.81	404.64	394.57	398.96	384.72	384.28	384.50
12	377.33	377.16	377.22	388.27	387.34	387.79	394.57	391.33	392.71	404.05	384.00	387.93
13	377.87	377.16	377.46	387.34	386.69	387.00	391.33	389.70	390.44	391.87	386.04	387.73
14	378.65	377.87	378.18	386.69	385.91	386.27	389.70	388.63	389.14	386.04	384.61	385.25
15	378.84	378.40	378.57	385.91	385.39	385.63	388.63	387.70	388.16	384.61	383.81	384.18
16	379.32	378.72	378.89	385.39	385.20	385.30	404.99	387.30	394.86	383.81	383.29	383.54
17	380.32	379.32	379.91	396.11	385.38	388.88	404.58	395.02	399.60	383.29	382.92	383.09
18	380.32	379.59	380.02	391.49	388.67	389.74	395.02	391.63	393.07	382.92	382.68	382.77
19	379.59	379.10	379.29	388.67	387.45	388.02	391.63	390.02	390.75	383.02	382.80	382.95
20	379.10	378.79	378.94	387.45	386.57	386.96	390.02	388.95	389.46	383.13	382.79	383.00
21	378.80	378.49	378.66	387.59	386.43	386.87	404.83	388.62	391.81	382.87	382.56	382.71
22	380.31	378.41	379.02	387.99	387.54	387.70	405.23	403.09	404.58	382.56	382.30	382.43
23	380.56	380.11	380.43	405.07	387.88	392.48	404.23	396.71	400.32	---	---	---
24	380.11	379.40	379.72	404.80	403.83	404.47	396.71	392.82	394.52	---	---	---
25	379.40	379.10	379.23	404.49	402.18	403.16	392.82	390.80	391.73	---	---	---
26	379.10	378.92	379.00	402.18	397.86	399.14	405.52	390.11	397.39	381.61	381.40	381.51
27	378.93	378.74	378.82	397.86	396.09	396.72	403.47	395.27	398.31	381.40	381.18	381.29
28	378.77	378.54	378.66	401.82	396.58	399.06	395.27	392.07	393.45	381.18	380.93	381.06
29	---	---	---	404.72	395.82	400.94	392.07	390.52	391.23	381.08	380.89	380.99
30	---	---	---	399.76	395.49	397.41	390.52	389.40	389.93	381.00	380.71	380.84
31	---	---	---	404.78	392.51	394.18	---	---	---	380.83	380.53	380.64
Month	380.56	377.16	378.76	405.41	378.29	391.39	405.57	387.30	394.54	404.37	380.53	384.83

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401416076594701
U.S. Geological Survey local well number CU 841
Ships Parts Control Center well number DD3

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
	June			July			August			September		
1	380.98	380.63	380.84	378.35	377.88	378.09	376.94	376.51	376.74	376.75	376.50	376.62
2	380.63	380.14	380.36	404.75	377.75	391.12	376.51	376.11	376.30	376.50	376.27	376.40
3	380.14	379.93	380.03	395.26	384.90	388.37	403.38	376.11	385.37	380.93	376.26	376.68
4	379.99	379.88	379.94	384.90	382.24	383.38	380.04	378.67	379.23	404.69	380.93	394.49
5	379.88	379.71	379.81	382.24	380.94	381.53	379.31	378.18	378.81	386.07	381.89	383.64
6	379.71	379.50	379.61	380.94	380.16	380.53	382.60	377.76	379.12	381.89	380.14	380.90
7	379.52	379.33	379.42	392.87	379.74	380.68	380.89	378.95	379.81	380.14	379.24	379.65
8	385.53	379.18	379.92	387.39	381.31	382.62	378.95	378.03	378.44	380.35	379.14	379.81
9	403.46	381.84	386.57	381.31	380.14	380.63	378.03	377.35	377.66	380.17	379.20	379.61
10	386.73	382.26	383.85	---	---	---	377.35	376.98	377.17	379.22	378.82	379.00
11	382.26	380.78	381.43	---	---	---	403.27	376.91	386.67	378.82	378.37	378.60
12	380.78	380.05	380.36	---	---	---	389.30	382.29	384.58	378.37	377.97	378.17
13	380.05	379.63	379.83	---	---	---	382.29	380.18	381.09	377.97	377.63	377.80
14	379.63	379.32	379.46	378.90	378.60	378.78	380.18	379.22	379.64	377.63	377.27	377.44
15	379.32	379.09	379.21	378.60	378.30	378.47	379.22	378.65	378.93	378.45	377.07	377.30
16	379.09	378.92	379.01	378.30	378.00	378.18	378.65	378.16	378.41	387.99	378.45	381.91
17	378.92	378.75	378.85	---	---	---	404.88	377.84	384.41	382.99	380.89	381.91
18	378.75	378.58	378.68	---	---	---	393.15	383.31	386.24	380.89	379.71	380.23
19	378.58	378.39	378.49	---	---	---	383.31	381.14	382.09	---	---	---
20	403.84	378.21	382.62	---	---	---	381.14	380.30	380.64	---	---	---
21	391.23	381.19	383.71	---	---	---	380.68	380.00	380.41	---	---	---
22	381.19	379.49	380.20	---	---	---	380.00	379.42	379.68	379.12	378.62	378.86
23	379.49	378.80	379.08	377.08	376.91	376.98	379.42	379.03	379.20	378.62	378.20	378.39
24	378.80	378.50	378.64	376.92	376.71	376.81	379.03	378.76	378.90	378.35	377.98	378.14
25	378.50	378.16	378.32	376.71	376.45	376.58	378.76	378.46	378.62	404.19	377.82	382.40
26	378.16	377.88	378.00	376.50	376.28	376.41	378.46	378.12	378.27	404.14	386.89	393.12
27	377.91	377.70	377.83	376.28	376.03	376.15	378.12	377.81	377.96	386.89	385.55	386.21
28	390.57	377.50	379.07	376.04	375.88	375.94	377.81	377.51	377.66	385.54	383.17	384.31
29	381.30	379.07	379.95	394.46	375.87	381.26	377.51	377.18	377.33	383.17	381.71	382.37
30	379.07	378.35	378.68	379.40	377.67	378.44	377.20	376.94	377.08	381.71	380.81	381.23
31	---	---	---	377.67	376.90	377.21	376.94	376.75	376.84	---	---	---
Month	403.84	377.50	380.06	404.75	375.87	379.91	404.88	376.11	379.78	404.69	376.26	380.92
YEAR	405.57	374.34	383.04									

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401419076595401
U.S. Geological Survey local well number CU 843
Ships Parts Control Center well number DD4

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		October			November			December			January	
1	---	---	---	381.17	379.59	380.12	389.03	388.70	388.87	389.35	389.20	389.28
2	---	---	---	390.09	381.17	383.67	388.70	388.29	388.50	389.20	389.04	389.13
3	---	---	---	393.61	389.76	390.89	388.29	387.79	388.03	389.04	388.79	388.92
4	---	---	---	389.76	389.64	389.71	387.79	387.45	387.62	388.79	388.52	388.66
5	---	---	---	389.64	389.49	389.56	387.45	386.99	387.23	389.75	388.51	389.43
6	---	---	---	389.61	389.54	389.60	386.99	386.66	386.82	389.61	389.52	389.56
7	---	---	---	389.59	389.50	389.55	---	---	---	389.52	389.42	389.47
8	---	---	---	389.50	389.36	389.44	---	---	---	389.60	389.37	389.45
9	---	---	---	389.36	389.11	389.23	---	---	---	389.60	389.53	389.57
10	---	---	---	389.11	388.88	389.00	---	---	---	389.53	389.42	389.47
11	---	---	---	388.88	388.59	388.74	390.16	388.07	389.79	389.42	389.30	389.36
12	---	---	---	390.54	388.39	388.64	389.99	389.69	389.81	389.75	389.30	389.57
13	---	---	---	390.07	389.65	389.75	389.69	389.50	389.60	389.94	389.72	389.87
14	---	---	---	389.65	389.52	389.58	389.50	389.33	389.42	389.84	389.75	389.79
15	---	---	---	389.52	389.42	389.48	389.33	389.16	389.24	389.75	389.63	389.69
16	387.97	387.50	387.74	389.42	389.24	389.33	389.16	389.00	389.07	389.63	389.45	389.54
17	387.50	387.04	387.29	389.24	389.06	389.15	389.84	389.00	389.55	389.45	389.19	389.33
18	387.04	386.59	386.81	389.06	388.78	388.93	389.71	389.56	389.64	389.19	388.92	389.06
19	386.59	386.07	386.35	388.78	388.40	388.60	389.56	389.42	389.48	388.92	388.58	388.75
20	386.07	385.45	385.77	388.40	387.98	388.19	389.57	389.39	389.50	388.58	388.17	388.37
21	385.45	384.80	385.15	389.46	387.72	388.06	389.53	389.44	389.48	388.17	387.80	387.96
22	384.80	383.95	384.39	390.49	389.46	389.75	389.44	389.35	389.39	389.60	387.95	389.38
23	383.95	382.87	383.42	392.89	389.75	391.16	389.35	389.24	389.31	389.54	389.43	389.49
24	382.87	381.95	382.38	389.75	389.67	389.71	389.24	389.06	389.16	389.62	389.39	389.44
25	381.95	381.65	381.77	389.73	389.68	389.71	389.06	388.82	388.94	389.63	389.54	389.59
26	382.13	381.88	382.05	389.68	389.67	389.68	388.82	388.46	388.65	389.54	389.45	389.49
27	382.13	382.04	382.10	389.68	389.59	389.64	388.46	388.13	388.29	389.45	389.31	389.39
28	382.04	381.81	381.94	389.59	389.45	389.51	388.14	387.94	388.03	389.31	389.16	389.24
29	381.81	381.36	381.61	389.45	389.26	389.36	389.33	388.14	388.84	389.16	388.93	389.05
30	381.36	380.14	380.79	389.26	389.03	389.15	389.56	389.33	389.46	388.93	388.67	388.81
31	380.14	379.59	379.79	---	---	---	389.52	389.35	389.44	388.67	388.32	388.51
Month	387.97	379.59	383.71	393.61	379.59	388.90	390.16	386.66	388.93	389.94	387.80	389.25
		February			March			April			May	
1	388.32	387.80	388.07	388.83	388.47	388.66	396.48	391.00	394.88	388.88	388.29	388.60
2	387.80	387.14	387.48	388.67	388.18	388.35	396.14	393.79	394.90	388.29	387.61	387.95
3	387.14	386.49	386.81	389.70	388.67	389.26	393.79	389.84	391.51	387.61	386.96	387.27
4	386.49	385.87	386.17	395.43	389.70	391.83	389.84	389.67	389.72	386.96	386.44	386.71
5	385.87	385.26	385.56	394.74	393.02	394.07	389.67	389.49	389.59	391.15	386.25	387.89
6	385.26	384.58	384.94	393.02	389.80	390.46	389.49	389.13	389.31	389.75	389.46	389.57
7	384.58	383.70	384.16	389.82	389.77	389.80	389.13	388.71	388.92	389.46	389.30	389.38
8	383.70	382.68	383.20	389.82	389.75	389.79	388.71	388.15	388.44	389.30	389.08	389.20
9	382.68	381.95	382.28	389.81	389.77	389.79	388.15	387.59	387.87	389.08	388.64	388.88
10	381.95	381.41	381.67	389.80	389.73	389.75	394.08	387.48	389.46	388.64	388.11	388.38
11	381.41	380.96	381.21	389.74	389.70	389.72	394.08	389.64	391.09	388.11	387.57	387.84
12	380.96	380.66	380.78	389.70	389.62	389.66	389.64	389.52	389.60	390.76	387.10	387.94
13	389.68	380.54	382.97	389.62	389.55	389.59	389.52	389.37	389.46	389.80	389.47	389.62
14	389.73	389.61	389.67	---	---	---	389.39	389.18	389.29	389.47	389.27	389.37
15	389.69	389.57	389.62	---	---	---	389.18	388.86	389.02	389.27	388.93	389.13
16	389.84	389.62	389.69	---	---	---	393.29	388.65	390.44	388.93	388.34	388.65
17	389.84	389.73	389.78	---	---	---	391.81	389.64	390.46	388.34	387.71	388.03
18	389.76	389.55	389.67	---	---	---	389.64	389.51	389.58	387.71	387.06	387.38
19	389.55	389.32	389.43	389.74	389.67	389.70	389.51	389.33	389.42	387.84	387.06	387.43
20	389.32	389.06	389.19	389.67	389.62	389.64	389.33	389.10	389.23	388.07	387.84	388.00
21	389.06	388.77	388.92	389.84	389.62	389.73	391.17	388.97	389.27	388.07	387.88	388.00
22	389.70	388.58	389.03	389.85	389.78	389.81	394.93	391.17	393.59	387.88	387.57	387.74
23	389.70	389.57	389.64	394.86	389.81	390.44	393.49	389.55	390.80	387.57	387.18	387.39
24	389.57	389.40	389.49	394.89	393.01	393.71	389.55	389.41	389.48	387.18	386.80	386.99
25	389.40	389.20	389.30	393.01	390.42	391.60	389.41	389.24	389.33	386.80	386.36	386.60
26	389.20	389.02	389.08	390.42	389.77	389.91	395.79	389.13	391.56	386.36	385.92	386.13
27	389.02	388.97	388.99	389.81	389.75	389.77	392.23	389.55	390.15	385.92	385.37	385.65
28	388.98	388.83	388.92	389.82	389.78	389.80	389.55	389.40	389.48	385.37	384.69	385.06
29	---	---	---	391.26	389.78	390.42	389.40	389.27	389.35	384.69	383.83	384.23
30	---	---	---	390.05	389.77	389.80	389.27	388.88	389.10	383.83	383.44	383.63
31	---	---	---	391.00	389.72	389.76	---	---	---	383.50	382.97	383.25
Month	389.84	380.54	386.99	395.43	388.18	390.19	396.48	387.48	390.14	391.15	382.97	387.48

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401419076595401
U.S. Geological Survey local well number CU 843
Ships Parts Control Center well number DD4

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
	June			July			August			September		
1	386.53	383.50	385.38	389.12	388.82	388.98	389.08	388.74	388.93	---	---	---
2	387.44	386.53	387.08	391.55	388.71	389.83	388.74	388.28	388.53	---	---	---
3	387.53	387.44	387.49	390.28	389.53	389.68	390.62	388.27	389.74	---	---	---
4	387.63	387.36	387.46	389.53	389.33	389.44	389.68	389.40	389.53	---	---	---
5	387.86	387.63	387.75	389.34	388.99	389.20	389.68	389.52	389.61	---	---	---
6	387.92	387.86	387.91	388.99	388.47	388.73	389.80	389.41	389.57	---	---	---
7	387.90	387.74	387.84	388.55	387.95	388.22	389.74	389.51	389.61	---	---	---
8	389.16	387.48	387.75	389.48	388.55	389.35	389.51	389.25	389.39	---	---	---
9	390.41	389.16	389.67	389.45	389.29	389.39	389.25	388.85	389.07	---	---	---
10	389.75	389.53	389.62	389.29	388.88	389.13	388.85	388.30	388.61	---	---	---
11	389.53	389.23	389.40	388.88	388.44	388.64	390.25	388.13	389.32	---	---	---
12	389.23	388.76	389.01	388.77	388.55	388.73	389.83	389.55	389.68	---	---	---
13	388.76	388.22	388.51	388.78	388.55	388.70	389.55	389.27	389.42	---	---	---
14	388.22	387.56	387.91	388.55	388.00	388.31	389.27	388.84	389.08	---	---	---
15	387.56	386.80	387.19	388.00	387.37	387.70	388.84	388.27	388.59	---	---	---
16	386.80	386.09	386.44	387.37	386.60	386.99	388.27	387.63	387.96	---	---	---
17	386.09	385.41	385.77	386.60	385.86	386.23	394.81	387.21	388.62	---	---	---
18	385.41	384.73	385.10	385.86	385.06	385.46	390.35	389.51	389.70	---	---	---
19	384.73	383.86	384.31	385.06	383.87	384.51	389.51	389.15	389.35	---	---	---
20	391.15	383.01	384.83	383.87	383.08	383.40	389.15	388.70	388.89	---	---	---
21	390.19	389.56	389.68	383.08	382.63	382.84	388.85	388.75	388.81	---	---	---
22	389.56	389.34	389.46	382.63	382.14	382.42	388.79	388.50	388.69	---	---	---
23	389.34	388.97	389.17	382.14	380.95	381.61	---	---	---	---	---	---
24	388.97	388.43	388.72	380.95	379.46	380.06	---	---	---	---	---	---
25	388.43	387.68	388.07	379.46	379.17	379.28	---	---	---	---	---	---
26	387.68	387.00	387.34	379.17	379.01	379.10	---	---	---	---	---	---
27	387.00	386.61	386.78	379.01	376.55	377.88	---	---	---	---	---	---
28	387.37	386.31	386.53	376.55	375.97	376.03	---	---	---	---	---	---
29	389.26	387.37	388.76	389.64	375.97	386.57	---	---	---	---	---	---
30	389.31	389.12	389.25	389.63	389.38	389.49	---	---	---	---	---	---
31	---	---	---	389.38	389.08	389.24	---	---	---	---	---	---
Month	391.15	383.01	387.67	391.55	375.97	385.97	394.81	387.21	389.12	---	---	---
YEAR	396.48	375.97	388.17									

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401428077000901
U.S. Geological Survey local well number CU 844
Ships Parts Control Center well number DD5

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
	October			November			December			January		
1	369.82	369.63	369.72	369.07	369.04	369.06	370.97	370.82	370.90	371.01	370.88	370.94
2	369.63	369.52	369.56	369.57	369.04	369.14	370.82	370.67	370.75	370.88	370.78	370.82
3	369.52	369.45	369.48	378.79	369.57	374.02	370.67	370.53	370.60	370.78	370.68	370.73
4	369.45	369.40	369.43	372.86	371.36	371.98	370.53	370.41	370.46	370.68	370.59	370.63
5	369.40	369.36	369.38	371.36	370.77	371.01	370.41	370.30	370.35	371.37	370.59	371.11
6	369.36	369.30	369.33	370.77	370.40	370.59	370.30	370.22	370.25	371.34	371.19	371.27
7	369.30	369.26	369.29	370.40	370.08	370.23	---	---	---	371.19	371.05	371.12
8	369.26	369.23	369.25	370.08	369.86	369.95	---	---	---	371.08	371.03	371.05
9	378.33	369.22	370.92	369.86	369.71	369.77	---	---	---	371.08	370.96	371.03
10	374.44	371.79	372.87	---	---	---	---	---	---	370.96	370.85	370.90
11	371.79	370.90	371.29	---	---	---	---	---	---	370.85	370.77	370.81
12	370.90	370.39	370.63	---	---	---	374.22	373.65	374.00	371.05	370.77	370.88
13	370.39	370.03	370.21	---	---	---	373.65	372.87	373.23	372.28	371.05	371.79
14	370.03	369.77	369.89	---	---	---	372.87	372.41	372.62	372.31	372.22	372.28
15	369.77	369.60	369.68	---	---	---	372.41	372.08	372.24	372.22	372.02	372.12
16	369.60	369.52	369.55	---	---	---	372.08	371.82	371.94	372.02	371.83	371.92
17	369.52	369.47	369.49	---	---	---	373.06	371.78	372.48	371.83	371.64	371.74
18	369.47	369.43	369.44	---	---	---	373.06	372.76	372.92	371.64	371.48	371.56
19	369.43	369.38	369.40	---	---	---	372.76	372.46	372.60	371.48	371.33	371.40
20	369.38	369.33	369.35	---	---	---	372.46	372.35	372.42	371.33	371.11	371.27
21	369.33	369.30	369.32	---	---	---	372.35	372.10	372.23	371.20	371.14	371.16
22	369.30	369.26	369.28	---	---	---	372.10	371.91	372.01	371.61	371.18	371.52
23	369.26	369.23	369.25	---	---	---	371.91	371.72	371.82	371.57	371.40	371.49
24	369.23	369.22	369.22	374.66	372.92	373.66	371.72	371.53	371.63	371.40	371.30	371.35
25	369.23	369.19	369.22	372.92	372.32	372.62	371.53	371.40	371.47	371.41	371.30	371.37
26	369.19	369.16	369.18	372.32	371.92	372.11	371.40	371.26	371.33	371.30	371.18	371.24
27	369.16	369.14	369.15	371.92	371.61	371.76	371.26	371.15	371.20	371.18	371.08	371.13
28	369.14	369.11	369.13	371.61	371.35	371.47	371.15	371.10	371.11	371.08	371.00	371.04
29	369.11	369.08	369.10	371.35	371.13	371.23	371.12	371.10	371.11	371.00	370.90	370.95
30	369.10	369.07	369.08	371.13	370.97	371.04	371.14	371.07	371.11	370.90	370.82	370.86
31	369.08	369.07	369.08	---	---	---	371.14	371.01	371.08	370.82	370.73	370.78
Month	378.33	369.07	369.65	378.79	369.04	371.23	374.22	370.22	371.69	372.31	370.59	371.23
	February			March			April			May		
1	370.74	370.63	370.68	370.27	370.25	370.26	---	---	---	374.42	374.13	374.27
2	370.63	370.53	370.58	370.48	370.23	370.29	---	---	---	374.13	373.87	373.99
3	370.53	370.47	370.51	370.89	370.48	370.62	---	---	---	373.87	373.64	373.74
4	370.55	370.37	370.43	381.15	370.89	374.97	---	---	---	373.64	373.44	373.53
5	370.38	370.33	370.36	380.17	378.50	379.21	---	---	---	376.69	373.39	374.27
6	370.33	370.27	370.30	378.69	376.37	377.31	---	---	---	375.21	373.99	374.47
7	370.27	370.23	370.25	376.37	375.76	375.95	---	---	---	373.99	373.57	373.76
8	370.23	370.18	370.21	375.76	375.46	375.59	---	---	---	373.57	373.32	373.43
9	370.18	370.14	370.16	375.46	375.28	375.35	---	---	---	373.32	373.14	373.23
10	370.14	370.10	370.12	375.32	374.87	375.12	---	---	---	373.14	372.99	373.07
11	370.10	370.06	370.08	374.87	374.32	374.58	---	---	---	373.21	372.89	372.96
12	370.06	370.04	370.05	374.32	373.94	374.11	---	---	---	375.25	372.81	373.23
13	370.25	370.06	370.12	373.94	373.72	373.84	---	---	---	374.32	373.27	373.67
14	370.33	370.25	370.27	373.73	373.38	373.53	---	---	---	373.27	372.94	373.08
15	370.33	370.29	370.31	373.38	373.20	373.27	---	---	---	372.94	372.77	372.85
16	370.51	370.33	370.36	373.23	373.16	373.18	---	---	---	372.77	372.65	372.70
17	370.77	370.51	370.67	374.17	373.23	373.54	---	---	---	372.65	372.54	372.59
18	370.77	370.59	370.69	374.28	374.03	374.17	---	---	---	372.54	372.47	372.51
19	370.59	370.41	370.49	374.03	373.76	373.88	---	---	---	372.53	372.49	372.51
20	370.41	370.30	370.35	373.76	373.54	373.64	374.76	374.37	374.56	372.49	372.39	372.44
21	370.30	370.25	370.27	373.80	373.52	373.60	378.55	374.26	374.56	372.39	372.31	372.35
22	370.68	370.22	370.35	374.02	373.80	373.88	380.92	377.90	379.32	372.31	372.23	372.26
23	370.75	370.68	370.73	381.78	374.02	375.25	379.42	376.66	377.88	372.23	372.16	372.19
24	370.68	370.51	370.59	381.81	379.18	379.78	376.66	375.59	376.05	372.16	372.09	372.12
25	370.51	370.41	370.46	379.21	377.54	378.28	375.59	374.97	375.26	372.09	372.03	372.06
26	370.41	370.34	370.37	377.54	376.50	376.94	379.94	374.74	376.77	372.03	371.97	372.00
27	370.34	370.30	370.32	376.50	375.99	376.17	378.11	376.11	376.96	371.97	371.91	371.94
28	370.30	370.27	370.29	376.06	375.81	375.98	376.11	375.29	375.66	371.91	371.84	371.88
29	---	---	---	378.00	375.67	376.59	375.29	374.78	375.03	371.84	371.82	371.83
30	---	---	---	376.69	375.67	376.10	374.78	374.42	374.59	371.82	371.75	371.78
31	---	---	---	375.67	375.16	375.39	---	---	---	371.75	371.71	371.73
Month	370.77	370.04	370.37	381.81	370.23	374.85	380.92	374.26	376.06	376.69	371.71	372.85

Appendix 5. Daily water-level elevations in wells along channel segments A, B, and C at the Navy Ships Parts Control Center, October 1, 1992, to September 30, 1993--Continued

Cumberland County
U.S. Geological Survey identification number 401428077000901
U.S. Geological Survey local well number CU 844
Ships Parts Control Center well number DD5

Day	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Maximum	Minimum	Mean
		June			July			August			September	
1	371.76	371.69	371.74	370.48	370.39	370.43	369.96	369.86	369.90	369.81	369.78	369.80
2	371.69	371.61	371.66	377.73	370.38	372.32	369.86	369.81	369.84	369.78	369.75	369.77
3	371.61	371.54	371.58	375.04	372.77	373.70	371.22	369.81	370.89	369.94	369.75	369.78
4	371.54	371.49	371.52	372.77	371.97	372.32	370.71	370.34	370.45	377.58	369.94	373.74
5	371.49	371.43	371.45	371.97	371.52	371.73	370.37	370.20	370.30	372.68	371.42	371.94
6	371.43	371.34	371.39	371.52	371.20	371.36	370.49	370.09	370.21	371.42	370.90	371.14
7	371.34	371.20	371.26	371.20	371.00	371.09	370.52	370.34	370.46	370.90	370.56	370.73
8	371.30	371.10	371.15	371.38	371.09	371.24	370.34	370.11	370.22	370.67	370.48	370.57
9	372.57	371.30	371.83	371.20	371.00	371.11	370.11	369.99	370.04	370.65	370.40	370.52
10	372.54	372.01	372.26	371.00	370.83	370.92	369.99	369.90	369.94	---	---	---
11	372.01	371.69	371.85	370.83	370.72	370.77	371.95	369.89	370.74	---	---	---
12	371.69	371.42	371.55	370.76	370.64	370.71	371.98	371.38	371.73	---	---	---
13	371.42	371.20	371.31	370.64	370.52	370.59	371.38	370.89	371.12	---	---	---
14	371.20	371.02	371.11	370.52	370.44	370.48	370.89	370.53	370.71	---	---	---
15	371.02	370.90	370.97	370.44	370.37	370.40	370.53	370.30	370.41	---	---	---
16	370.90	370.75	370.83	370.37	370.31	370.33	370.30	370.14	370.22	---	---	---
17	370.75	370.67	370.71	370.31	370.26	370.28	377.28	370.05	371.45	---	---	---
18	370.67	370.59	370.63	370.26	370.20	370.23	373.95	372.01	372.80	370.77	370.46	370.60
19	370.59	370.53	370.56	370.20	370.18	370.19	372.01	371.34	371.63	370.46	370.26	370.36
20	375.52	370.50	371.15	370.22	370.16	370.19	371.34	371.02	371.15	370.26	370.11	370.18
21	373.29	371.73	372.30	370.16	370.11	370.14	371.02	370.80	370.93	370.23	370.11	370.19
22	371.73	371.23	371.45	370.11	370.04	370.07	370.80	370.55	370.67	370.20	370.08	370.14
23	371.23	370.91	371.06	370.04	369.99	370.02	370.55	370.38	370.46	370.08	369.99	370.02
24	370.91	370.71	370.80	369.99	369.94	369.97	370.38	370.26	370.32	---	---	---
25	370.71	370.59	370.64	369.94	369.90	369.93	370.26	370.16	370.21	---	---	---
26	370.59	370.50	370.53	369.90	369.87	369.89	370.16	370.07	370.12	---	---	---
27	370.50	370.45	370.47	369.87	369.84	369.86	370.07	370.01	370.04	---	---	---
28	370.60	370.39	370.44	369.84	369.81	369.83	370.01	369.94	369.98	---	---	---
29	370.70	370.60	370.67	370.34	369.81	370.19	369.94	369.90	369.93	372.04	371.60	371.81
30	370.61	370.48	370.55	370.31	370.09	370.21	369.90	369.85	369.88	371.60	371.30	371.45
31	---	---	---	370.09	369.96	370.02	369.85	369.81	369.84	---	---	---
Month	375.52	370.39	371.18	377.73	369.81	370.66	377.28	369.81	370.54	377.58	369.75	370.75
YEAR	381.81	369.04	371.57									

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993

CONODOGUINET CREEK BASIN
01570010 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 1, NEAR MECHANICSBURG, PA

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
October				
09	0725	18	514	25
09	0735	58	415	64
09	0755	22	126	7.5
09	0756	22	104	6.2
09	0840	1.0	37	.10
09	1330	15	15	.61
09	1331	15	12	.49
09	1540	5.1	32	.44
09	1745	18	122	5.9
09	1755	46	304	38
09	1805	195	174	92
09	1855	21	46	2.6
09	2025	2.2	34	.21
November				
02	2030	12	24	.75
02	2245	30	13	1.1
02	2246	30	6	.49
02	2345	43	19	2.2
03	0210	90	11	2.7
03	0230	104	8	2.2
03	0250	88	24	5.7
03	0330	46	29	3.6
03	0500	3.9	12	.13
12	2030	26	17	1.2
12	2100	50	48	6.5
12	2130	66	24	4.3
12	2140	36	19	1.9
12	2141	36	19	1.9
12	2320	3.0	12	.10
21	1955	.44	14	.02
21	2035	6.2	10	.17
21	2155	.06	11	.00
22	2205	6.8	33	.61
22	2250	5.1	27	.37
22	2320	31	48	4.1
22	2350	92	53	13
23	0055	127	47	16
23	0140	23	29	1.8
23	0141	23	27	1.7
23	0255	3.0	29	.23
23	0415	18	36	1.7
23	0510	24	42	2.8
December				
11	0040	33	11	0.97
11	0240	18	11	.53
11	0410	10	16	.45
11	0440	9.6	9	.23
11	1441	9.6	12	.31
17	0540	8.8	35	.83
17	0630	17	29	1.3
17	0730	8.8	22	.52
17	0955	9.6	19	.49
17	0956	9.6	18	.47
January				
05	0305	3.0	99	.79
05	0540	38	34	3.5
13	0345	3.6	34	.33
13	0400	4.7	29	.37
13	0515	12	18	.56
February				
22	1520	13	24	.85
22	1705	1.0	14	.04
March				
04	1120	43	48	5.5
04	1125	43	64	7.3
04	1130	41	46	5.1
04	1140	40	60	6.5
04	1200	39	74	7.8
04	1230	41	81	9.0
04	1300	51	57	7.9
04	1315	50	61	8.3
04	1420	44	79	9.3
04	1540	58	60	9.3
04	1600	95	61	16
04	1625	49	46	6.1
23	1710	26	73	5.0
23	1759	30	68	5.5
23	1920	39	57	6.0
23	1940	43	49	5.6
23	2005	41	48	5.4
23	2105	44	33	3.9
25	0831	3.0	5	.04
27	1345	2.2	40	.24
29	0919	22	69	4.1
29	1120	7.4	44	.88

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993–Continued

CONODOGUINET CREEK BASIN

01570010 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 1, NEAR MECHANICSBURG, PA–Continued

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
March--Continued				
31	1230	0.49	48	0.06
31	2240	43	64	7.3
31	2255	48	64	8.2
31	2335	40	78	8.4
31	2355	51	74	10
April				
01	0025	55	64	9.5
01	0110	48	46	5.9
01	0240	55	58	8.6
01	0540	16	19	.82
01	1952	55	15	2.2
01	2000	66	55	9.8
01	2010	95	107	27
01	2020	90	113	28
01	2030	88	156	37
01	2031	88	163	39
01	2050	63	77	13
02	1040	8.8	12	.29
05	0940	.88	8	.02
05	1431	.62	83	.14
10	1500	58	23	3.6
10	1501	58	24	3.7
10	1530	55	41	6.1
10	1610	50	37	5.0
10	1611	50	38	5.1
10	1721	33	23	2.0
16	1120	65	137	24
16	1130	111	212	64
16	1150	164	150	66
16	1202	138	141	53
16	1220	72	78	15
16	1305	68	52	9.6
16	1616	3.2	29	.25
18	1244	.00	19	.00
21	0930	4.3	35	.40
21	2030	40	21	2.3
21	2045	44	20	2.4
21	2110	40	23	2.5
21	2140	53	25	3.6
22	1142	8.8	15	.36
22	1310	24	33	2.2
22	1525	38	29	2.9
23	1505	1.3	25	.09
26	1153	61	336	56
26	1155	62	227	38
April--Continued				
26	1205	218	606	357
26	1207	242	490	320
26	1212	291	474	372
26	1247	184	137	68
26	1440	18	44	2.1
May				
05	1455	249	361	243
05	1510	135	223	81
05	1530	34	246	22
05	1535	33	179	16
12	1740	95	342	88
June				
09	1505	199	153	82
09	1515	168	202	92
09	1525	95	127	33
20	1900	62	147	24
20	1910	516	226	315
20	1920	255	140	96
20	1930	114	103	32
20	1955	35	65	6.1
August				
06	1726	.23	14	.01
11	0720	112	84	25
September				
03	2345	236	100	64
03	2355	122	87	29
04	0010	89	62	15
04	0030	81	71	15
04	0310	79	30	6.4
04	0325	105	41	12
04	0340	67	27	4.9
04	0350	63	21	3.6
25	1945	59	22	3.5
25	2000	67	22	4.0
25	2020	77	20	4.1
25	2045	66	23	4.1
25	2105	56	27	4.1
26	0435	92	29	7.2

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993--Continued

CONODOGUINET CREEK BASIN
01570030 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 2, NEAR MECHANICSBURG, PA

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)	Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
October					March				
09	1827	31	105	8.8	04	1200	0.08	229	0.05
09	1829	125	163	55	04	1220	16	89	3.8
09	1830	127	159	55	04	1305	27	75	5.5
09	1832	227	138	85	04	1425	29	59	4.6
09	1833	278	129	97	04	1436	34	107	9.8
09	1840	227	161	99	04	1550	39	42	4.4
09	1850	176	129	61	04	1725	14	46	1.7
09	1910	89	72	17	23	1820	.48	83	.11
09	1935	31	47	3.9	23	1835	.76	98	.20
09	2000	9.1	44	1.1	23	1855	14	68	2.6
09	2001	9.1	37	.91	23	1950	27	53	3.9
09	2150	.30	20	.02	23	2045	34	44	4.0
November					23	2300	19	25	1.3
02	2400	.26	20	.01	24	0010	6.3	20	.34
03	0020	18	15	.71	24	0748	.89	12	.03
03	0040	15	13	.53	24	1230	.40	13	.01
03	0100	14	11	.43	25	1030	.18	15	.01
03	0140	18	12	.57	29	0825	.66	59	.11
03	0300	74	28	5.6	29	0850	16	60	2.6
03	0410	20	18	.98	29	0930	14	33	1.3
03	0411	20	21	1.1	29	0931	14	35	1.4
03	0550	.56	11	.02	29	1145	2.2	31	.18
12	2150	.56	47	.07	29	1345	.66	31	.05
12	2205	21	22	1.3	31	2335	26	71	5.0
12	2245	2.0	27	.14	31	2355	29	62	4.8
12	2246	2.0	15	.08	April				
12	2400	.26	13	.01	01	0055	37	48	4.8
23	0010	24	43	2.8	01	0135	32	42	3.7
23	0030	40	43	4.7	01	0235	70	70	13
23	0055	99	47	13	01	0330	31	47	3.9
23	0145	37	32	3.2	01	0506	14	30	1.2
23	0325	.66	26	.05	01	0606	2.4	31	.20
23	0550	9.1	35	.86	01	1650	1.5	18	.08
23	0551	9.1	30	.74	01	2050	68	107	20
23	0715	.56	20	.03	01	2110	53	100	14
23	1015	.03	22	.00	01	2111	53	99	14
December					01	2145	32	60	5.2
11	0045	.15	42	.02	01	2245	15	44	1.8
11	0155	6.7	17	.31	01	2335	11	38	1.1
11	0310	3.0	10	.08	02	0235	5.0	31	.42
11	0620	.35	9	.01	02	1235	3.9	6	.06
10	1535	24	59	3.8	02	1545	.48	22	.03
10	1545	39	35	3.6	02	1605	44	25	3.0
10	1620	34	30	2.7	02	1625	31	26	2.2

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993--Continued

CONODOGUINET CREEK BASIN

01570030 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 2, NEAR MECHANICSBURG, PA--Continued

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
April--Continued				
10	1621	34	30	2.7
10	1720	25	26	1.8
10	2125	7.6	16	.33
16	1155	1.0	184	.51
16	1210	107	113	33
16	1240	77	73	15
16	1241	77	87	18
16	1335	37	41	4.1
16	1710	4.2	31	.35
16	1800	.22	18	.01
21	2130	.10	45	.01
21	2145	19	26	1.3
21	2230	40	24	2.6
21	2325	24	19	1.2
22	0035	29	17	1.3
22	0320	3.0	12	.10
22	1535	13	37	1.3
26	1230	206	102	57
26	1250	185	80	40
26	1257	173	178	83
26	1300	165	153	68
26	1310	143	60	23
26	1315	127	106	36
26	1455	18	43	2.1
May				
05	1510	5.0	248	3.3
05	1525	120	192	62
05	1550	48	112	14
05	1630	5.4	84	1.2
05	1735	.30	41	.03
12	1820	55	177	26
12	1830	53	122	17
12	1910	8.1	77	1.7
12	1945	.48	45	.06
12	2045	.12	29	.01
June				
09	1555	24	60	3.9
09	1620	3.9	83	.87
09	1730	.18	55	.03
20	1925	151	166	68
20	1940	132	102	36
20	2015	25	36	2.4
20	2055	.48	26	.03
20	2150	.15	27	.01
July				
02	1655	29	11	0.85
02	1740	44	11	1.3
02	1840	7.6	8	.16
August				
03	0210	57	72	11
03	0215	51	69	9.5
03	0225	32	52	4.5
03	0240	14	43	1.7
03	0305	.66	28	.05
03	0400	.15	23	.01
11	0900	16	67	2.9
11	0910	18	51	2.4
11	0920	10	49	1.4
11	1025	.26	20	.01
17	1830	138	530	197
17	1835	389	319	335
17	1840	406	231	253
17	1845	402	179	194
17	1850	370	135	135
17	1905	227	73	45
17	1940	48	40	5.1
17	2110	.35	20	.02
September				
04	0135	18	55	2.7
04	0145	34	39	3.6
04	0205	35	20	1.9
04	0325	1.0	15	.04
04	0410	13	17	.59
25	2125	12	38	1.3
25	2145	44	18	2.1
25	2205	39	18	1.9
25	2235	20	13	.71
25	2310	1.3	14	.05
25	0010	.30	12	.01

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993--Continued

CONODOGUINET CREEK BASIN

01570060 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 3, NEAR MECHANICSBURG, PA

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
October				
09	1858	93	238	60
09	1900	120	365	118
09	1905	157	280	119
09	1910	154	159	66
09	1911	154	155	64
09	1920	129	119	41
09	1932	103	105	29
09	1940	74	87	17
09	1941	74	87	17
09	1955	45	74	9.0
09	2025	15	51	2.0
November				
03	0315	44	31	3.7
03	0506	6.4	15	.26
03	0518	4.2	16	.18
23	0115	23	248	15
23	0120	67	83	15
23	0135	81	50	11
23	0200	52	34	4.8
23	0201	52	34	4.8
23	0245	12	29	.91
23	0330	1.8	28	.14
March				
04	1410	13	112	3.9
04	1425	17	101	4.6
04	1450	16	83	3.7
04	1600	20	63	3.4
04	1620	31	128	11
04	1640	59	153	24
04	1641	59	150	24
04	1645	61	150	25
04	1700	51	123	17
04	1730	24	89	5.8
04	1825	5.1	53	.73
23	2105	18	107	5.1
23	2125	36	91	8.8
23	2145	34	86	7.8
23	2205	27	70	5.2
23	2235	21	56	3.2
23	2340	11	40	1.2
24	0045	3.1	30	.25
April				
01	0045	17	104	4.8
01	0055	24	95	6.0
01	0110	24	75	4.8
April--Continued				
01	0130	23	62	3.8
01	0155	24	55	3.5
01	0220	20	57	3.0
01	0240	33	90	8.0
01	0305	60	85	14
01	0345	34	51	4.6
01	0400	26	59	4.1
01	0625	3.9	57	.60
01	0640	2.8	34	.26
01	1105	1.7	19	.09
01	2055	38	364	38
01	2105	62	189	32
01	2120	59	133	21
01	2130	53	103	15
01	2210	30	85	6.8
01	2300	12	58	1.9
02	0100	3.9	38	.40
10	1710	15	136	5.3
10	1730	14	77	2.9
10	1756	12	25	.78
10	1820	8.0	51	1.1
10	2015	.13	20	.01
16	1230	39	302	32
16	1240	70	198	37
16	1300	51	173	24
16	1313	63	127	21
16	1330	55	89	13
16	1350	32	68	5.9
16	1520	3.9	52	.55
16	1625	.02	40	.00
21	2250	18	117	5.8
21	2305	22	36	2.1
21	2335	15	26	1.1
22	0110	18	28	1.4
22	0355	.40	20	.02
22	1420	24	55	3.6
22	1450	25	43	2.9
22	1635	3.6	55	.53
26	1240	142	645	247
26	1250	208	436	245
26	1310	186	248	125
26	1311	186	321	161
26	1335	126	168	57
26	1341	117	147	46
26	1400	88	100	24
26	1530	9.0	50	1.2

Appendix 6. Suspended-sediment concentrations in water samples collected at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 26, 1993--Continued

CONODOGUINET CREEK BASIN

01570060 UNNAMED TRIBUTARY TO TRINDLE SPRING RUN, SITE 3, NEAR MECHANICSBURG, PA--Continued

Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)	Date	Time	Discharge, instantaneous, (cubic feet per second)	Sediment, suspended (milligrams per liter)	Sediment, discharge, suspended (tons per day)
May					August				
05	1540	95	159	41	17	1755	116	493	154
05	1630	30	93	7.5	17	1800	271	301	220
12	1920	2.8	121	.91	17	1805	273	223	164
12	1925	5.1	103	1.4	17	1815	251	140	95
June					17	1830	176	78	37
20	2005	108	132	38	17	1855	76	48	9.9
20	2015	95	90	23	September				
20	2045	22	56	3.3	04	0420	29	25	2.0
20	2046	22	49	2.9	04	0430	34	22	2.0
20	2110	5.4	42	.61	04	0445	28	17	1.3
					04	0500	21	18	1.0
					25	2200	6.4	30	.52

Appendix 7. Daily mean discharge, mean suspended-sediment concentration, and daily suspended-sediment load at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 27, 1993

[Daily mean discharge in cubic feet per second; sediment concentration in milligrams per liter; sediment load in tons; --, no data]

Date	Channel segment A			Channel segment B			Channel segment C		
	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load
October									
9	13	60	2.11	6.6	59	1.04	5.0	105	1.41
November									
2	4.2	30	.34	.00	--	--	.00	--	--
3	10	39	1.06	6.0	47	.76	3.0	72	.58
12	3.7	26	.26	.50	25	.03	.00	--	--
13	.01	5	.0001	.00	--	--	.00	--	--
21	.3	14	.01	.00	--	--	.00	--	--
22	3.0	24	.19	.00	--	--	.00	--	--
23	8.9	34	.82	5.8	38	.59	3.3	62	.56
December									
10	1.4	21	.078	.00	--	--	.00	--	--
11	9.3	37	.92	.66	19	.03	.00	--	--
12	.18	13	.006	.05	14	.002	.00	--	--
17	3.6	29	.28						
January									
5	1.5	54	.22	.00	--	--	.00	--	--
13	1.1	42	.12	.00	--	--	.00	--	--
22	.41	29	.03	.00	--	--	.00	--	--
February									
22	.32	23	.02	.00	--	--	.00	--	--
March									
4	16	71	3.06	7.7	59	1.22	4.5	98	1.18
5	6.4	51	.88	1.8	41	.20	.00	--	--
6	.10	19	.005	.00	--	--	.00	--	--
17	2.8	43	.33	.00	--	--	.00	--	--
21	.06	19	.003	.00	--	--	.00	--	--
23	9.8	70	1.85	5.3	60	.86	2.8	86	.65
24	4.8	55	.71	1.1	42	.12	.23	40	.025
25	3.0	48	.39	.21	33	.02	.00	--	--
26	2.3	45	.28	.00	--	--	.00	--	--
27	2.2	45	.27	.00	--	--	.00	--	--
28	3.0	50	.40						
29	5.6	62	.93	1.5	45	1.8	.00	--	--
30	1.8	44	.22	.00	--	--	.00	--	--
31	3.9	56	.59	.81	41	.09	.00	--	--

Appendix 7. Daily mean discharge, mean suspended-sediment concentration, and daily suspended-sediment load at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 27, 1993--Continued

Date	Channel segment A			Channel segment B			Channel segment C		
	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load
April									
1	21	104	5.89	16	88	3.8	9.7	151	3.96
2	6.9	70	1.30	3.9	58	.61	.63	53	.09
3	2.7	52	.38	.21	34	.02	.00	--	--
4	1.5	45	.18	.00	--	--	.00	--	--
5	.69	38	.07	.00	--	--	.00	--	--
6	.12	27	.009	.00	--	--	.00	--	--
10	11	92	2.47	4.7	64	.81	1.1	65	.19
11	1.3	48	.17	.13	34	.01	.00	--	--
12	.08	27	.006						
16	11	101	2.99	6.5	71	1.25	4.0	107	1.16
17	3.0	66	.54	.46	40	.05	.00	--	--
18	.06	28	.004						
21	8.0	98	2.09	2.9	59	.46	.87	62	.15
22	13	117	4.10	7.3	76	1.49	3.5	103	.97
23	1.5	60	.24	.08	34	.01	.00	--	--
24	.53	48	.068	.00	--	--	.00	--	--
25	.07	32	.006	.00	--	--	.00	--	--
26	16	134	5.79	13	91	3.2	11	172	5.12
27	1.5	63	.26	.03	33	.003	.00	--	--
28	.55	51	.08						
29	.03	26	.002						
May									
5	6.9	112	2.10	3.2	64	.55	2.0	86	.46
12	3.8	102	1.04	1.3	53	.19	.08	40	.008
June									
8	1.2	98	.32	.00	--	--	.00	--	--
9	3.2	128	1.11	.47	47	.06	.00	--	--
20	7.3	177	3.48	3.8	72	.74	2.3	97	.60
28	1.4	109	.41	.00	--	--	.00	--	--
July									
2	12	213	6.9	3.9	73	.77	1.4	82	.31
7	1.7	114	.52	.00	--	--	.00	--	--
29	2.6	112	.78	.00	--	--	.00	--	--

Appendix 7. Daily mean discharge, mean suspended-sediment concentration, and daily suspended-sediment load at downstream end of channel segments A, B, and C at the Navy Ships Parts Control Center, October 9, 1992, to September 27, 1993–Continued

Date	Channel segment A			Channel segment B			Channel segment C		
	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load	Daily mean discharge	Mean suspended-sediment concentration	Daily suspended-sediment load
August									
3	4.2	123	1.39	1.1	53	0.16	0.00	--	--
6	1.0	80	.22	.00	--	--	.00	--	--
11	5.2	119	1.67	.31	42	.04	.00	--	--
17	18	169	8.23	12	93	3.01	9.3	172	4.32
September									
3	3.2	71	.62	.00	--				
4	11	106	3.14	4.7	66	.83	1.3	74	.26
15	.23	31	.019	.00	--	--	.00	--	--
16	2.0	49	.27	.00	--	--	.00	--	--
25	7.0	62	1.16	1.9	47	.24	.17	39	.018
26	4.0	50	.54	.83	40	.09	.00	--	--
27	.24	25	.016	.00	--	--	.00	--	--
TOTAL	319.38		76.96	126.75		25.20	66.18		22.02