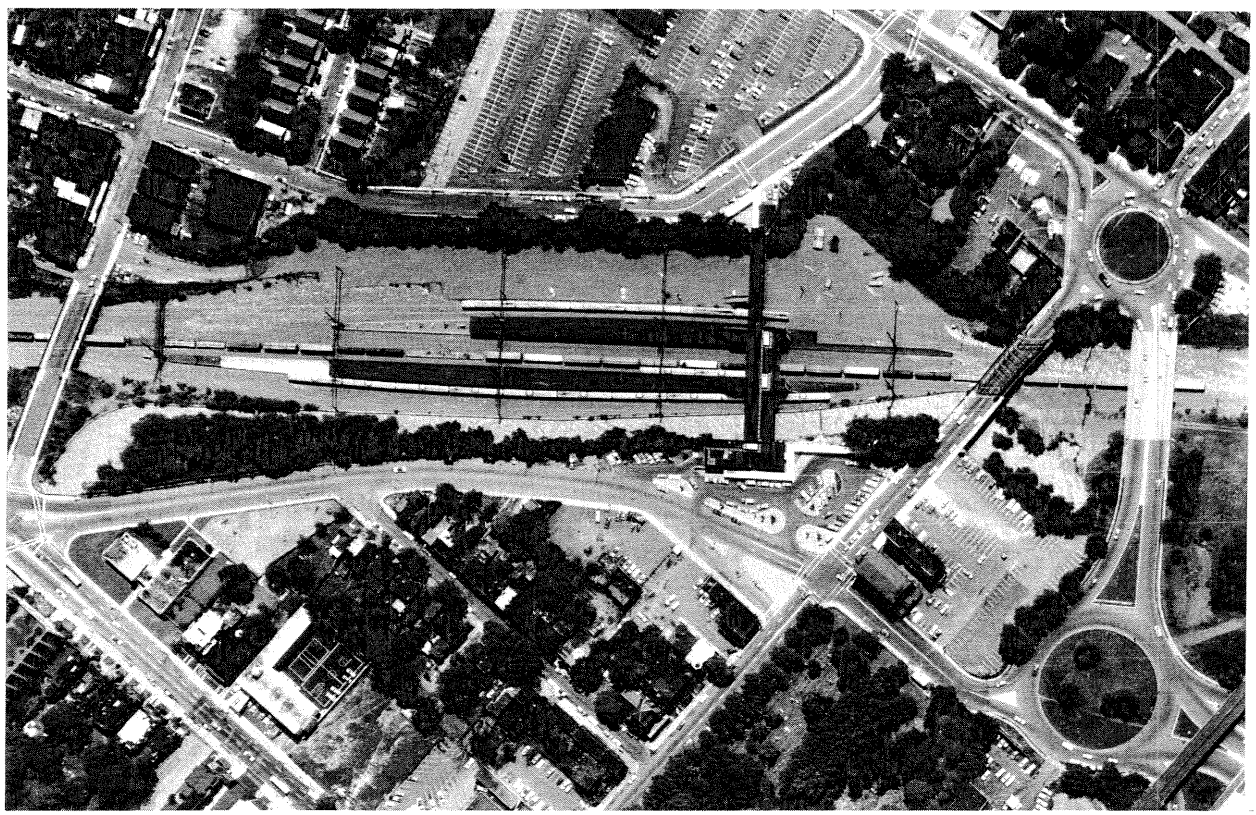
FLOOD OF JULY 21, 1975 IN MERCER COUNTY, NEW JERSEY

U.S. GEOLOGICAL SURVEY

Water–Resources Investigations 51–75



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Intense rainfall during the evening of July 20 and early morning hours of July 21, 1975 caused flooding of unprecedented magnitude in highly urbanized Mercer County, New Jersey. Over 6 inches (152 millimetres) of rainfall was recorded during a 10-hour period at Trenton, the capital of New Jersey. No lives were lost but damages to highways and bridges, to industrial, business, and residential buildings, to farmlands and crops, and to water supply systems were severe.

This report illustrates the magnitude of the flood and provides hydrologic data needed for planning and design to control or lessen damages from future floods. It includes discussions of the antecedent conditions and meteorological aspects of the storm; a description of the flood and comparison to previous floods; a summary of flood stages and discharges; a discussion of flood frequency; and photomosaics which show inundated areas. More than 200 high-water marks are described as to location and elevation above mean sea level.

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December 1975

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Multiply English units	By	To obtain SI units
	LENGTH	
inches (in)	25.40	millimetres (mm)
feet (ft)	.3048	metres (m)
miles (mi)	1.609	kilometres (km)
	AREA	
square miles (mi^2)	2.590	square kilometres (km^2)
	FLOW	
cubic feet per second (ft^3/s)	.02832	cubic metres per second (m^3/s)
cubic feet per second per square mile ($ft^3/s/mi^2$)	.01093	cubic metres per second per square kilometre ($m^3/s/km^2$)

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ABSTRACT

Intense rainfall during the evening of July 20 and early morning hours of July 21, 1975 caused flooding of unprecedented magnitude in highly urbanized Mercer County, New Jersey. Over 6 inches (152 millimetres) of rainfall was recorded during a 10-hour period at Trenton, the capital of New Jersey. No lives were lost but damages to highways and bridges, to industrial, business, and residential buildings, to farmlands and crops, and to water supply systems were severe.

This report illustrates the magnitude of the flood and provides hydrologic data needed for planning and design to control or lessen damages from future floods. It includes discussions of the antecedent conditions and meteorological aspects of the storm; a description of the flood and comparison to previous floods; a summary of flood stages and discharges; a discussion of flood frequency; and photomosaics which show inundated areas. More than 200 high-water marks are described as to location and elevation above mean sea level.

INTRODUCTION

During the evening of July 20 and early morning hours of July 21, 1975, Mercer County experienced an intense rainstorm that caused flooding of record or near record proportions along

the Assunpink Creek and its tributaries (fig. 1). The flooded area is highly developed. Damage to homes, commercial facilities, and factories was extensive. The flooding closed major highway and rail arteries and caused a virtual halt of traffic into and out of Trenton, the capital of New Jersey.

This report describes the magnitude of the flood and provides detailed hydrologic data needed for planning and designing hydraulic structures and flood-protection works, for bridge and culvert design, for flood-plain management and flood insurance purposes. The data should also be useful for applied research and legal and theoretical studies of outstanding hydrologic events. It includes precipitation data, data on flood stages and discharges, comparisons with maximum floods previously known, and photomosaics which show areas inundated along the Assunpink Creek and Pond Run. Flood-crest elevations are tabulated for over 200 sites and flood profiles are presented for eight streams. Eastern daylight saving time (EDT) on a 24-hour clock basis is used throughout this report.

ACKNOWLEDGMENTS

This report was prepared by the U.S. Geological Survey, in cooperation with the New Jersey Department of Environmental Protection, Division of Water Resources.

The data were collected and compiled in the Trenton, New Jersey office of the Geological Survey. Coordination for the State of New Jersey was provided by Dirk C. Hofman, chief, Bureau of Flood Plain Management.

Precipitation data were furnished by the National Weather Service office in Trenton, New Jersey. Assistance in the marking of flood high-water levels immediately following recession of flood waters and subsequent running of levels to establish mean-sea-level datum for these marks were given by Dirk C. Hofman, chief, and Clark D. Gilman, supervising engineer, Bureau of Flood Plain Management, New Jersey Department of Environmental Protection, and Richard H. Marston, assistant state conservationist for water resources, and Joseph S. Lalka, hydraulic engineer, U.S. Soil Conservation Service.

PRECIPITATION

Precipitation was substantially above normal throughout Mercer County for the month of July 1975. Rainfall for the month at the National Weather Service station at Trenton was

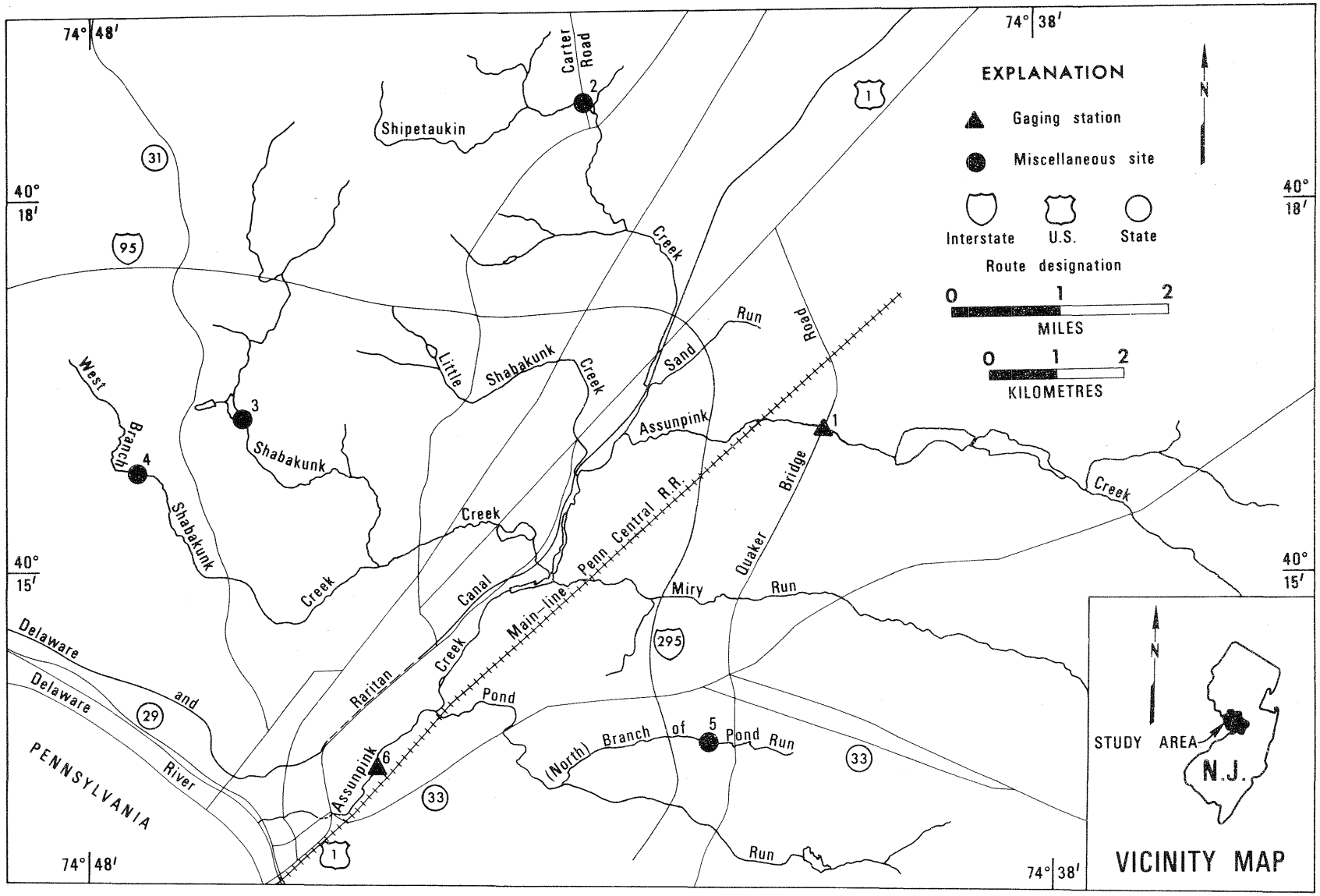


Figure 1.--Map showing streams in flood-affected area and location of peak-flow-measurement sites (1-6). Numbers refer to those in table 2.

13.39 inches (340 mm) which is 282 percent of normal. This was the second wettest July at Trenton in 95 years. In July 1880, 15.22 inches (387 mm) of rainfall was recorded. July 1975 was also the third wettest month on record at Trenton exceeded only by July 1880 and August 1955.

Much of the heavy rain fell during the period July 10-21. Rainfall during this period was associated with a series of thunderstorms which were set off by a front which arrived on July 10 and remained quasi-stationary over the area until July 21. During the period July 10-16, 6.12 inches (155 mm) of rainfall was recorded at Trenton. During the three days, July 17-19, only a trace of precipitation was recorded at Trenton. Then, during the evening of July 20 and early morning hours of July 21, torrential downpours dumped over 7 inches (178 mm) of rainfall on parts of Mercer County. A total of 6.11 inches (155 mm) was recorded during a 10-hour period at Trenton. Rainfall was most intense between 2000 hours on July 20 and 0100 hours on July 21. Precipitation recorded at selected sites during July 20-21 is listed in table 1. Figure 2 shows isohyets of total precipitation for the period July 20-21. The distribution of rainfall amounts with respect to time at the National Weather Service station at Trenton is shown on figure 3.

Table 1.-Precipitation at selected sites, July 20-21, 1975. Data furnished by National Weather Service. Site numbers refer to those in figure 2.

Site number	Location	Rainfall (inches)
1	Ackors Corner	1.18
2	Centerville	3.5
3	Clarksville	6.33
4	Ewing Township	6.75
5	Franklin Corner	6.57
6	Harts Corner	2.5
7	Hickory Corner	4.48
8	Hightstown	4.42
9	Hopewell	2.1
10	Lawrence Township	6.50
11	Lawrenceville	6.75
12	Marshalls Corner	1.6
13	Mercerville	5.90
14	Penns Neck	7.08
15	Princeton	5.84
16	Trenton	6.11
17	West Trenton	6.6

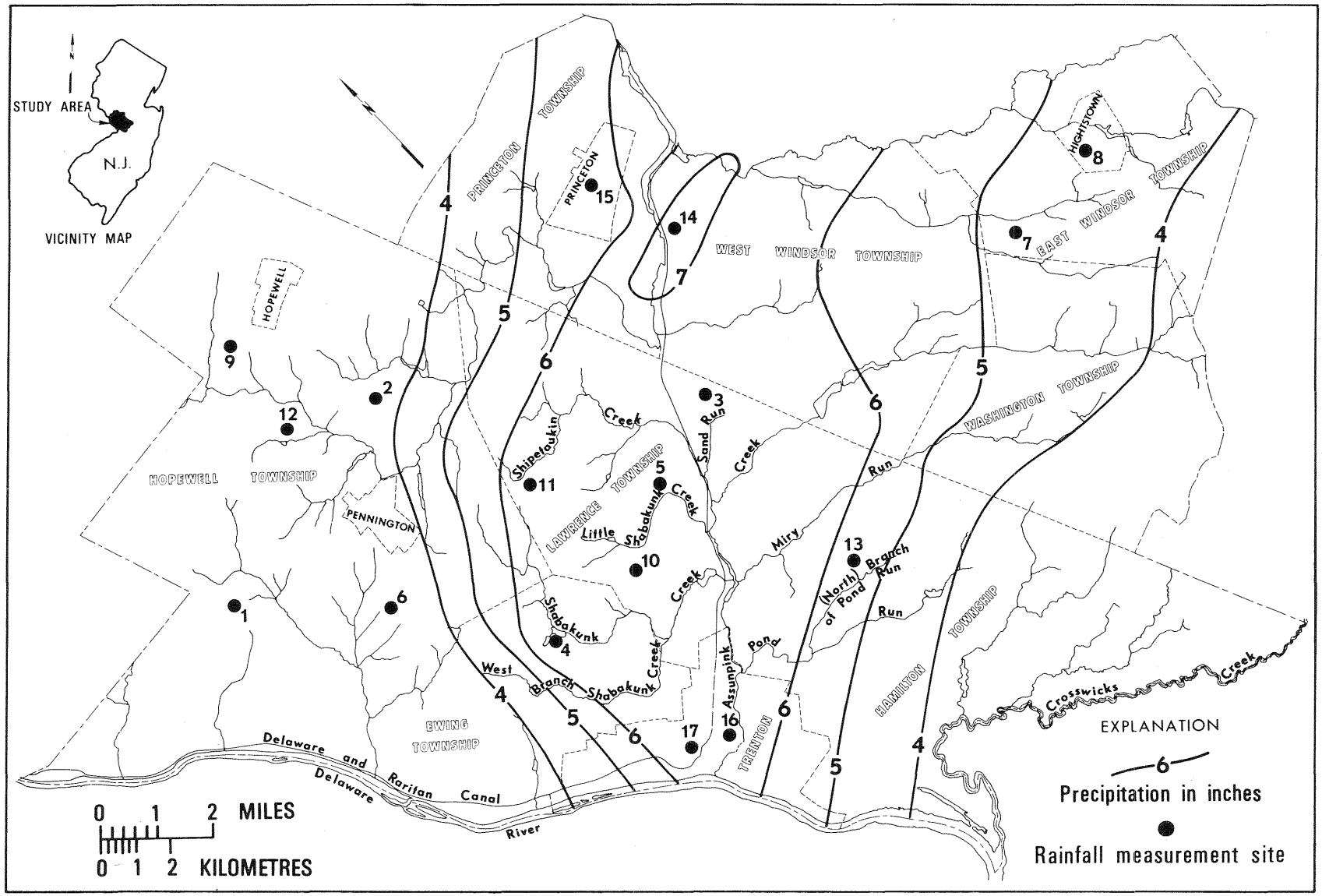


Figure 2.--Map showing selected rainfall measurement sites (1-17) and isohyets of total precipitation, July 20-21, 1975, for Mercer County, N.J. Adapted from map furnished by National Weather Service. Numbers refer to those in table 1.

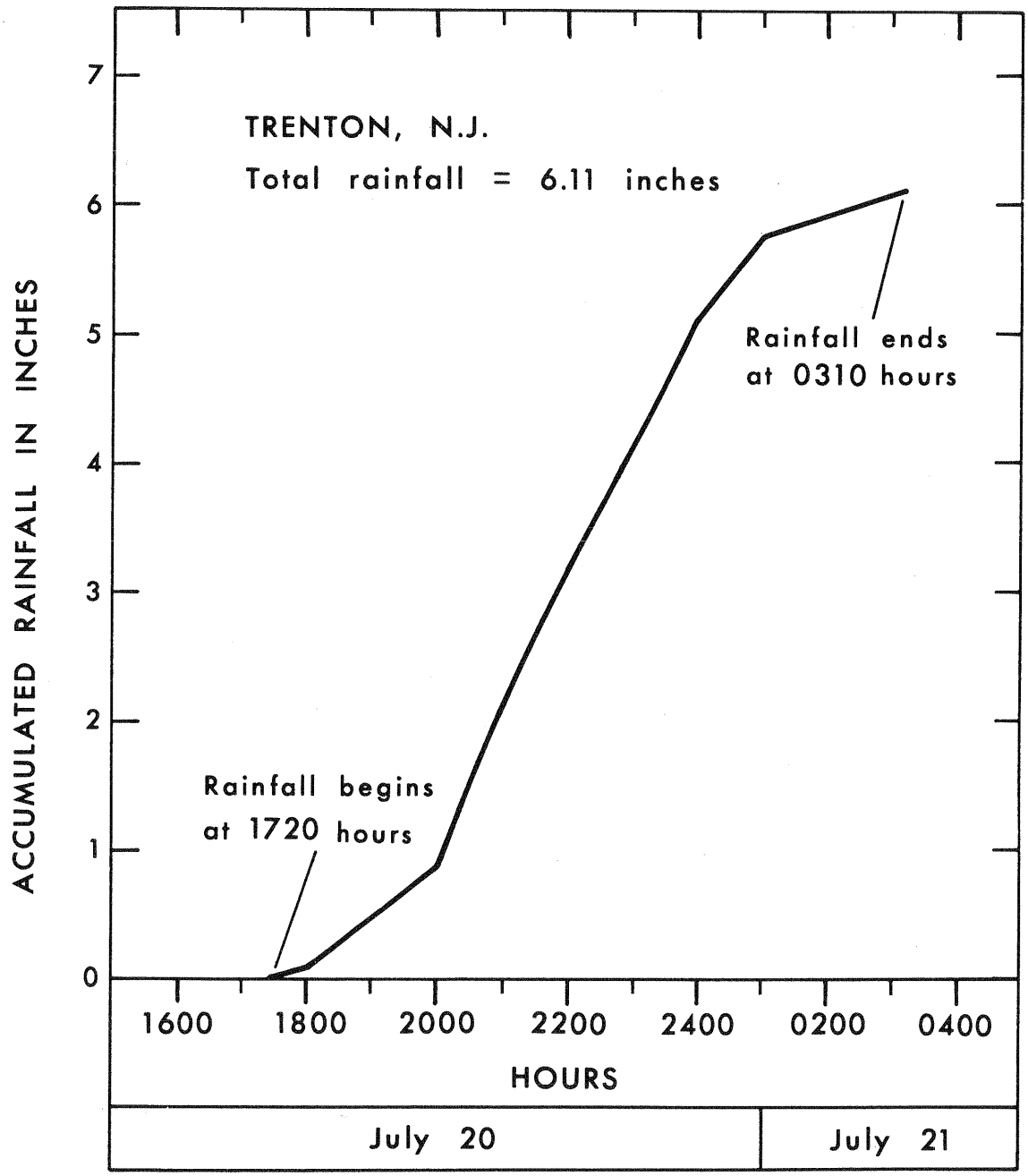


Figure 3.--Accumulated rainfall at Trenton, N.J., July 20-21, 1975. Based on data furnished by National Weather Service.

DESCRIPTION OF THE FLOOD

The Assunpink Creek, with a drainage area of 91.4 square miles (236.7 km^2) originates in Monmouth County, New Jersey and enters the Delaware River at Trenton in Mercer County, New Jersey. The largest portion of the watershed lies in Mercer County. The Assunpink Creek flows through one of the most highly urbanized areas of New Jersey. Assunpink Creek near Clarksville (site no. 1) had a peak discharge of 1,050 ft^3/s (29.7 m^3/s) from 34.3 square miles (88.8 km^2) which was 70 percent of the maximum flow observed in 1971. Flooding was devastating in the vicinity of Trenton where industrial, commericial, and residential development along the Assunpink Creek is extensive (fig. 4). Assunpink Creek at Trenton (site no. 6) reached a peak flow of 5,450 ft^3/s (154 m^3/s) from 89.4 square miles (231.5 km^2), which was 39 percent greater than the previous maximum in 51 years of record. The peak stage was 1.15 feet (0.350 m) higher than the 1971 peak and 3.87 feet (1.180 m) higher than the 1938 peak. Assunpink Creek floodwaters overflowed onto the main-line Penn Central railroad tracks in the vicinity of North Olden Avenue in Trenton and inundated the Clinton Avenue station, stopping railroad service between New York City and Philadelphia (figs. 5-8). At Trenton (site no. 6), the Assunpink Creek overflow on the Penn Central railroad tracks reached a peak of 1,340 ft^3/s (37.9 m^3/s). This accounts for about 25 percent of the total peak flow recorded at the site. Figures 7 and 8 show some of this overflow spilling over a flood-wall back into the main-channel of the Assunpink Creek in the vicinity of the Penn Central Clinton Avenue railroad station. Almost all of the overflow, however, continued to flow down the main-line Penn Central railroad tracks until it spilled onto Ferry Street between Lamberton Street and Bridge Street in South Trenton, where flood damage to commercial, industrial, and residential property was extensive (figs. 9-10).

Shipetaukin Creek, Shabakunk Creek, West Branch Shabakunk Creek, Pond Run and (North) Branch of Pond Run are tributaries to Assunpink Creek. All of these streams flow through low hills and a gently rolling topography. The soil of the watersheds is a light, loamy, alluvial type. Shipetaukin Creek, with a drainage area of 9.05 square miles (23.44 km^2), originates in Lawrence Township and flows southeasterly to the Delaware and Raritan Canal, then southwesterly parallel to the Canal, under the Canal, and then southwesterly to its confluence with Assunpink Creek. Shipetaukin Creek at Carter Road near Lawrenceville (site no. 2) had a peak of 3,340 ft^3/s (94.6 m^3/s) from 2.99 square miles (7.74 km^2) which yielded a unit discharge of

Figure 4.--Industrial and residential flooding along Assunpink Creek in Trenton, July 21, 1975. Mulberry Street is in the foreground. Nottingham Way, P.E. Albert and Sons machinery plant and Thiokol Corp. plant are in the background. Trenton Times photograph by Warren Kruse.

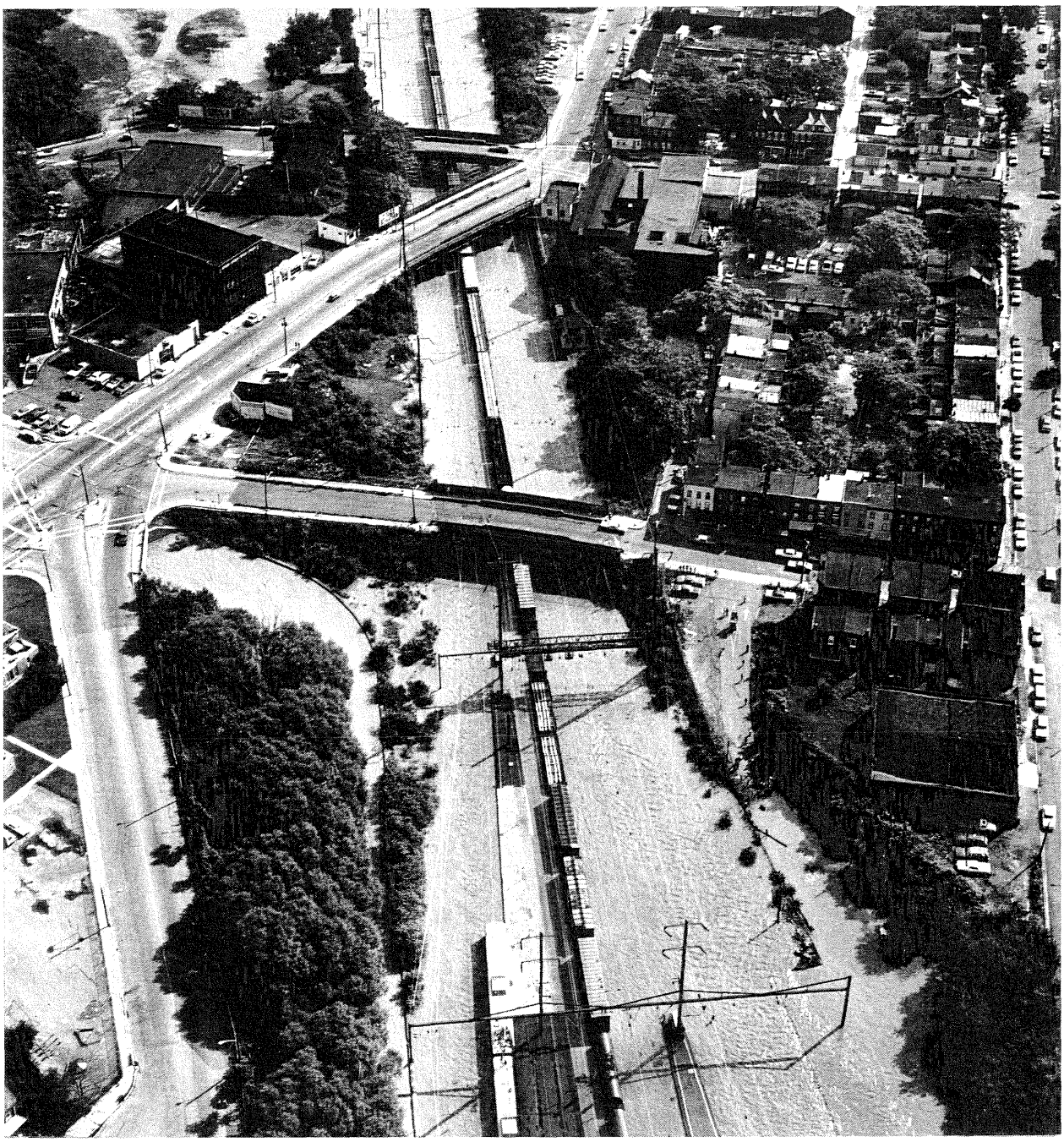


Figure 5.--Main-line Penn Central railroad tracks flooded by Assunpink Creek, looking northeast from the Clinton Avenue station in Trenton, July 21,1975. Trenton Times photograph by Warren Kruse.

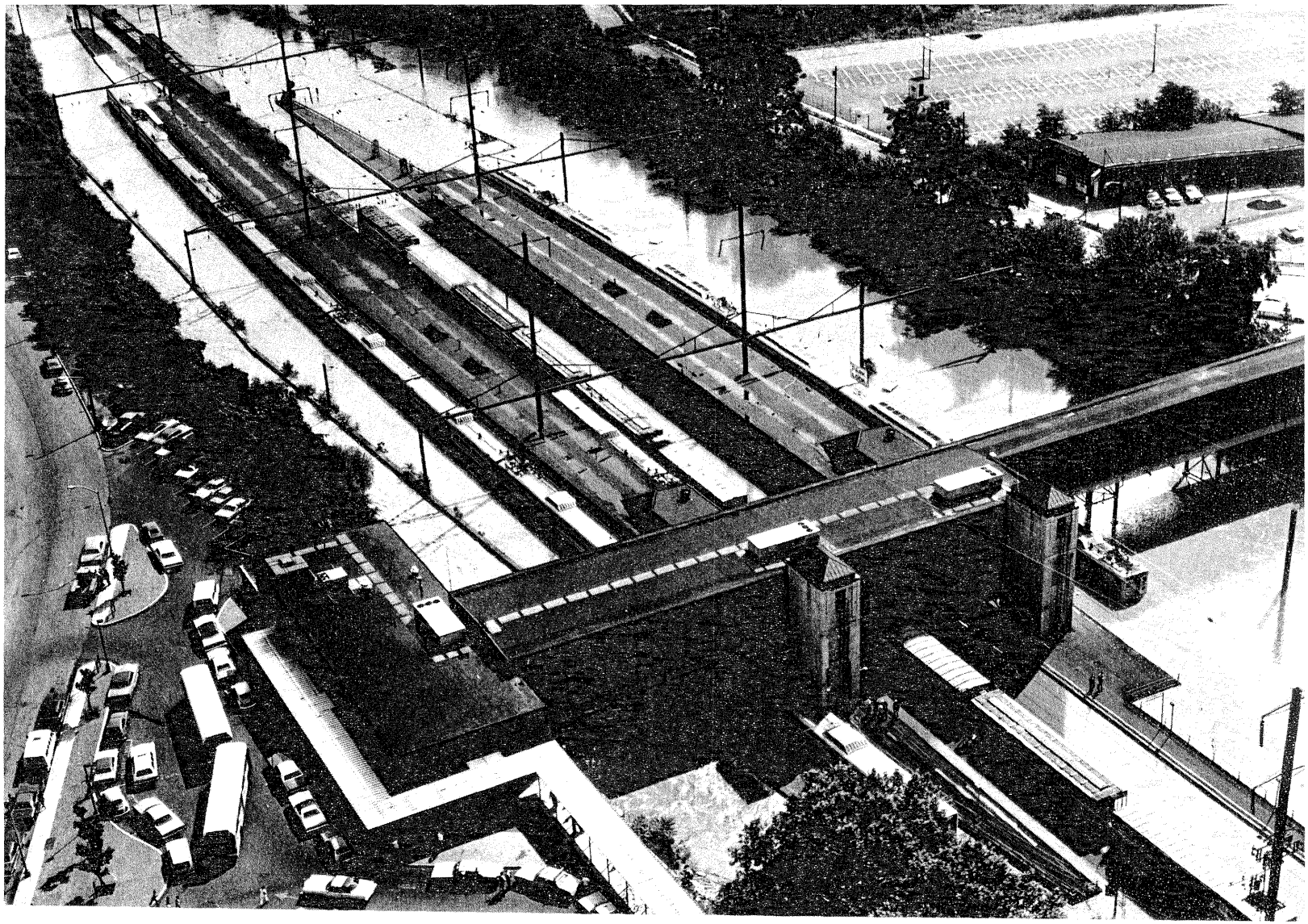


Figure 6.--Penn Central Clinton Avenue railroad station flooded by Assunpink Creek, looking east, July 21, 1975. Trenton Times photograph by Warren Kruse.

Figure 7.--Penn Central Clinton Avenue railroad station flooded by Assunpink Creek, looking east, July 21, 1975. Trenton Times photograph by Martin D'Arcy.

Figure 8.--Flooding along Assunpink Creek under the upper passenger concourse of the Penn Central Clinton Avenue railroad station, July 21, 1975. Trenton Times photograph by Martin D'Arcy.

Figure 9.--Assunpink Creek floodwaters rushing off of main-line Penn Central railroad tracks onto Ferry Street near Lamberton Street in Trenton, looking southwest, July 21, 1975. Trenton Times photograph by Martin D'Arcy.

Figure 10.--Intersection of Bridge and Ferry Streets in Trenton inundated by floodwaters from Assunpink Creek which had overflowed onto the main-line Penn Central railroad tracks, July 21, 1975. View is looking east. Trenton Times photograph by Warren Kruse.

1,120 $ft^3/s/mi^2$ (12.2 $m^3/s/km^2$). Combined floodwaters from Shipetaukin Creek and the Delaware and Raritan Canal resulted in the closing of U.S. Highway 1, a major north-south highway connecting New York with Philadelphia.

Shabakunk Creek, with a drainage area of 13.1 square miles (33.9 km^2), originates in Hopewell Township and flows southerly, then easterly, and then under the Delaware and Raritan Canal, to its confluence with Assunpink Creek in Lawrence Township. At Sylvia Lake dam at Ewingville (site no. 3), Shabakunk Creek reached a peak stage 1.1 feet (0.34 m) higher than that of the August 28, 1971 flood. The peak discharge of 5,550 ft^3/s (157 m^3/s) from 3.99 square miles (10.33 km^2) yielded a unit discharge of 1,390 $ft^3/s/mi^2$ (15.2 $m^3/s/km^2$).

West Branch Shabakunk Creek, with a drainage area of 4.82 square miles (12.48 km^2), originates in north-west Ewing Township and flows southeasterly to Prospect Street in Ewing and then northeasterly to its confluence with Shabakunk Creek in Lawrence Township. West Branch Shabakunk Creek at Stratford Avenue near West Trenton (site no. 4) had an extremely high peak discharge of 1,430 ft^3/s (40.5 m^3/s) from 1.82 square miles (4.71 km^2). Damage to residential and commercial properties along the entire reach was extensive.

Pond Run, with a drainage area of 10.0 square miles (25.9 km^2), inundated large portions of highly urbanized Hamilton Township (fig. 11), as it flowed westward to the Assunpink Creek. (North) Branch of Pond Run at Estates Boulevard, at Mercerville (site no. 5) had a peak discharge of 590 ft^3/s (16.7 m^3/s) from 1.12 square miles (2.90 km^2). Severe flooding also occurred along the (Lawrenceville School) Tributary to Shipetaukin Creek, Sand Run, Little Shabakunk Creek, and Miry Run. Additional information pertaining to floods in Mercer County can be found in the report by Stankowski (1972).

SUMMARY OF FLOOD STAGES AND DISCHARGES

Peak stages and discharges for major floods during the period of record at two gaging stations and four miscellaneous sites in the flood affected area are summarized in table 2. The peak discharges given in the table are flows that passed the gaging station or measurement site, without adjustment for storage, regulation, or diversion.

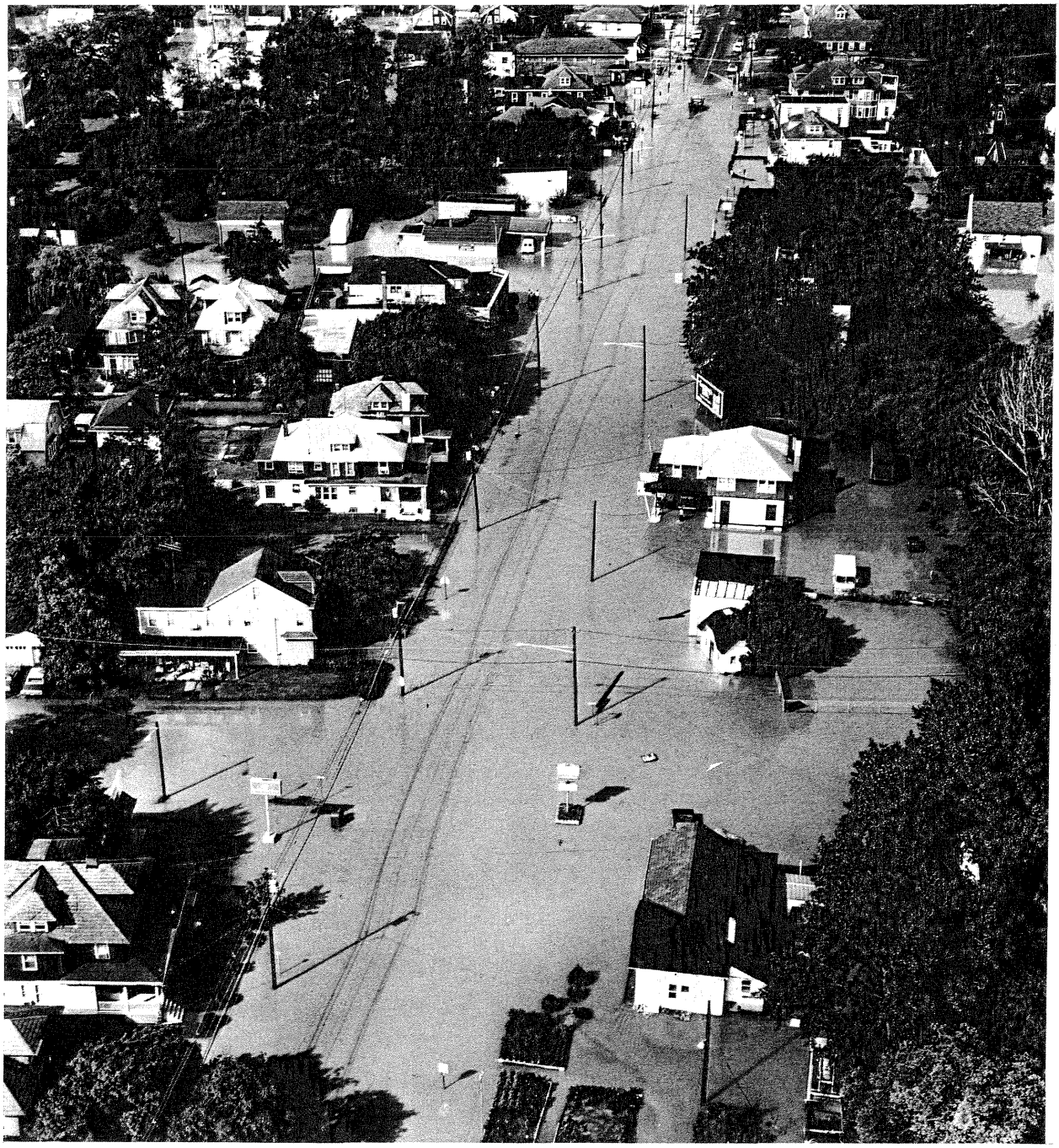


Figure 11.--Greenwood Avenue at Joan Terrace in Hamilton Township flooded by Pond Run, looking southwest, July 21, 1975. Trenton Times photograph by Warren Kruse.

Table 2.-Summary of flood stages and discharges. Site numbers refer to those in figure 1.

Site number	Permanent station number	Stream and place of determination		Drainage area (sq mi)	Period (water years)
Date		Elevation (feet above mean sea level)	Discharge (cubic feet per second)	Unit discharge (cubic feet per second) per square mile)	
1	01463620	Assunpink Creek near Clarksville, N. J.		34.3	1971, 1973-75
August 28, 1971		60.2	1,500	43.7	
July 21, 1975		58.64	1,050	30.6	
2	01463640	Shipetaukin Creek at Carter Road, near Lawrenceville, N. J.		2.99	---
July 21, 1975		102.4	3,340	1,120	
3	01463740	Shabakunk Creek at Sylvia Lake dam, at Ewingville, N. J.		3.99	---
August 28, 1971		94.2	---	---	
July 21, 1975		95.3	5,550	1,390	
4	01463770	West Branch Shabakunk Creek at Stratford Avenue, near West Trenton, N. J.		1.82	---
July 21, 1975		103.6	1,430	786	
5	01463960	(North) Branch of Pond Run at Estates Boulevard, at Mercerville, N. J.		1.12	---
July 21, 1975		67.5	590	527	
6	01464000	Assunpink Creek at Trenton, N. J.		89.4	1924-75
September 22, 1938		35.50	3,320	37.1	
August 28, 1971		38.22	3,920	43.8	
July 21, 1975		39.37	5,450	61.0	

The site numbers in table 2 correspond to those on the location map (fig. 1) and aid in locating the sites at which peak discharges were determined. The permanent station number is the U.S. Geological Survey national network identification number. Drainage area is the gross area, in square miles, above the measuring site as determined from topographic maps. Period refers to the inclusive water years for which an annual maximum discharge and (or) stage has been determined. The water year begins October 1 and ends September 30. It is designated by the calendar year in which it ends; for example, 1971 indicates the water year October 1, 1970 to September 30, 1971. Elevation refers to the height of the flood crest, in feet, above mean-sea-level datum of 1929. Discharge is the rate of flow of a stream, reported in cubic feet of water per second, passing the specified location. Flood discharges are instantaneous maximums. Unit discharge is the flood discharge divided by the drainage area.

Discharge hydrographs offer an effective means for study of flood characteristics. They represent the complex effects of variation in rainfall, in antecedent conditions, in ground cover, in topography, and in geology, all of which are integrated in time and space to produce the flood event. Discharge hydrographs for the July 21, 1975 flood for the two gaging stations on the Assunpink Creek are shown on figure 12.

FLOOD FREQUENCY

The proper design of bridges, culverts, highways, waterworks, industrial plants, and flood-control structures on the flood plains of streams, and the formulation of zoning criteria for planning and flood-insurance purposes require consideration of the flood hazard. In addition to the magnitude of floods, the frequency of flood occurrence is a major factor in the economic design of a structure. Structures located on a flood plain are seldom designed to avoid the maximum flood that may occur. Economical design balances the cost of flood protection against potential flood damage or liabilities arising from failure and interruption of services. The selection of the "design flood" to be considered in planning a structure is usually made on the basis of some frequency of recurrence.

The frequency of a flood may be expressed in terms of recurrence interval or of probability of occurrence. The recurrence interval is the average time, in years, in which a flood of a given magnitude can be expected to be exceeded once. Recurrence intervals are average figures based on historical data. The occurrence of floods is erratic and a flood of a given recurrence interval may occur in any year, even in successive

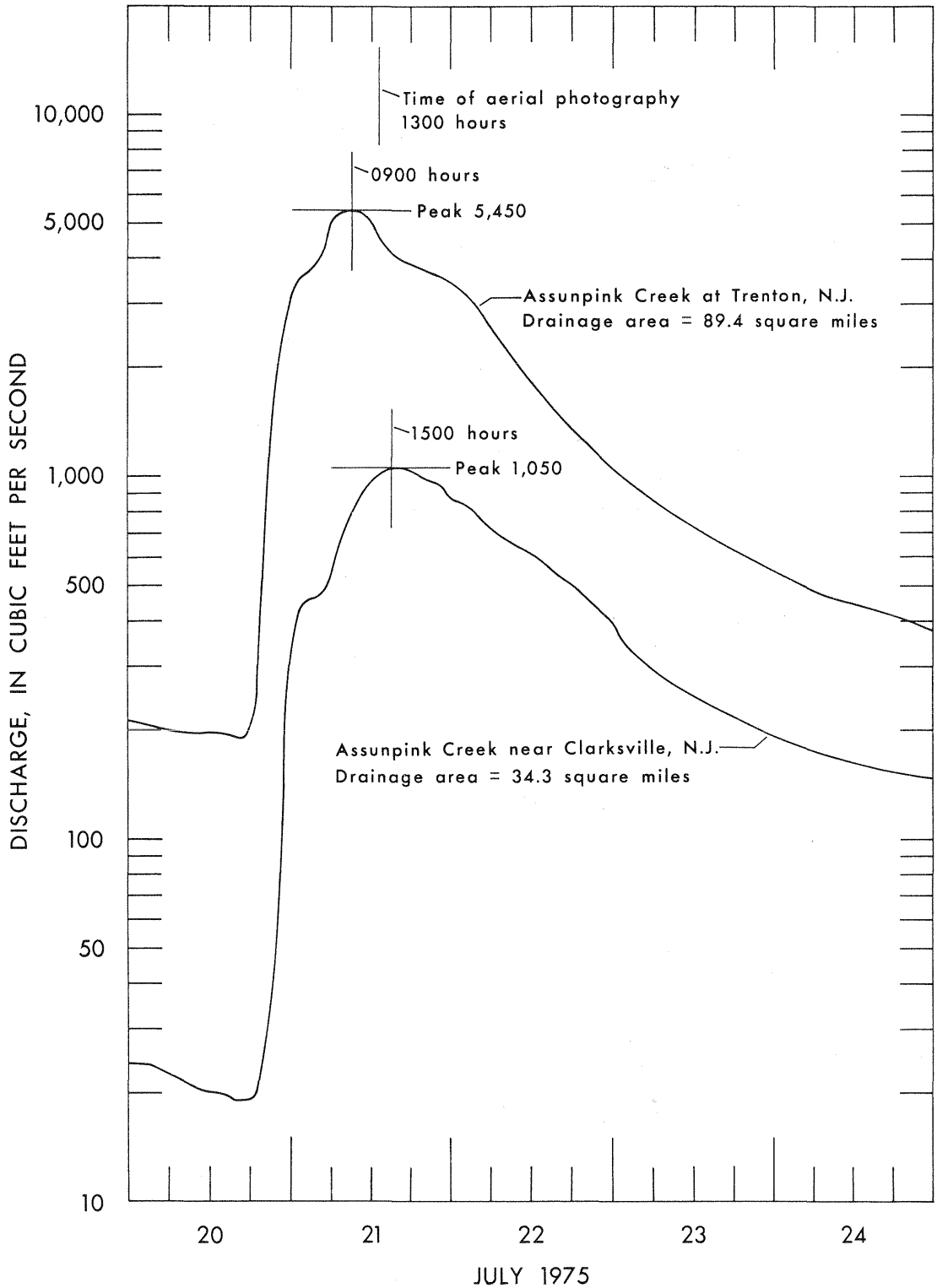


Figure 12.--Discharge hydrographs at gaging stations on Assunpink Creek near Clarksville, N.J. (01463620) and Assunpink Creek at Trenton, N.J. (01464000).

years, or it may not occur for a period much greater than the designated recurrence interval. Probability terms may be used to avoid any inference of regularity of occurrence. The recurrence interval is inversely related to the chance of a specific flood discharge being exceeded in any one year. Thus, a flood with a 100-year recurrence interval would have 1 chance in 100, or a 1-percent chance of being exceeded in any one year. A flood with a 25-year recurrence interval has a 4-percent chance of being exceeded in any given year.

The frequency with which a flood of given magnitude can be expected to occur on the Assunpink Creek at Trenton can be determined from figure 13. Figure 13 shows that the July 21, 1975 peak discharge on Assunpink Creek at Trenton was 10 percent greater than that of the 100-year flood. The flood was also a rare event on many of the tributaries to Assunpink Creek. Where there are no gaging stations on these tributaries, discharges may be evaluated on the basis of regional flood magnitude and frequency information using the technique described by Stankowski (1974).

It is emphasized that floods do not occur at regular intervals. For example, the graph in figure 13 shows a flood equal to at least 3,300 ft^3/s (93 m^3/s) has a recurrence interval of about 20 years. Yet, only one flood of that magnitude occurred in the first 47 years of record (1924-70) -- namely, the flood of September 22, 1938; then two occurred in the next 5 years (1971-75) -- namely, the flood of August 28, 1971 and the flood of July 21, 1975. A flood greater than any of these can occur at any time.

FLOOD-CREST ELEVATIONS

The availability of flood-profile data is essential to the solution of a wide range of engineering and planning problems. Examples include the proper design of dams, bridges, culverts, highways, and all other structures located on the flood plains, and the determination of flood-prone areas for planning, zoning, and flood insurance purposes. This section presents flood-crest data obtained for the July 21, 1975 flood in 12 reaches representing 40 river miles. The flood-crest elevations were located and marked in the field within five days of the flood. These data are tabulated in table 3.

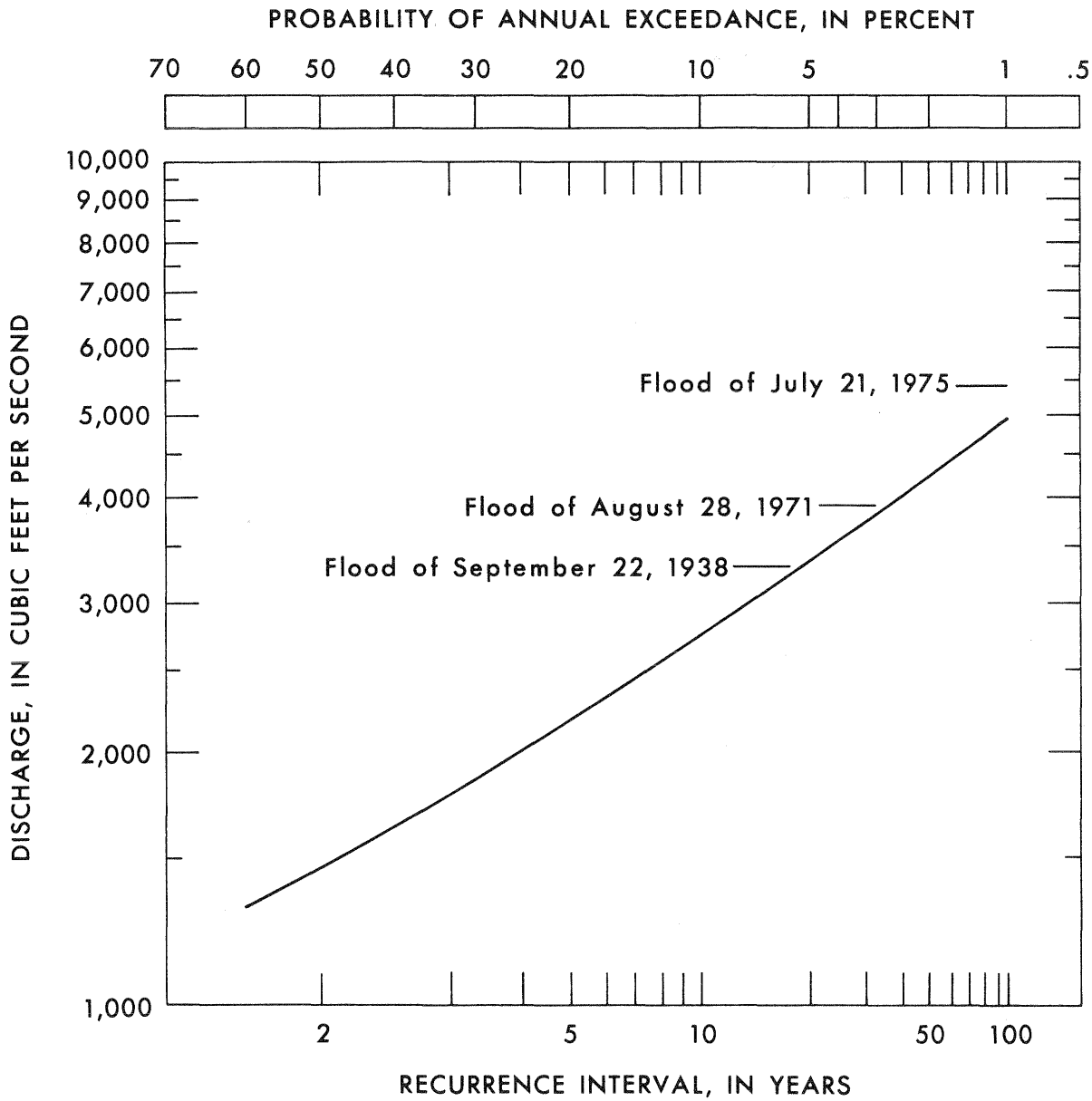


Figure 13.--Frequency of floods at gaging station on Assunpink Creek at Trenton, N.J. (01464000).

Depth of flooding at a specific point can be determined by subtracting the ground elevation from the water-surface elevation at the same point. Ground elevations should be obtained by differential leveling and should be referenced to mean sea level, datum of 1929, which is equivalent to the New Jersey Geodetic Control Survey datum.

Reaches for which Flood-Crest Elevations are Tabulated

Names of the reaches for which flood-crest data are listed are given in downstream order in the following tabulation. The letter (P) refers to data that are also shown plotted on profiles.

Delaware and Raritan Canal
Assunpink Creek (P)
  Shipetaukin Creek (P)
    (Lawrenceville School) Tributary to Shipetaukin Creek
    Sand Run
  Little Shabakunk Creek (P)
  Shabakunk Creek (P)
    West Branch Shabakunk Creek (P)
  Miry Run (P)
  Pond Run (P)
    (North) Branch of Pond Run (P)
Assunpink Creek overflow on Penn Central railroad tracks

Explanation of Flood-Crest Data

The flood-crest data are tabulated in the following order:

Principal stream, tributary stream -- in regular downstream order, with one exception: the profile data are continuous in one group for the reach of stream carrying the same name throughout. This order compares with the regular order in which each tributary is listed in downstream order as found.

City or township, and state -- as determined from U.S. Geological Survey 7.5-minute series topographic maps.

Place of high-water mark -- example: 65 ft downstream from Quaker Bridge Road; right bank; left bank; USGS gaging

station. "Right bank" and "left bank" refer to the side of the stream as viewed when looking downstream.

River miles above mouth -- as measured in one-tenth-mile increments on U.S. Geological Survey 7.5-minute series topographic maps.

Elevation -- referred to mean sea level, datum of 1929, which is equivalent to that of the New Jersey Geodetic Control Survey.

Table 3.--Flood-crest data, July 21, 1975

Stream and location	Miles above mouth	Elevation (feet)
DELAWARE AND RARITAN CANAL		
Lawrence Township, N.J., at Lawrence Station Road, upstream, left wingwall.	---	57.4
Lawrence Township, N.J., 200 ft downstream from Lawrence Station Road, right bank.	---	57.4
Lawrence Township, N.J., 100 ft upstream of U.S. Highway 1, left bank.	---	57.7
Lawrence Township, N.J., downstream headwall U.S. Highway 1, right bank.	---	58.1
Lawrence Township, N.J., at Interstate 295, southbound approach.	---	58.3
Lawrence Township, N.J., 1100 ft downstream from Interstate 295, northbound approach.	---	58.7
ASSUNPINK CREEK		
Lawrence Township, N.J., USGS gaging station 200 ft upstream from Quaker Bridge Road, left bank.	7.6	58.6

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
ASSUNPINK CREEK--Continued		
Lawrence Township, N.J., 65 ft downstream from Quaker Bridge Road, right bank.	7.5	58.3
Hamilton Township, N.J., 15 ft upstream from Penn Central RR bridge, left bank.	7.0	56.1
Hamilton Township, N.J., downstream side of Penn Central RR bridge, left bank.	7.0	55.7
Hamilton Township, N.J., 65 ft upstream from the old Youngs Road bridge, left bank.	6.6	54.4
Lawrence Township, N.J., 25 ft downstream from Youngs Road, right bank.	6.6	53.7
Lawrence Township, N.J., upstream side of Basin Road, right bank.	5.9	53.3
Lawrence Township, N.J., downstream side of Basin Road, right bank.	5.9	53.2
Hamilton Township, N.J., 90 ft upstream from Carnegie Avenue, left bank.	5.1	52.8
Hamilton Township, N.J., 10 ft downstream from Carnegie Avenue, left bank.	5.1	52.6
Hamilton Township, N.J., inside Capitol City Aluminum Products garage at Rutgers and Carlisle Avenues, left bank.	4.2	52.1
Hamilton Township, N.J., at mouth of Miry Run.	3.9	51.5
Lawrence Township, N.J., upstream side of Whitehead Road, right bank.	3.6	51.5
Hamilton Township, N.J., at Goodall Rubber Co., downstream side of Whitehead Road, left bank.	3.5	51.5
Hamilton Township, N.J., 145 ft upstream from Enterprise Avenue, right bank.	3.1	50.5

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
ASSUNPINK CREEK--Continued		
Lawrence Township, N.J., upstream side of Enterprise Avenue, right bank.	3.1	50.0
Lawrence Township, N.J., 20 ft downstream from Enterprise Avenue, right bank.	3.1	49.8
Trenton, N.J., upstream side of Penn Central RR spur-line bridge, right bank.	2.8	49.2
Hamilton Township, N.J., 60 ft downstream from Penn Central RR spur-line bridge, left bank.	2.8	48.7
Hamilton Township, N.J., 175 ft upstream from Nottingham Way, right bank.	2.4	47.0
Trenton, N.J., on Thiokol Corp. staff, 70 ft downstream from Nottingham Way, right bank.	2.3	47.0
Trenton, N.J., 60 ft upstream from North Olden Avenue, right bank.	1.9	45.2
Trenton, N.J., on TRW-Crescent Insulated Wire and Cable Co. staff, 65 ft downstream from North Olden Avenue, left bank.	1.9	44.3
Trenton, N.J., at Stokes Molded Products, 500 ft downstream from Olden Avenue, right bank.	1.8	43.7
Trenton, N.J., upstream side of Oak Street, right bank.	1.6	42.5
Trenton, N.J., at American Biltrite Co., 100 ft downstream from Oak Street, right bank.	1.6	42.2
Trenton, N.J., 100 ft upstream from Penn Central RR spur-line bridge, right bank.	1.5	41.3
Trenton, N.J., downstream side of Penn Central RR spur-line bridge, left bank.	1.5	40.1

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
ASSUNPINK CREEK--Continued		
Trenton, N.J., USGS gaging station, upstream side of Chambers Street bridge, right bank.	1.4	39.4
Trenton, N.J., 30 ft upstream from Monmouth Street, left bank.	1.2	38.9
Trenton, N.J., 15 ft downstream from Monmouth Street, right bank.	1.2	38.0
Trenton, N.J., 60 ft upstream from Wall Street, left bank.	1.2	37.7
Trenton, N.J., 140 ft downstream from Fairview Avenue, right bank.	1.1	36.3
Trenton, N.J., 340 ft upstream from South Clinton Avenue, right bank.	0.9	34.8
Trenton, N.J., 40 ft upstream from entrance to culvert under Stockton Street-U.S. Highway 1 Interchange, left bank.	0.8	34.0
Trenton, N.J., 220 ft upstream from Montgomery Street, left bank.	0.5	27.8
Trenton, N.J., 175 ft upstream from South Broad Street, left bank.	0.4	24.9
Trenton, N.J., 150 ft downstream from Peace Street, right bank.	0.1	13.3
Mouth, at Delaware River.	0	---
SHIPETAUKIN CREEK		
Lawrence Township, N.J., 50 ft upstream from Cold Soil Road, left bank.	4.8	146.7
Lawrence Township, N.J., 30 ft downstream from Cold Soil Road, left bank.	4.8	146.5
Lawrence Township, N.J., 50 ft upstream from Carter Road, right bank.	3.7	102.4
Lawrence Township, N.J., upstream headwall, Carter Road, right bank.	3.7	102.3

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
SHIPETAUKIN CREEK--Continued		
Lawrence Township, N.J., 50 ft downstream from Carter Road, right bank.	3.7	101.0
Lawrence Township, N.J., 30 ft upstream from U.S. Highway 206, right bank.	3.4	91.7
Lawrence Township, N.J., midway between U.S. Highway 206 and Fackler Road.	3.4	88.9
Lawrence Township, N.J., on ELSA building, 100 ft downstream from Fackler Road, left bank.	3.4	86.7
Lawrence Townhip, N.J., 65 ft upstream from Princeton Pike, right bank.	2.2	70.4
Lawrence Township, N.J., 50 ft downstream from Princeton Pike, right bank.	2.2	69.5
Lawrence Township, N.J., 1100 ft upstream from Interstate 295 northbound approach, left bank.	1.5	58.6
Lawrence Township, N.J., at Interstate 295 northbound approach, left bank.	1.3	58.0
Lawrence Township, N.J., at Interstate 295 southbound approach, left bank.	1.2	57.6
Lawrence Township, N.J., 100 ft downstream from Interstate 295 southbound approach, left bank.	1.2	57.6
Lawrence Township, N.J., on fence post, 350 ft upstream from U.S. Highway 1, left bank.	0.8	57.0
Lawrence Township, N.J., downstream wingwall, U.S. Highway 1, left bank.	0.8	57.0
Lawrence Township, N.J., 100 ft downstream from U.S. Highway 1, right bank.	0.8	57.0
Lawrence Township, N.J., 200 ft downstream from U.S. Highway 1, right bank.	0.7	56.9

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
SHIPETAUKIN CREEK--Continued		
Lawrence Township, N.J., on pole in front of ELSA building, upstream from Lawrence Station Road, right bank.	0.4	54.5
Lawrence Township, N.J., downstream headwall, Lawrence Station Road, right bank.	0.4	54.0
Lawrence Township, N.J., 30 ft downstream from Lawrence Station Road, right bank.	0.4	54.0
Mouth, at Assunpink Creek.	0	---
(LAWRENCEVILLE SCHOOL) TRIBUTARY TO SHIPETAUKIN CREEK		
Lawrence Township, N.J., on asphalt walk, 150 ft upstream from abandoned trolley line.	1.7	118.7
Lawrence Township, N.J., 50 ft upstream from abandoned trolley line, left bank.	1.7	117.4
Lawrence Township, N.J., 30 ft downstream from abandoned trolley line, right bank.	1.7	114.6
Lawrence Township, N.J., 60 ft upstream from U.S. Highway 206, left bank.	1.6	108.2
Lawrence Township, N.J., 50 ft downstream from U.S. Highway 206, right bank.	1.6	105.8
Lawrence Township, N.J., on dam near Lawrenceville School field house.	1.1	93.8
Lawrence Township, N.J., 40 ft downstream from dam near Lawrenceville School field house.	1.1	90.6
Lawrence Township, N.J., Lawrenceville School, 300 ft upstream from Murphy's bridge, left bank.	1.0	89.8

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
(LAWRENCEVILLE SCHOOL) TRIBUTARY TO SHIPETAUKIN CREEK--Continued		
Lawrence Township, N.J., Lawrenceville School, 150 ft downstream from Murphy's bridge, left bank.	0.9	87.0
Lawrence Township, N.J., Lawrenceville School, 200 ft downstream from Murphy's bridge, left bank.	0.9	87.0
Mouth, at Shipetaukin Creek.	0	---
SAND RUN		
Lawrence Township, N.J., upstream side of culvert, under road to Channel 52 television transmitter.	1.1	57.9
Lawrence Township, N.J., downstream side of culvert, under road to Channel 52 television transmitter.	1.1	56.5
Lawrence Township, N.J., on cable anchorage fence, Channel 52, right bank.	1.0	55.7
Lawrence Township, N.J., upstream side of Interstate 295 culvert, on fence, left bank.	0.6	55.2
Lawrence Township, N.J., downstream side of Interstate 295 culvert, on fence, right bank.	0.6	55.1
Lawrence Township, N.J., 200 ft downstream from Interstate 295 culvert, left bank.	0.6	55.1
Mouth, at Shipetaukin Creek.	0	---

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
LITTLE SHABAKUNK CREEK		
Lawrence Township, N.J., Rider College, 85 ft upstream from Sorority Row bridge, right bank.	3.0	97.1
Lawrence Township, N.J., Rider College, 30 ft upstream from Sorority Row bridge, right bank.	3.0	97.0
Lawrence Township, N.J., at Rider College Student Center, left bank.	2.7	92.5
Lawrence Township, N.J., upstream side of U.S. Highway 206, right bank.	2.3	77.3
Lawrence Township, N.J., near end of Vanderveer Drive, right bank.	1.9	76.5
Lawrence Township, N.J., 75 ft upstream from Balsam Drive, left bank.	1.6	71.8
Lawrence Township, N.J., downstream side of Balsam Drive.	1.6	71.0
Lawrence Township, N.J., 15 ft upstream from Princeton Pike, right bank.	1.3	66.4
Lawrence Township, N.J., 225 ft downstream from Princeton Pike, left bank.	1.3	65.0
Lawrence Township, N.J., 500 ft upstream from U.S. Highway 1 (alternate) southbound, right bank.	0.5	59.0
Lawrence Township, N.J., upstream side of U.S. Highway 1 (alternate) southbound, left bank.	0.4	57.1
Lawrence Township, N.J., downstream side of U.S. Highway 1 (alternate) northbound, right bank.	0.3	56.5
Mouth, at Assunpink Creek.	0	---

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
SHABAKUNK CREEK		
Hopewell Township, N.J., upstream side of Bull Run Road.	5.6	114.0
Ewing Township, N.J., downstream side of Bull Run Road.	5.6	113.7
Ewing Township, N.J., upstream side of private road bridge, right bank.	5.1	103.2
Ewing Township, N.J., downstream side of private road bridge, left bank.	5.1	103.2
Ewing Township, N.J., upstream side of Ewingville Road.	4.8	97.6
Ewing Township, N.J., downstream side of Ewingville Road.	4.8	97.5
Ewing Township, N.J., upstream side of Sylvia Lake dam, 200 ft to the right of the spillway.	4.5	95.3
Ewing Township, N.J., downstream from Sylvia Lake dam.	4.4	91.7
Ewing Township, N.J., upstream side of Green Lane.	4.1	84.8
Ewing Township, N.J., downstream side of Green Lane.	4.1	84.6
Ewing Township, N.J., downstream side of Parkside Avenue.	3.3	75.5
Ewing Township, N.J., downstream from Reading RR bridge.	2.9	73.6
Lawrence Township, N.J., 100 ft upstream from mouth of West Branch Shabakunk Creek, right bank.	2.0	66.3
Lawrence Township, N.J., upstream side of U.S. Highway 206, right bank.	1.6	62.9
Lawrence Township, N.J., downstream side of U.S. Highway 206.	1.5	62.5
Lawrence Township, N.J., upstream side of Princeton Pike.	1.3	61.6
Lawrence Township, N.J., downstream side of Princeton Pike.	1.3	61.1

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
SHABAKUNK CREEK--Continued		
Lawrence Township, N.J., upstream abutment, U.S. Highway 1 (alternate), right bank.	0.8	56.5
Lawrence Township, N.J., downstream side of U.S. Highway 1 (alternate), right bank.	0.8	56.2
Lawrence Township, N.J., upstream side of U.S. Highway 1, right bank.	0.3	55.1
Mouth, at Assunpink Creek.	0	---
WEST BRANCH SHABAKUNK CREEK		
Ewing Township, N.J., 175 ft downstream from Upper Ferry Road.	4.5	146.3
Ewing Township, N.J., 35 ft downstream from Carlton Avenue, left bank.	3.8	115.2
Ewing Township, N.J., 175 ft upstream from Lower Ferry Road, left bank.	3.4	108.7
Ewing Township, N.J., 85 ft downstream from Lower Ferry Road, left bank.	3.4	106.7
Ewing Township, N.J., 35 ft upstream from Stratford Avenue, right bank.	3.2	103.6
Ewing Township, N.J., 75 ft downstream from Stratford Avenue, right bank.	3.2	101.2
Ewing Township, N.J., downstream side of Rutledge Avenue footbridge, right bank.	2.9	96.0
Ewing Township, N.J., 160 ft upstream from Central Avenue, right bank.	2.5	91.8
Ewing Township, N.J., downstream side of Central Avenue, left bank.	2.5	90.8
Ewing Township, N.J., 400 ft upstream from Thurston Avenue, left bank.	2.4	90.3
Ewing Township, N.J., 25 ft downstream from Thurston Avenue, right bank.	2.3	88.2

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
WEST BRANCH SHABAKUNK CREEK--Continued		
Ewing Township, N.J., 125 ft downstream from Olden Avenue, left bank.	2.1	86.7
Ewing Township, N.J., 200 ft upstream from Pennington Road, left bank.	1.8	85.9
Ewing Township, N.J., 250 ft upstream from Parkside Avenue, right bank.	1.6	81.9
Ewing Township, N.J., 250 ft downstream from Parkside Avenue, right bank.	1.6	80.1
Ewing Township, N.J., 60 ft upstream from Prospect Street, left bank.	1.2	76.2
Ewing Township, N.J., 35 ft upstream from Prospect Street, left bank.	1.2	76.2
Ewing Township, N.J., upstream side of Reading RR bridge.	0.9	75.2
Ewing Township, N.J., downstream side of Reading RR bridge.	0.9	75.1
Ewing Township, N.J., 45 ft upstream from Olden Avenue, right bank.	0.8	72.3
Ewing Township, N.J., 35 ft downstream from Olden Avenue, right bank.	0.8	72.2
Ewing Township, N.J., 25 ft upstream from Spruce Street, left bank.	0.4	68.2
Ewing Township, N.J., 200 ft downstream from Spruce Street, right bank.	0.4	67.6
Ewing Township, N.J., at P.A.L. Baseball Field, right bank.	0	65.8
Mouth, at Shabakunk Creek.	0	---
MIRY RUN		
Washington Township, N.J., upstream wingwall, U.S. Highway 130, right bank.	6.6	86.0
Washington Township, N.J., downstream headwall, U.S. Highway 130.	6.5	85.6

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
MIRY RUN--Continued		
Washington Township, N.J., 50 ft upstream from Robbinsville-Edinburg Road, 80 ft from stream, right bank.	6.0	80.5
Washington Township, N.J., downstream abutment, Robbinsville-Edinburg Road, left bank.	5.9	80.0
Washington Township, N.J., 40 ft upstream from Pond Road, right bank.	5.4	75.7
Washington Township, N.J., 40 ft downstream from Pond Road, 30 ft from stream, right bank.	5.4	74.8
Washington Township, N.J., 80 ft upstream from Line Road, left bank.	4.2	68.5
Washington Township, N.J., 10 ft downstream from Line Road, 50 ft from stream, left bank.	4.1	68.3
Hamilton Township, N.J., upstream headwall, Hughes Drive, right bank.	3.4	63.3
Hamilton Township, N.J., downstream headwall, Hughes Drive, left bank.	3.4	63.1
Hamilton Township, N.J., upstream headwall, Old Trenton Road, right bank.	2.8	60.3
Hamilton Township, N.J., 20 ft downstream from Old Trenton Road, right bank.	2.8	60.0
Hamilton Township, N.J., 100 ft downstream from Old Trenton Road, right bank.	2.8	59.9
Hamilton Township, N.J., 100 ft upstream from Quaker Bridge Road, left bank.	1.9	56.1
Hamilton Township, N.J., 30 ft downstream from Quaker Bridge Road, right bank.	1.9	54.5
Hamilton Township, N.J., 25 ft upstream from Klockner Road, 25 ft from stream, left bank.	0.4	53.1

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
MIRY RUN--Continued		
Hamilton Township, N.J., downstream side of Klockner Road, left bank.	0.4	53.0
Hamilton Township, N.J., 30 ft upstream from Penn Central RR bridge, left bank.	0.4	53.0
Hamilton Township, N.J., downstream side of Penn Central RR bridge, right bank.	0.3	52.1
Hamilton Township, N.J., 50 ft upstream from Sweet Briar Road, left bank.	0	51.5
Mouth, at Assunpink Creek.	0	---
POND RUN		
Hamilton Township, N.J., 100 ft upstream from White Horse-Mercerville Road, left bank.	3.4	59.5
Hamilton Township, N.J., downstream side of White Horse-Mercerville Road, left bank.	3.4	59.2
Hamilton Township, N.J., upstream side of Interstate 295, left bank.	2.9	56.0
Hamilton Township, N.J., downstream side of Interstate 295, left bank.	2.9	55.9
Hamilton Township, N.J., at east end of Elkton Avenue.	2.5	55.5
Hamilton Township, N.J., upstream side of Kuser Road, right bank.	1.8	55.4
Hamilton Township, N.J., downstream side of Kuser Road, right bank.	1.8	55.4
Hamilton Township, N.J., 50 ft upstream from Liberty Street.	1.6	55.0
Hamilton Township, N.J., 10 ft downstream from Hamilton Avenue, right bank.	1.6	53.6

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
POND RUN--Continued		
Hamilton Township, N.J., near residence at 39 Eleanor Avenue, left bank.	1.3	50.6
Hamilton Township, N.J., 100 ft upstream from Greenwood Avenue, left bank.	1.0	49.7
Hamilton Township, N.J., 150 ft downstream from Greenwood Avenue, left bank.	1.0	49.5
Hamilton Township, N.J., 15 ft upstream from Joan Terrace, left bank.	0.9	49.3
Hamilton Township, N.J., 30 ft downstream from Joan Terrace, right bank.	0.9	49.0
Hamilton Township, N.J., 40 ft upstream from Hollywood Drive, right bank.	0.6	48.1
Hamilton Township, N.J., 50 ft downstream from Hollywood Drive, left bank.	0.6	47.9
Hamilton Township, N.J., 30 ft upstream from East State Street, right bank.	0.5	47.4
Hamilton Township, N.J., 30 ft downstream from East State Street, left bank.	0.5	47.3
Hamilton Township, N.J., 20 ft upstream from Johnston Avenue, left bank.	0.4	47.2
Hamilton Township, N.J., 60 ft downstream from Johnston Avenue, left bank.	0.4	47.0
Hamilton Township, N.J., upstream side of Penn Central RR bridge.	0.1	46.9
Hamilton Township, N.J., downstream side of Penn Central RR bridge.	0.1	46.5
Mouth, at Assunpink Creek.	0	---

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
(NORTH) BRANCH OF POND RUN		
Hamilton Township, N.J., 70 ft upstream from White Horse-Mercerville Road, left bank.	1.8	72.7
Hamilton Township, N.J., 100 ft downstream from White Horse-Mercerville Road, right bank.	1.7	70.6
Hamilton Township, N.J., upstream side of Estates Boulevard, right bank.	1.5	67.5
Hamilton Township, N.J., downstream side of Estates Boulevard, right bank.	1.5	65.7
Hamilton Township, N.J., on garage near Natrona and Erie Avenues, 320 ft upstream from Interstate 295, right bank.	1.2	63.0
Hamilton Township, N.J., 40 ft downstream from Interstate 295, left bank.	1.1	60.1
Hamilton Township, N.J., upstream side of Klockner Road, right bank.	0.8	58.5
Hamilton Township, N.J., 100 ft downstream from Klockner Road, left bank.	0.8	57.4
Hamilton Township, N.J., 40 ft upstream from Cypress Lane, right bank.	0.4	56.0
Hamilton Township, N.J., 100 ft downstream from Cypress Lane, right bank.	0.4	55.6
Hamilton Township, N.J., 50 ft upstream from Pope Avenue, right bank.	0.3	55.6
Hamilton Township, N.J., 30 ft downstream from Pope Avenue, left bank.	0.3	55.5
Hamilton Township, N.J., 80 ft upstream from Brook Avenue, right bank.	0.2	55.5
Hamilton Township, N.J., 100 ft downstream from Brook Avenue, right bank.	0.1	55.4
Mouth, at Pond Run.	0	---

Table 3.--Flood-crest data, July 21, 1975--Continued

Stream and location	Miles above mouth	Elevation (feet)
ASSUNPINK CREEK OVERFLOW ON PENN CENTRAL RAILROAD TRACKS		
Trenton, N.J., 200 ft below Olden Avenue on railroad yard office, west of tracks.	---	43.9
Trenton, N.J., north end of Penn Central RR freight yard platform.	---	43.4
Trenton, N.J., south end of Penn Central RR freight yard platform.	---	42.6
Trenton, N.J., 240 ft above Monmouth Street, east of tracks.	---	38.5
Trenton, N.J., on Penn Central RR "Fair" tower south of East State Street.	---	37.1
Trenton, N.J., 70 ft above Chestnut Avenue, east of tracks.	---	36.7
Trenton, N.J., 110 ft south of Chestnut Avenue, north end of "Trenton" station platform.	---	36.0
Trenton, N.J., 140 ft north of South Clinton Avenue, near south end of "Trenton" station platform.	---	35.4
Trenton, N.J., on north end of west abutment of U.S. Highway 33, west side.	---	34.7
Trenton, N.J., 60 ft above north end of east abutment to the old Lamberton Street crossing.	---	33.9

Flood Profiles

Flood profiles are presented for 8 streams in figures 14 to 20. These profiles are based on the flood-crest data tabulated in table 3. Also shown are the locations of principal roads, railroads, U.S. Geological Survey gaging stations, and other physical features that traverse the reaches.

Water-surface profiles are affected by obstructions, contractions and expansions of the channel; relative roughness of the bed, banks, and overflow areas; changes in alignment; and the flow of tributaries. For example, an abrupt change in profile is shown at many bridges, indicating the difference in upstream and downstream water-surface elevations. A steep gradient through a bridge indicates that under conditions prevalent at the time of the peak, the hydraulic characteristics of the bridge structure controlled the elevation of the upstream water surface to some extent. Hydraulic characteristics of the channel downstream from the bridge control the water-surface elevation below the bridge. Accumulations of debris, channel enlargement or fill could significantly alter the drop in water surface through the bridge and may also affect the areal extent of flooding upstream from the bridge. Linear interpolation of elevation is not shown between data points located upstream and downstream from a dam, culvert, or bridge structure.

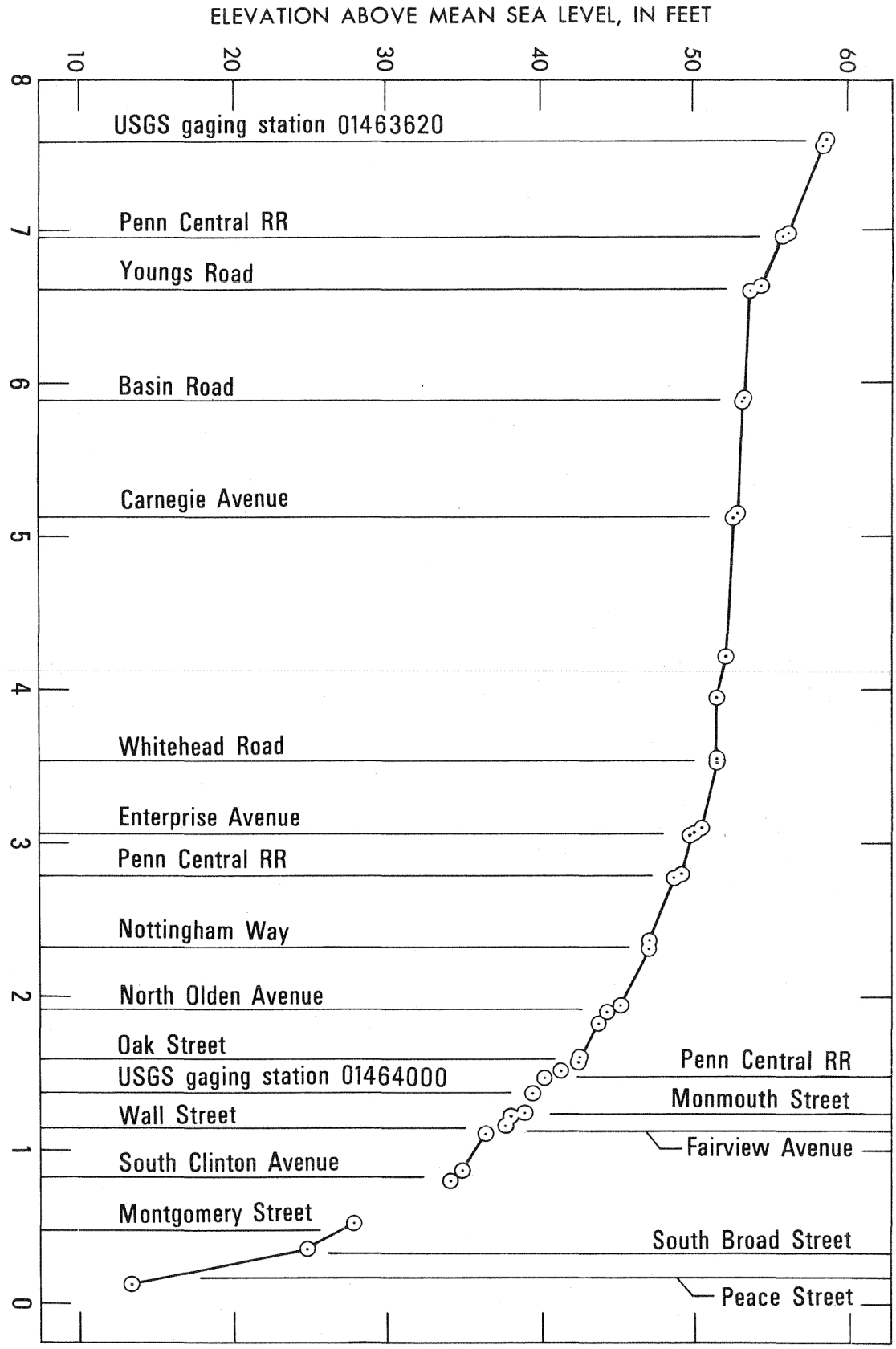


Figure 14.-- Profile of July 21, 1975 flood-crest elevations on Assunpink Creek, mile 7.6 to 0.1

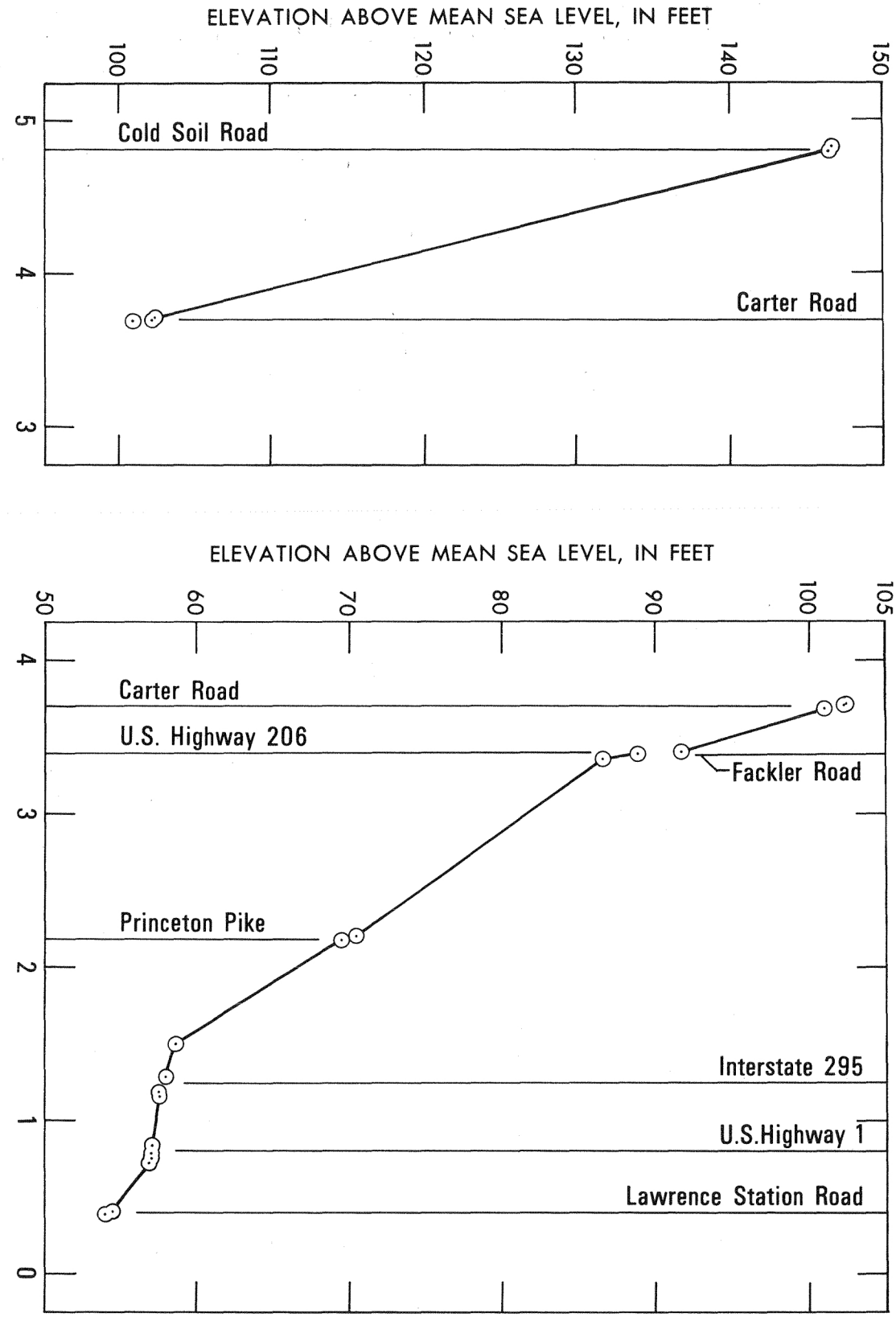


Figure 15.-- Profile of July 21, 1975 flood-crest elevations on Shipetaukin Creek, mile 4.8 to 0.4

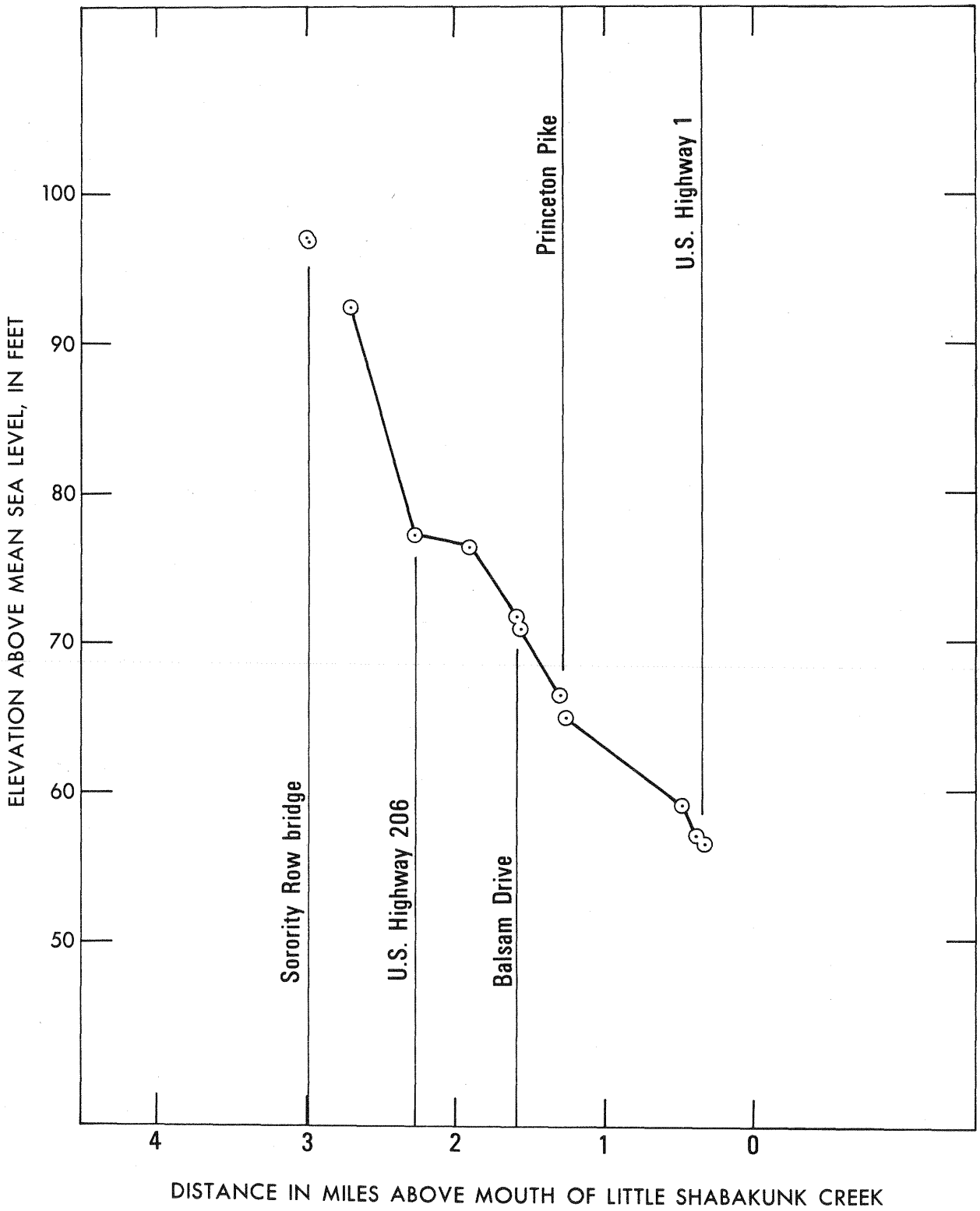


Figure 16.-- Profile of July 21, 1975 flood-crest elevations on Little Shabakunk Creek, mile 3.0 to 0.3

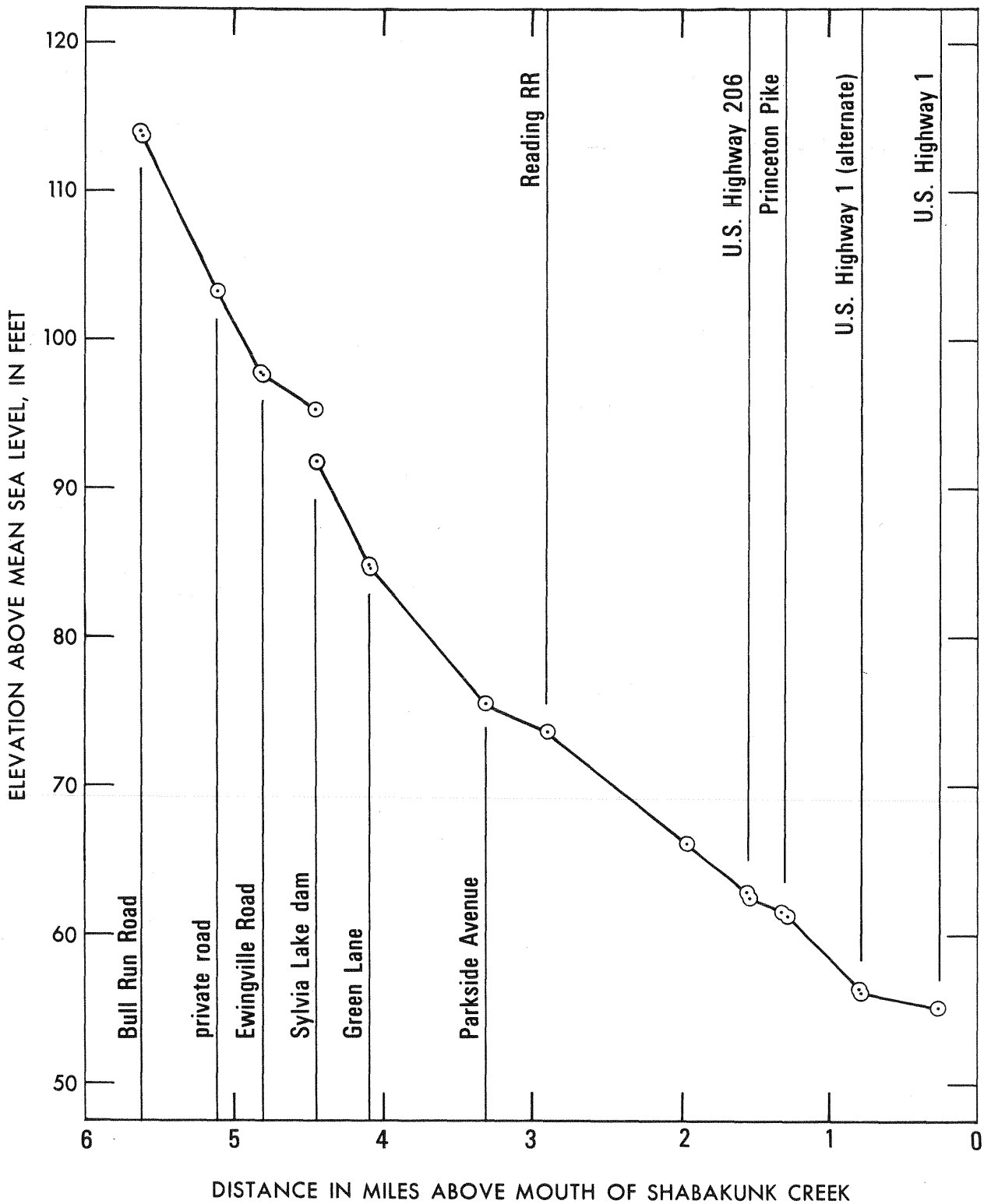


Figure 17.-- Profile of July 21, 1975 flood-crest elevations on Shabakunk Creek , mile 5.6 to 0.3

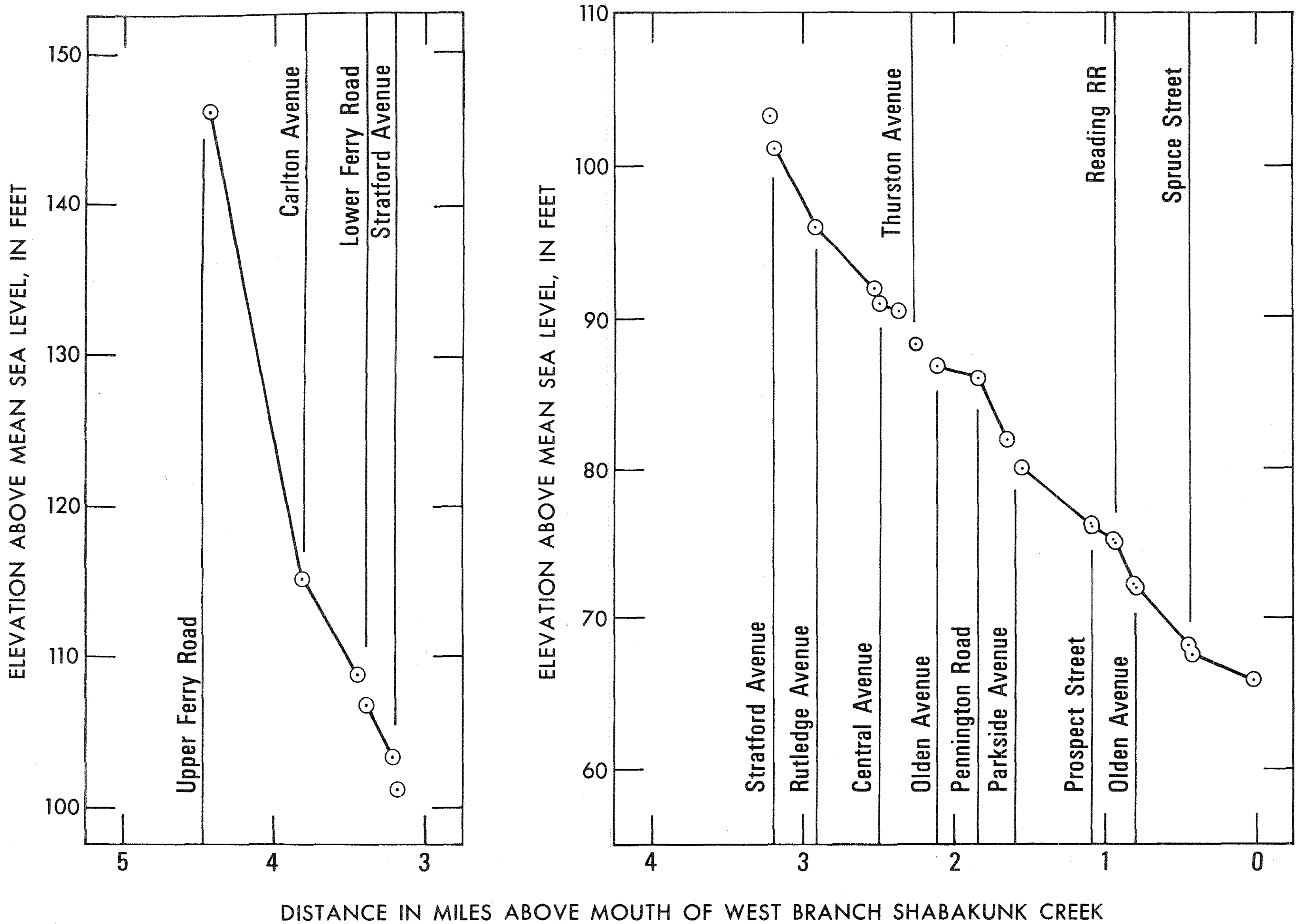


Figure 18.-- Profile of July 21, 1975 flood-crest elevations on West Branch Shabakunk Creek, mile 4.5 to 0.

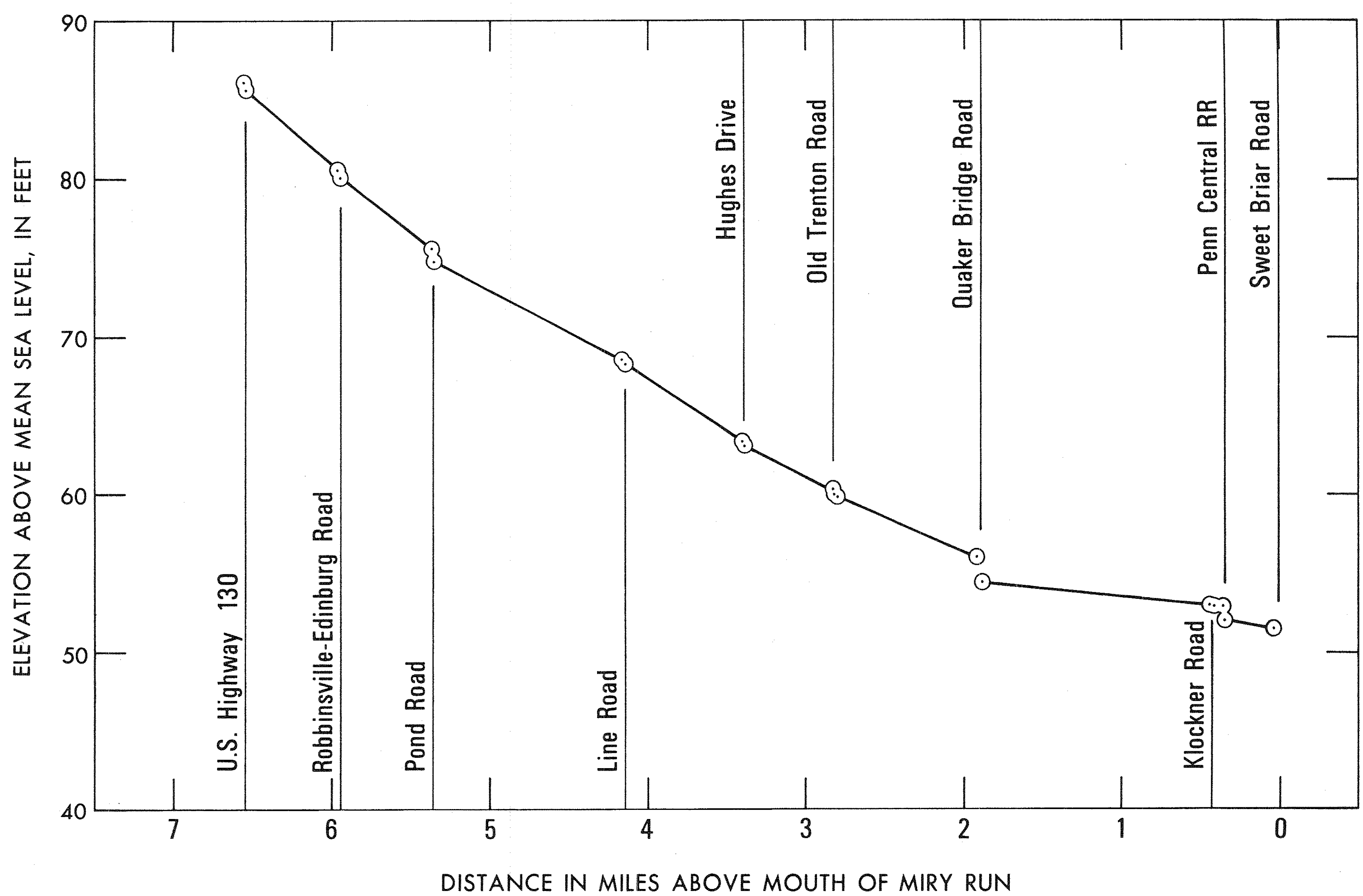


Figure 19.-Profile of July 21, 1975 flood-crest elevations on Miry Run, mile 6.6 to 0.

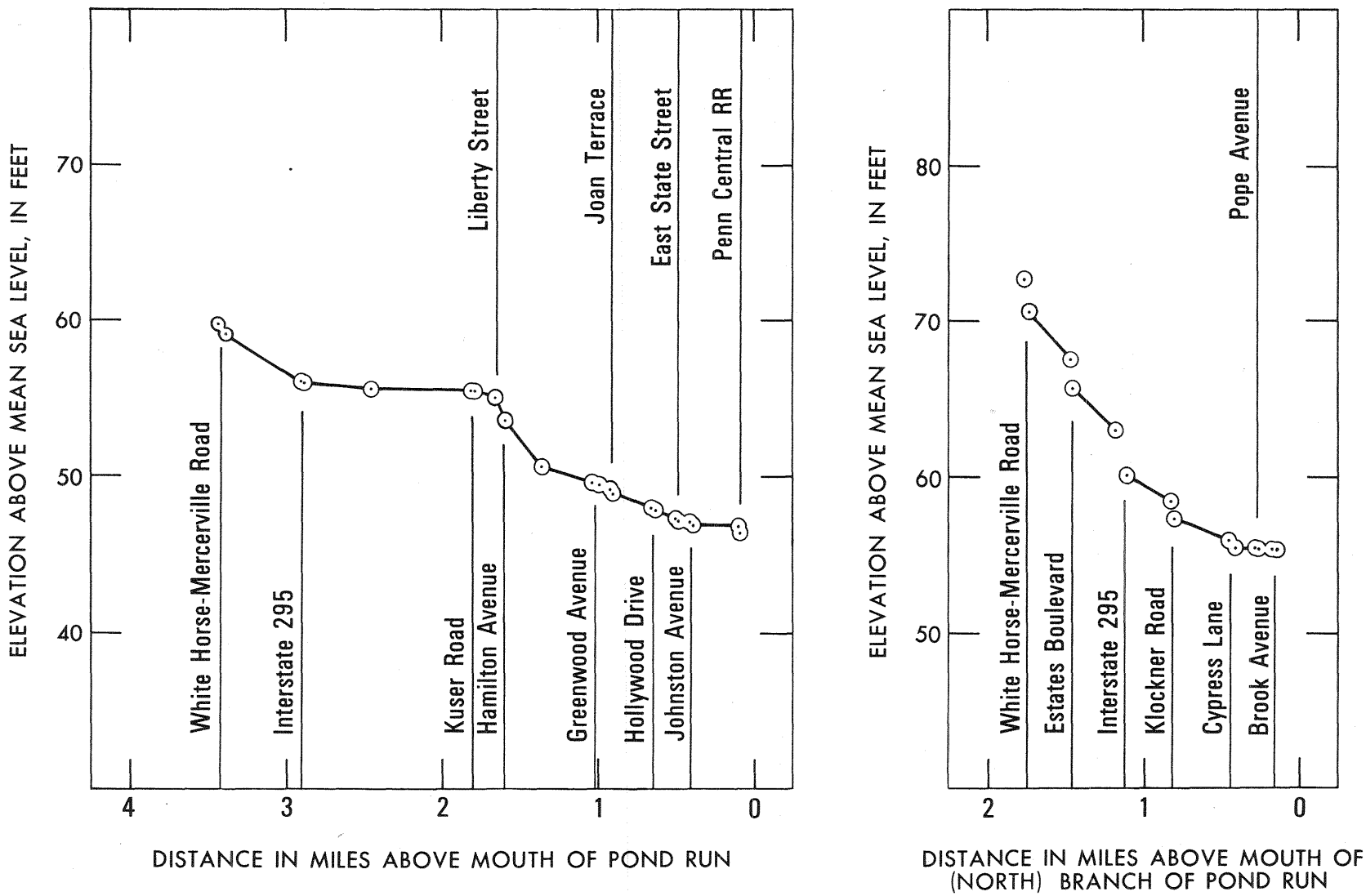


Figure 20.-- Profile of July 21, 1975 flood-crest elevations on Pond Run, mile 3.4 to 0.1, and (North)Branch of Pond Run, mile 1.8 to 0.1

STATION DATA

The operation of a streamflow-measuring station consists principally of the measurment of stage and discharge to define a stage-discharge relation. Discharges are generally measured at various stages with a current meter but are obtained by indirect measurement at times. Indirect discharge measurements are based on channel geometry, hydraulic-structure geometry, and high-water profiles obtained by field survey and are computed by use of procedures and equations based on established hydraulic principles. They are indirect only in the sense that the basic data are collected after the passage of the peak discharge. Indirect measurements were made at 5 sites in Mercer County for the flood of July 21, 1975.

Detailed information on stage and discharge for the two gaging stations and four miscellaneous sites in the flood affected area are summarized on the following pages. The description for each gaging station gives the location, drainage area above the gage, method of obtaining gage-height record during the flood period, datum of gage, a brief statement of the definition of the stage-discharge relation, a table of stage and discharge at selected time intervals, maximum stage and discharge during the July 21, 1975 flood, and previous maximum of record. The description for each miscellaneous site gives the location, drainage area, peak stage, and discharge for the July 21, 1975 flood.

01463620 Assunpink Creek near Clarksville, N. J.

LOCATION.--Lat 40°16'11", long 74°40'20", Mercer County, on left bank 200 ft (61 m) upstream from bridge on Quaker Bridge Road, 1.9 mi (3.1 km) south of Clarksville, 2.0 mi (3.2 km) upstream from Shipetaukin Creek, and 7.6 mi (12.2 km) upstream from mouth.

DRAINAGE AREA.--34.3 mi^2 (88.8 km^2).

GAGE-HEIGHT RECORD.--Digital recorder tape punched at 15-minute intervals. Datum of gage is 49.28 ft (15.021 m) above mean sea level.

DISCHARGE RECORD.--Stage-discharge relation defined by current-meter measurements below 980 ft^3/s (27.8 m^3/s) and extended above by logarithmic plotting.

MAXIMA.--July 1975: Discharge 1,050 ft^3/s (29.8 m^3/s) 1500 to 1600 hours, July 21 (gage height, 9.36 ft or 2.853 m, from crest-stage gage).
1971, 1973 to June 1975: Discharge 1,500 ft^3/s (42.5 m^3/s) Aug. 38, 1971 (gage height, 10.9 ft or 3.32 m, from high-water mark).

GAGE HEIGHT, IN FEET; DISCHARGE, IN CUBIC FEET PER SECOND, AT INDICATED TIME, 1975

DATE	TIME	GAGE HEIGHT	DISCHARGE	DATE	TIME	GAGE HEIGHT	DISCHARGE
7-20	0200	4.72	24	7-21	2200	9.01	952
7-20	1200	4.67	20	7-21	2400	8.71	878
7-20	1800	4.65	19	7-22	0400	8.36	790
7-20	1900	4.67	20	7-22	0800	7.94	685
7-20	2100	4.82	34	7-22	1200	7.63	608
7-20	2200	5.07	64	7-22	1600	7.33	532
7-20	2400	6.54	337	7-22	2000	7.01	467
7-21	0200	7.13	459	7-22	2400	6.66	397
7-21	0400	7.15	467	7-23	0400	6.24	313
7-21	0600	7.40	525	7-23	0800	6.06	277
7-21	0800	8.11	712	7-23	1200	5.93	252
7-21	1000	8.62	850	7-23	1600	5.82	231
7-21	1200	9.05	962	7-23	2000	5.72	212
7-21	1300	9.20	1,000	7-23	2400	5.63	195
7-21	1400	9.31	1,030	7-24	0400	5.55	180
7-21	1500	9.36	1,050	7-24	0800	5.48	166
7-21	1600	9.36	1,050	7-24	1200	5.47	165
7-21	1700	9.35	1,040	7-24	1600	5.44	159
7-21	1800	9.31	1,030	7-24	2000	5.41	154
7-21	2000	9.17	992	7-24	2400	5.37	147

01463640 Shipetaukin Creek at Carter Road, near Lawrenceville, N. J.

(Miscellaneous site)

LOCATION.--Lat 40°18'49", long 74°42'51", Mercer County, at bridge on Carter Road (State Highway 569), 800 ft (244 m) upstream from unnamed tributary, 1.4 mi (2.3 km) northeast of Lawrenceville, and 3.8 mi (6.1 km) southwest of Princeton.

DRAINAGE AREA.--2.99 mi^2 (7.74 km^2).

MAXIMA.--July 1975: Discharge, 3,340 ft^3/s (94.6 m^3/s) from contracted-opening measurement, July 21 (stage, 102.4 ft or 31.21 m above mean sea level, 50 ft or 15 m upstream from Carter Road bridge).

01463740 Shabakunk Creek at Sylvia Lake dam, at Ewingville, N. J.

(Miscellaneous site)

LOCATION.--Lat 40°16'16", long 74°46'25", Mercer County, at Sylvia Lake dam on grounds of Trenton State College, 0.2 mi (0.3 km) downstream from Ceva Lake outlet stream, 0.5 mi (0.8 km) southeast of Ewingville, and 2.5 mi (4.0 km) east of West Trenton.

DRAINAGE AREA.--3.99 mi^2 (10.33 km^2).

MAXIMA.--July 1975: Discharge, 5,550 ft^3/s (157 m^3/s) from combination of flow-over-dam and flow-over-embankment computations, July 21 (stage, 95.3 ft or 29.05 m above mean sea level, upstream from Sylvia Lake dam).
Flood of Aug. 28, 1971 reached a stage of 94.2 ft (28.71 m) upstream of Sylvia dam.

01463770 West Branch Shabakunk Creek at Stratford Avenue, near West Trenton, N. J.

(Miscellaneous site)

LOCATION.--Lat 40°15'48", long 74°47'26", Mercer County, at bridge on Stratford Avenue, 0.2 mi (0.3 km) downstream from Lower Ferry Road, 1.5 mi (2.4 km) east of West Trenton and 3.3 mi (5.3 km) upstream from mouth.

DRAINAGE AREA.--1.82 mi^2 (4.71 km^2).

MAXIMA.--July 1975: Discharge, 1,430 ft^3/s (40.5 m^3/s) from combination of culvert and flow-over-embankment computations, July 21 (stage, 103.6 ft or 31.58 m above mean sea level, 35 ft or 11 m upstream from Stratford Avenue bridge).

01463960 (North) Branch of Pond Run at Estates Boulevard, at Mercerville, N. J.

(Miscellaneous site)

LOCATION.--Lat 49°13'39", long 74°41'35", Mercer County, at bridge on Estates Boulevard, 0.3 mi (0.5 km) downstream from White Horse-Mercerville Road, 0.5 mi (0.8 km) south of Mercerville and 1.5 mi (2.4 km) upstream from mouth.

DRAINAGE AREA.--1.12 mi^2 (2.90 km^2).

MAXIMA.--July 1975: Discharge, 590 ft^3/s (16.7 m^3/s) from combination of culvert and flow-over-embankment computations, July 21 (stage, 67.5 ft or 20.57 m above mean sea level, 33 ft or 10 m upstream from Estates Boulevard bridge).

01464000 Assunpink Creek at Trenton, N. J.

LOCATION.--Lat 40°13'27", long 74°44'58", Mercer County, on left bank at Chambers Street Bridge in Trenton, 1.4 mi (2.2 km) upstream from mouth.

DRAINAGE AREA.--89.4 mi^2 (231.5 km^2).

GAGE-HEIGHT RECORD.--Digital recorder tape punched at 15-minute intervals, except for 2400 hours July 20 to 1600 hours July 21. Graph drawn on basis of gage readings, floodmarks and comparison of stage hydrographs of previous peaks. Datum of gage is 24.76 ft (7.547 m) above mean sea level.

DISCHARGE RECORD.--Stage-discharge relation defined by current meter measurements below 4,040 ft^3/s (114 m^3/s) and by combination of current-meter and slope-area measurement at 5,450 ft^3/s (154 m^3/s).

MAXIMA.--July 1975: Discharge, 5,450 ft^3/s (154 m^3/s) about 0900 hours, July 21 (gage height, 14.61 ft or 4.453 m, from high-water mark in gage house).
1924 to June 1975: Discharge, 3,920 ft^3/s (111 m^3/s) Aug. 28, 1971 (gage height, 13.46 ft or 4.103 m, from high-water mark in gage house).

GAGE HEIGHT, IN FEET; DISCHARGE, IN CUBIC FEET PER SECOND, AT INDICATED TIME, 1975

DATE	TIME	GAGE HEIGHT	DISCHARGE	DATE	TIME	GAGE HEIGHT	DISCHARGE
7-20	0200	3.62	208	7-21	2000	13.02	3,710
7-20	1200	3.57	198	7-21	2400	12.33	3,430
7-20	1700	3.53	190	7-22	0400	11.04	2,920
7-20	1800	3.60	204	7-22	0800	9.50	2,300
7-20	1900	3.83	258	7-22	1200	8.27	1,810
7-20	2000	4.89	567	7-22	1600	7.40	1,460
7-20	2100	7.18	1,370	7-22	2000	6.86	1,250
7-20	2200	8.28	1,810	7-22	2400	6.26	1,040
7-20	2400	11.39	3,060	7-23	0400	5.88	908
7-21	0100	12.50	3,500	7-23	0800	5.58	803
7-21	0200	12.80	3,620	7-23	1200	5.38	733
7-21	0400	13.40	3,960	7-23	1600	5.17	660
7-21	0600	14.30	5,020	7-23	2000	4.98	594
7-21	0700	14.50	5,300	7-23	2400	4.82	546
7-21	0800	14.58	5,410	7-24	0400	4.68	504
7-21	0900	14.61	5,450	7-24	0800	4.56	468
7-21	1000	14.55	5,370	7-24	1200	4.51	453
7-21	1200	14.30	5,020	7-24	1600	4.43	429
7-21	1430	13.69	4,220	7-24	2000	4.34	403
7-21	1600	13.48	4,020	7-24	2400	4.25	376

REFERENCES CITED

Stankowski, S. J., 1972, Floods of August and September 1971 in New Jersey: New Jersey Department of Environmental Protection, Division of Water Resources, Special Report 37, 330 p.

Stankowski, S. J., 1974, Magnitude and frequency of floods in New Jersey with effects of urbanization: New Jersey Department of Environmental Protection, Division of Water Resources, Special Report 38, 46 p.

AERIAL PHOTOGRAPHS OF FLOODED AREAS

The extent of flooding along Assunpink Creek and Pond Run, an ungaged tributary to Assunpink Creek, is shown on the photomosaic base maps on plates 2 to 18. The areas covered by the photomosaic base maps are outlined on plate 1.

The photomosaics have not been corrected for possible distortion caused by camera tilt or minor changes in altitude during flight. Although such distortions might cause slight error in the linear scale of the photomosaics, they have no effect on the boundaries of the flooding.

The overflow areas were, for the most part, identified directly from the aerial photographs. Flood-crest elevations were used to develop an independent set of boundary lines which were positioned on 2-ft-contour-interval topographic maps by interpolating between the contour lines (lines of equal ground elevation) or by field investigation. These boundary lines were used to verify those determined directly from the aerial photographs and to delineate those areas masked by dense vegetation as well as those areas not covered by aerial photography. Flooded areas masked by dense vegetation or outside the area covered by aerial photography are outlined by a dashed line to indicate that the limit of flooding is only approximate.

The photographs were taken at about 1300 hours on July 21, 1975. Streamflow records obtained on Assunpink Creek indicate that the photographs were taken about 2 hours before the flood crested at Clarksville and about 4 hours after the flood crested at Trenton (see fig. 12). The stage of the river at Clarksville had increased only about 2 inches (51 mm) during the 2-hour period, 1300 hours to 1500 hours. The stage at Trenton decreased only about 7 inches (178 mm) during the 4-hour period, 0900 hours to 1300 hours. Comparison of the flood boundaries determined directly from the aerial photographs with those determined from flood-crest and ground elevation data indicated that the areas shown as being inundated on the mosaics depict the maximum extent of the flood. Although the flooding was clearly visible in most photographs or readily defined from interpolated field data, flooding may have extended slightly beyond the outlined areas in a few places. The inundated areas shown reflect the conditions during the July 21, 1975 flood. Changes in waterway openings at bridges and culverts, channel conditions, drainage systems, extent of vegetative cover and urbanization, along with the addition of detention structures and other cultural changes may significantly affect the extent of areas inundated by overflows from future floods.

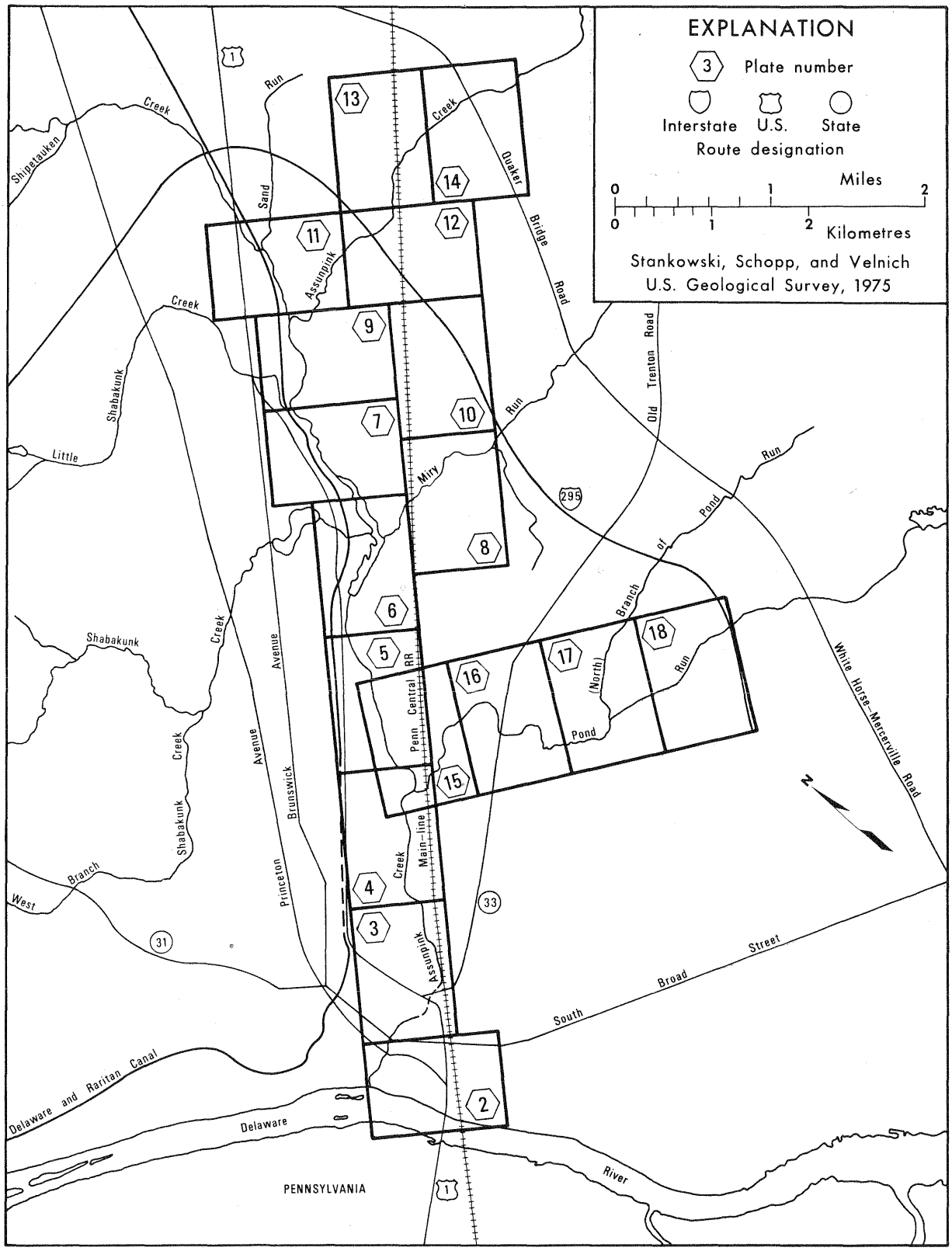

EXPLANATION
3 Plate number
Interstate U.S. State
Route designation
Miles
0 1 2
0 1 2 Kilometres
Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975
PENNSYLVANIA
Delaware
Delaware and Raritan Canal
Shipetauken Creek
Sand Run
Assunpink Creek
Quaker Bridge Road
Shabakunk Creek
Little Shabakunk Creek
Miry Run
Old Trenton Road
Pond Run
Branch of Pond Run
Penn Central RR
Avenue
Princeton Avenue
Brunswick
Main-line
Creek
West Branch
Shabakunk Creek
(North) Pond
White Horse-Mercerville Road
South Broad Street
River
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
31
33
295

PLATE 1

JOINS PLATE 3

EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

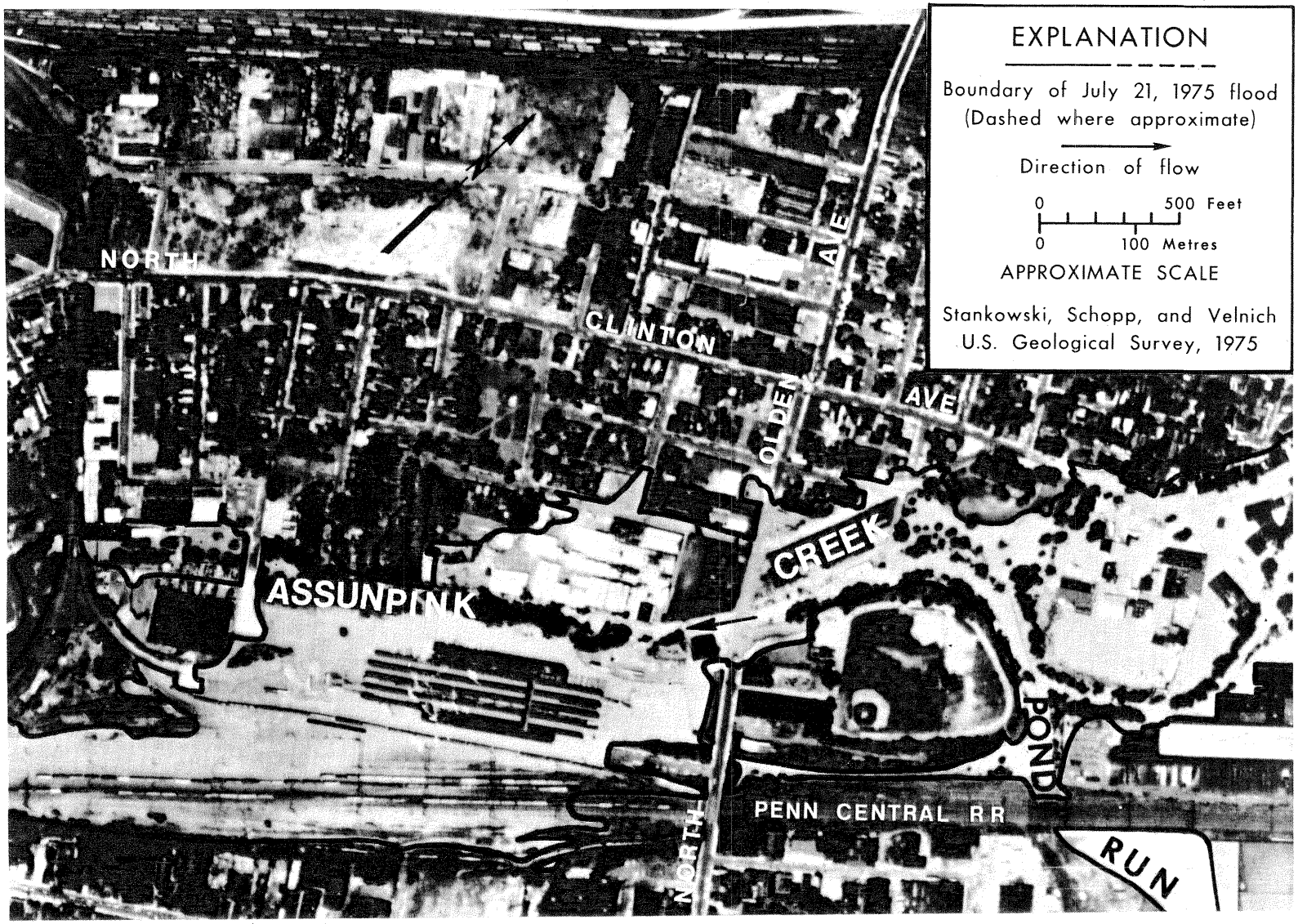
PLATE 2

JOINS PLATE 4

JOINS PLATE 2

PLATE 3

PLATE 4



EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

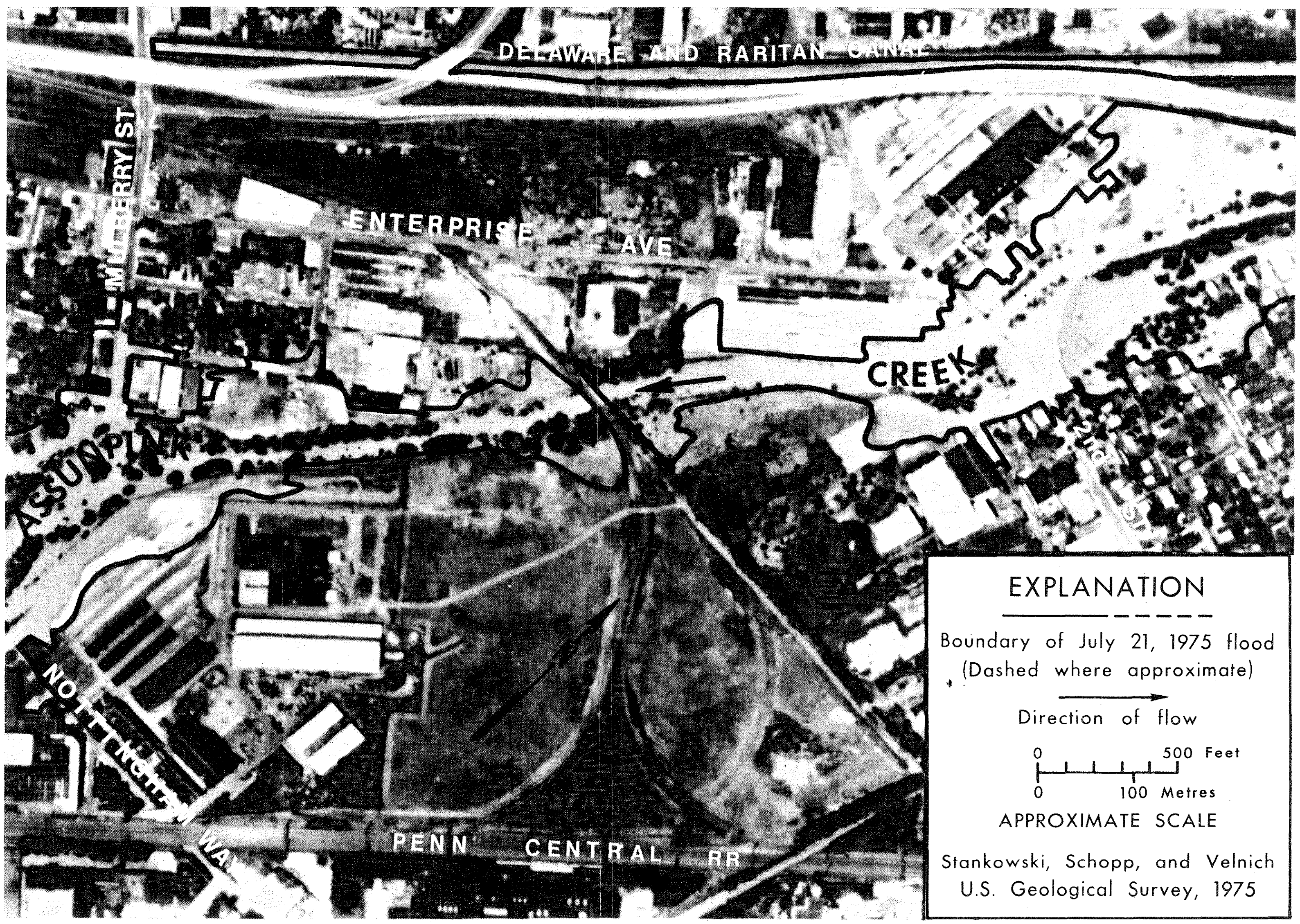
APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

JOINS PLATE 3

JOINS PLATE 5

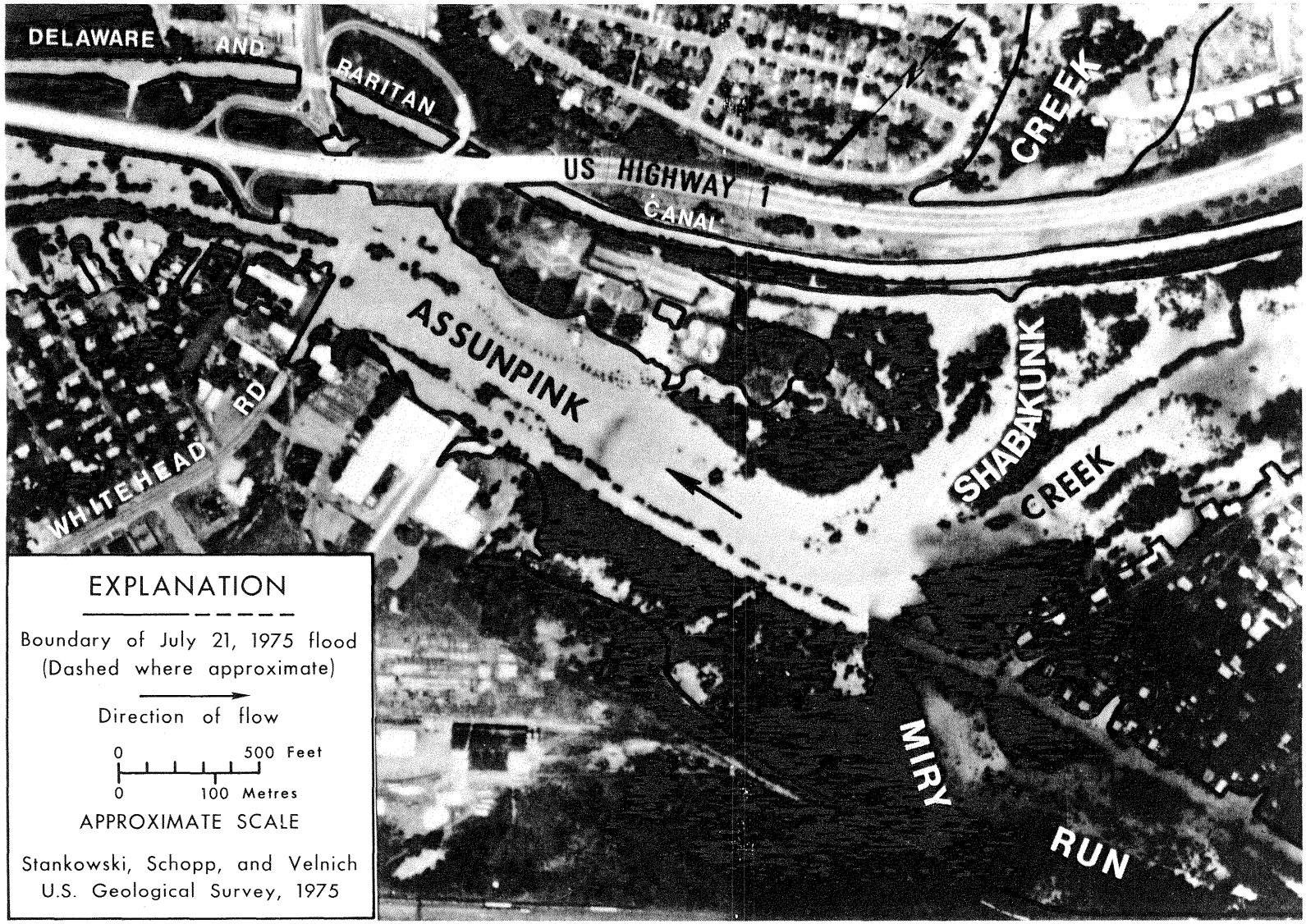
JOINS PLATE 4



JOINS PLATE 6

PLATE 5

PLATE 6



JOINS PLATE 5

JOINS PLATE 7

JOINS PLATE 8

JOINS PLATE 6

JOINS PLATE 9

EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

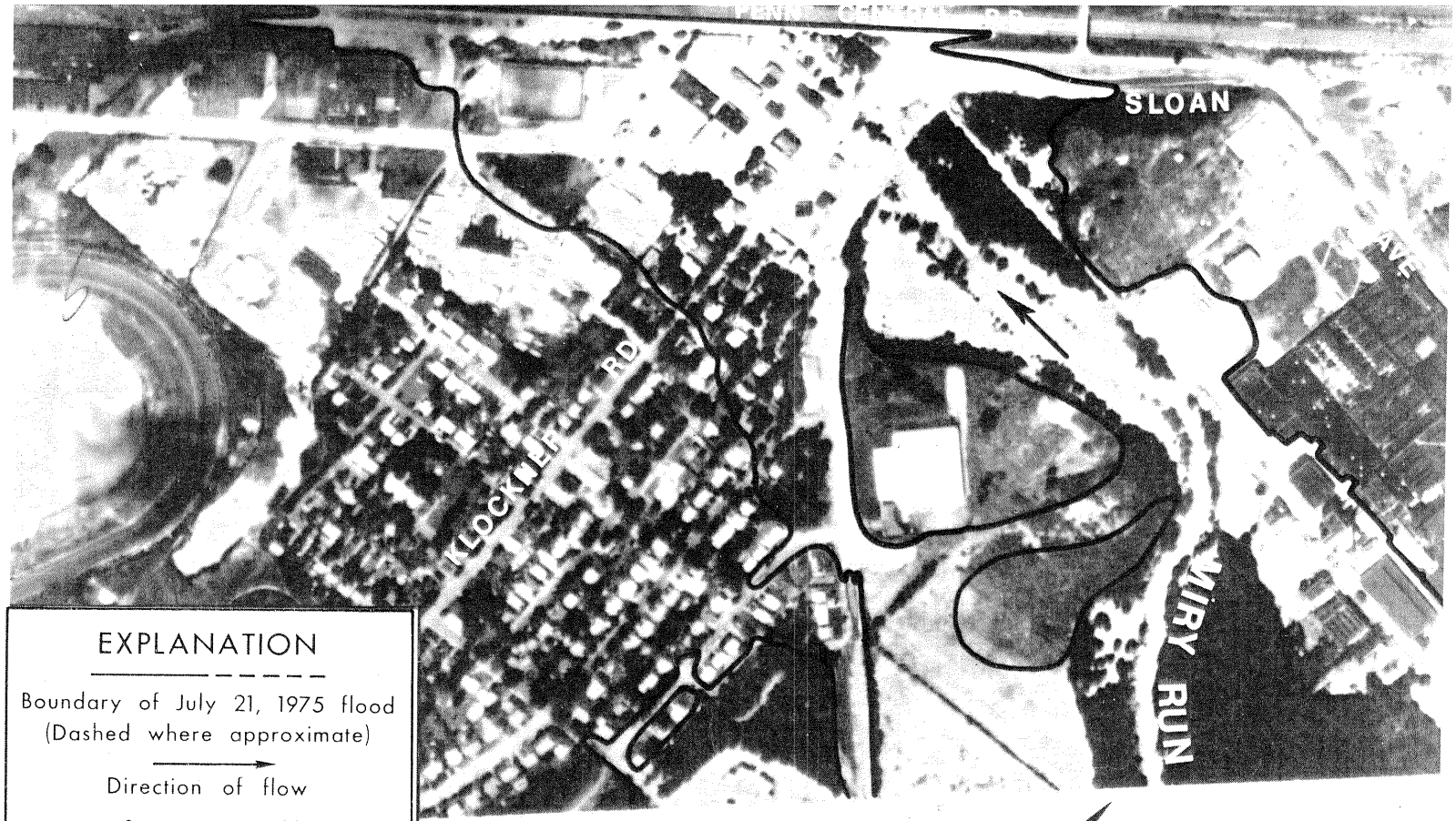
JOINS PLATE 8

JOINS PLATE 10

PLATE 7

JOINS PLATE 6

JOINS PLATE 7



EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

PLATE 8

JOINS PLATE 10

JOINS PLATE 7

JOINS PLATE 11

JOINS PLATE 12

JOINS PLATE 10

EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

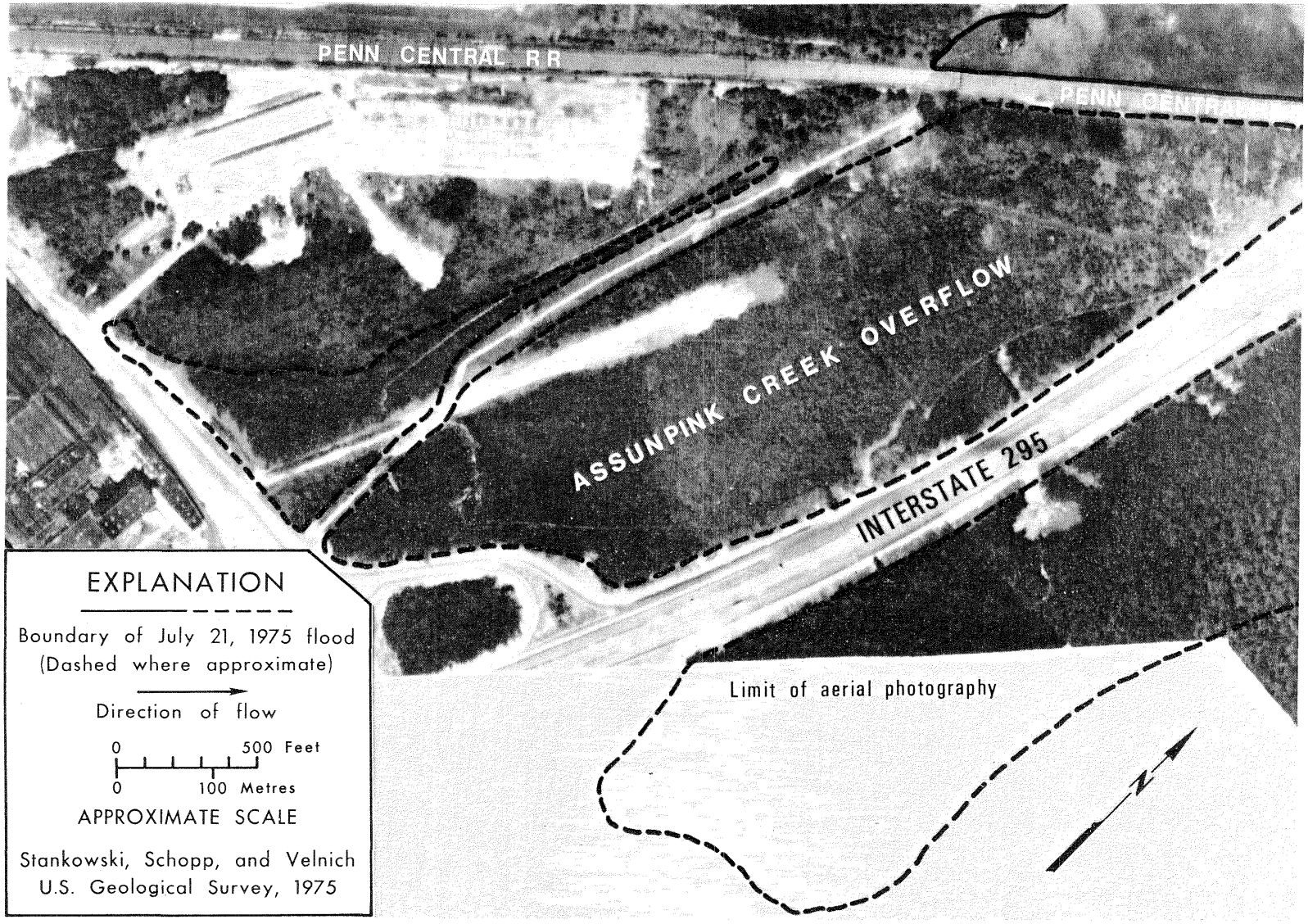
PLATE 9

PLATE 10

JOINS PLATE 8

JOINS PLATE 7

JOINS PLATE 9



EXPLANATION

Boundary of July 21, 1975 flood (Dashed where approximate)

Direction of flow

0 500 Feet

0 100 Metres

APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

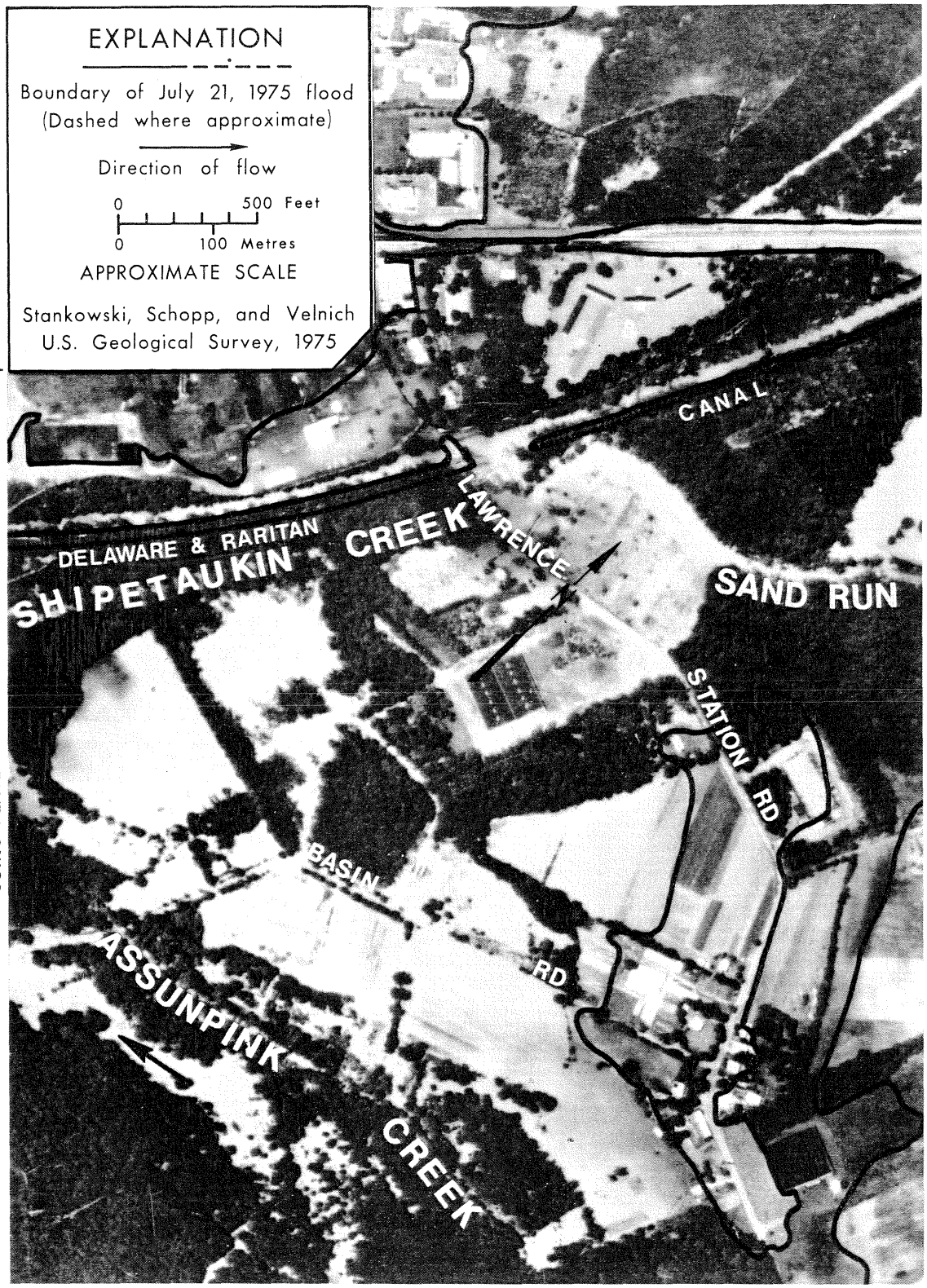
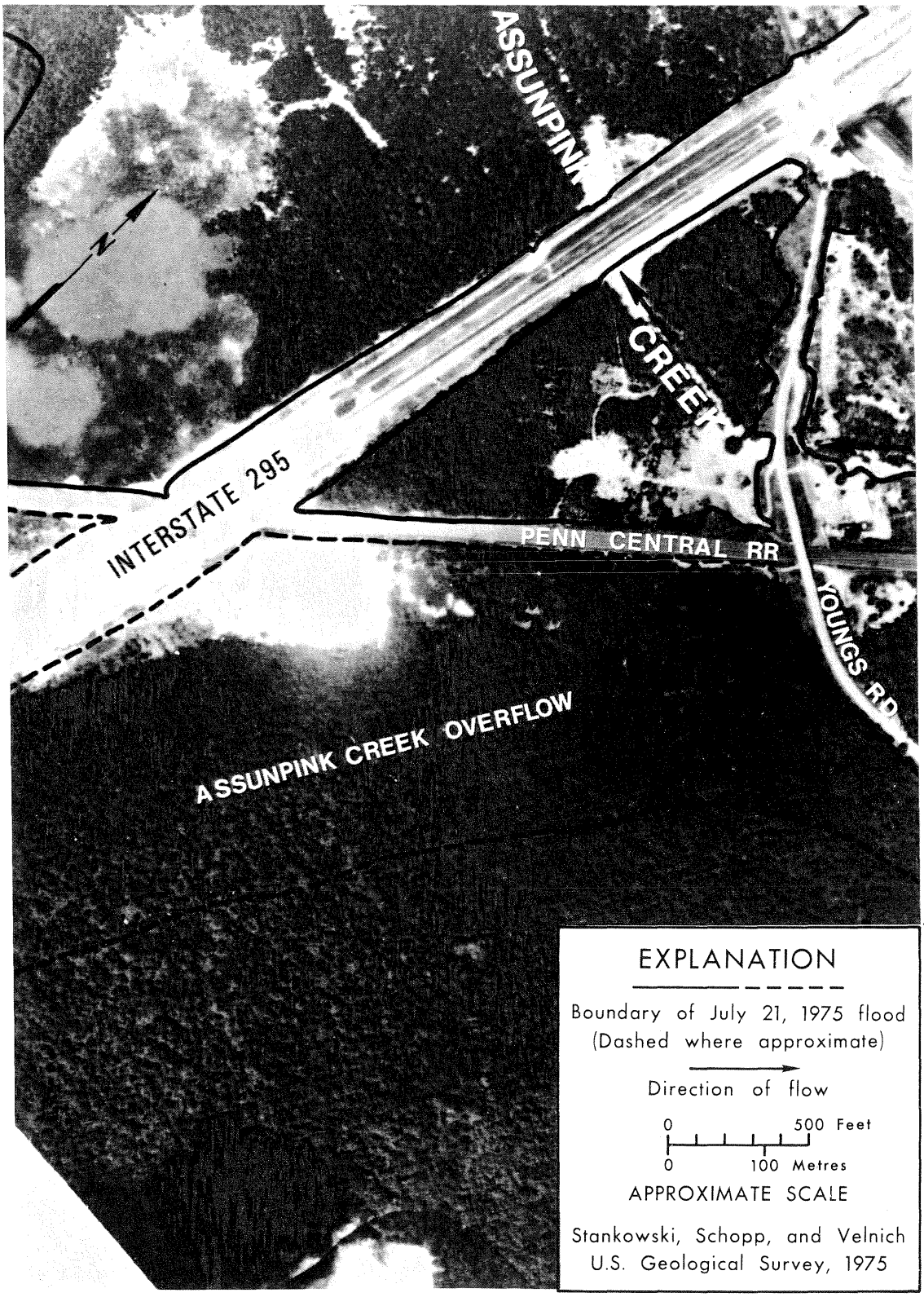

EXPLANATION
Boundary of July 21, 1975 flood
(Dashed where approximate)
Direction of flow
0 500 Feet
0 100 Metres
APPROXIMATE SCALE
Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975
CANAL
DELAWARE & RARITAN
SHIPETAUKIN CREEK
LAWRENCE
SAND RUN
STATION RD
BASIN
RD
ASSUNPINK
CREEK
JOINS PLATE 9
JOINS PLATE 12

PLATE 11

JOINS PLATE 11

JOINS PLATE 9



JOINS PLATE 13

JOINS PLATE 10

EXPLANATION

Boundary of July 21, 1975 flood
(Dashed where approximate)

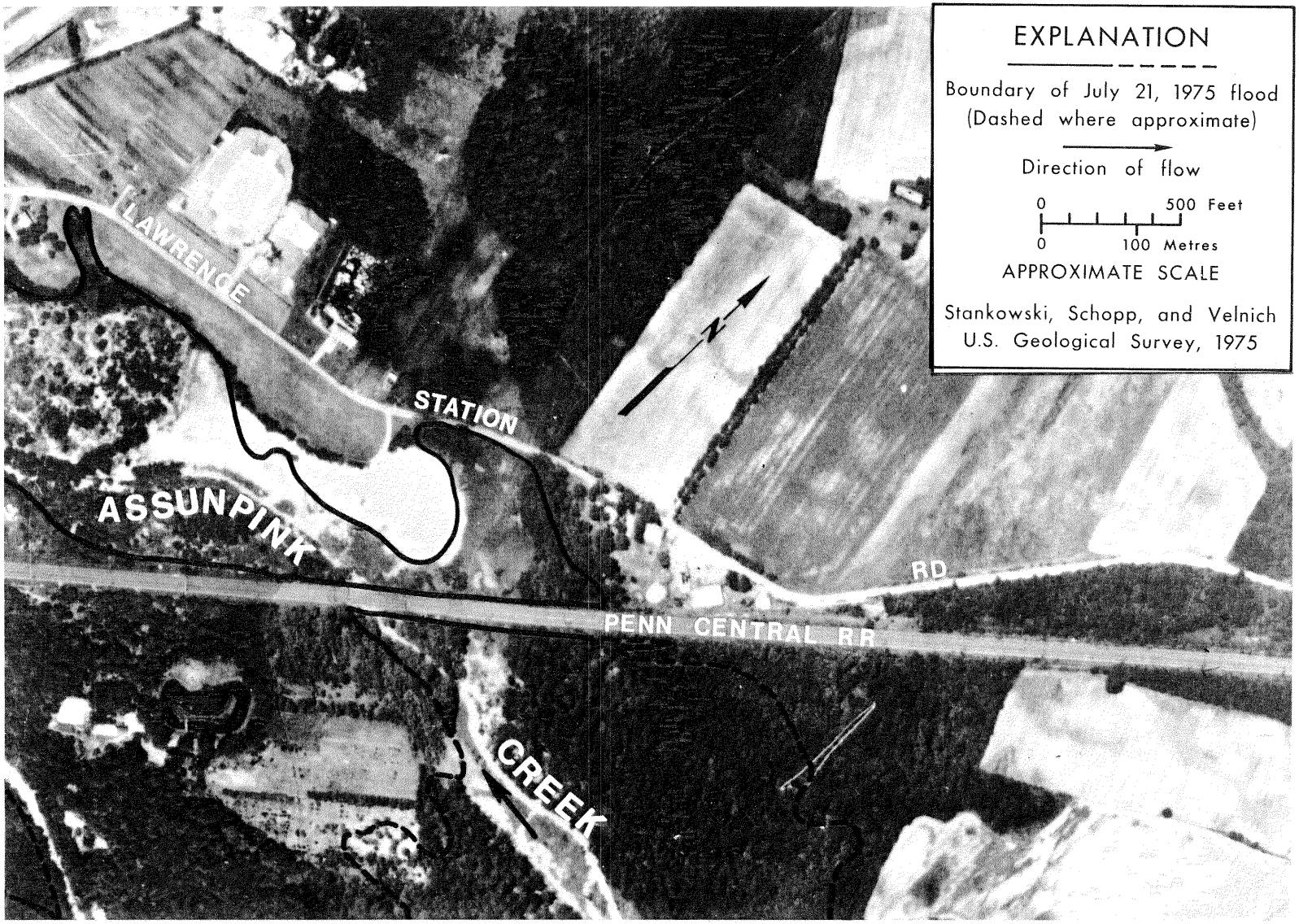
Direction of flow

0 500 Feet
0 100 Metres
APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

JOINS PLATE 14

PLATE 12

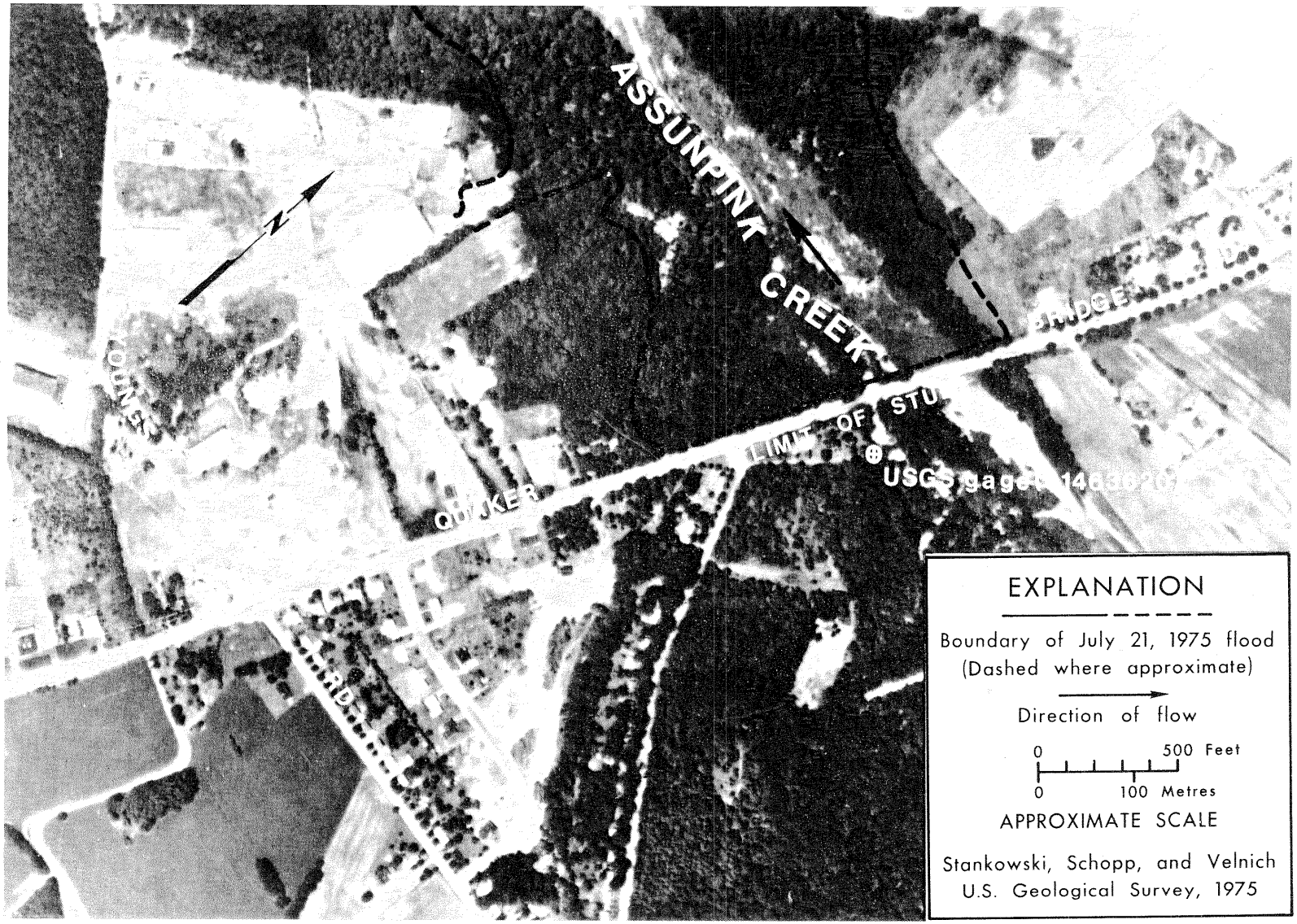


JOINS PLATE 12

JOINS PLATE 14

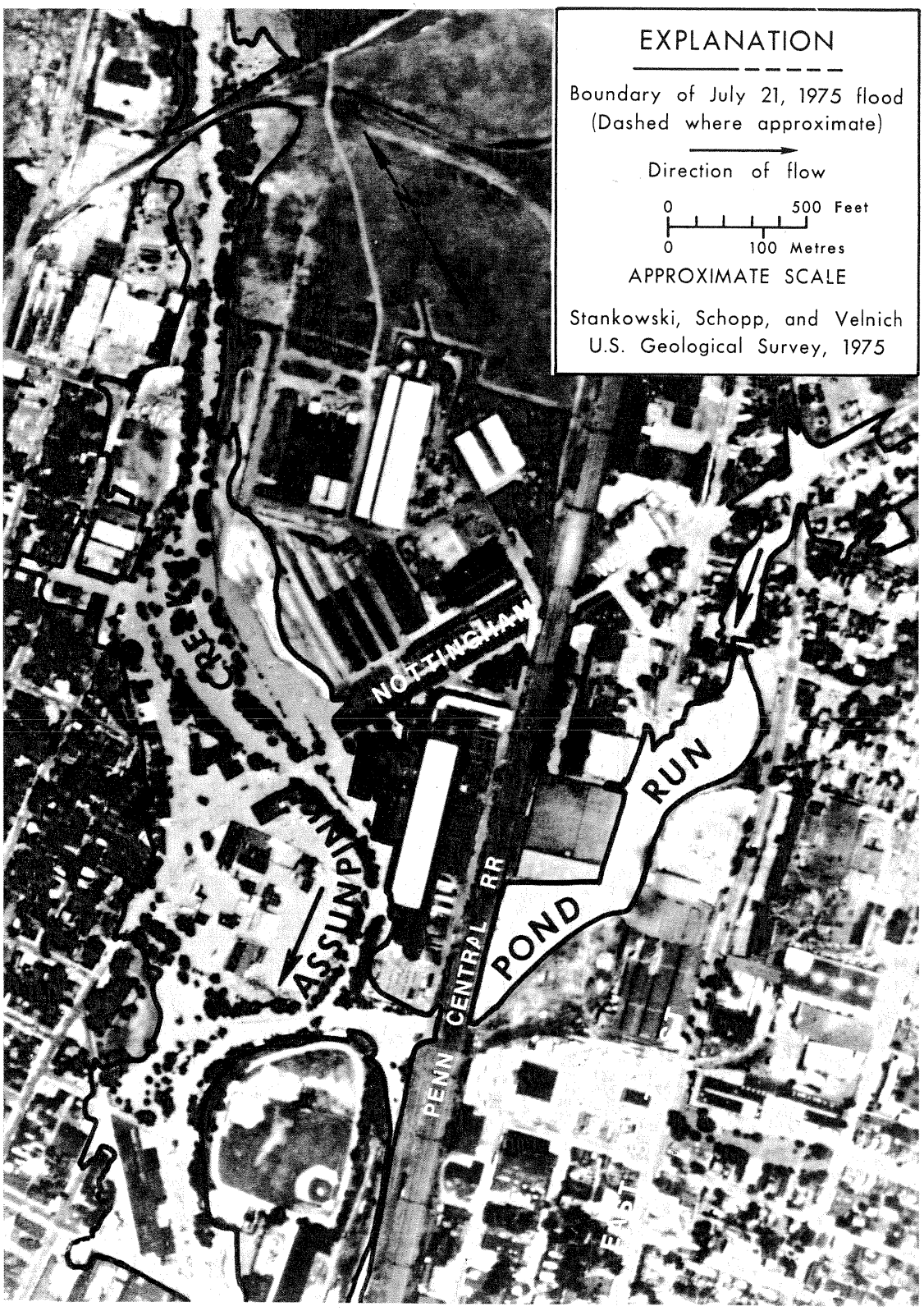
PLATE 13

JOINS PLATE 13



JOINS PLATE 12

PLATE 14



JOINS PLATE 16

PLATE 15

JOINS PLATE 15

JOINS PLATE 17

PLATE 16


EXPLANATION
Boundary of July 21, 1975 flood
(Dashed where approximate)
Direction of flow
0 500 Feet
0 100 Metres
APPROXIMATE SCALE
Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975
WARD AVE
HAMILTON AVE
POND RUN
JOINS PLATE 16
JOINS PLATE 18

PLATE 17

EXPLANATION

Boundary of July 21, 1975 flood
(Dashed where approximate)

Direction of flow

0 500 Feet
0 100 Metres
APPROXIMATE SCALE

Stankowski, Schopp, and Velnich
U.S. Geological Survey, 1975

PLATE 18