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SPECIAL FLOOD HAZARD REPORT, STONY CREEK, MONTGOMERY COUNTY, PE--ETC(U)
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SPECIAL FLOOD HAZARD REPORT,

STONY CREEK,

MONTGOMERY COUNTY, PA

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DISTRIBUTION UNLIMITED.



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PREPARED FOR
MONTGOMERY COUNTY PLANNING COMMISSION

BY
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

REPT. NO.: DAEN/NAP-82040/SFH03-76/06

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TO THE REQUESTOR:

This Flood Plain Information (FPI) Report was prepared by the Philadelphia District office of the U.S. Army Corps of Engineers, under the continuing authority of the 1960 Flood Control Act, as amended. The report contains valuable background information, discussion of flood characteristics and historical flood data for the study area. The report also presents through tables, profiles, maps and text, the results of engineering studies to determine the possible magnitude and extent of future floods, because knowledge of flood potential and flood hazards is important in land use planning and for management decisions concerning floodplain utilization. These projections of possible flood events and their frequency of occurrence were based on conditions in the study area at the time the report was prepared.

Since the publication of this FPI Report, other engineering studies or reports may have been published for the area. Among these are Flood Insurance Studies prepared by the Federal Insurance Administration of the Federal Emergency Management Agency, Flood Insurance Studies generally provide different types of flood hazard data (including information pertinent to setting flood insurance rates) and different types of floodplain mapping for regulatory purposes and in some cases provide updated technical data based on recent flood events or changes in the study area that may have occurred since the publication of this report.

It is strongly suggested that, where available, Flood Insurance Studies and other sources of flood hazard data be sought out for the additional, and, in some cases, updated flood plain information which they might provide. Should you have any questions concerning the preparation of, or data contained in this FPI Report, please contact:

U.S. Army Corps of Engineers
Philadelphia District
Custom House, 2nd and Chestnut Streets
Philadelphia, PA 19106

ATTN: Flood Plain Mgt. Services Branch, NAPEN-M

Telephone number: (215) 597-4807

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DAEN/NAP-82040/SFH03-76/06	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This special flood hazard information report was undertaken by the U.S. Army Corps of Engineers, Philadelphia District at the request of the Montgomery County Planning Commission. It covers 5.2 miles of the flood plain including the main stem of Stony Creek from its confluence with the Schuylkill River at Norristown to the study limit at North Wales Road. Tributaries to the Stony Creek area also studied in this report included Tributary No. 1, West Branch Stony Creek (tributary A & B) and Tributary No. 2.		

The hydrology, hydraulics and drainage areas of the creek were described. The data included rise and duration of flooding and flood profiles.

The information given within the scope of this report should be considered for its historical value. Since the publication of this report other flood insurance studies have been undertaken and should also be consulted for current information.

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SPECIAL FLOOD HAZARD INFORMATION REPORT
STONY CREEK, MONTGOMERY COUNTY, PENNSYLVANIA

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SPECIAL FLOOD HAZARD INFORMATION REPORT
STONY CREEK, MONTGOMERY COUNTY, PENNSYLVANIA

1.0 AUTHORITY FOR STUDY

This Special Flood Hazard Information Report was undertaken at the request of the Montgomery County Planning Commission with the indorsement of the Pennsylvania Department of Environmental Resources. This report was prepared by the Philadelphia District, U. S. Army Corps of Engineers under continuing authority provided in Section 206 of the 1960 Flood Control Act as amended.

2.0 DESCRIPTION OF AREA AND LIMITS OF STUDY

This report covers 5.2 miles of the main stem of Stony Creek, from its confluence with the Schuylkill River at Norristown, to the study limit at North Wales Road. Stony Creek originates south of West Point in Worcester Township, and in its upper reaches flows through rolling land marked by occasional steep hills and gently sloping flood plains covered with trees and natural growth. In the lower reaches of Stony Creek, the flood plain becomes more restricted and highly developed with residential, commercial and industrial development.

Tributaries to the Stony Creek also studied in this report include Tributary No. 1, West Branch Stony Creek (with Tributaries A and B), and Tributary No. 2. The study areas of Stony Creek and its tributaries are shown on the General Map. A tabulation of stream mileages and respective drainage areas can be found in Table 1.

3.0 HISTORY OF FLOODING

Damaging floods on Stony Creek have been reported in Norristown as early as 1786. Tropical Storm Agnes in June 1972 caused record flooding in Norristown as a result of floodwaters on the Schuylkill River backing up floodflows on Stony Creek. The severe floods of Stony Creek have caused extensive property damage and threatened general safety. Floods causing significant damage have occurred in 1809, 1902, 1931, 1933, 1971 and 1972.

4.0 DESCRIPTION OF WORK

4.1 Surveys

Field surveys, including stream profiles, cross sections and bridge measurements were performed by the Philadelphia District, U. S. Army Corps of Engineers.

4.2 Hydrology

There are no stream gages located on Stony Creek to record historical flood events. Therefore, the Intermediate Regional Flood was developed from regionalized discharge frequency curves, adjusted to correlate with estimated peak discharges of past flood events on Stony Creek and calculated peak flows from other nearby drainage basins. The Intermediate Regional Flood is defined as a flood having an average frequency of occurrence in the order of once in 100 years, and having a 1% chance of being equalled or exceeded in any year.

The Standard Project Flood is defined as a major flood that can be expected to occur from the most severe combination of meteorological and hydrological conditions that is considered reasonably characteristic of the geographical area in which the study area is located, excluding extremely rare combinations. Peak discharges for these floods are generally about 40 to 60 percent of the Probable Maximum Floods for the same basins, and are developed by applying rainfall patterns to Unit Hydrographs which are characteristic of the study area. A tabulation of peak flows for Stony Creek and its tributaries is given in Table 2.

4.3 Hydraulics

Water surface profiles for the Intermediate Regional (100-year) and Standard Project Flood events for Stony Creek and its tributaries were computed using the Corps of Engineers' HEC-II Backwater Computer Program. Starting water surface elevations for Stony Creek were obtained through analysis of flooding conditions and backwater effects of the Schuylkill River. Similarly, starting water surface elevations for Stony Creek tributaries were obtained from corresponding flood elevations on the main stem of Stony Creek.

Water surface profiles shown in this report were developed based on existing conditions of the watershed at the time field surveys were performed. During an actual flood, debris collecting on bridges and culverts could decrease their water-carrying capacity and cause backwater effects upstream of these structures. However, since the location and extent of debris accumulation are impossible to predict, it was necessary, for the purposes of this report, to assume that bridge and culvert openings would remain unobstructed. In addition to bridges and culverts, there are 7 small dams located within the study area. These dams have essentially no flood control capacity, nor will they significantly alter the flow characteristics of floodwaters.

Water surface profiles thus developed can be found on Plates 2 through 11. A tabulation of flood elevations at all bridges and culverts can be found in Table 3.

Typical stream cross sections on Stony Creek and its tributaries and respective water surface elevations for the Intermediate Regional Flood and Standard Project Flood events are shown on Plates 12 and 13. Maximum velocities of flow which are expected to occur at these selected cross sections are given in Table 4. Predicted rates of rise and duration of flooding for the Standard Project Flood at selected locations on Stony Creek and West Branch Stony Creek are given in Table 5.

5.0 ACKNOWLEDGMENTS

The assistance and cooperation of the U. S. Geological Survey and private citizens in supplying data for the preparation of this report are appreciated.

Additional copies of this report can be obtained from the Montgomery County Planning Commission. The Philadelphia District Office of the Corps of Engineers, Department of the Army, will upon request provide technical assistance to planning agencies in the interpretation and use of the data presented as well as planning guidance and further assistance, including the development of additional technical information.

TABLE 1
DRAINAGE AREAS
STONY CREEK AND ITS TRIBUTARIES

<u>Location</u>	<u>Mileage Above Mouth</u>	<u>Drainage Areas</u>	
		<u>Tributary Sq. Mi.</u>	<u>Total Sq. Mi.</u>
<u>Stony Creek</u>			
Confluence with Schuylkill River	0.00	--	21.2
Tributary No. 1	1.86	3.8	19.4
West Branch	2.56	6.4	15.0
Tributary No. 2	4.69	3.0	7.0
<u>Tributary No. 1 to Stony Creek</u>			
Confluence with Stony Creek	0.00	--	3.8
<u>West Branch Stony Creek</u>			
Confluence with Stony Creek	0.00	--	6.4
Tributary A	1.83	1.7	4.8
Upstream of Tributary B	1.96	0.9	2.2 (b)
<u>Tributary No. 2 to Stony Creek</u>			
Confluence with Stony Creek	0.00	--	3.0
<u>Tributary A to West Branch</u>			
Confluence with West Branch	0.00	--	1.7
<u>Tributary B to West Branch</u>			
Confluence with West Branch	0.00	--	0.9
(a) Includes Tributary.			
(b) Does Not Include Tributary.			

TABLE 2
PEAK FLOWS FOR THE INTERMEDIATE REGIONAL AND
STANDARD PROJECT FLOODS

STONY CREEK AND ITS TRIBUTARIES

<u>Location</u>	<u>Mileage Above Mouth</u>	<u>Drainage Area sq. mi.</u>	<u>Intermediate Regional Flood Discharge cfs</u>	<u>Standard Project Flood Discharge cfs</u>
<u>Stony Creek</u>				
Confluence with Schuylkill River	0.00	21.2	13,000	17,800
Downstream of confluence with Tributary No. 1	1.86	19.4	12,180	16,900
Downstream of confluence with West Branch	2.56	15.0	10,050	14,300
Downstream of confluence with Tributary No. 2	4.69	7.0	5,860	8,000
<u>Tributary No. 1 to Stony Creek</u>				
Confluence with Stony Creek	0.00	3.8	3,580	4,900
<u>West Branch Stony Creek</u>				
Confluence with Stony Creek	0.00	6.4	5,400	7,400
Downstream of Tributary A	1.83	4.8	4,380	6,000
Upstream of Tributary B	1.96	2.2	2,260	3,100
<u>Tributary No. 2 to Stony Creek</u>				
Confluence with Stony Creek	0.00	3.0	3,000	4,100

TABLE 2
PEAK FLOWS FOR THE INTERMEDIATE REGIONAL AND
STANDARD PROJECT FLOODS
STONY CREEK AND ITS TRIBUTARIES

<u>Location</u>	<u>Mileage Above Mouth</u>	<u>Drainage Area sq. mi.</u>	<u>Intermediate Regional Flood Discharge cfs</u>	<u>Standard Project Flood Discharge cfs</u>
<u>Tributary A to West Branch</u>				
Confluence with West Branch	0.00	1.7	1,860	2,550
<u>Tributary B to West Branch</u>				
Confluence with West Branch	0.00	0.9	1,000	1,380

TABLE 3

ELEVATION DATA

BRIDGES ACROSS STONY CREEK AND ITS TRIBUTARIES

<u>Identification</u>	<u>Mileage Above Mouth</u>	<u>Under- clearance Elevation Feet-Mean Sea Level Datum</u>	<u>Water Surface Elevation (a)</u>		
			<u>Intermediate Regional Flood</u>	<u>Standard</u>	
				<u>Feet - Mean Sea Level Datum</u>	<u>Project</u>
					<u>Flood Datum</u>
<u>Stony Creek</u>					
Penn Central Railroad	0.11	87.6	78.0	89.5	
W. Lafayette Street	0.15	67.5	78.0	89.5	
W. Main Street	0.23	74.8	78.0	89.5	
W. Airy Street	0.32	104.8	78.0	89.5	
Reading Railroad	0.34	74.7	78.0	89.5	
Markley Street (U.S. Rte. 202)	0.36	75.3	79.5	89.5	
E. Marshall Avenue	0.47	77.4	85.7	89.5	
Private Road (Schmidt's Brewery)	0.55	83.3	87.5	89.5	
W. Elm Street & Markley Street	0.76	93.7	92.7	96.6	
Sterigere Street	1.13	94.9	96.3	99.2	
Reading Railroad	2.00	136.6	125.6	128.2	
Lower Farm Road	2.23	133.7	132.7	135.2	
Lower Farm Road	3.05	153.2	156.1	158.7	
Reading Railroad	3.44	174.6	161.0	163.0	
Germantown Pike					
(U.S. Rte. 422 Alt.)	3.68	169.4	167.9	170.9	
Township Line Road	4.64	195.2	198.1	199.9	
N. Wales Road	5.21	221.3	222.3 (b)	223.2 (b)	

TABLE 3

ELEVATION DATA

BRIDGES ACROSS STONY CREEK AND ITS TRIBUTARIES

<u>Identification</u>	<u>Mileage Above Mouth</u>	<u>Under- clearance Elevation Feet-Mean Sea Level Datum</u>	<u>Water Surface Elevation (a)</u>		
			<u>Intermediate</u>	<u>Standard</u>	
			<u>Regional</u>	<u>Project</u>	<u>Flood</u>
			<u>Feet - Mean Sea Level Datum</u>		
<u>Tributary No. 1 to Stony Creek</u>					
Norris City Road	0.38	142.0	135.6	137.3	
Swede Street	0.66	154.0	155.3	156.1	
Germanatown Pike (U.S. Rte. 422 Alt.)	1.59	199.2	203.1	204.0	
Abandoned Railroad Bridge	1.68	198.6	204.1	205.2	
Dekalb Pike	1.70	201.1	205.0	205.9	
Private Road	1.76	198.0	205.9	206.9	
Private Footbridge	1.82	203.7	208.2	209.1	
Hannah Avenue	2.09	211.8	215.4	215.9	
Township Line Road	2.23	217.9	222.0	222.4	
Footbridge	2.33	219.4	223.0	223.8	
Jolly Road	2.96	243.5	245.9	246.4	
Pa. Turnpike (Northeast Ext.)	2.98	249.7	246.2 (b)	246.8 (b)	
<u>West Branch Stony Creek</u>					
Upper Farm Road	0.28	172.3	156.5	158.6	

TABLE 3

ELEVATION DATA

BRIDGES ACROSS STONY CREEK AND ITS TRIBUTARIES

Identification	Mileage Above Mouth	Under- clearance Elevation Feet-Mean Sea Level Datum	Water Surface Elevation (a)		
			Intermediate Regional Flood	Standard Project Flood	
				Feet - Mean Sea Level Datum	
<u>West Branch Stony Creek (Continued)</u>					
Whitehall Road	0.99	182.4	182.0	185.2	
Private Road	1.09	177.1	184.2	185.5	
Private Bridge	1.22	180.3	190.4	192.1	
Eagle Road	1.26	185.1	192.6	193.8	
Footbridge					
(Norristown Area H.S.)	2.05	210.6	211.2	211.6	
Eagle Road	2.16	213.5	215.0	216.3	
Germanstown Pike					
(U.S. Rte. 422 Alt.)	2.68	238.0	242.1	243.7	
Private Road	2.98	246.5	251.0	251.8	
Woodland Avenue	3.15	257.4	262.2	263.2	
Shultz Road	3.81	292.2	295.1	295.7	
Potshop Road	3.92	301.1	302.6 (b)	303.2 (b)	

TABLE 3

ELEVATION DATA

BRIDGES ACROSS STONY CREEK AND ITS TRIBUTARIES

Identification	Mileage Above Mouth	Under- clearance Elevation Feet-Mean Sea Level Datum	Water Surface Elevation (a)		
			Intermediate Regional Flood Feet - Mean Sea Level Datum	Standard Project Flood Level Datum	
<u>Tributary A to West Branch</u>					
Burnside Avenue	0.20	205.0	209.5	209.7	
Footbridge	0.43	214.7	217.7	218.7	
Trooper Road	1.11	269.7	268.4 (b)	269.2 (b)	
<u>Tributary B to West Branch</u>					
Eagle Road	0.24	218.0	219.2	219.3	
Burnside Avenue	0.28	219.8	222.6	222.8	
Germantown Pike (U.S. Rte. 422 Alt.)	0.79	271.6	264.0 (b)	264.4 (b)	
<u>Tributary No. 2 to Stony Creek</u>					
Pulaski Road	0.52	213.9	218.7	218.8	
Yost Road	0.76	215.9	222.3	223.2	
Pa. Turnpike (Northeast Ext.)	1.18	232.9	230.0	232.3	
Skippack Pike (Pa. Rte. 73)	1.85	251.2	252.0	252.9	
Dekalb Pike (U.S. Rte. 202)	1.99	251.3	255.0 (b)	255.8 (b)	

(a) Flood elevations are listed for the upstream side of the bridge.

(b) Flood elevations for downstream side of bridge.

TABLE 4

MAXIMUM VELOCITIES

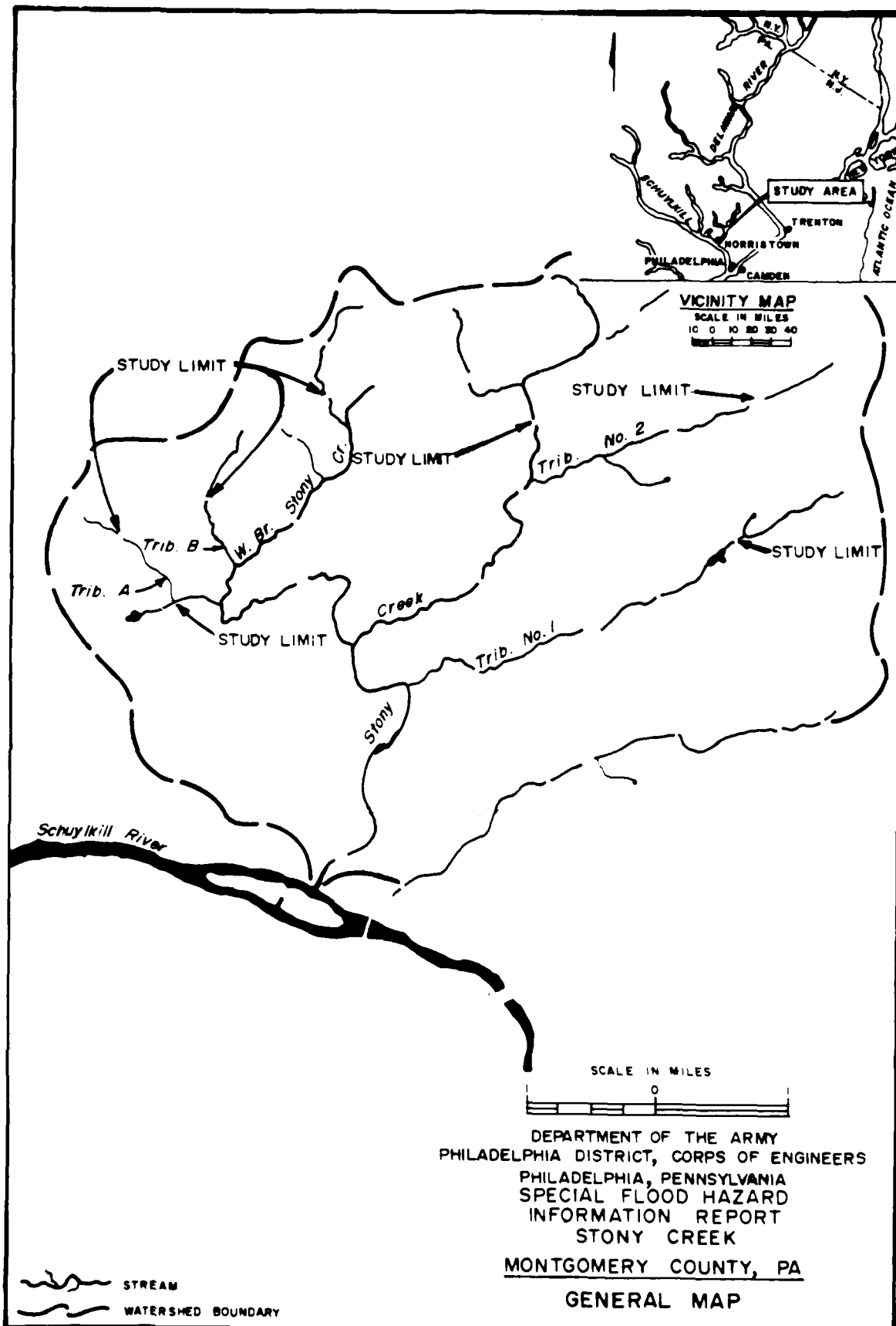
STONY CREEK AND ITS TRIBUTARIES

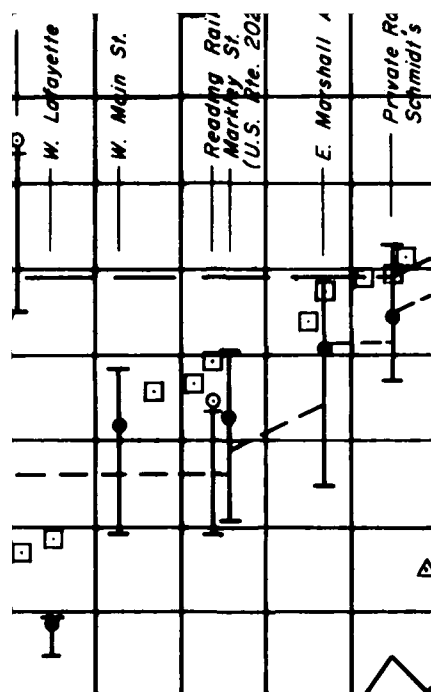
Cross Section	Mileage Above Mouth	Maximum Velocities			
		Intermediate		Standard	
		Channel	Regional Flood Overbank (a)	Channel	Project Flood Overbank (a)
		ft/sec	ft/sec	ft/sec	ft/sec
<u>Stony Creek</u>					
2	0.59	5.9	2.0	7.1	2.5
7	2.80	12.5	3.1	13.5	3.6
11	4.59	11.6	2.7	12.9	3.3
<u>Tributary No. 1 to Stony Creek</u>					
16	2.19	11.2	2.4	12.3	2.7
<u>West Branch Stony Creek</u>					
21	2.64	10.4	2.6	11.6	3.1
<u>Tributary No. 2 to Stony Creek</u>					
30	0.95	8.1	1.9	8.6	2.1

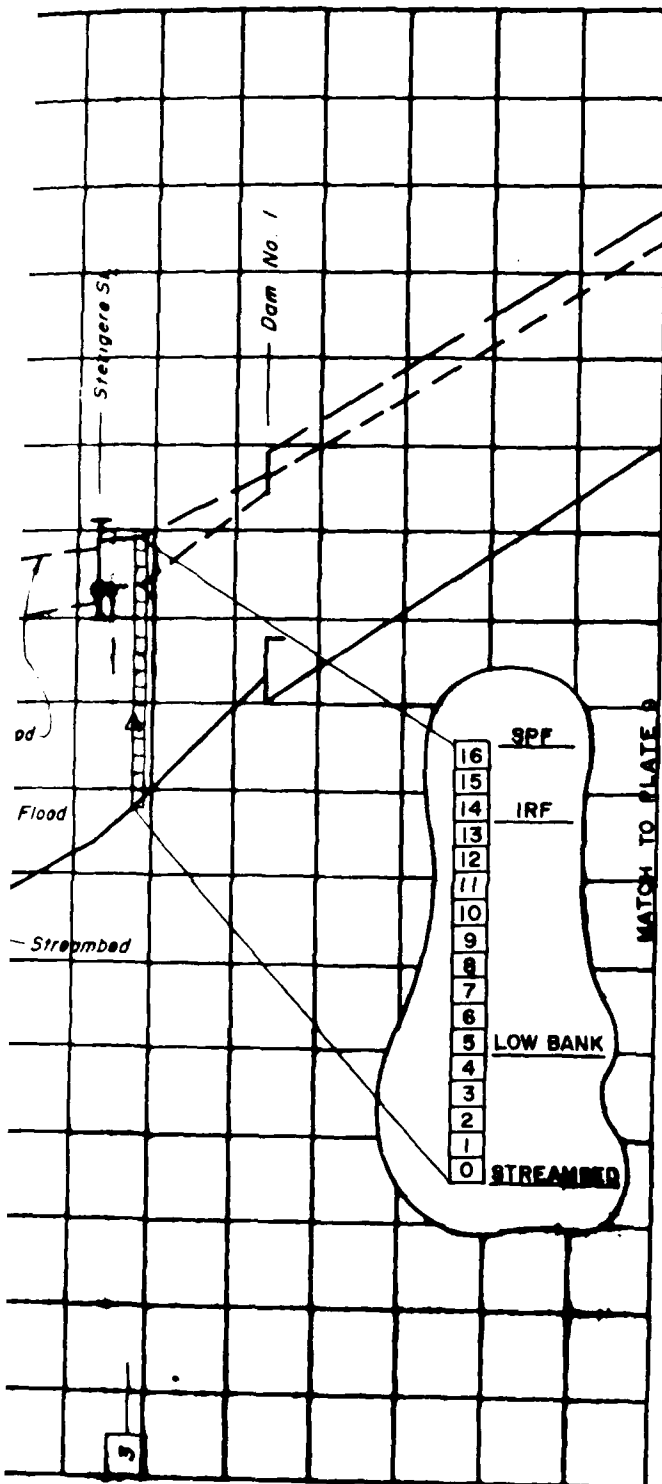
(a) Value given is maximum of left or right overbank velocity.

TABLE 5
 RATES OF RISE AND DURATION OF FLOODING
 STANDARD PROJECT FLOOD
 STONY CREEK - WEST BRANCH STONY CREEK

<u>Location</u>	<u>Mileage Above Mouth</u>	<u>Maximum Rate of Rise ft/hr</u>	<u>Height of Rise ft</u>	<u>Time of Rise hrs</u>	<u>Duration of Critical Stage hrs</u>
<u>Stony Creek</u>					
Cross Section 4	1.81	2.0	6.7	5.5	13.5
<u>West Branch Stony Creek</u>					
Cross Section 17	0.24	1.7	7.3	8.2	16.2



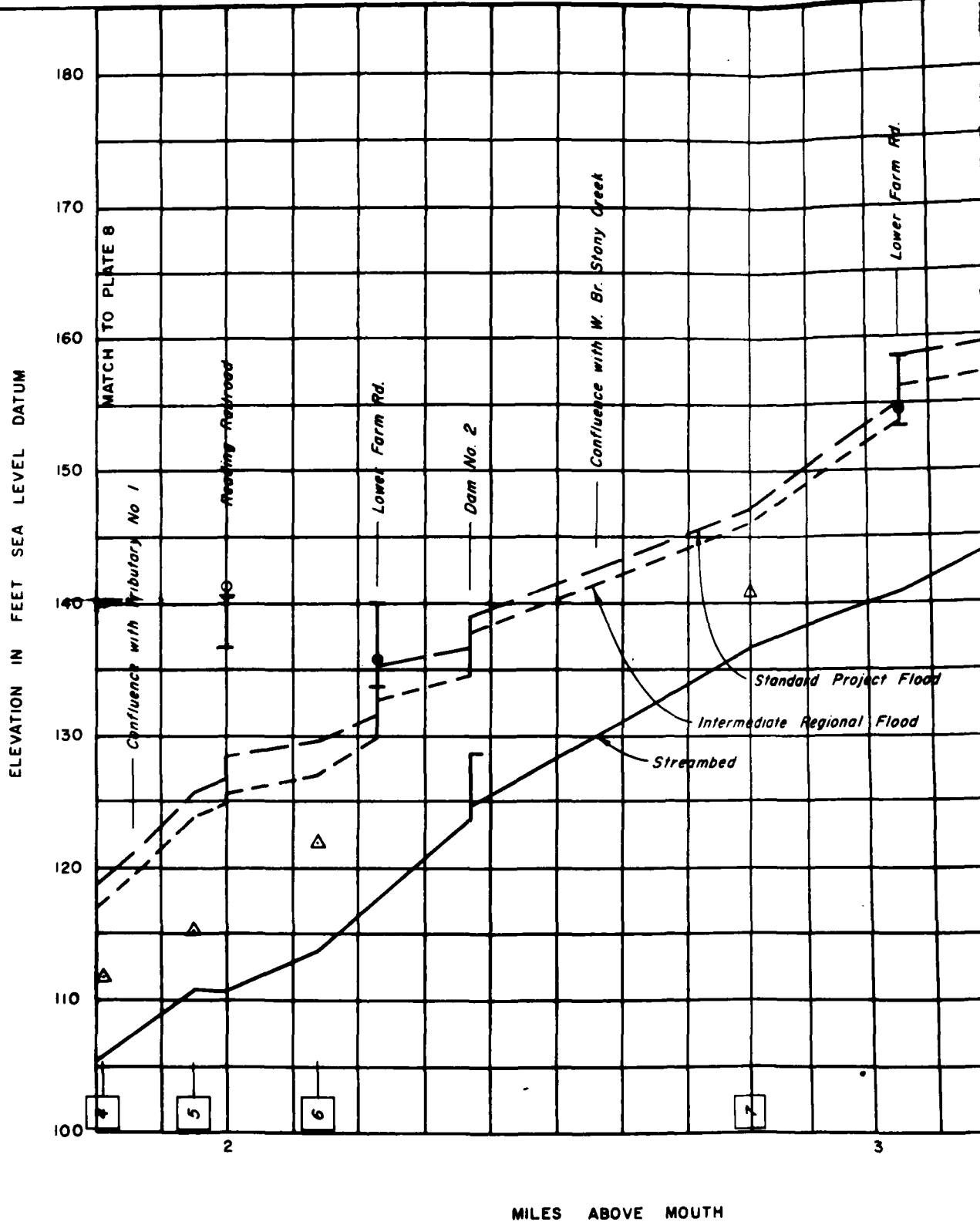


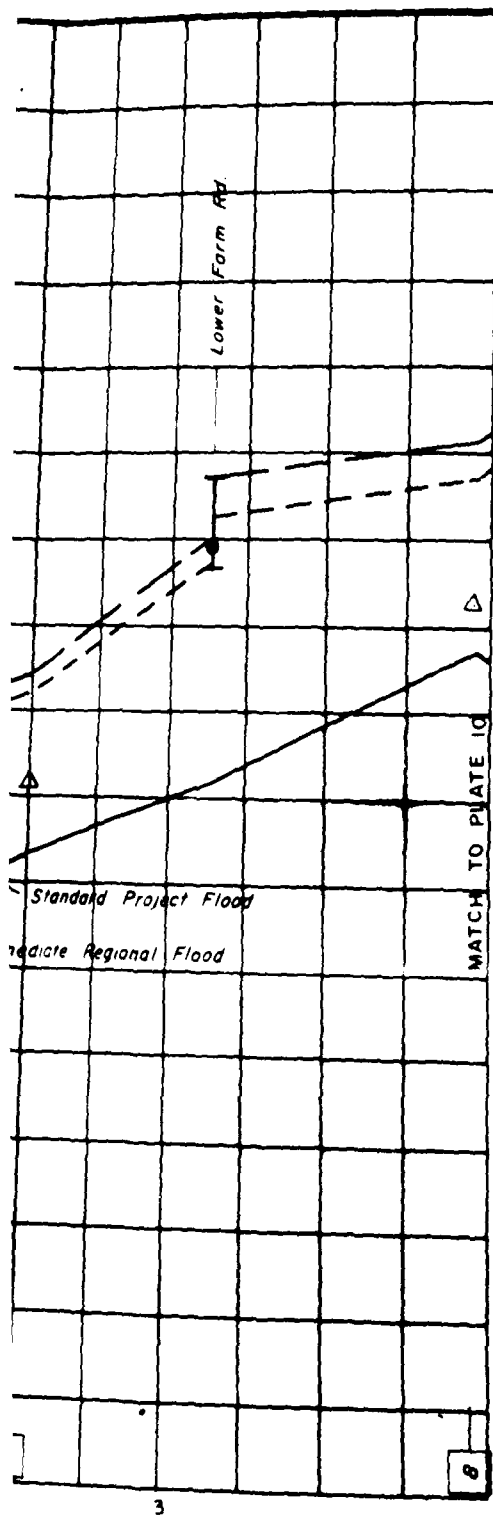


LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Rail (R.R. Bridge)
- Top of Low Bank
- Cross Section
- High Water Mark
- Flood of Sept. 13, 1971

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 PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
 PHILADELPHIA, PENNSYLVANIA
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 INFORMATION REPORT
 STONY CREEK
 MONTGOMERY COUNTY, PA
 HIGH WATER PROFILES
 STONY CREEK



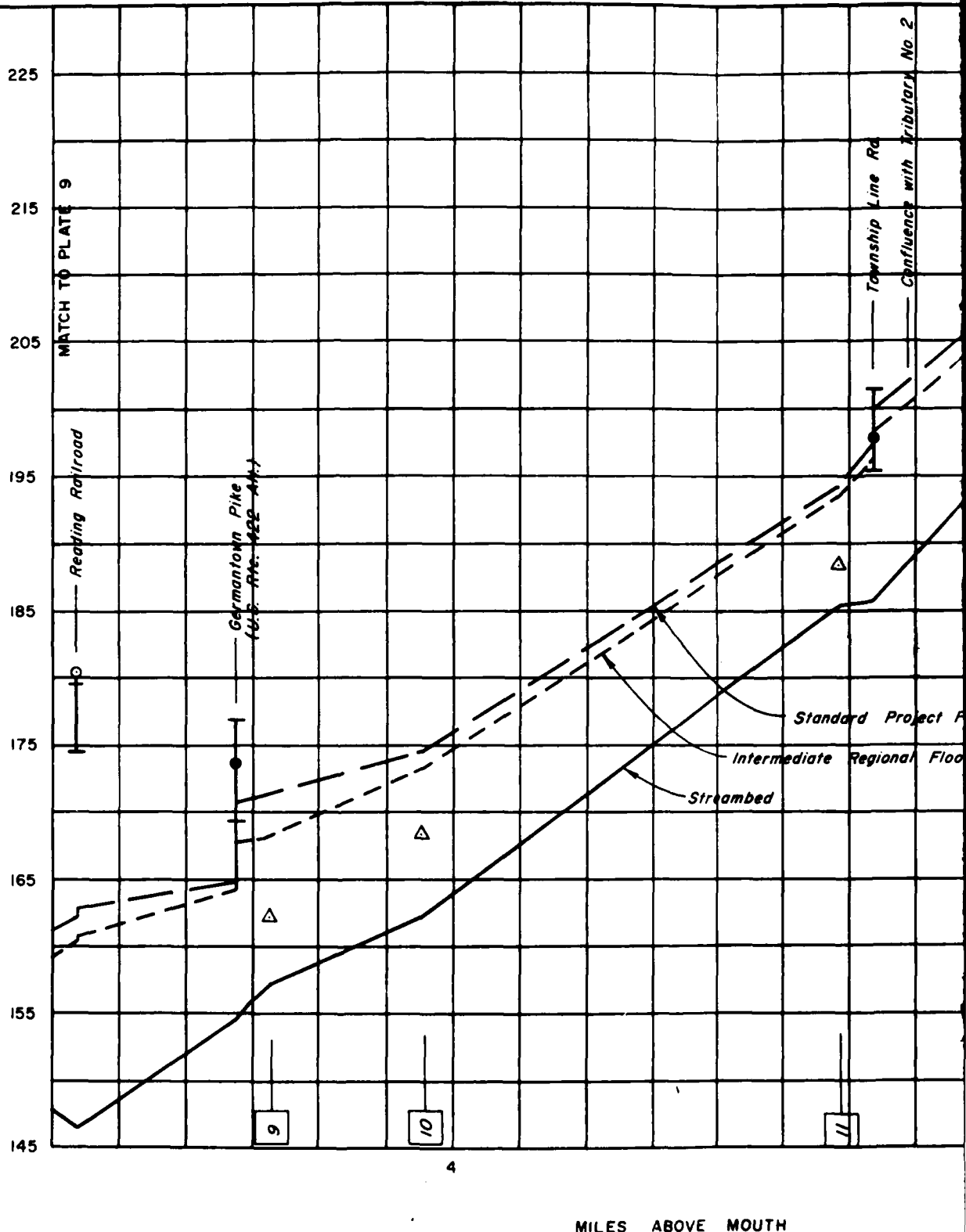


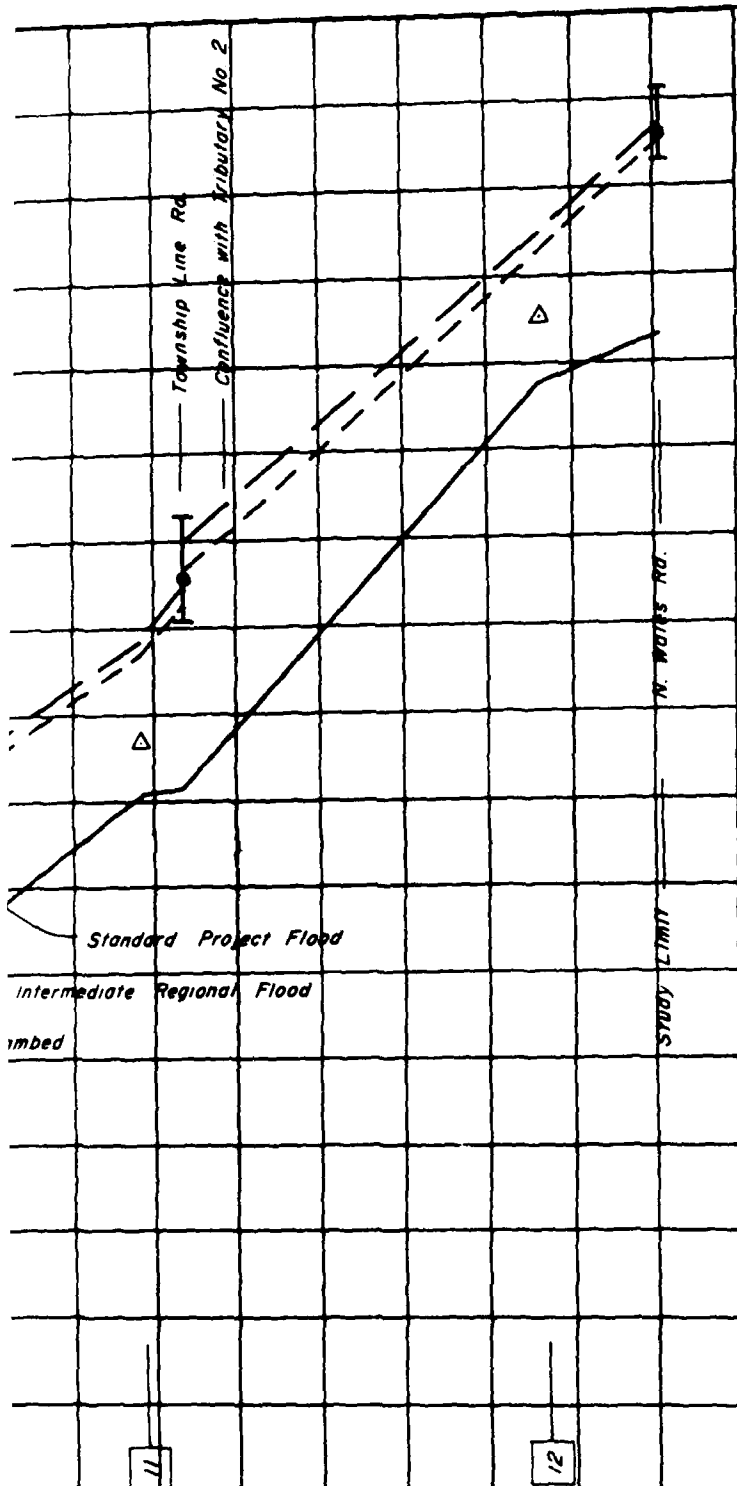
LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Rail (R.R. Bridge)
- Top of Low Bank
- 4 — Cross Section

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 HIGH WATER PROFILES
 STONY CREEK

ELEVATION IN FEET SEA LEVEL DATUM

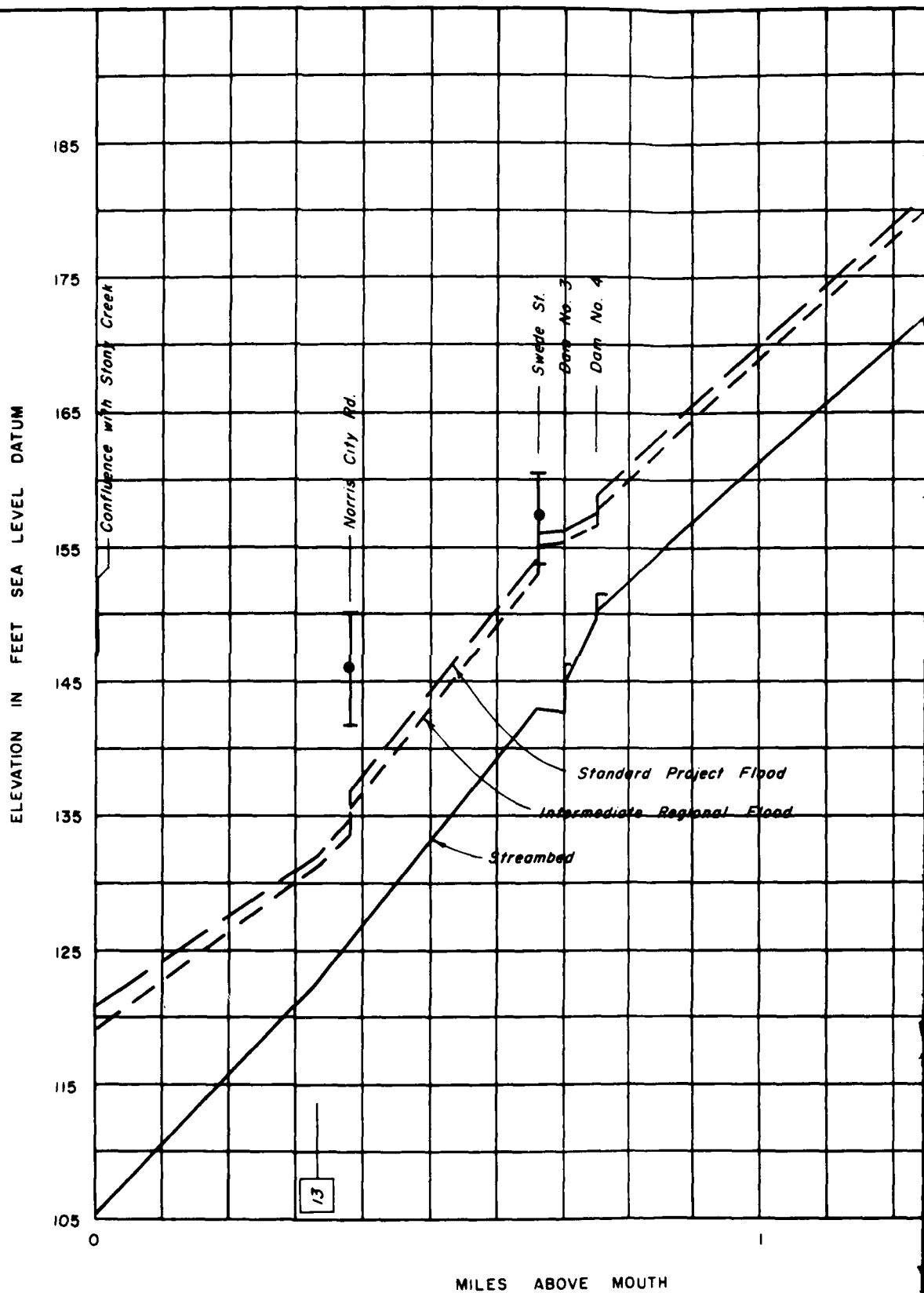


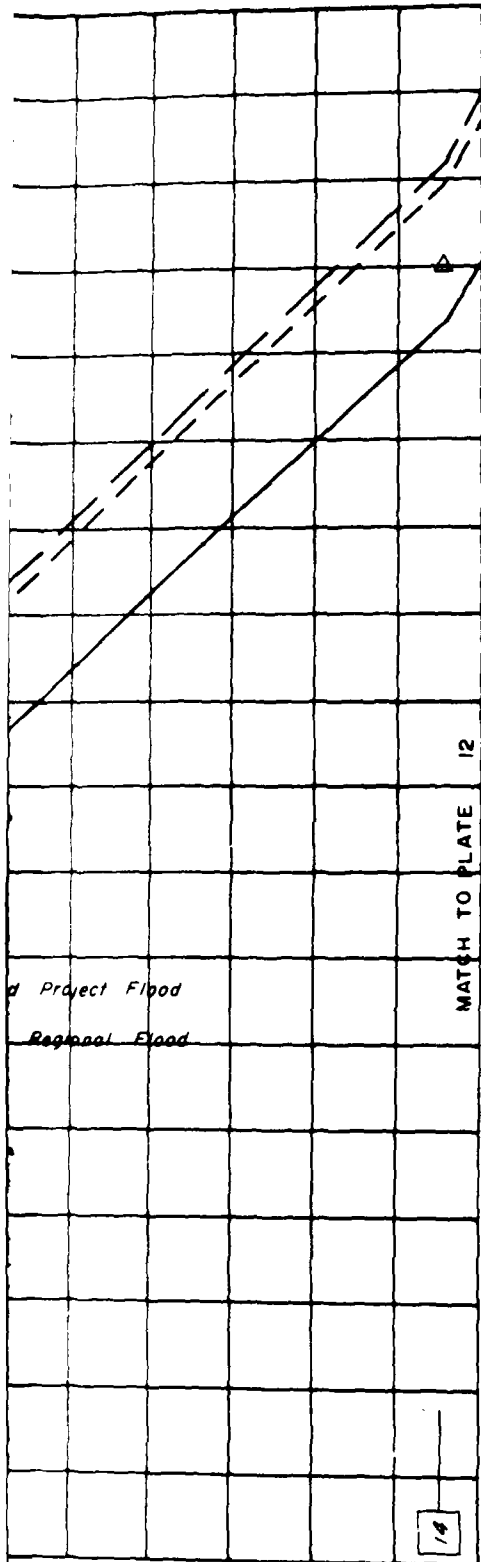


LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Rail (R.R. Bridge)
- Top of Low Bank
- 9 — Cross Section

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LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Low Bank
- 13 Cross Section

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 MONTGOMERY COUNTY, PA
 HIGH WATER PROFILES
 TRIBUTARY NO. 1
 STONY CREEK

ELEVATION IN FEET SEA LEVEL DATUM

255
245
235
225
215
205
195
185
175

WATER TO PLATE II

Germantown Pike
(U.S. Rte. 422 Alt.)

Abandoned Railroad Br. 15
Private Rd.
(U.S. Rte. 202)

Private Footbridge

Standard Project Flood
Intermediate Regional Flood
Streambed

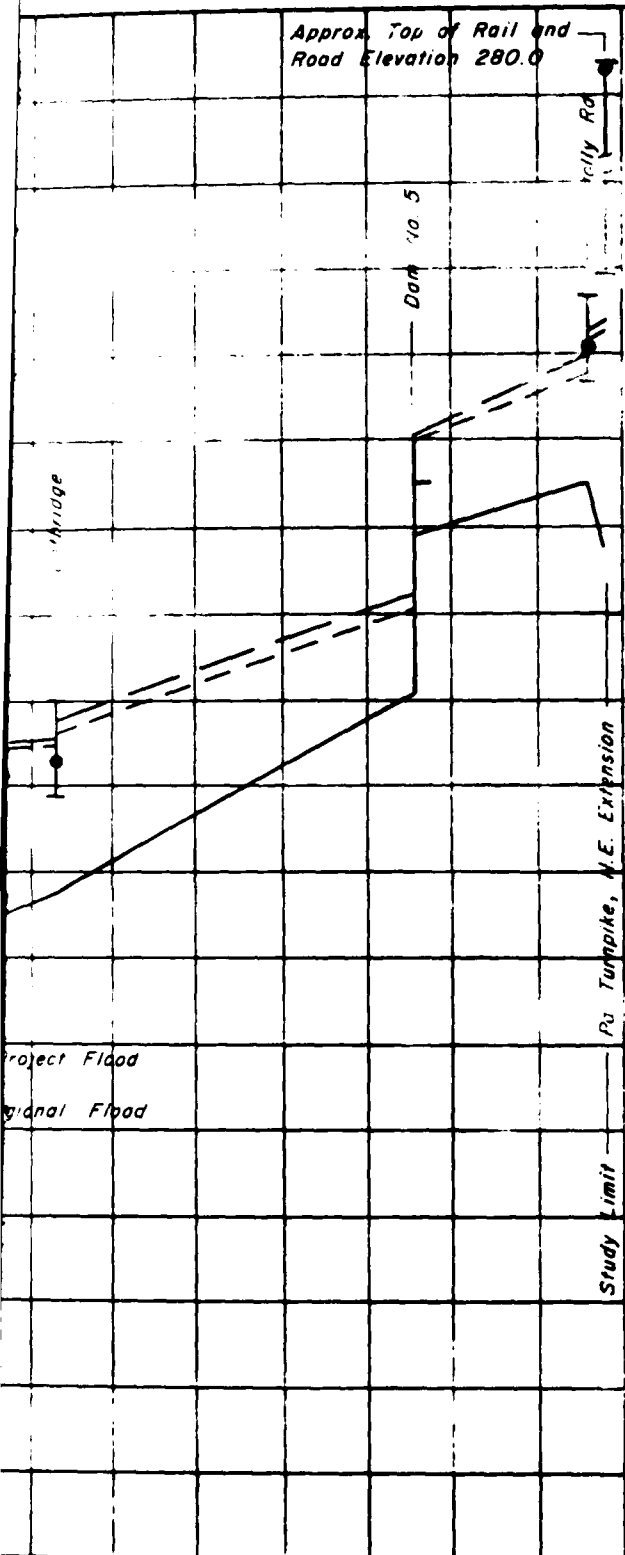
Shipping Line 41
Bridge

15

16

2

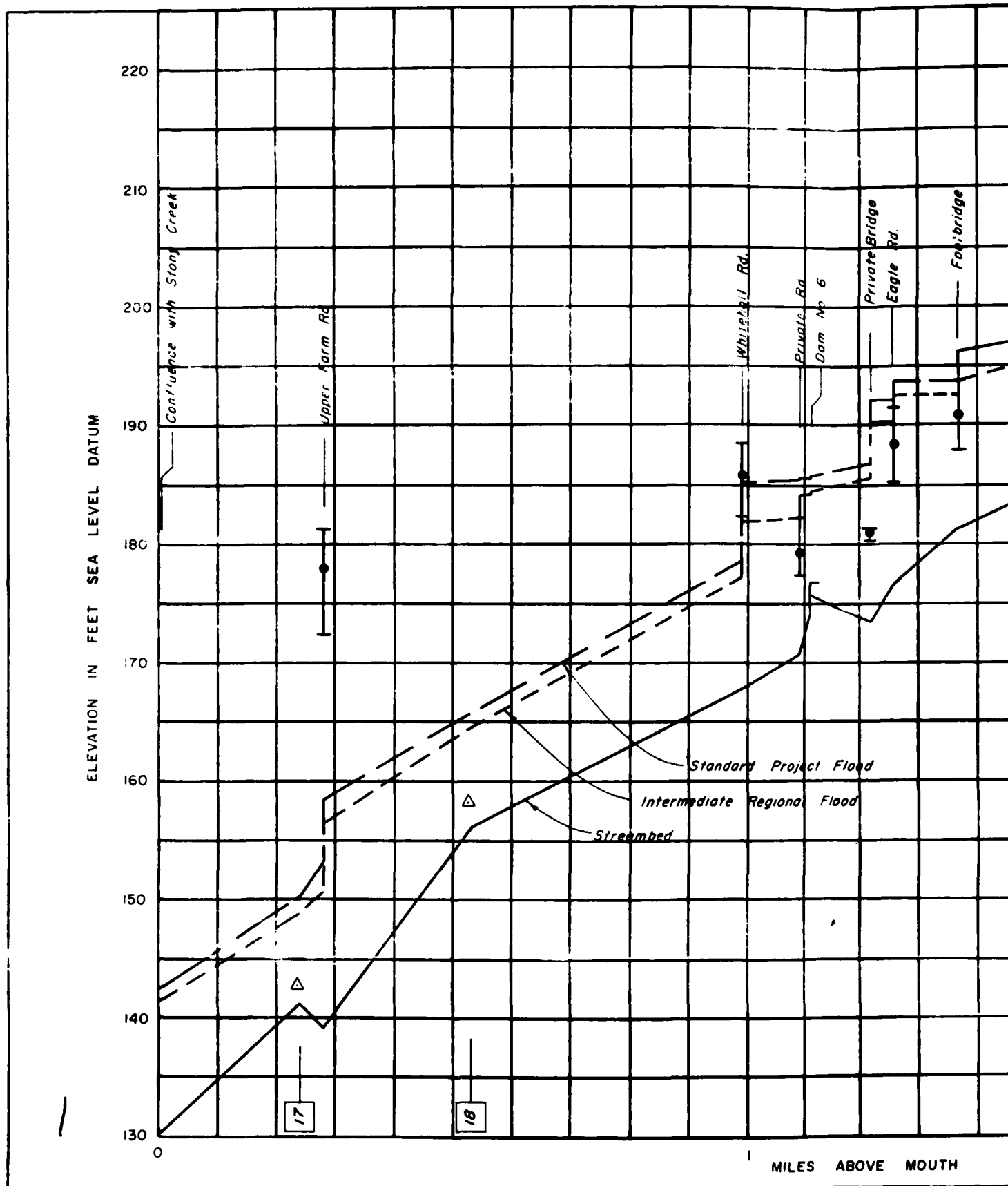
MILES ABOVE MOUTH

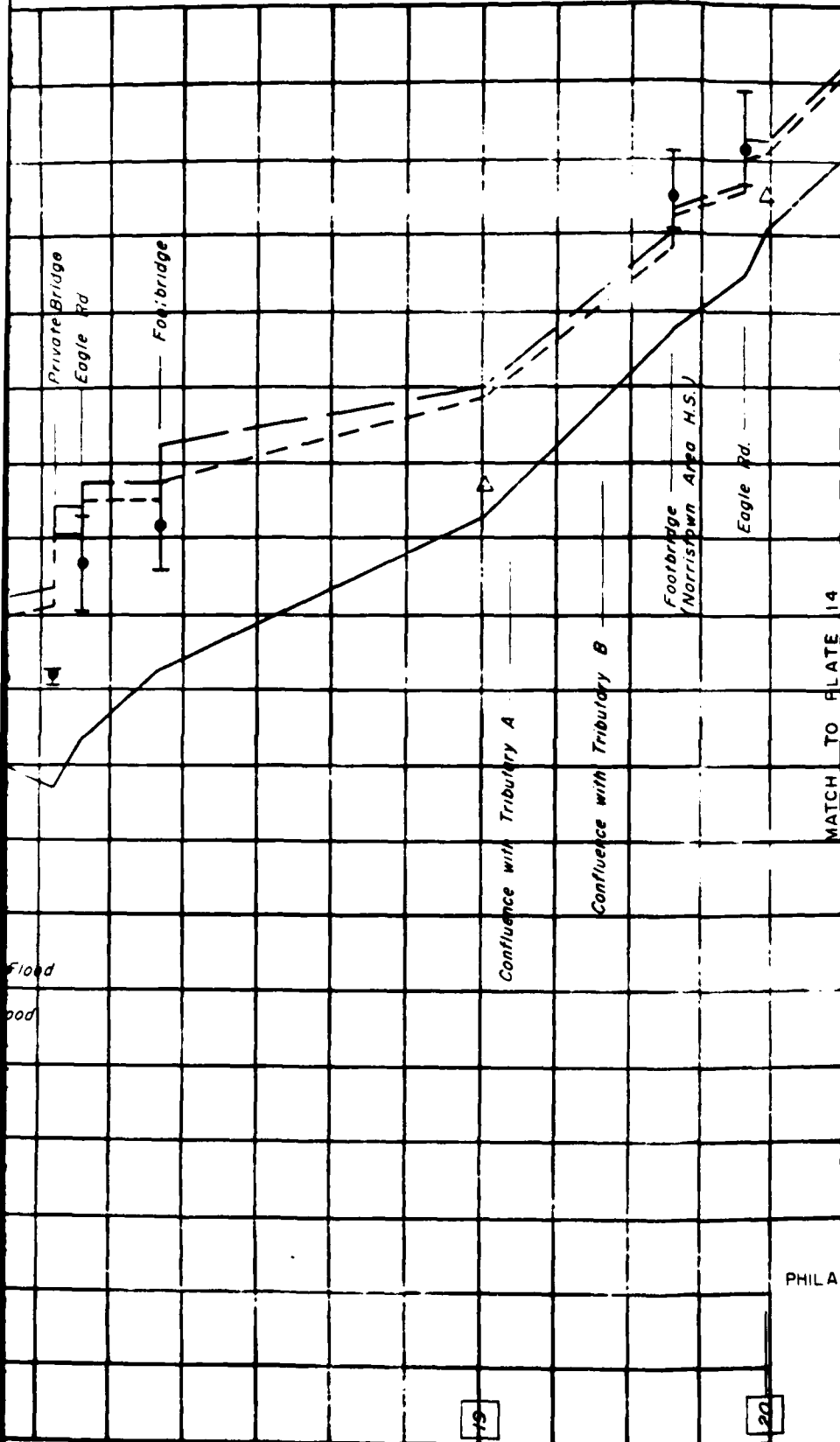


LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Rail (R.R. Bridge)
- Top of Low Bank
- 15 — Cross Section

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 SPECIAL FLOOD HAZARD
 INFORMATION REPORT
 STONY CREEK
 MONTGOMERY COUNTY, PA
 HIGH WATER PROFILES
 TRIBUTARY NO. 1
 STONY CREEK

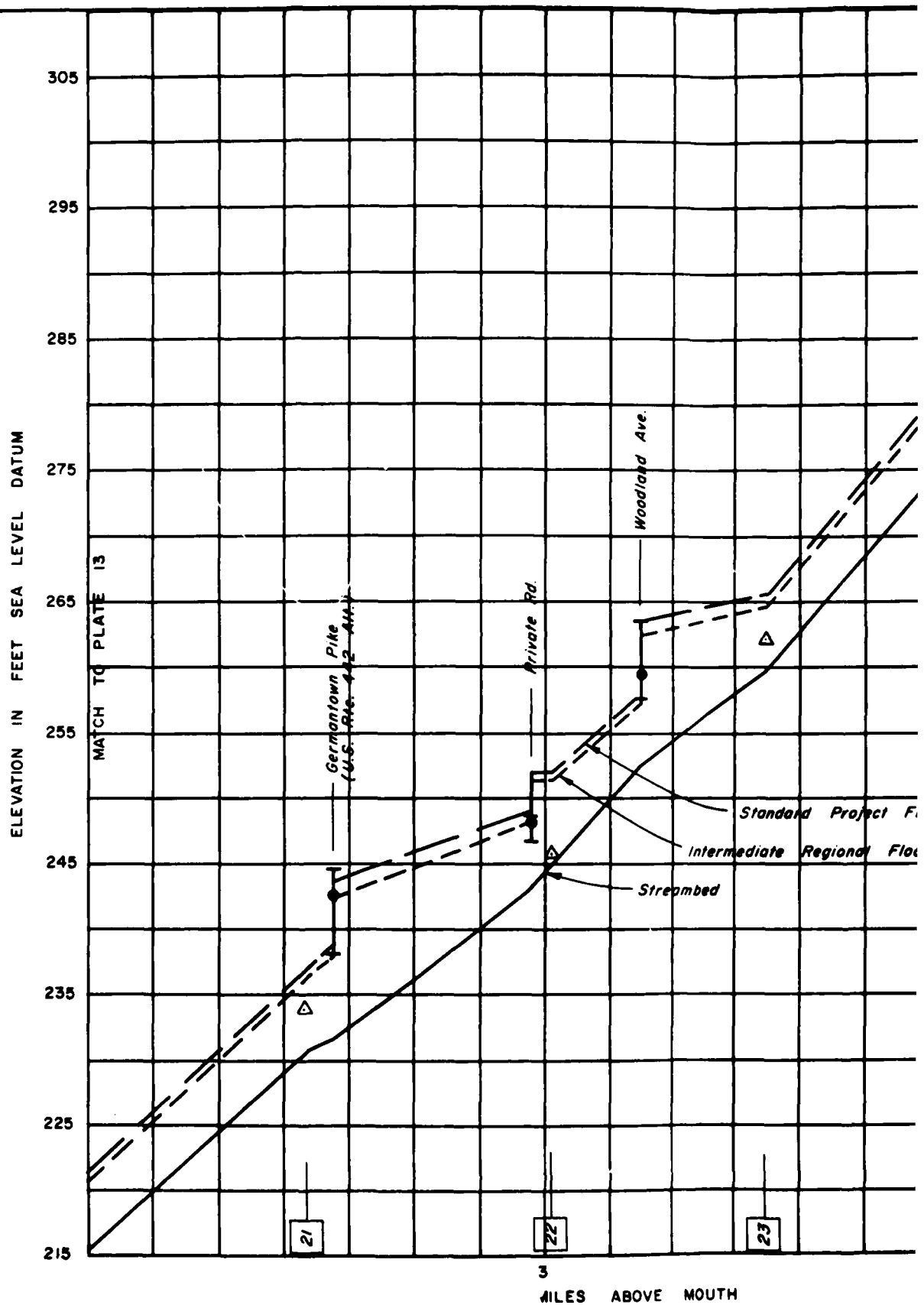


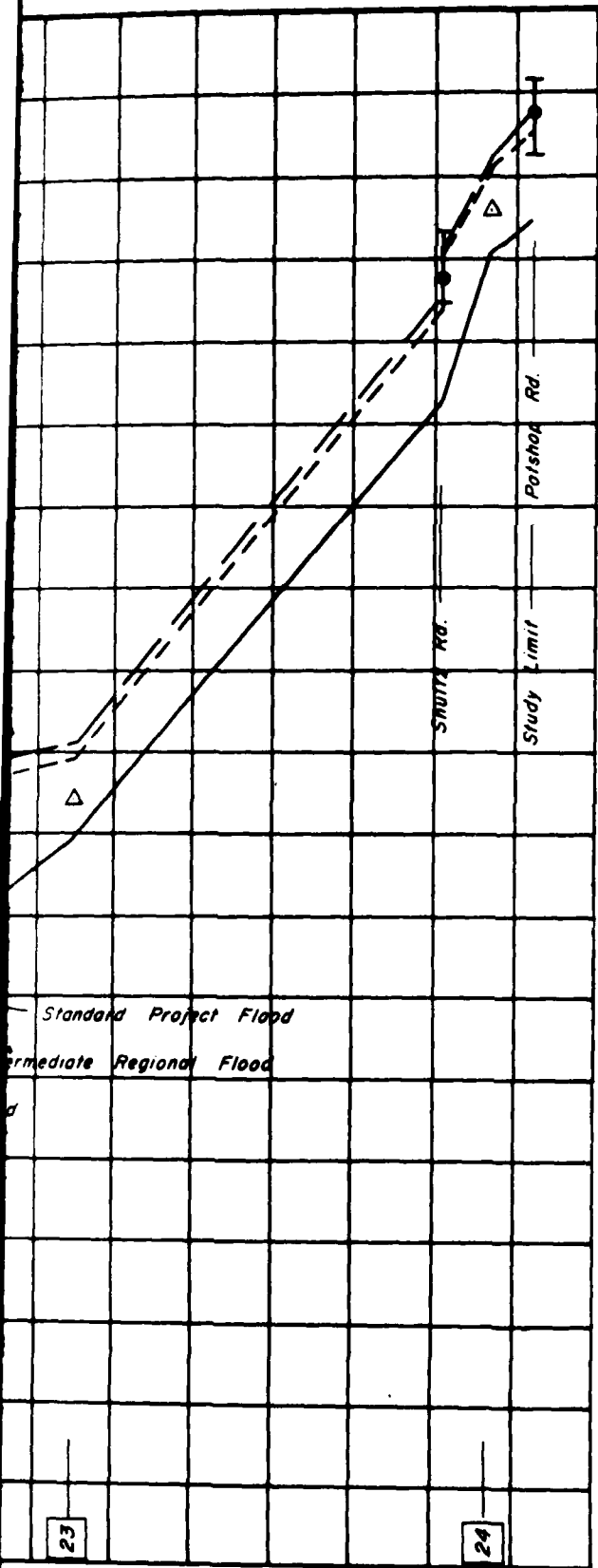


LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Low Bank
- Cross Section

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 HIGH WATER PROFILES
 WEST BRANCH STONY CREEK



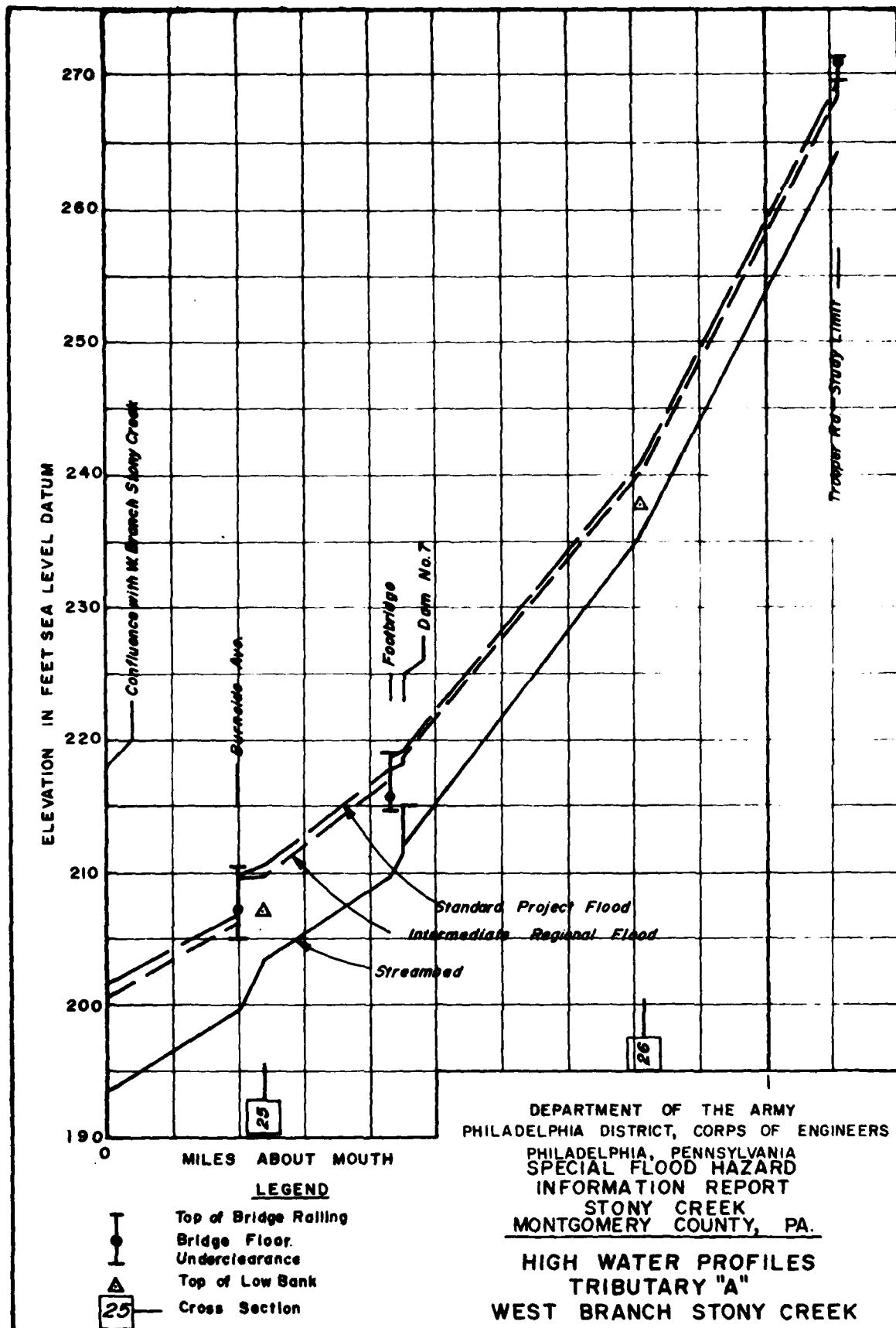


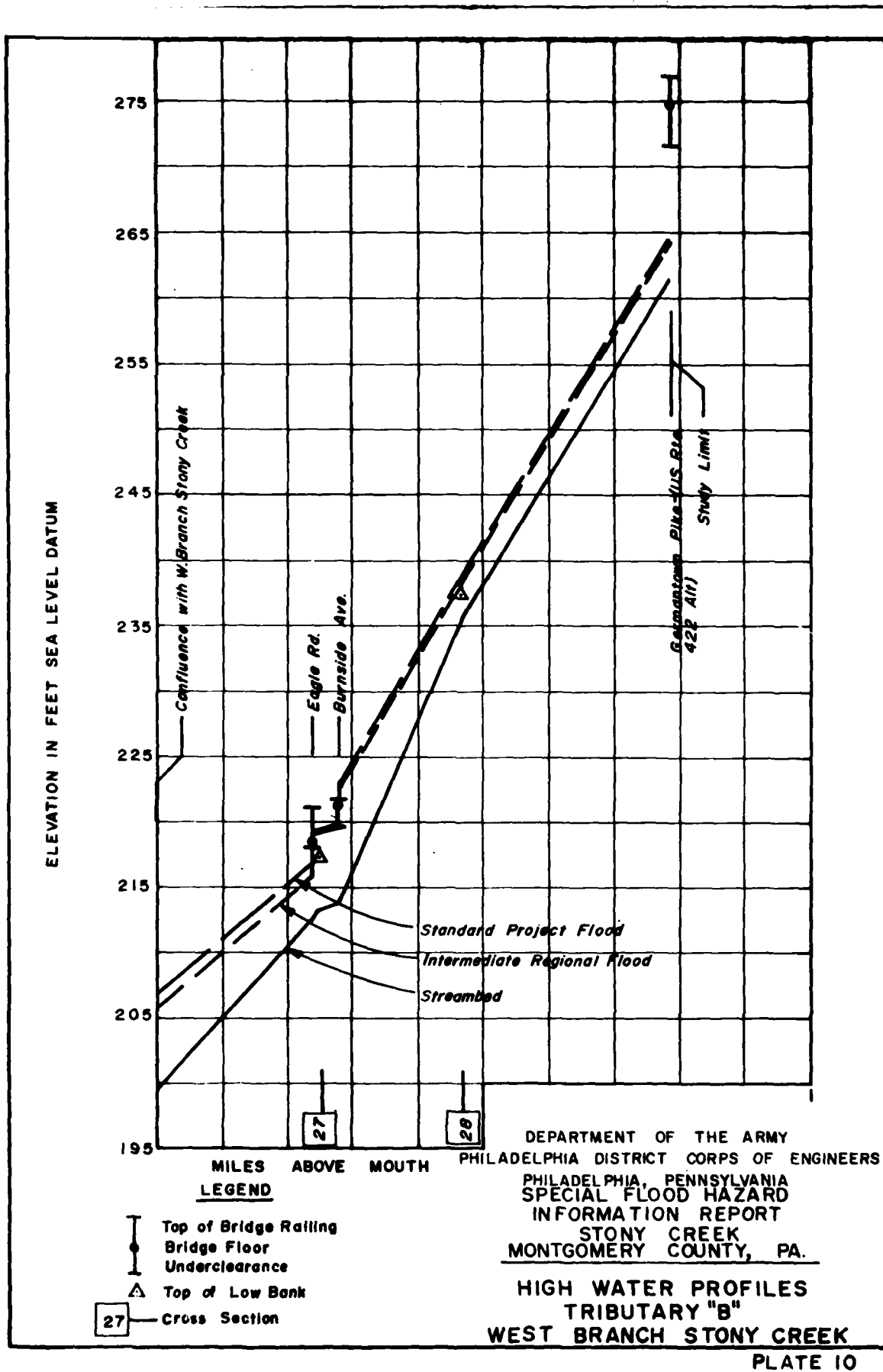
LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Low Bank
- 21 — Cross Section

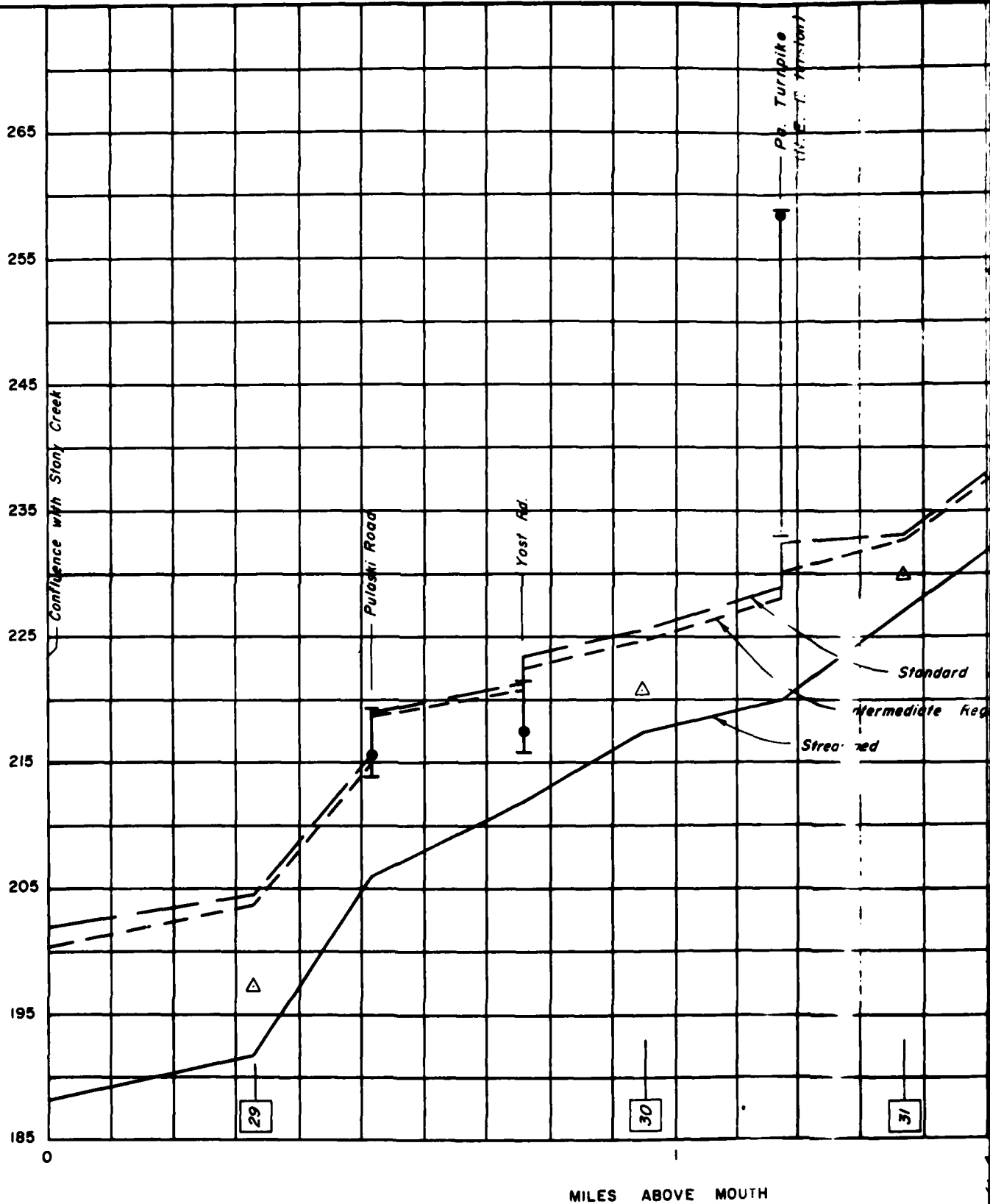
DEPARTMENT OF THE ARMY
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 INFORMATION REPORT
 STONY CREEK

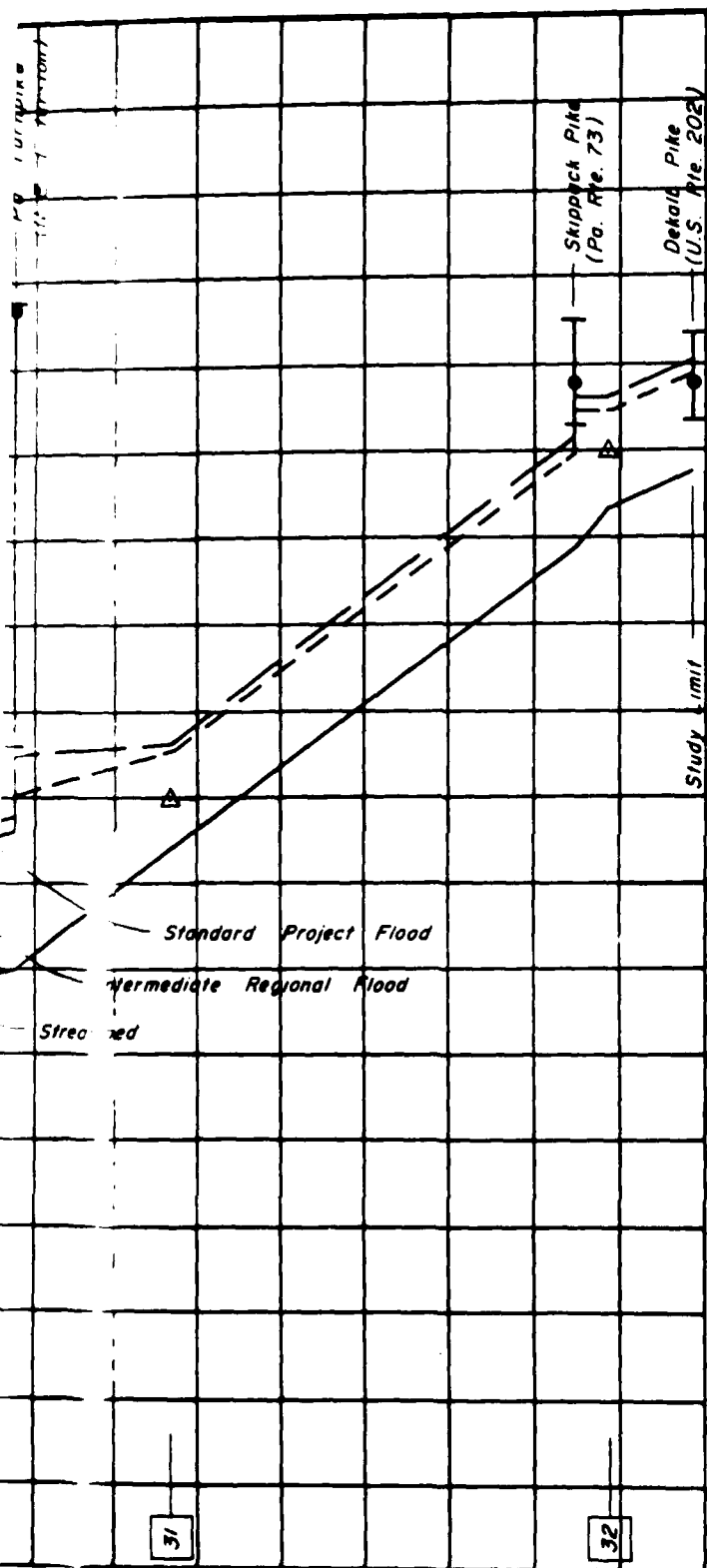
MONTGOMERY COUNTY, PA
 HIGH WATER PROFILES
 WEST BRANCH STONY CREEK





ELEVATION IN FEET SEA LEVEL DATUM



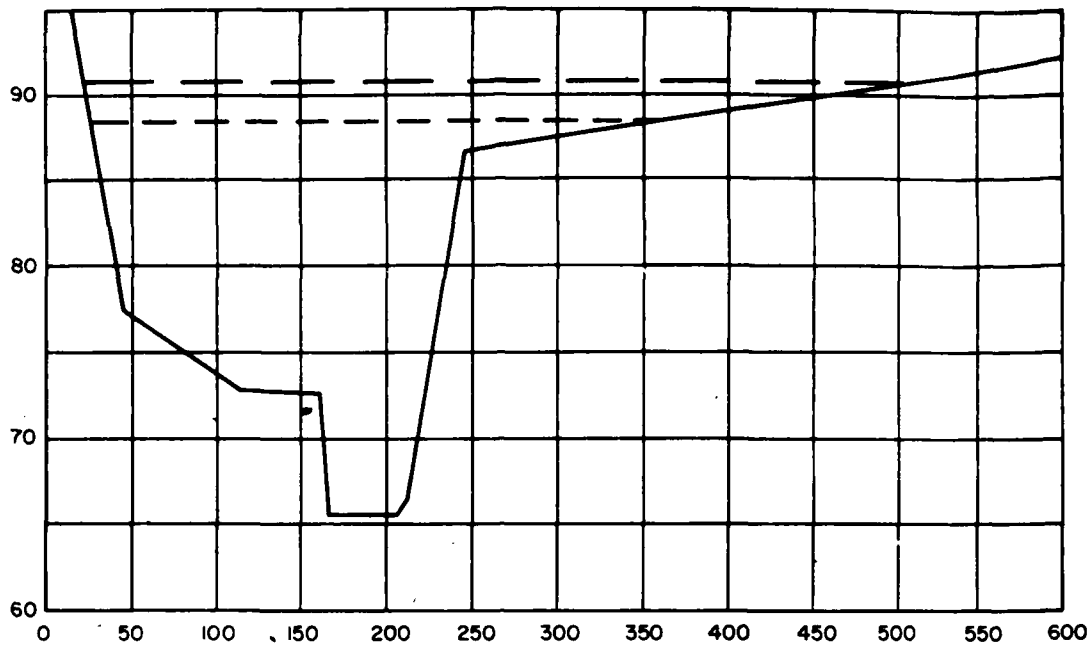


LEGEND

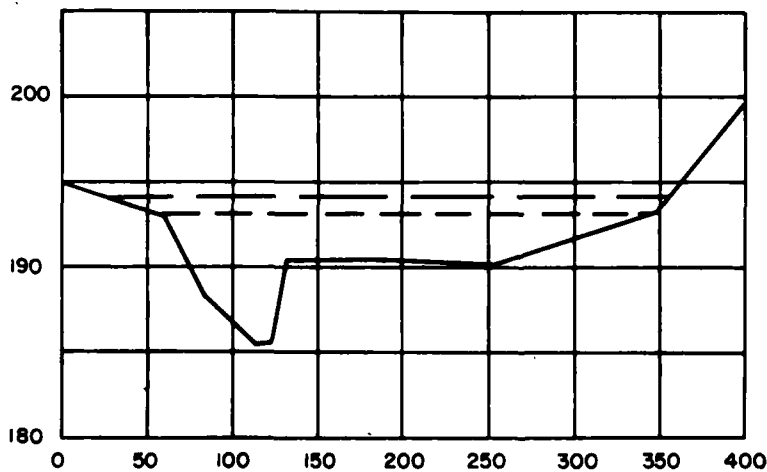
- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Low Bank
- 29 — Cross Section

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 INFORMATION REPORT
 STONY CREEK
MONTGOMERY COUNTY, PA
 HIGH WATER PROFILES
 TRIBUTARY NO. 2
 STONY CREEK

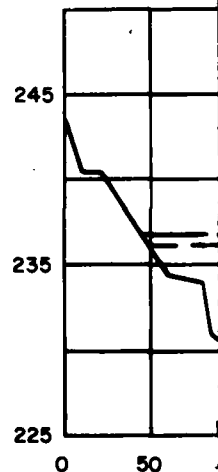
ELEVATION IN FEET SEA LEVEL DATUM



CROSS SECTION NO. 2
MILE 0.59
STONY CREEK



CROSS SECTION NO. 11
MILE 4.59
STONY CREEK



CROSS SECTION NO. 12
MILE 5.59
STONY CREEK

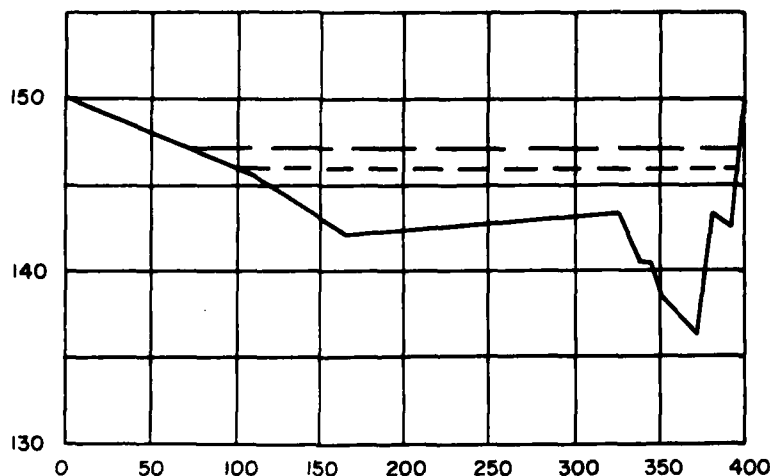
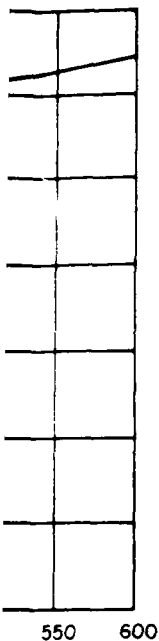
HORIZONTAL DISTANCE IN FEET

LEGEND

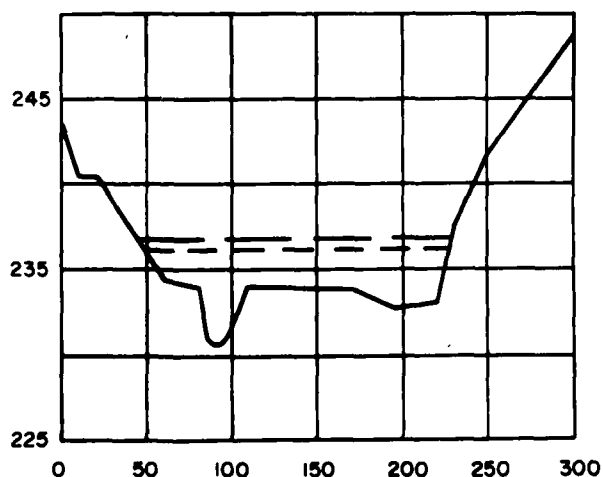
- Standard Project Flood
- Intermediate Regional Flood
- Ground Line

NOTES:

1. The 26 Cross Sections on Stony Creek & its Tributaries are in the file at the Philadelphia District, Corps of Engineers, & request.
2. Cross Sections are taken looking downstream.



CROSS SECTION NO. 7
MILE 2.80
STONY CREEK



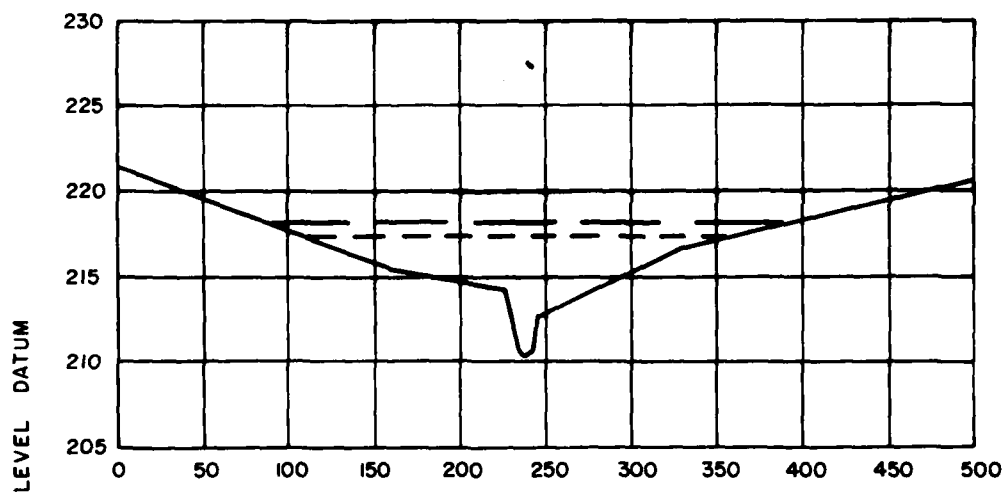
CROSS SECTION NO. 21
MILE 2.64
WEST BRANCH STONY CREEK

STANCE IN FEET

on Stony Creek & its Tributaries not shown in this report are on
District, Corps of Engineers, & are available for inspection upon
ken looking downstream.

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SELECTED CROSS SECTIONS

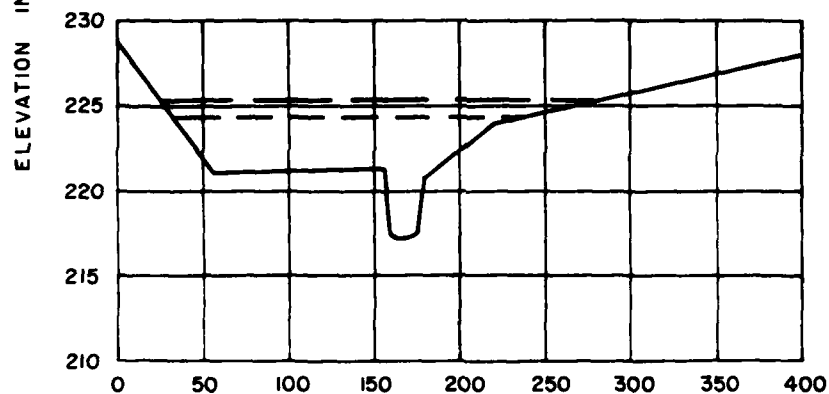


CROSS SECTION NO. 16

MILE 2.19

TRIBUTARY NO. 1

STONY CREEK



CROSS SECTION NO. 30

MILE 0.95

TRIBUTARY NO. 2

STONY CREEK

HORIZONTAL DISTANCE IN FEET

NOTE:

For notes see Plate 18

LEGEND

- — — Standard Project Flood
- - - Intermediate Regional Flood
- — — Ground Line

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SELECTED CROSS SECTIONS

END

DATE
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10-81

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