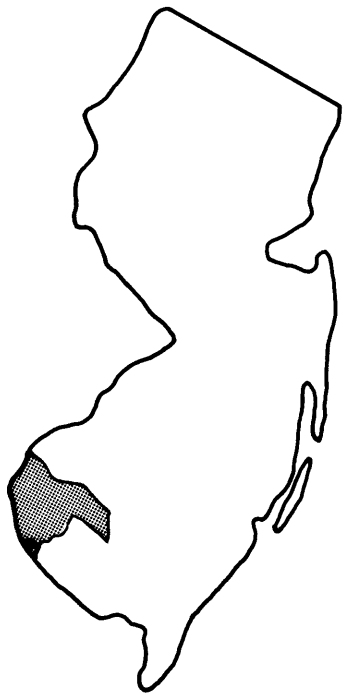
FLOOD INSURANCE STUDY

TOWNSHIP OF LOWER ALLOWAYS CREEK, NEW JERSEY
SALEM COUNTY



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FLOOD INSURANCE STUDY
TOWNSHIP OF LOWER ALLOWAYS CREEK, NEW JERSEY

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Township of Lower Alloways Creek, Salem County, New Jersey, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Lower Alloways Creek to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the New Jersey Department of Environmental Protection, Division of Water Resources, Bureau of Flood Plain Management for the Federal Emergency Management Agency, under Contract No. S-90022. This work was completed in October 1980. The hydrologic and hydraulic analyses for this study were conducted by Tippetts-Abbett-McCarthy-Stratton, under subcontract to the New Jersey Department of Environmental Protection, Division of Water Resources, Bureau of Flood Plain Management.

1.3 Coordination

On November 10, 1977, an initial Consultation and Coordination Officer's (CCO) meeting, attended by representatives of the Township of Lower

Alloways Creek, the FEMA and New Jersey Department of Environmental Protection, Division of Water Resources, Bureau of Flood Plain Management (NJDEP - the study contractor), was held to explain the nature and purpose of the study, the scope and limits of the work, as well as to obtain flood information concerning the community. The NJDEP served as the State Coordinating Agency for this study. A search for basic data was made at all levels of government. Contact was made with the Philadelphia District of the U. S. Army Corps of Engineers (COE).

On May 26, 1982, a final CCO meeting, attended by representatives of the Township of Lower Alloways Creek, the FEMA, the study contractor and Tippetts-Abbett-McCarthy-Stratton (TAMS), was held to review the results of the study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Lower Alloways Creek, Salem County, New Jersey. The area of study is shown on the Vicinity Map (Figure 1).

The Delaware River, for its entire length within the township, was studied by detailed methods. Delaware Bay, within the township was studied by detailed methods. Alloways Creek, from its confluence with the Delaware River to a point 65 feet upstream of Salem-Hancocks Bridge Road, was also studied by detailed methods. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through October 1985.

Maskells Mill Pond and Stow Creek and its tributaries were studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FEMA.

2.2 Community Description

The Township of Lower Alloways Creek is located in southwestern New Jersey. The township was originally a part of the Township of Monmouth. Lower Alloways Creek is bordered by the Township of Quinton to the northeast, the Townships of Stow Creek and Greenwich to the southeast, the Delaware River and Bay to the west and southwest, and the City of Salem and the Township of Elsinboro to the north.

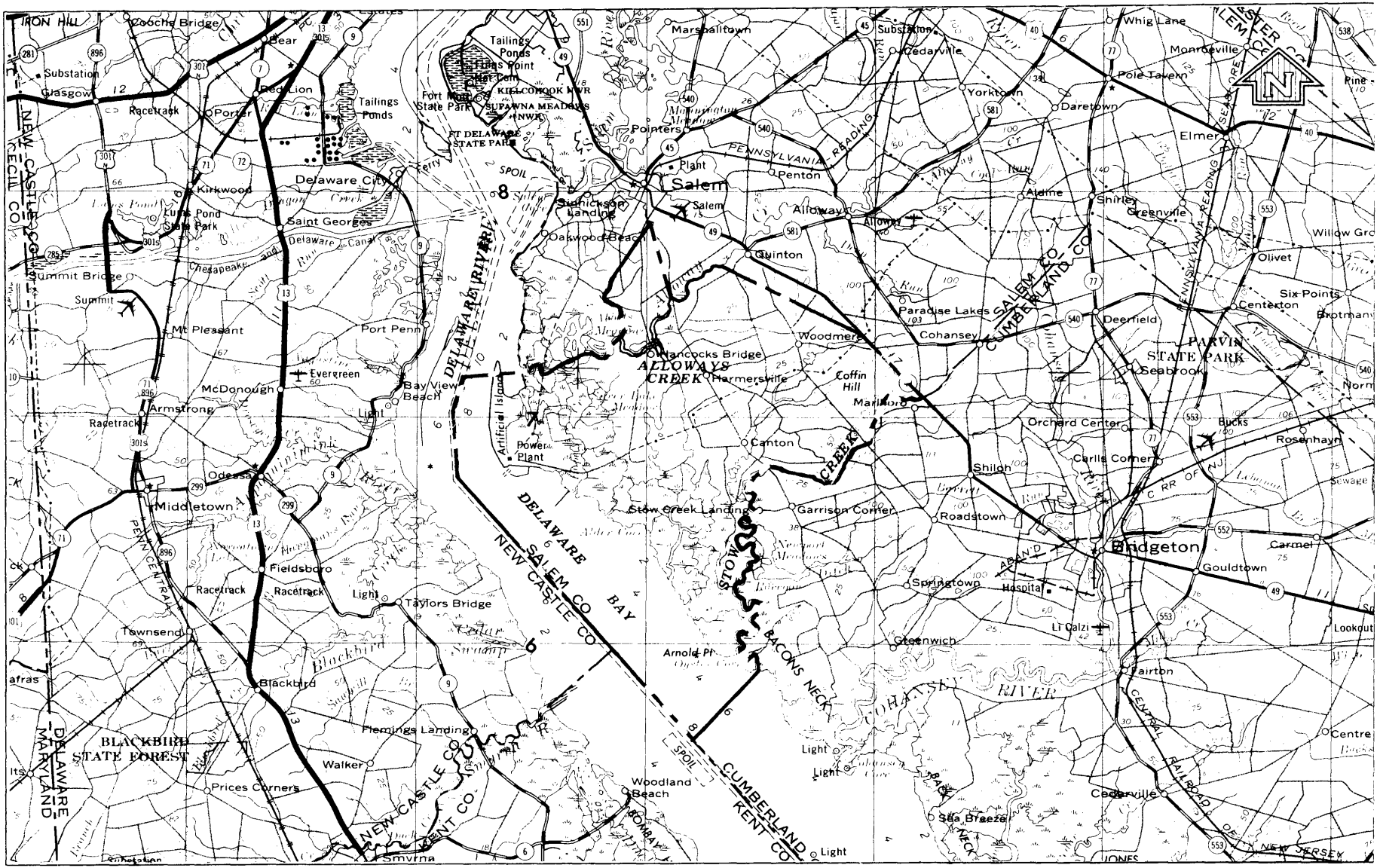


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF LOWER ALLOWAYS CREEK, NJ
(SALEM CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

There are two areas of population concentration in Lower Alloways Creek located at Hancocks Bridge and at Canton.

The 1980 population of the township was 1,547, an increase of 10.5-percent over the 1970 population of 1,400 (Reference 1). It is unlikely that substantial new growth will occur within the township since much of the land area is unsuited for development. Most of the southern and western portions of the town are wetlands, with the eastern portion being undeveloped wetland. Farming occupies most of the land suitable for development. The topography of the township is flat, with most elevations being less than 10 feet.

Three major drainage systems are located within the township; the eastern watershed contributing to the Stow Creek basin, the northern watershed contributing to the Alloways Creek basin, and the tidal marshland which drains into the Delaware River and Bay.

The climate in the Township of Lower Alloways Creek is influenced by its proximity to the Atlantic Ocean and the Delaware Bay. The area is characterized by longer summers and milder winters than more inland regions of the same latitude. The average annual temperature is 54 degrees Fahrenheit. The average annual precipitation is approximately 45 inches and is evenly distributed throughout the year.

2.3 Principal Flood Problems

Areas of tidal marsh, located in the southern portion of the township, are subject to flooding. Flooding in the northern portion of the community generally occurs within close proximity to the streams.

The low-lying areas of the township are subject to inundation by high tides from the Delaware River and Bay. Extreme high tides would flood these lowlands to the same elevation as reached in the Delaware River and Bay. Although floods may occur during any season of the year, flooding is most likely to take place during the late summer and fall as a result of hurricanes and tropical storms moving north along the Atlantic coastline.

The storm of November 25, 1950 resulted in a tide of 8.8 feet at Greenwich piers, Cumberland County, the high tide of record for the area. Flooding from a storm occuring on October 23, 1878 had a magnitude approximately that of the 1950 flood.

The storm of March 6, 1962 had a duration which exceeded 60 hours and caused damage to beaches, dunes and shore communities. The high tide from the 1962 storm inundated almost all the marshlands in the township, flooded highways and streets and interrupted communications. A high tide of 7.9 feet was recorded at Lewes, Delaware for the 1962 storm.

2.4 Flood Protection Measures

Non-structural flood protection measures are being utilized to aid in the prevention of future flood damage. These are in the form of land use regulations adopted from the township's zoning ordinance in which the flood plain is described as "the limits of those areas subject to intermediate regional tidal flood, as defined by the U. S. Army Corps of Engineers, and as delineated on the zoning map" (Reference 2). Wetlands have been zoned for flood plain conservation and will serve as a wide buffer zone to reduce the impact of coastal storms.

Structural measures have also been utilized to aid in the prevention of future flood damage. The following protective measures have been proposed or are being undertaken:

1. An existing tide gate on Alloways Creek, just east of Salem-Hancocks Bridge Road, was repaired by the Soil Conservation Service.

2. An earth bank was constructed along the southern side of Alloways Creek extending west from Salem-Hancocks Bridge Road to the confluence of Bass Creek. The bank would serve as protection for the Village of Hancocks Bridge.

3. The construction of a pumping station, with a capacity of 3,200 gallons per minute (GPM), in the vicinity of the Poplar Street - Main Street intersection. This station would pump water impounded in the low area behind a proposed dike.

4. The construction of an embankment south of Silver Lake Meadow, extending west to east from Alloways Creek Neck Road to Fogg Road, with a gate at the north end of the Silver Lake Fork tributary, located approximately 2,800 feet southwest of the Silver Lake Road - Fogg Road intersection.

5. The original tide gates at Stow Neck Road still protect the areas upstream from Stow Neck Road along the tributary to Stow Creek running south from Maskells Mill Pond.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one-percent chance of annual occurrence) in any 50-year period is about 40 percent (four in ten) and, for any 90-year period, the risk increases to about 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

Flood-flow frequency data for Alloways Creek were based on statistical analysis of streamflow records following the standard log-Pearson Type III procedure as outlined by the Water Resources Council, and regional flow equations which relate basin characteristics to peak flood discharges as presented in Special Report 38 (References 3 and 4). Both methods were applied to streamflow records and other pertinent data obtained at the gaging station located on Alloways Creek at Alloways, New Jersey. This gage has a relatively short period of record, from 1953 through 1978. Therefore, the discharges obtained using the log-Pearson Type III method were weighted with values from Special Report 38 (Reference 4). The weighted data represent the peak discharge-frequency for floods with recurrence intervals of 10-, 50- and 100-years and were plotted on log-probability paper. The 500-year peak discharge was estimated by a straight-line extrapolation of the previously mentioned graph.

Peak discharge-frequency values at various points of interest downstream of the gaging station were obtained by transposing the weighted data, using the discharge-drainage area relationship, $Q = kA^{0.81}$, where Q is

the discharge in cubic feet per second (cfs), k is the constant of proportionality, and A is the drainage area in square miles.

A summary of the drainage area-peak discharge relationships for Alloways Creek is shown in Table 1, "Summary of Discharges".

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
ALLOWAYS CREEK					
At confluence with Delaware River	59.6	2,740	4,520	5,450	7,800
At Salem-Hancocks Bridge Road	51.6	2,440	4,020	4,850	6,600
At gaging station at Alloway (No. 01483500)	21.9	1,220	2,010	2,420	3,490

Tidal frequency-elevation relationships were determined for the Delaware River and Bay in the vicinity of the township for the floods of selected recurrence intervals. Analyses of the tide elevations were based on the results of COE House Document No. 348 (Reference 5). This statistical analyses of recorded levels resulted in the tidal frequency-elevation distance relationships which were applied to the Township of Lower Alloways Creek. Tide height measurements have been recorded continuously since 1900 (except for several months during 1921, 1960, 1968 and 1971) at Philadelphia. Measurements at Lewes were recorded sporadically between 1919 and 1949 and continuously since 1953. Tide measurements at Reedy Point (entrance to Chesapeake and Delaware Canal) were recorded continuously between 1956 and 1964 and then recorded sporadically until 1966.

A summary of the elevation-frequency relationships for the Delaware River and Bay are shown in Table 2, "Summary of Elevations".

TABLE 2 - SUMMARY OF ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
DELAWARE RIVER				
At confluence of Alloways Creek	7.0	8.2	8.9	13.2
DELAWARE BAY				
At confluence of Stow Creek	6.9	8.1	8.8	12.9

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of Alloways Creek along with the hydraulic analyses of the shoreline characteristics of the Delaware River and Bay were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross sections for the backwater analyses of Alloways Creek were obtained from aerial photographs and field survey measurements (Reference 6). They were located at close intervals above and below bridges in order to compute the significant backwater effects of the structures.

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgement and based on field observations of the stream and flood plain areas. The channel "n" values for Alloways Creek range from 0.023 to 0.035 and the overbank "n" values range from 0.075 to 0.080.

Water-surface elevations of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 step-backwater computer program (Reference 7). Mean sea level was used as the starting water-surface elevation for Alloways Creek.

Tidal frequency-elevation relationships were determined for the Delaware River and Bay in the vicinity of the Township of Lower Alloways Creek. These high tide elevations were developed from data presented by the COE in House Document No. 348 (Reference 5). Tidal elevations for each of the selected recurrence intervals were superimposed on the computed water-surface profiles. The tidal elevations were higher for each recurrence interval and did not coincide with those obtained from the hydraulic computations for Alloways Creek. Consequently, only the tidal elevations for the selected recurrence intervals were shown on the profiles and maps.

The areas studied by approximate methods were also subject to tidal flooding from the Delaware River and Bay. Analyses of these areas were based on the application of the 100-year high tide elevation and the utilization of the boundaries as shown on the Flood Hazard Boundary Map for the Township of Lower Alloways Creek (Reference 8).

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3).

All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in the study are shown on the maps.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are valid only if hydraulic structures remain unobstructed and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. The 100- and 500-year boundaries were delineated using photogrammetric plotting on specially prepared topographic maps of the study area at a scale of 1:2,400 (Reference 9). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the areas studied by approximate methods, the flood boundaries were determined by plotting the 100-year tidal flood elevations obtained for the Delaware River and Bay on the topographic maps referenced above and utilizing the Flood Hazard Boundary Map for the Township of Lower Alloways Creek (Reference 8).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and

increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies. However, the State of New Jersey has established criteria limiting the increase in flood heights to 0.2 foot. Thus, a floodway having no more than a 0.2-foot surcharge has been delineated for this study.

The floodway presented in this study was not computed by any of the standard encroachment methods, since the computed 100-year flood on Alloways Creek was contained in the main channel and already represented the maximum possible encroachment. The floodway was established at the channel bank stations at each cross section. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 3). Portions of the floodway for Alloways Creek extend beyond the corporate limits.

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 0.2 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "With Floodway" elevations presented in Table 3 for certain downstream cross sections of Alloways Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Alloways Creek								
A	230	345/50[2]	12,151	0.5	8.8	0.0[3]	0.0	0.0
B	2,020	305/150[2]	6,318	0.9	8.8	0.0[3]	0.0	0.0
C	3,835	370/175[2]	6,529	0.8	8.8	0.0[3]	0.0	0.0
D	9,990	420/190[2]	5,071	1.1	8.8	0.1[3]	0.1	0.0
E	11,740	375/175[2]	4,025	1.4	8.8	0.1[3]	0.1	0.0
F	16,235	300/145[2]	2,902	1.8	8.8	0.2[3]	0.2	0.0
G	19,665	315/165[2]	2,440	2.1	8.8	0.4[3]	0.4	0.0
H	22,398	320	2,417	2.1	8.8	0.6[3]	0.6	0.0
I	24,038	285	2,258	2.3	8.8	0.7[3]	0.7	0.0
J	25,770	255	2,091	2.5	8.8	0.9[3]	0.9	0.0
K	26,855	225	2,077	2.5	8.8	1.0[3]	1.0	0.0
L	27,015	265	2,884	1.8	8.8	1.1[3]	1.1	0.0

[1]Feet above confluence with Delaware River

[2]Width/width within corporate limits

[3]Elevation computed without consideration of backwater effects from Delaware River

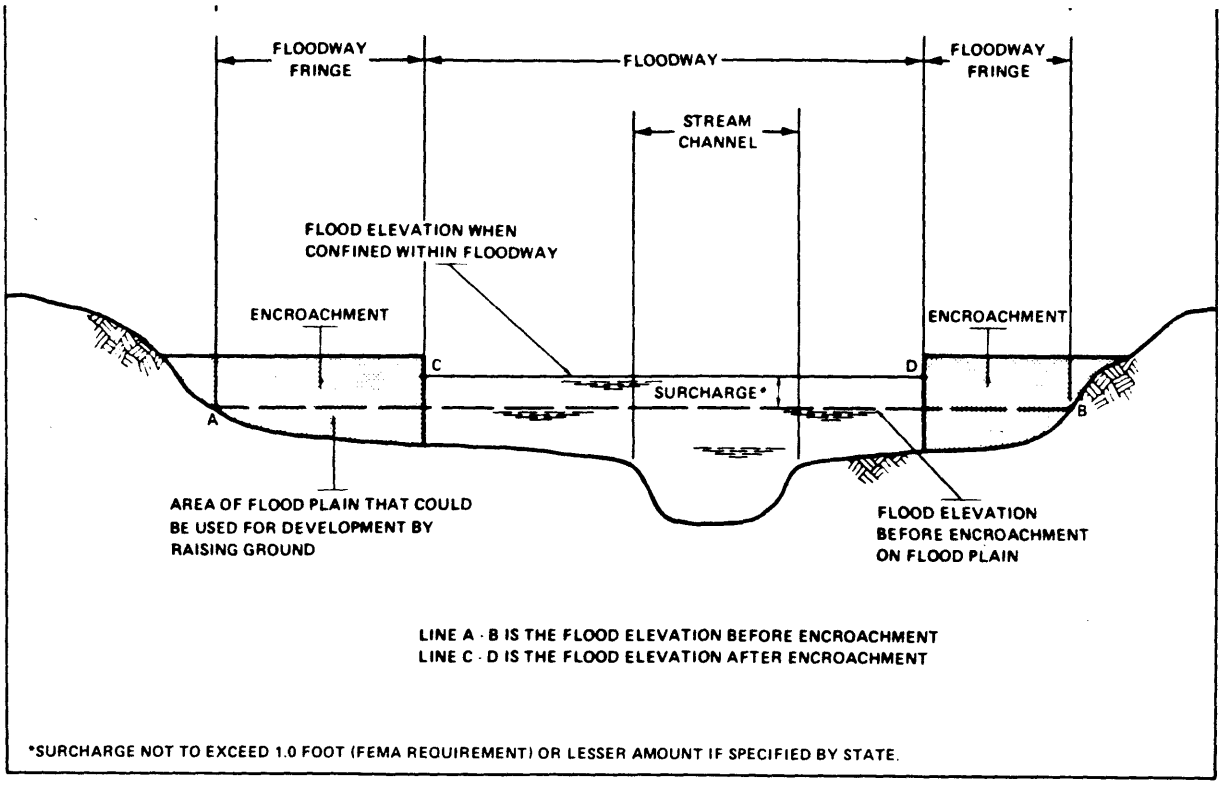
TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF LOWER ALLOWAYS CREEK, NJ
(SALEM CO.)

FLOODWAY DATA

ALLOWAYS CREEK



FLOODWAY SCHEMATIC

Figure 2

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Township of Lower Alloways Creek.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses or waterbodies having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

In tidal areas, reaches are limited to the distance for which the difference between the 10- and 100-year flood elevations does not vary more than 1.0 foot. Using these criteria, the entire shoreline qualifies as one reach whose flooding source is the Delaware River and Bay. The Alloways Creek shoreline is one reach whose flooding source is the Delaware River. The locations of these reaches are shown on the Flood Insurance Rate Map.

The locations of the reaches determined for the flooding sources of the Township of Lower Alloways Creek are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 4).

5.2 Flood Hazard Factors

The FHF is the FEMA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Township of Lower Alloways Creek was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Delaware River and Delaware Bay Reach 1	01,02,03, 04,05,06, 07,08,09, 10,11,12, 13,17,20	-1.9	-0.7	+4.2	020	A4	9
Delaware River (Backwater affecting Alloways Creek)	05,06	-1.9	-0.7	+4.3	020	A4	9

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF LOWER ALLOWAYS CREEK, NJ
(SALEM CO.)

FLOOD INSURANCE ZONE DATA

DELAWARE RIVER AND DELAWARE BAY

Zone A4: Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.

Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 4, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the Township of Lower Alloways Creek.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Township of Lower Alloways Creek is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FEMA.

6.0 OTHER STUDIES

The COE conducted a study of high tide frequency-elevations for the Delaware River and Bay, known as House Document No. 348, dated 1964 (Reference 5). This report contains the most up-to-date tidal frequencies for the Delaware River and Bay and has been congressionally approved and adopted for planning purposes.

Flood Insurance Studies have been prepared for the City of Delaware City and the Town of Leipsic on the Delaware side of the Delaware River (References 10 and 11). Flood Insurance Studies for the City of Salem and the Township of Elsinboro are currently being prepared (References 12 and 13). The results of the previously mentioned studies will be in complete agreement with the results of this study.

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 19-100, New York, New York 10278.

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BACKWATER FROM DELAWARE RIVER

ZONE A4

CONFLUENCE WITH DELAWARE RIVER

CORPORATE LIMITS

CORPORATE LIMITS

SALEM - HANCOCKS BRIDGE ROAD

LIMIT OF FLOODWAY

ELEVATION IN FEET (NGVD)

20
10
0
-10
-20
-30
-40

A B C D E F G H I J K L

0 4 8 12 16 20 24 28

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH DELAWARE RIVER

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

ALLOWAYS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF LOWER ALLOWAYS CREEK, NJ
(SALEM CO.)

01P