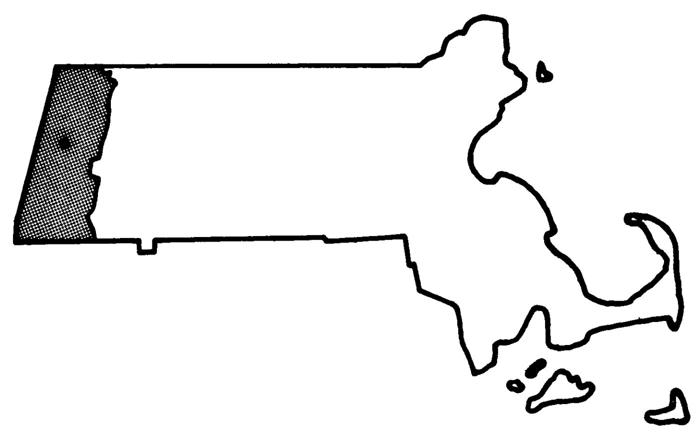
FLOOD INSURANCE STUDY

TOWN OF DALTON, MASSACHUSETTS
BERKSHIRE COUNTY



JANUARY 5, 1982

Federal Emergency Management Agency

COMMUNITY NUMBER - 250021

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FLOOD INSURANCE STUDY
TOWN OF DALTON, MASSACHUSETTS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Dalton, Berkshire County, Massachusetts, 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 Dalton 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 Soil Conservation Service for the Federal Emergency Management Agency, under Inter-Agency Agreement No. IAA-H-17-78, Project Order No. 4. This work was completed in November 1979.

1.3 Coordination

On December 16, 1977, community base map selection and the identification of streams requiring detailed study were accomplished at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of the FEMA, the the Town of Dalton, and the Soil Conservation Service (SCS), the study contractor. During the course of the study, flood profiles and boundaries and floodway delineations were discussed with community officials.

An intermediate CCO meeting to discuss preliminary study results and specifically proposed floodways was held in Dalton on October 9, 1979.

On January 22, 1981, the results of the study were reviewed at a final CCO meeting held with representatives of the FEMA, the town, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Dalton, Berkshire County, Massachusetts. The area of study is shown on the Vicinity Map (Figure 1).

The East Branch Housatonic River, Wahconah Falls Brook, Anthony Brook, and Sackett Brook from Kirchner Road to the downstream corporate limits were studied by detailed methods. The areas of detailed study were selected with priority given to all known flood hazards and areas of projected development and proposed construction for the next five years, through November 1984.

Cleveland Brook, Walker Brook, Weston Brook, Barton Brook, Hathaway Brook from Washington Road to the upstream corporate limits, the remaining portions of Sackett Brook, and several unnamed streams 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.

2.2 Community Description

The Town of Dalton is located in the west-central portion of Berkshire County in western Massachusetts, approximately 40 miles east of Albany, New York, and approximately 75 miles northwest of Hartford, Connecticut. Dalton is bordered by the City of Pittsfield and the Town of Lanesborough to the west, the Town of Cheshire to the north and west, the Towns of Windsor and Hinsdale to the east, and the Town of Washington to the south. The incorporated area of Dalton is 39.86 square miles, and the 1975 state census listed the population as 7,504.

The major stream in Dalton is the East Branch Housatonic River, which enters the town from Hinsdale. The river flows northwest and then west to Center Pond, and from there flows west into Pittsfield. Wahconah Falls Brook and Cleveland Brook are the major tributaries to the East Branch Housatonic River and both serve as outlets for reservoirs. Wahconah Falls Brook flows southwest from Windsor Reservoir into Center Pond. Cleveland Brook flows west from Cleveland Brook Reservoir into the East Branch Housatonic River slightly upstream of Center Pond. At the Hinsdale-Dalton corporate boundary, the drainage area of the East Branch Housatonic River is 26 square miles, and at the Pittsfield-Dalton

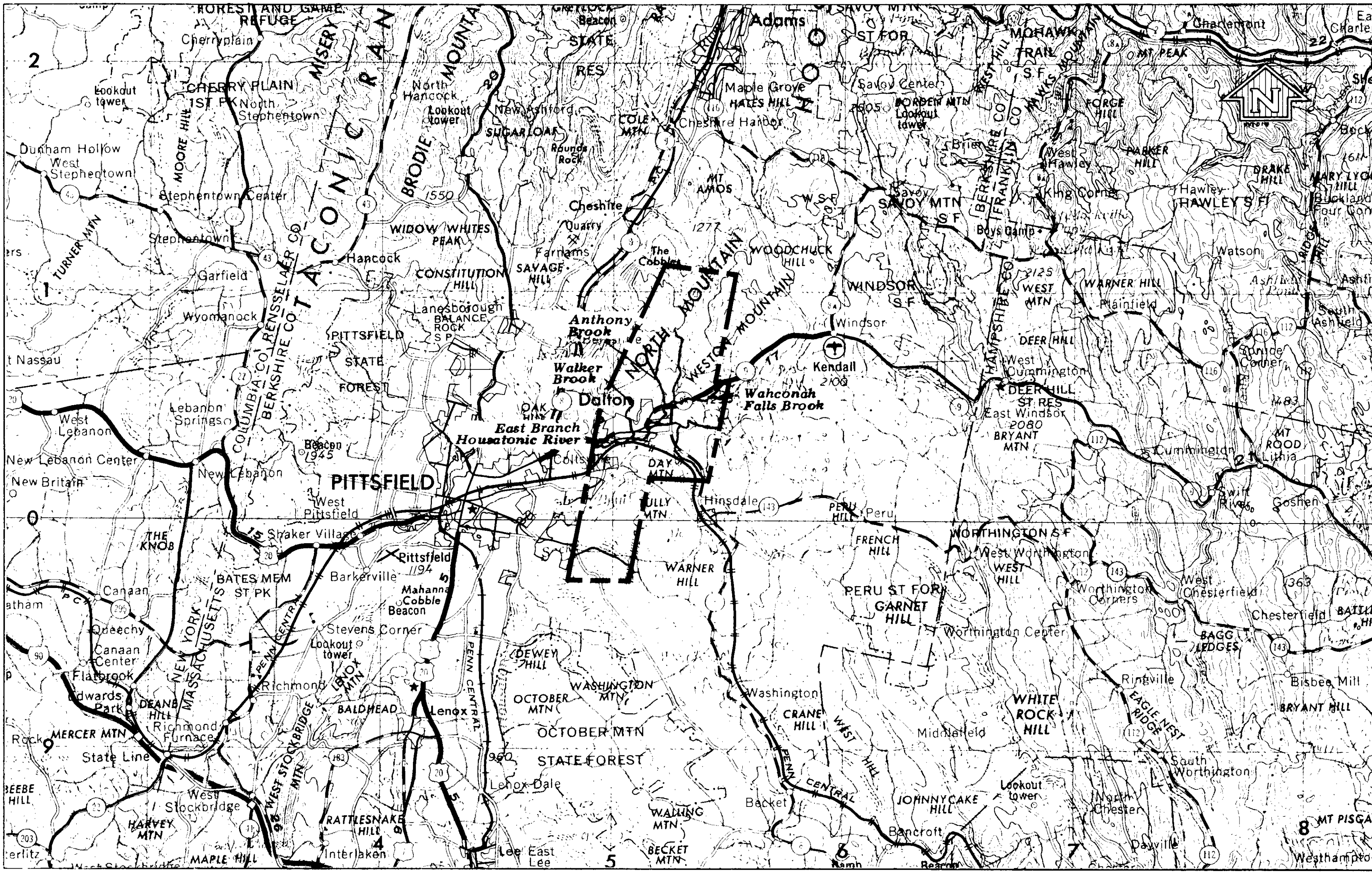


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

corporate boundary the drainage area is 57.1 square miles. The headwaters of the streams are hilly and steep.

Sackett Brook, which is a tributary of the Housatonic River, enters Dalton from Hinsdale and flows west to the Pittsfield coporate boundary. The Sackett Brook watershed is part of the Pittsfield water-supply system. There are two storage reservoirs on Sackett Brook in the upper reaches. Hathaway Brook is a small tributary to Sackett Brook. Both Sackett Brook and Hathaway Brook deposit an alluvial fan in the vicinity of Kirchner Road and Washington Mountain Road.

The climate of Dalton is typical of the North Temperate Zone. The mean annual temperature is approximately 46 degrees Fahrenheit (°F). The normal growing season of nearly 140 days usually extends from May through September. The average annual precipitation is 45 inches, of which approximately 27 inches is runoff. The average annual snowfall is approximately 75 inches and may occur in appreciable amounts from November to April each year.

Present land use is approximately 76 percent forest, nine percent urban, 12 percent open or agriculture, one percent water and wetland, and two percent other uses. The Town of Dalton is a commercial and residential town, with industries located along the East Branch Housatonic River. Paper maufacturing is the primary industry. Center Pond has been used for both recreational and industrial purposes, but at present, little use is made of it due to extensive sedimentation.

2.3 Principal Flood Problems

Flooding can occur annually as a result of melting snows and spring rains, with more localized flooding caused by summer thunderstorms. The major floods, however, have been the result of multiple-day rainfalls. Usually, the more serious flooding is a result of large volumes of runoff which exceeds the storage of the reservoirs and the natural storage of the headwater areas.

Dalton experienced flooding in 1927, 1936, 1938, 1948-49, 1969, and 1973. The floods of September 1938 (approximate 50-year flood) and January 1, 1949 (approximate 40-year flood) were the most recent severe floods.

Historically, the town has experienced infrequent but severe flooding resulting in substantial municipal and industrial damage. This is principally due to concentrated industrial development along the East Branch Housatonic River, several road crossings with utilities, and a series of river dams.

Continued deposition of sediment in Center Pond is increasing flood stages at Main Street and through the pond. The accumulation of sediment behind the dam and through the bridge opening reduces the size of the opening, thus increasing flood levels for any given discharge.

Figure 2 shows flooding in 1948-1949 at one location in the Town of Dalton.

Figure 2 - Flood photograph of the 1948-1949 New Year flood looking across the East Branch Housatonic River at a footbridge at the Bay State Mill.

2.4 Flood Protection Measures

To date, there are no significant or extensive flood protection structures in the Town of Dalton. Center Pond does provide for some floodwater storage but does not significantly reduce downstream flood damage.

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 relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

A U. S. Geological Survey (USGS) gaging station located on the East Branch Housatonic River in the Coltsville section of Pittsfield has a 42-year length of record and was used to define the discharge-frequency relationship for the river. Values of the 10-, 50-, 100-, and 500-year peak discharges were obtained from a log-Pearson Type III distribution of annual peak flow data (Reference 1). The discharge-frequency relationships for the other streams studied by detailed methods were determined from methodology developed by the SCS that analyzes anticipated rainfall and resulting runoff (Reference 2).

The log-Pearson Type III distribution analysis of the stream gage records was used to calibrate the watershed model with a drainage area of 57.1 square miles. The watershed was divided into areas of relatively uniform characteristics. An analysis of these areas' slope, soils, vegetative cover, land use, and stream channels was made to compute composite runoff curve numbers, times of concentration, and travel times. Storage-capacity and stage-discharge curves were computed for all significant reservoirs and natural valley storage areas.

The 10-, 50-, 100-, and 500-year synthetic storms were then flood routed through the upstream areas of the watershed using the SCS TR-20 computer program (Reference 3). The program computes surface runoff resulting from synthetic or natural rainstorms. It takes into account conditions having a bearing on runoff and routes the flow through stream channels and reservoirs. It combines the routed hydrograph with those from other tributaries and computes peak discharge, time of occurrence, and the water-surface elevation at selected cross sections and reservoirs.

Rainfall data for the various frequency storms were obtained from U. S. Weather Bureau publications (References 4 and 5). A 48-hour storm distribution was used for all frequency storms. The New Year 1948-1949 flood was used to test the watershed model by comparing the frequency-discharge relationship with the stream gage record analysis.

A summary of drainage area-peak discharge relationships for the streams studied by detailed methods 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
EAST BRANCH HOUSATONIC RIVER					
At the downstream corporate limits	57.1	3,719	6,627	7,743	11,824
At Center Pond Dam	52.7	3,552	6,331	7,385	11,158
At Old Windsor Road	27.8	1,319	2,368	2,747	4,323
WAHCONAH FALLS BROOK					
At North Street	19.3	2,281	3,997	4,588	6,934
At Cleveland Street	16.5	2,154	3,777	4,334	6,553
ANTHONY BROOK					
At North Street	2.0	894	1,450	1,653	2,473
SACKETT BROOK					
At Washington Mountain Road	4.3	979	1,821	2,337	3,521
At Kirchner Road	3.0	671	1,265	1,629	2,474

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Cross sections were field surveyed and located at typical valley sections and restrictions such as roads, bridges, and dams. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Water-surface elevations for floods of the selected recurrence intervals were computed through the use of the SCS WSP-2 water-surface profile computer program (Reference 6). Starting water-surface elevations for the streams studied by detailed methods were determined using the slope/area method.

Channel roughness factors (Manning's "n") for the hydraulic computations were assigned on the basis of field inspection of channels and flood plains. The channel "n" values for all streams studied by detailed methods ranged from 0.035 to 0.050, and the overbank "n" values ranged from 0.050 to 0.100.

Sackett and Hathaway Brooks deposit a modified alluvial fan in the vicinity of Washington Mountain Road. The fan is modified from both road development and stream modification. Standard hydraulic analysis procedures are not appropriate for areas of unpredictable flow paths and sheet runoff. While a perennial flowing channel does exist, its capacity is minor compared to flood discharges.

Discharges for this portion of Sackett Brook were determined at the head of the fan and uniformly routed across the entire area subject to sheet flow between Washington Mountain Road and the Dalton-Pittsfield corporate boundary. Flood depths for the 100-year profile are between 1 and 3 feet. No flood profile was prepared for this segment of Sackett Brook.

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 dams and other flood control structures operate properly and do not fail.

Flood stages for the 100-year flood along the streams studied by approximate methods were determined from regional stage versus drainage area curves for Massachusetts and an analysis of the 100-year flood stages developed by the watershed models along the streams studied in detail (Reference 7).

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. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Reference 8). Aerial photographs taken in 1971 were also utilized in delineating the flood boundaries between cross sections (Reference 9). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

Flood boundaries for the streams studied by approximate methods were delineated using the topographic maps and aerial photographs referenced above.

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.

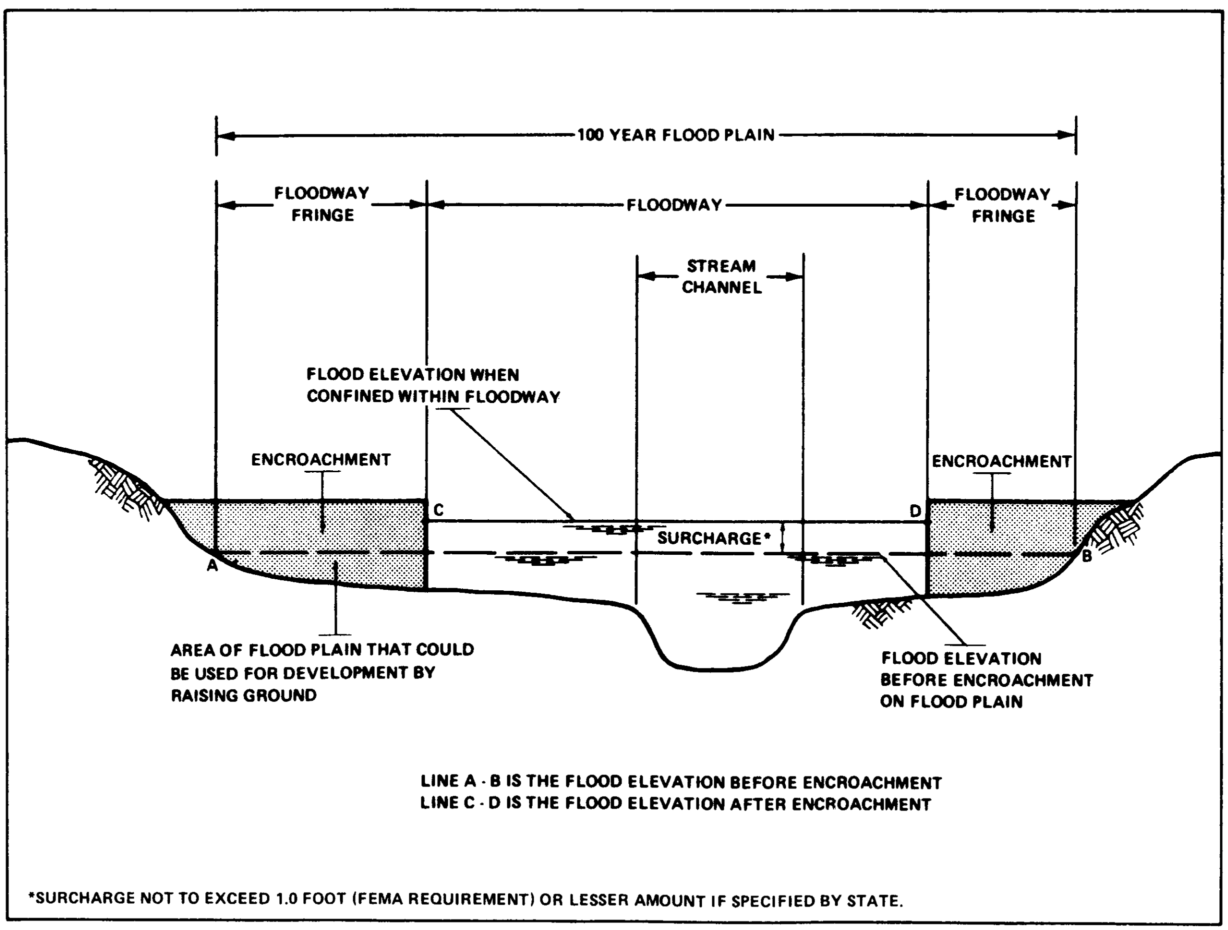
4.2 Floodways

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.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plains. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

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 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 3.



FLOODWAY SCHEMATIC Figure 3

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 (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
East Branch Housatonic River								
A	0	435	4,726	1.6	1,023.5	1,023.5	1,024.4	0.9
B	1,610	82	810	9.5	1,026.3	1,026.3	1,027.3	1.0
C	1,850	78	736	10.5	1,027.5	1,027.5	1,028.5	1.0
D	2,660	*	1,180	6.5	1,031.6	1,031.6	1,032.4	0.8
E	3,610	*	599	12.8	1,039.9	1,039.9	1,040.6	0.7
F	5,065	*	874	8.8	1,054.5	1,054.5	1,055.4	0.9
G	5,940	101	690	11.1	1,064.7	1,064.7	1,065.4	0.7
H	6,210	*	1,009	7.6	1,078.3	1,078.3	1,078.3	0.0
I	8,360	*	876	8.5	1,090.9	1,090.9	1,090.9	0.0
J	9,815	*	1,792	4.2	1,128.2	1,128.2	1,128.2	0.0
K	10,260	*	1,987	3.7	1,144.1	1,144.1	1,144.1	0.0
L	16,775	173	761	4.3	1,147.8	1,147.8	1,148.7	0.9
M	17,525	289	801	3.4	1,149.2	1,149.2	1,150.1	0.9
N	18,110	*	359	7.7	1,152.6	1,152.6	1,152.8	0.2
O	18,350	*	453	6.1	1,155.6	1,155.6	1,155.8	0.2
P	19,050	*	307	8.9	1,158.9	1,158.9	1,159.9	1.0
Q	20,232	*	327	8.3	1,171.8	1,171.8	1,172.1	0.3

[1]Feet above corporate limits

*Floodway coincident with channel banks

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

FLOODWAY DATA

EAST BRANCH HOUSATONIC RIVER

TABLE 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
East Branch Housatonic River (continued)								
R	20,640[1]	*	399	6.8	1,176.5	1,176.5	1,176.9	0.4
S	20,990[1]	*	352	7.7	1,180.3	1,180.3	1,181.0	0.7
T	22,815[1]	*	289	9.2	1,216.3	1,216.3	1,216.4	0.1
U	25,375[1]	*	249	10.6	1,273.7	1,273.7	1,274.1	0.4
V	25,980[1]	*	393	6.7	1,290.9	1,290.9	1,291.3	0.4
W	27,825[1]	*	240	10.8	1,318.6	1,318.6	1,319.5	0.9
Wahconah Falls Brook								
A	1,245[2]	194	1,198	3.8	1,145.9	1,142.8[3]	1,143.8	1.0
B	3,605[2]	178	650	7.1	1,150.8	1,150.8	1,151.8	1.0
C	4,005[2]	*	644	7.1	1,153.6	1,153.6	1,154.1	0.5
D	5,145[2]	*	458	10.0	1,159.1	1,159.1	1,160.1	1.0
E	6,355[2]	158	705	6.4	1,166.4	1,166.4	1,167.4	1.0
F	7,295[2]	118	522	8.6	1,172.3	1,172.3	1,173.3	1.0

[1]Feet above corporate limits

[2]Feet above confluence with East Branch Housatonic River

[3]Elevation computed without consideration of backwater effects from Wahconah Falls Brook

*Floodway coincident with channel banks

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA (BERKSHIRE CO.)

FLOODWAY DATA

EAST BRANCH HOUSATONIC RIVER AND WAHCONAH FALLS BROOK

TABLE 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Wahconah Falls Brook (continued)								
G	7,645[1]	89	636	7.1	1,176.6	1,176.6	1,177.0	0.4
H	9,225[1]	76	424	10.4	1,191.3	1,191.3	1,191.9	0.6
I	9,635[1]	95	536	9.7	1,195.9	1,195.9	1,196.8	0.9
J	10,410[1]	*	475	9.1	1,203.5	1,203.5	1,204.0	0.5
K	10,651[1]	64	692	6.3	1,208.8	1,208.8	1,209.0	0.2
L	12,271[1]	*	415	10.4	1,222.3	1,222.3	1,223.2	0.9
M	13,277[1]	*	470	8.9	1,231.2	1,231.2	1,232.0	0.8
Anthony Brook								
A	700[2]	83	278	6.2	1,145.8	1,141.9[3]	1,142.8	0.9
B	1,725[2]	42	152	10.9	1,154.9	1,154.9	1,155.7	0.8
C	1,990[2]	119	468	3.5	1,158.3	1,158.3	1,159.3	1.0
D	3,215[2]	121	369	4.3	1,164.3	1,164.3	1,165.0	0.7
E	4,475[2]	60	145	9.1	1,181.8	1,181.8	1,182.4	0.6

[1]Feet above confluence with East Branch Housatonic River

[2]Feet above confluence with Wahconah Falls Brook

[3]Elevation computed without consideration of backwater effects from Wahconah Falls Brook

*Floodway coincident with channel banks

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA (BERKSHIRE CO.)

FLOODWAY DATA

WAHCONAH FALLS BROOK AND ANTHONY BROOK

TABLE 2

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 (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Sackett Brook								
A	69	161	633	3.7	1,059.2	1,059.2	1,060.2	1.0

[1]Feet above Washington Mountain Road

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA (BERKSHIRE CO.)

FLOODWAY DATA

SACKETT BROOK

TABLE 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 2 for certain downstream cross sections of Anthony Brook 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.

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 Town of Dalton.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses 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.

Average Difference Between 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

The locations of the reaches determined for the flooding sources of the Town of Dalton are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 3).

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

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.)			
East Branch Housatonic River							
Reach 1		-3.3	-0.7	+2.1	035	A7	Varies
Reach 2		-3.0	-0.7	+2.3	030	A6	Varies
Reach 3		-3.9	-0.8	+1.6	040	A8	Varies
Reach 4		-2.0	-0.4	+1.5	020	A4	Varies
Wahconah Falls Brook							
Reach 1		-2.0	-0.5	+1.2	020	A4	Varies
Anthony Brook							
Reach 1		-0.7	-0.1	+0.5	005	A1	Varies
Sackett Brook							
Reach 1		-1.0	-0.3	+0.7	010	A2	Varies
Sheet Flow Area		Shallow Flooding - Average Depth 1 Foot				AO	--

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

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

FLOOD INSURANCE ZONE DATA

EAST BRANCH HOUSATONIC RIVER, WAHCONAH FALLS BROOK, ANTHONY BROOK AND SACKETT BROOK

TABLE 3

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 Town of Dalton 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.
Zone A0:	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; depths are shown, but no FHFs are determined.
Zones A1, A2, A4, A6, A7, and A8:	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 3, "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 Town of Dalton.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Dalton 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

In 1974, the SCS published a Flood Hazard Analyses report on the upper Housatonic River in Massachusetts (Reference 10). The report presented a 100-year flood delineation and flood profiles for the 10-, 100-, and 500-year floods. The East Branch Housatonic River was included in the report. However, this Flood Insurance Study had the benefit of more recent USGS topographic maps, aerial photographs, and additional field surveys conducted in 1978. It also reflects many watershed and flood plain changes, in addition to data not developed in the Flood Hazard Analyses.

The Flood Insurance Study for the City of Pittsfield has been completed (Reference 11). That study contained flood discharge information and flood profiles for the East Branch Housatonic River at the Dalton corporate boundary. The flood profiles in this study do not agree exactly at the corporate boundary with the profiles in the Pittsfield study. This is primarily due to a change in the peak discharge-frequency analysis relationship at the stream gage at Coltsville. The more recent analysis resulted in a slightly lower peak discharge for most frequency floods, which in turn slightly lowered the respective flood height. In all cases, the difference is less than one foot, with the 10-year difference being negligible.

Flood Insurance Studied for the Towns of Lanesborough, Cheshire, and Windsor are currently being prepared (References 12, 13, and 14). The results of those studies will be in exact 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 I Office, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

8.0 BIBLIOGRAPHY AND REFERENCES

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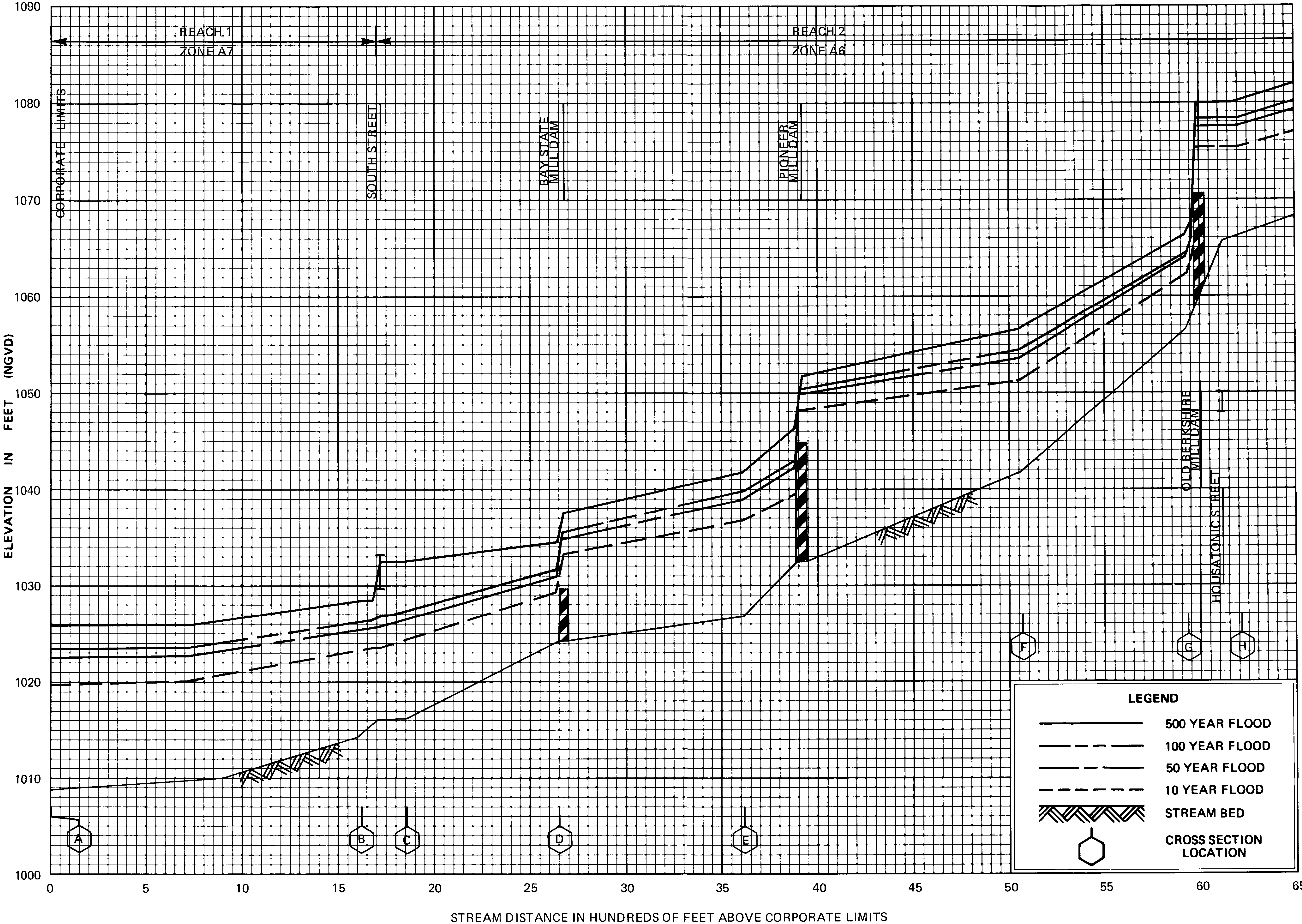
13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Town of Cheshire, Berkshire County, Massachusetts (Unpublished).

14. Federal Emergency Management Agency, Federal Insurance Administration, _Flood Insurance Study, Town of Windsor, Berkshire County, Massachusetts_ (Unpublished).



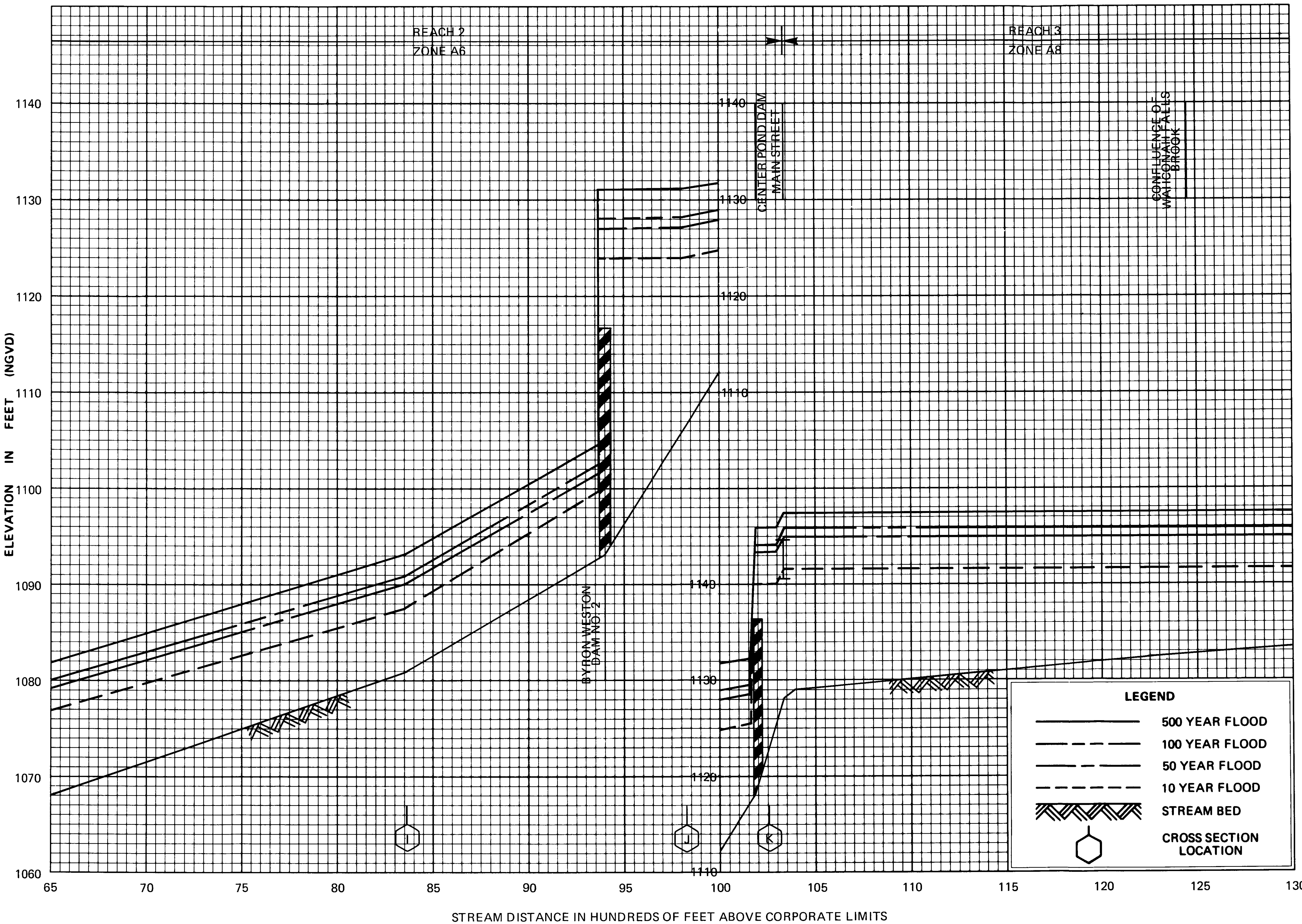
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

01P



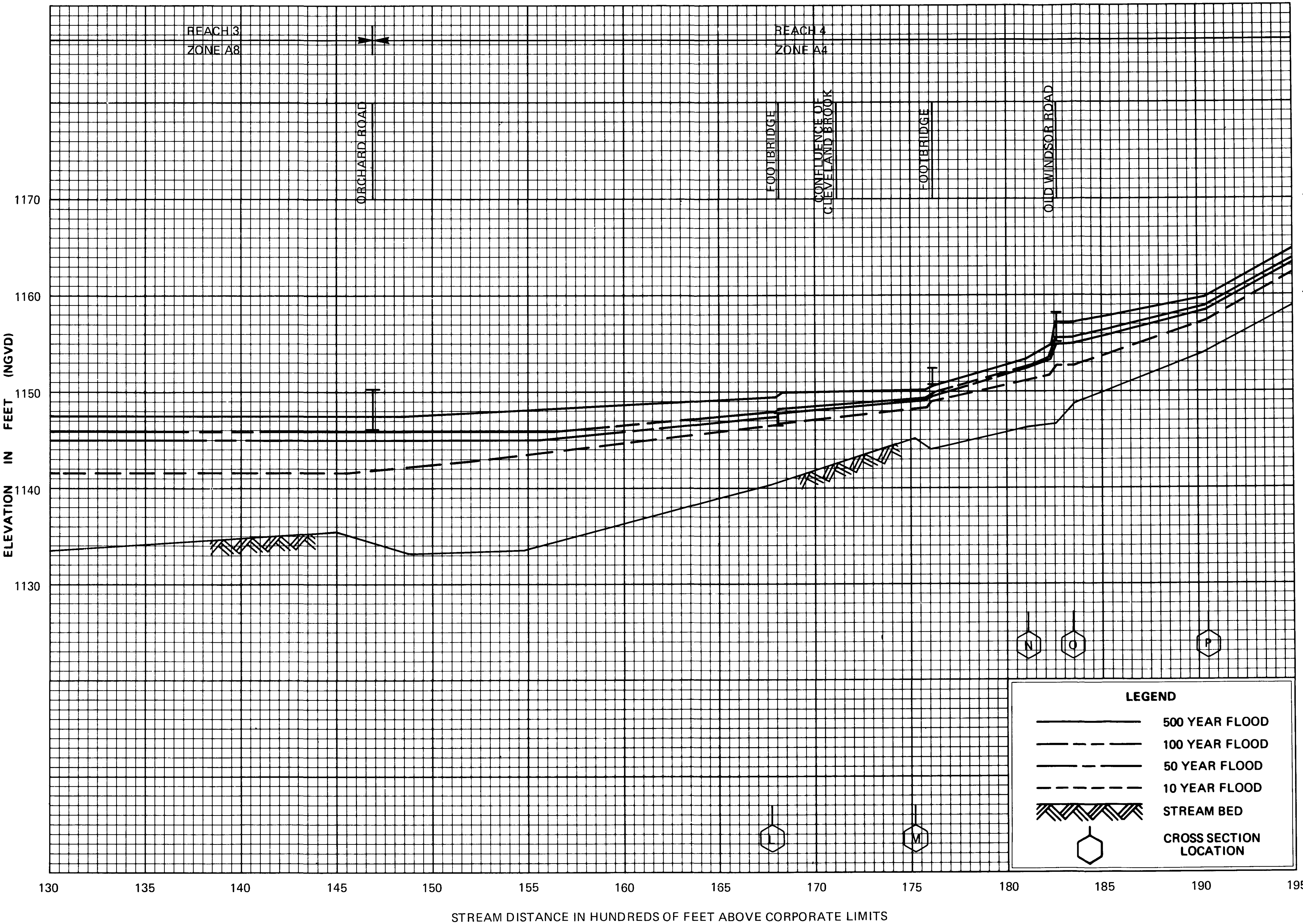
FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

02P



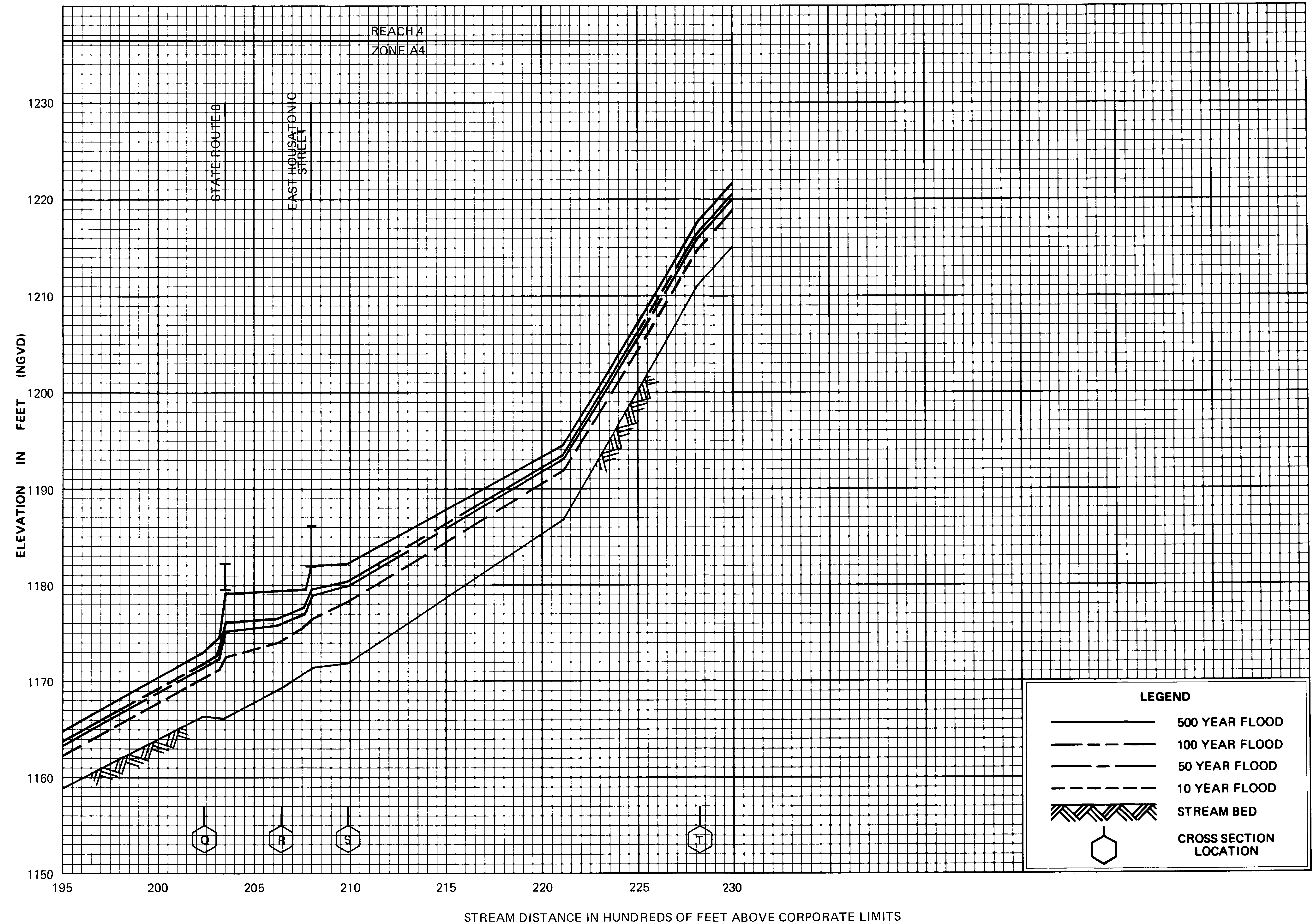
FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

03P



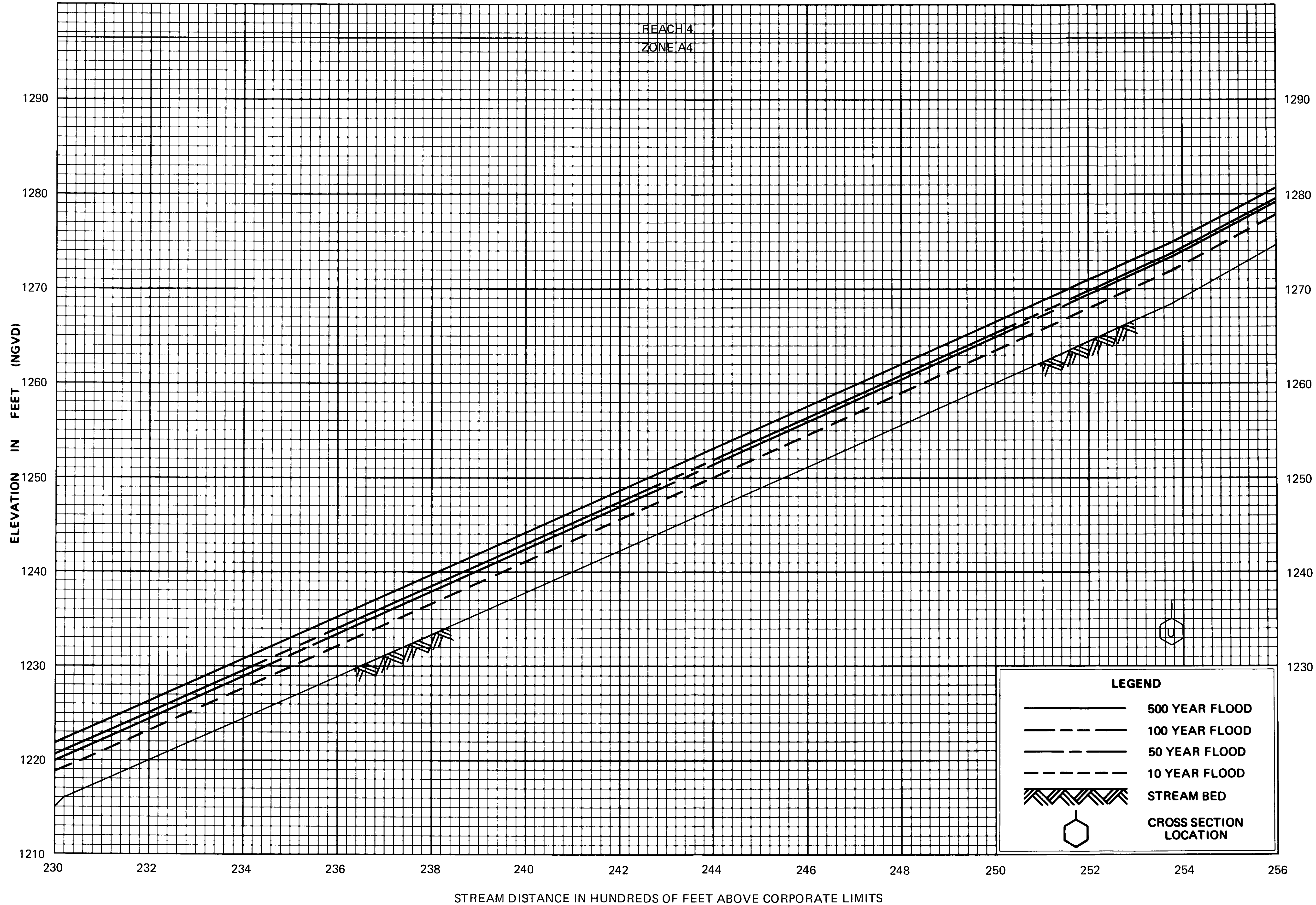
FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

04P



FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

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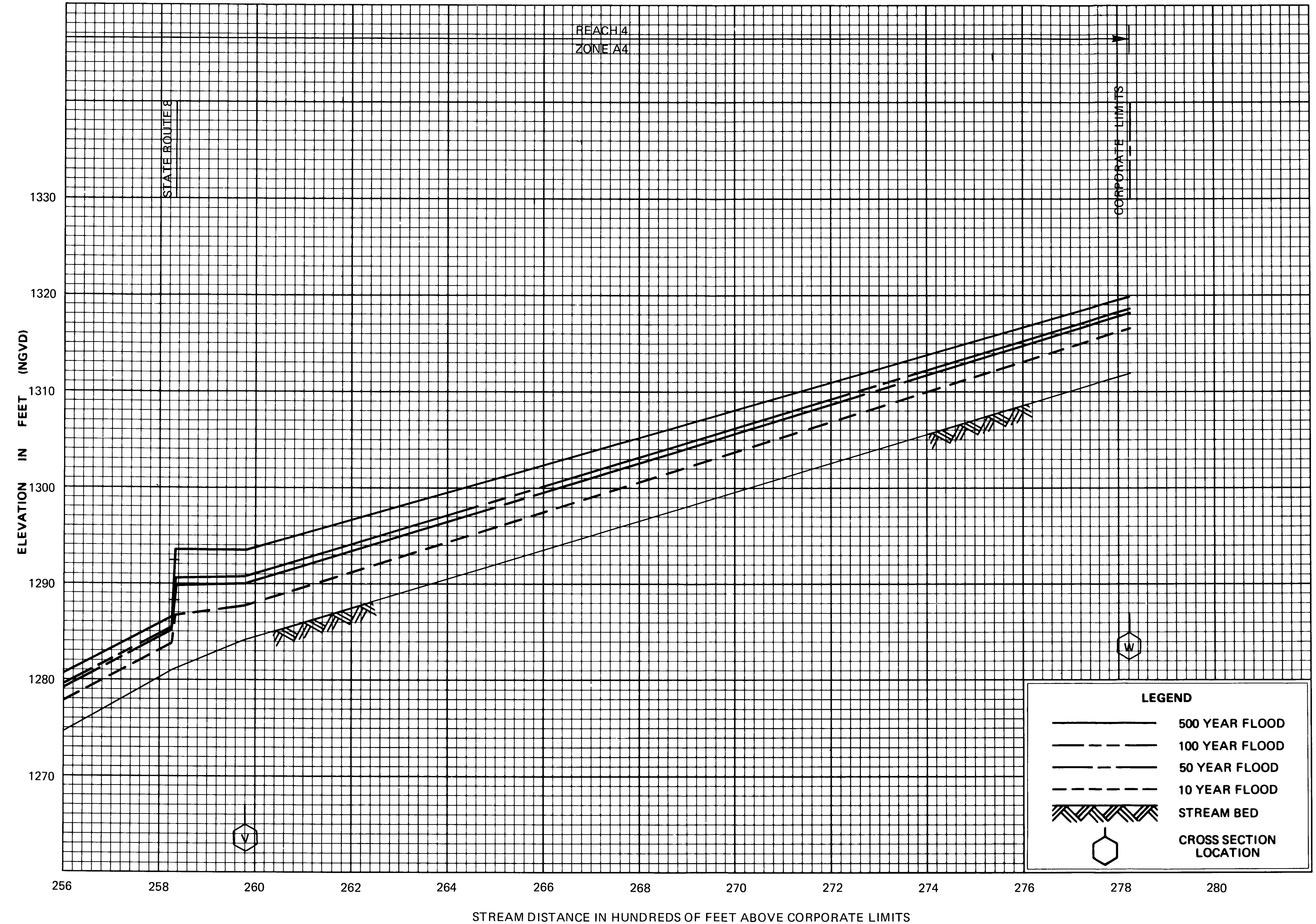
(BERKSHIRE CO.)

05P



FLOOD PROFILES

EAST BRANCH HOUSATONIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

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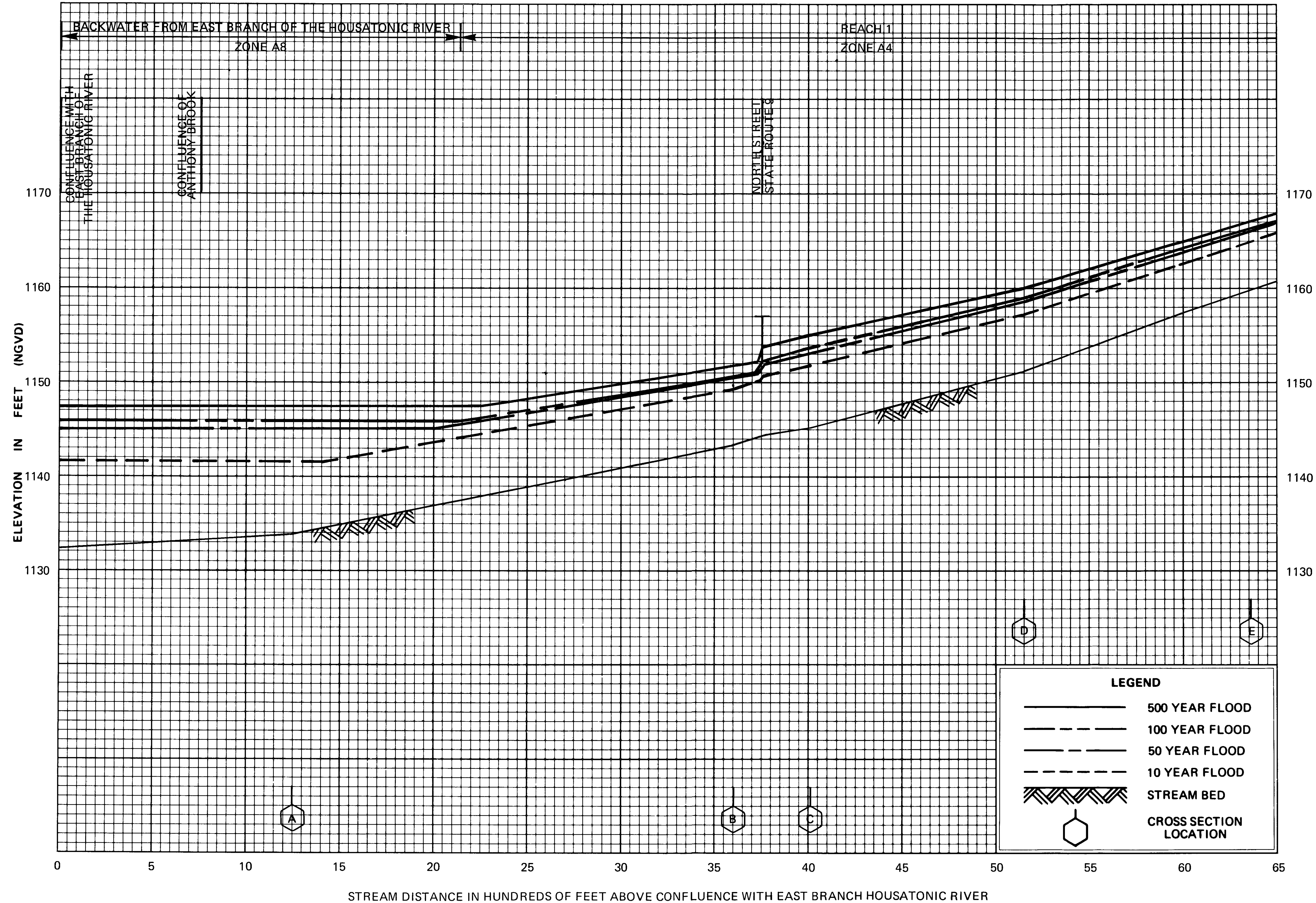
(BERKSHIRE CO.)

06P



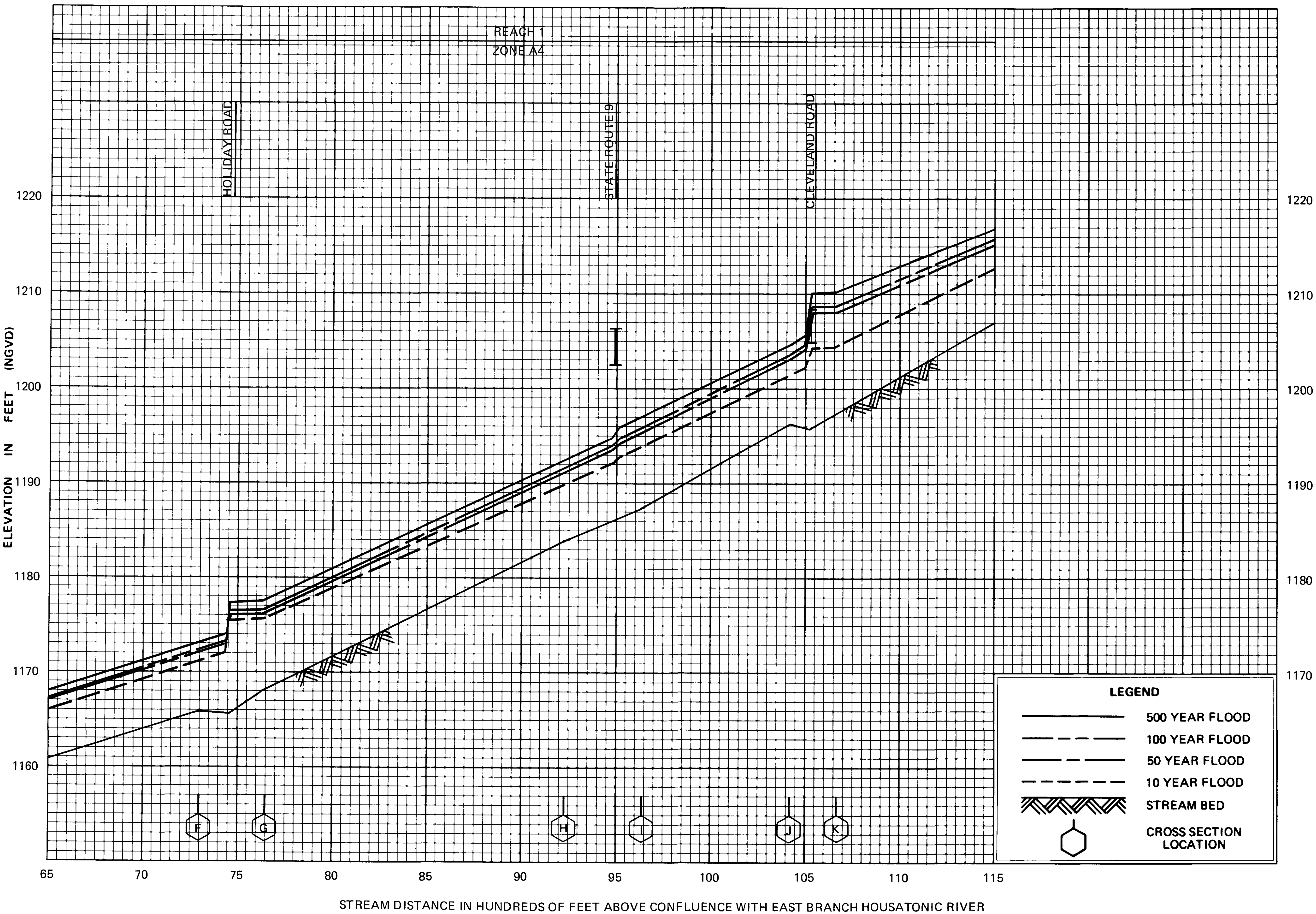
FLOOD PROFILES

WAHCONAH FALLS BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

07P



FLOOD PROFILES

WAHCONAH FALLS BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

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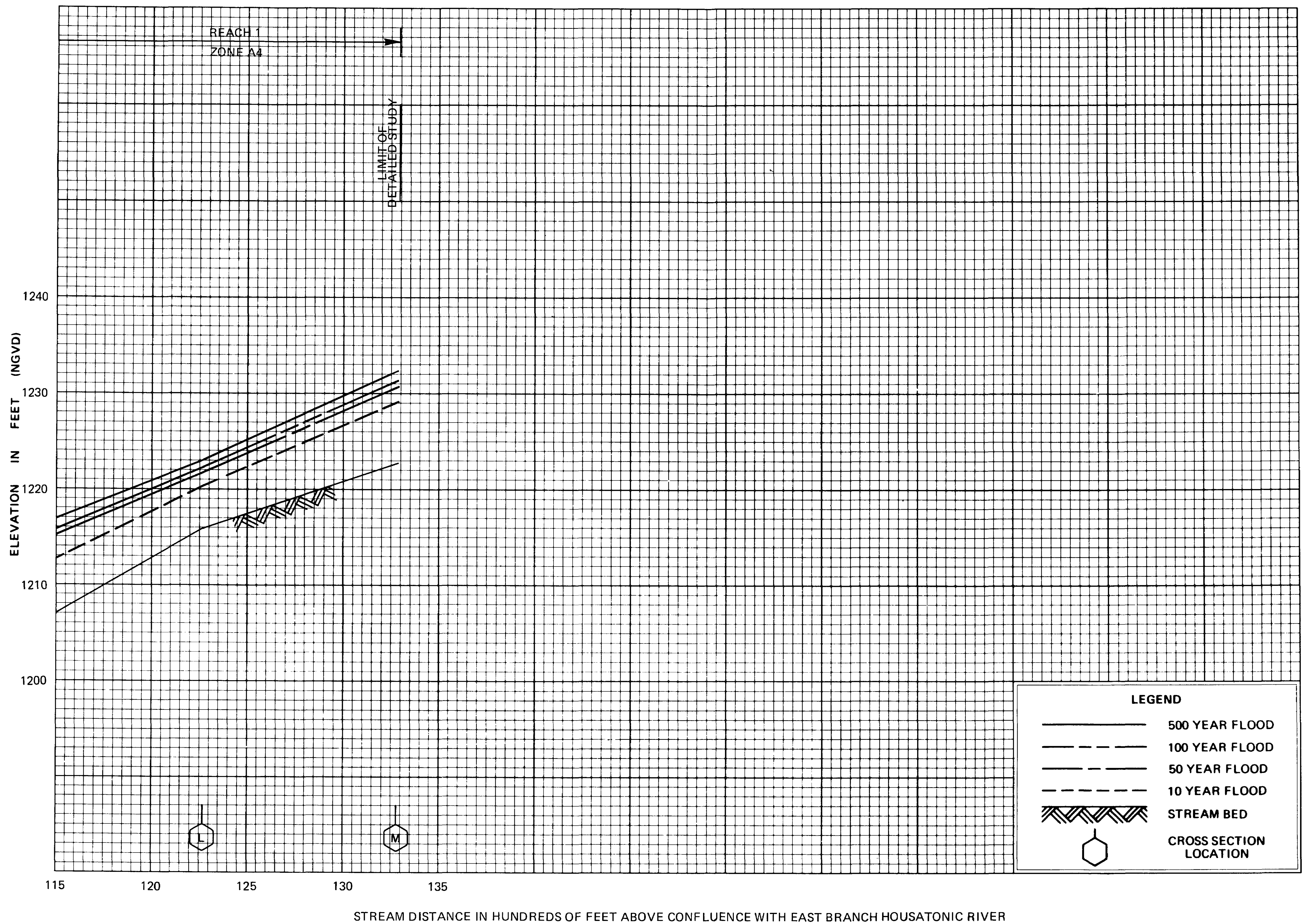


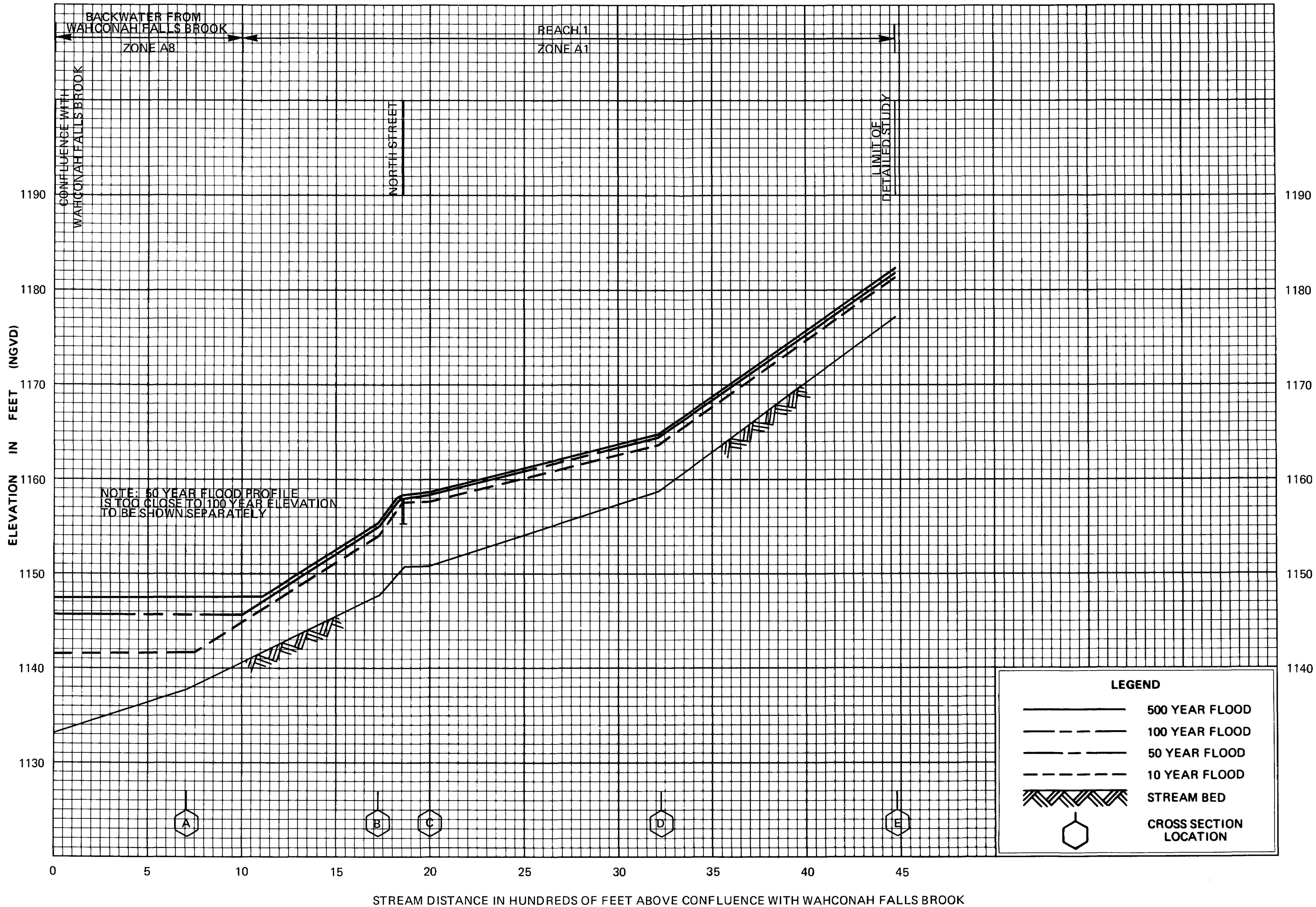
FLOOD PROFILES

WAHCONAH FALLS BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

09P



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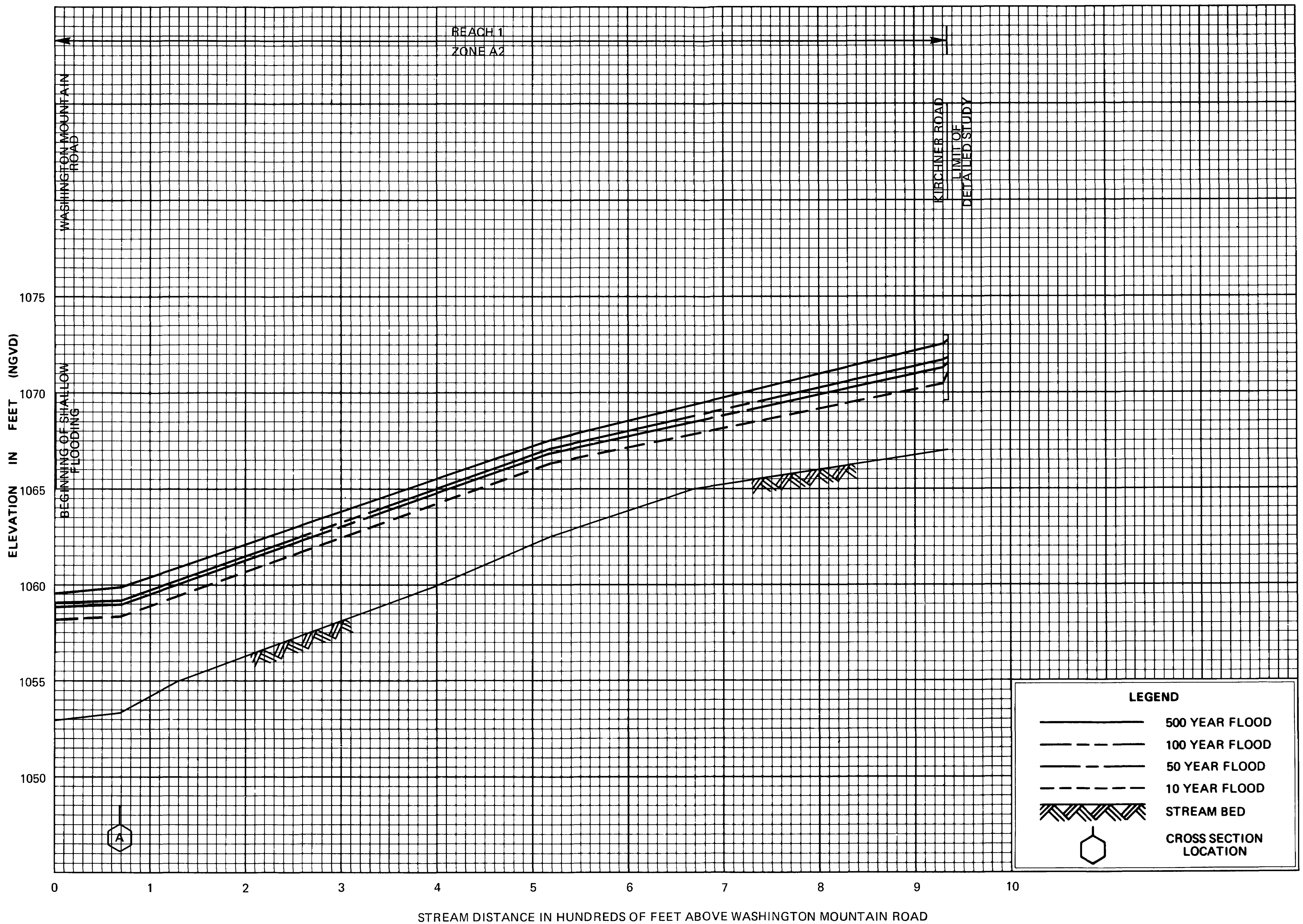
(BERKSHIRE CO.)

FLOOD PROFILES

ANTHONY BROOK

10P



FLOOD PROFILES

SACKETT BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DALTON, MA
(BERKSHIRE CO.)

11P