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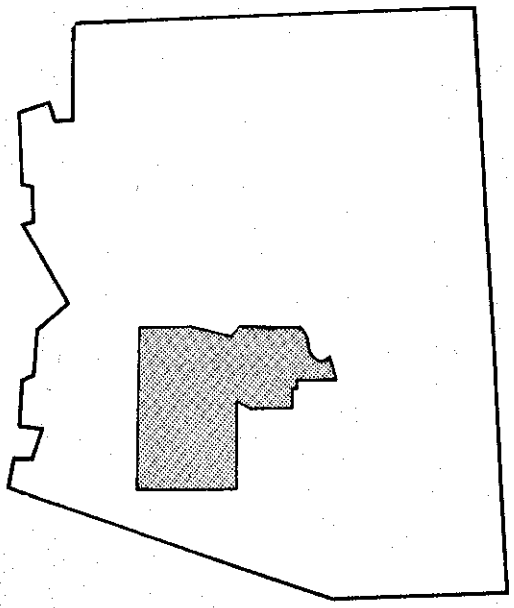
FLOOD INSURANCE STUDY

MARICOPA COUNTY, ARIZONA
UNINCORPORATED AREAS



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U.S. DEPARTMENT of HOUSING & URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

FEMA
L-00-8-25/29

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index

Flood Insurance Rate Map Panels 040037 0001A-2600A

FLOOD INSURANCE STUDY
MARICOPA COUNTY, ARIZONA

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the unincorporated areas of Maricopa County, Arizona, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert Maricopa County to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

The Maricopa County Flood Control District (MCFCD) assisted in the selection of the areas that were studied in detail and the selection of preliminary floodway limits.

The Arizona Department of Transportation provided highway maps used for the preparation of base maps covering undeveloped areas studied only by approximate methods.

This study was also coordinated with the Special Studies Section of the Water Resources Division of the U. S. Geological Survey (USGS), Tucson, Arizona.

On May 31, 1977, results of the study were reviewed at the final Consultation and Coordination Officer's (CCO) meeting, which was attended by residents of the county, representatives of the MCFCD, and the FIA.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The original hydrologic and hydraulic analyses for this study were performed by the Los Angeles District of the U. S. Army Corps of Engineers (COE) for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-15-72, Project Order No. 1. Additional hydrologic and hydraulic analyses to determine the 100-year

flood of the Agua Fria River, New River, and Skunk Creek, were performed by the COE under contract to the Maricopa County Flood Control District. Hydrologic and hydraulic analyses for the Salt and Gila Rivers were performed by Harris-Toups Associates in October 1977. The 10-year flood for the above streams and the 500-year flood for the Agua Fria River were computed by Dames & Moore using data provided by the Los Angeles COE. The delineation of approximate flood boundaries and areas subject to sheet flooding was performed by Dames & Moore, under contract to the Federal Insurance Administration. Sources of data used for this delineation are described in Section 3.2.

Additional funds for the revision and updating of this study were provided by the Flood Control District of Maricopa County.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Maricopa County, Arizona. Areas not included in this study are the incorporated Towns of Buckeye, El Mirage, Gila Bend, Gilbert, Goodyear, Paradise Valley, Surprise, Wickenburg, and Youngtown; the Cities of Chandler, Glendale, Mesa, Peoria, Phoenix, Scottsdale, Tempe, and Tolleson; military installations; regional, state, and national forests and parks; Federal and state-owned lands; Indian reservations; and undeveloped areas with no potential for future habitation. The area of study is shown on the Vicinity Map (Figure 1).

The following segments of major streams were studied in detail:

1. Agua Fria River from its confluence with the Gila River to river mile 24.32 (near Pinnacle Peak Road).

2. New River from its confluence with the Agua Fria River to river mile 14.48 (near Pinnacle Peak Road).

3. Hassayampa River from river mile 40.0 to 50.15 (the county line).

4. Skunk Creek from its confluence with the New River to river mile 16.7 (Carefree Highway).

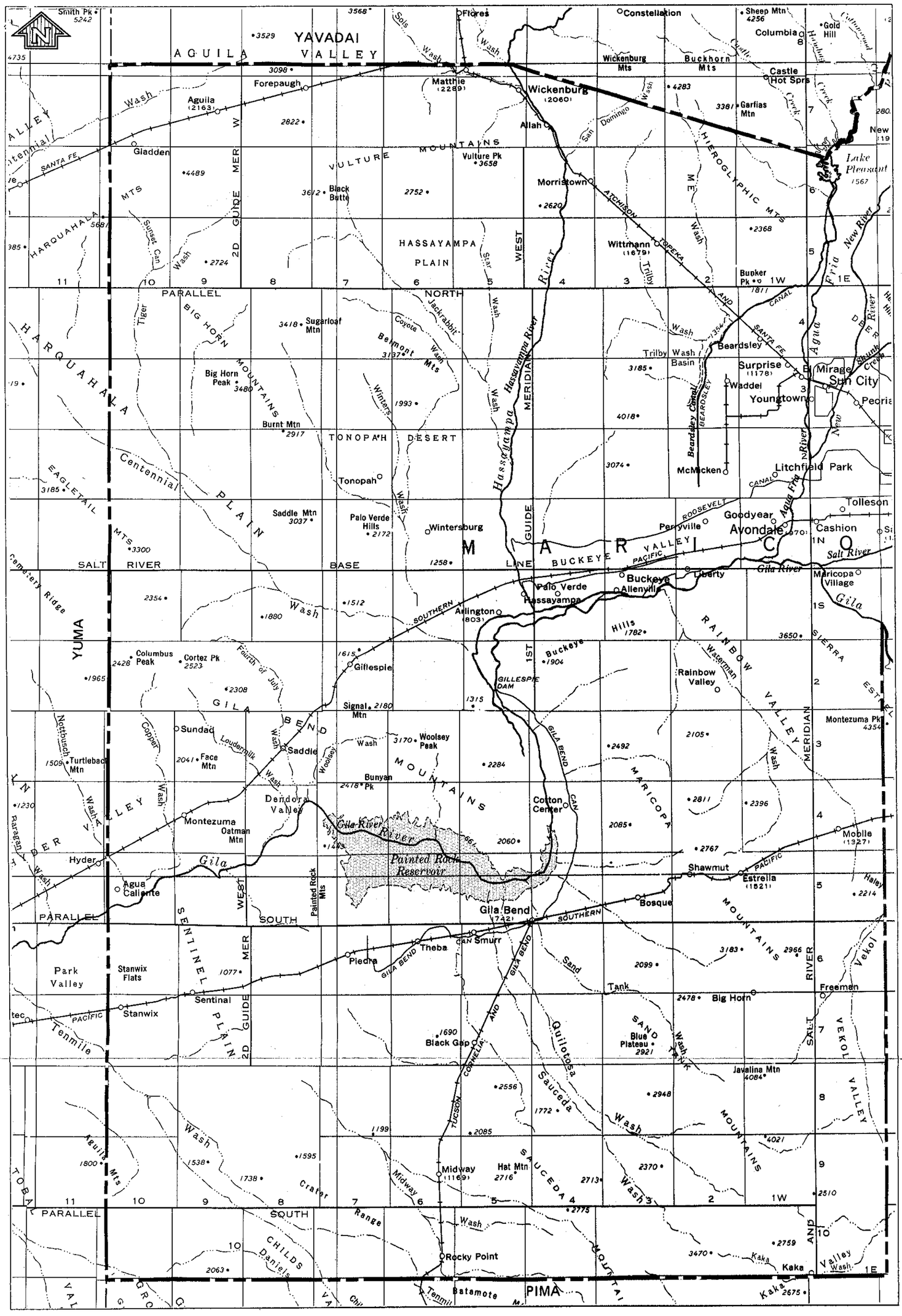


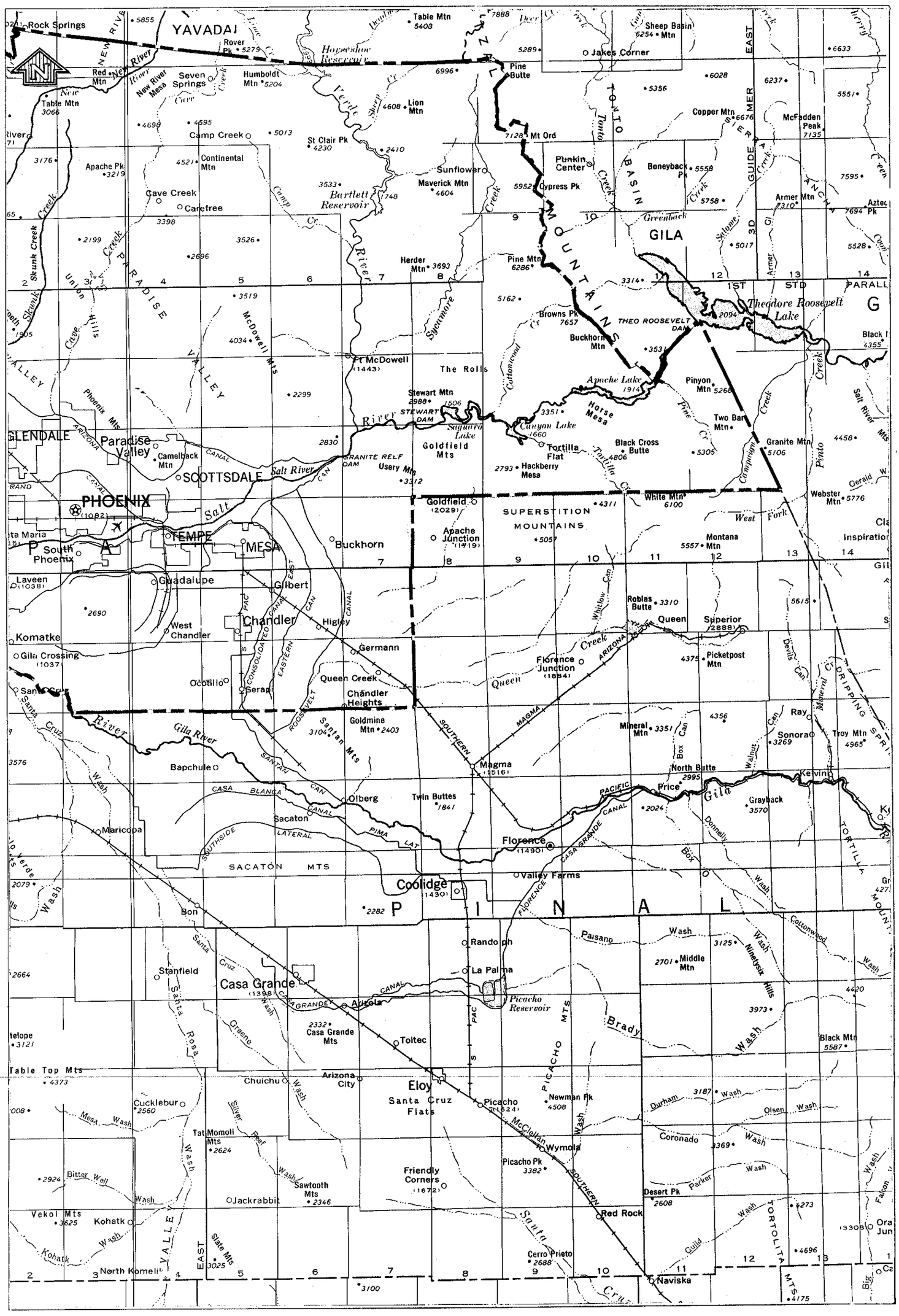
FIGURE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

APPROXIMATE SCALE
8 0 8 16 24 MILES

VICINITY MAP



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

APPROXIMATE SCALE
8 0 8 16 24 MILES

VICINITY MAP

FIGURE 2

5. Gila River from 331st Avenue to its confluence with the Salt River.

6. Salt River from its confluence with the Gila River to North Mesa Drive.

7. Indian Bend Wash between Double Tree Ranch Road and Hatcher Road and between McDonald Drive and Indian Bend Road.

Additional segments of the above streams were evaluated using approximate methods; no notable development is foreseen within their flood plains.

Flooding caused by overflow of several smaller streams and washes in undeveloped parts of the county and shallow flooding caused by ponding of runoff or by sheet flow, were also studied by approximate methods.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas, and areas of projected development or proposed construction for the next five years, through October 1982.

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 FIA.

All streams in Maricopa County, except those fed by lakes or reservoirs, flow intermittently.

2.2 Community Description

Maricopa County, encompassing a total area of 9,238 square miles, is located in the south central section of Arizona and has a population of 968,487. The incorporated communities within the county cover an area in excess of 100 square miles, and an additional 3,330 square miles are government-owned lands. A large portion of the remaining county lands is undeveloped and is presently considered to be economically unfit for development.

The terrain varies in character from the numerous rugged mountain ranges scattered throughout Maricopa County to plains and deserts. An abundance of small intermittent streams and washes traverse the major portion of the county.

Residential and agricultural development is concentrated along the major streams with expansion continuing at a rapid pace.

The climate in Maricopa County is mild, with short winters and long, hot summers.

The Agua Fria River rises in the Prescott National Forest and flows southward for about 130 miles to its confluence with the Gila River. It drains an area of approximately 2,340 square miles, most of which is located in Yavapai County (Reference 1).

The New River, the major tributary of the Agua Fria River, rises in the Cook Mesa area of the New River Mountains and flows until it joins the Agua Fria River. The total length of the stream is approximately 48 miles with a total drainage area of approximately 350 square miles (Reference 2).

The Hassayampa River originates in the Bradshaw Mountains in Yavapai County and flows southward to its confluence with the Gila River (References 3 and 4).

The Salt River originates at the Theodore Roosevelt Lake and empties into the Gila River. Within the area studied, the river has a wide, irregular, sandy streambed with several meandering channels.

Skunk Creek originates in the Union Hills and flows southwestward about 20 miles to its confluence with the New River.

Indian Bend Wash flows in a southeasterly direction through the eastern portion of the county.

The Gila River, the main stream, traverses the county in a southwesterly direction.

2.3 Principal Flood Problems

The past flooding history of Maricopa County indicates that large portions of the county are subject to destructive floods.

The principal flood hazard results from overflow of the major rivers; the overflow results in the inundation of the wide, flat flood plains, including any residential, commercial, or agricultural developments located within them. Erosion, combined with the development of new channels, adds to the potential hazard from inundation.

Major floods occurred on the Gila and Salt Rivers in November and December of 1965; on the Hassayampa River in 1890, 1935, and 1970; on the Agua Fria River in January 1916, November 1919, September 1922, and August 1951; on the New River in August 1943, August 1951, July 1955, January 1957, and July 1957. A great number of less severe floods have occurred in Maricopa County within the last 100 years (References 1 through 7). Recurrence intervals are not available for these floods.

Areas adjacent to the flood plains of the major rivers, but not subject to overflow from the rivers, may be flooded due to the failure of earthen dikes and other retarding or diverting structures (Reference 7).

The upland areas of Maricopa County are also subject to flooding. Throughout the county there are broad alluvial slopes that lie between the steep mountains and major watercourses. These slopes are formed by the intermingling of deltas from several streams and are traversed by many small channels that divide and reconverge at many places. These channels are usually lined with small amounts of brush. Flooding occurs either as a direct result of rainfall on the slopes or by streams that drain from the mountains. Floods originating in the mountains often carry large amounts of rock debris that is deposited on the alluvial slope. The debris may plug old channels and cause new ones to develop. Many of the lower slopes receive runoff only from precipitation that falls directly on the area involved because mountain runoff is completely dissipated on the upper slopes (Reference 8).

Much of the flood flow on the upland areas is unconfined and moves downslope as sheet flow with a maximum depth of two feet. Generally, sheet flow is less than one foot deep because the wide expanse of flow prevents water from building up to greater depths, except in depressions and where water ponds behind dikes, canals, and road fills. A wide expanse of sheet flow may be diverted from its normal path by such a structure. The concentrated flow may then break through at one spot causing high velocities and deep flows immediately below the break or overflow area (References 8 and 9).

The type of sheet-flow described above occurs on ground slopes of from one to five percent. Slopes of less than one percent are too flat to carry water far. Ponding and rapid infiltration deplete the flood flows quickly. Slopes of more than five percent generally cause defined channels to form. Defined channels of minor tributaries

may extend a considerable distance into slopes that are flatter than five percent, but will seldom reach slopes of less than two percent without distributary channels forming. Water in these channels is generally 2.5 to 3 feet deep (References 8 and 9).

2.4 Flood Protection Measures

Several flood control structures have been built in the past and others are presently being built. The Painted Rock Dam, which is located in the western portion of Maricopa County on the Gila River, was constructed by the COE and designed to retain the Standard Project Flood (SPF). Two structures, near Wickenburg, were built by the Soil Conservation Service (SCS) to protect agricultural lands. These are known as the Buckeye Floodwater Retarding Structure (FRS) and the White Tanks structures numbers 3 and 4. It has been determined that both will retain the 100-year flood. The McMicken Dam, located on Trilby Wash, was built by the COE and has a capacity for retaining less than the 25-year flood. On the Agua Fria River, the Carl Pleasant Dam was constructed for water conservation, but will be effective in retaining the 100-year flood. Cave Creek Dam was built for flood control in 1920, but only has a capacity for retaining the 25-year flood. The Paradise Valley detention dikes, which are a feature of the Central Arizona Project (CAP), should retain in excess of the 100-year flood. The Guadalupe FRS was constructed by the SCS and has a capacity of retaining the 100-year flood. Four structures, which are located in Pinal County, control flooding within Maricopa County. Three of these structures, Vineyard Road FRS, Powerline FRS, and Rittenhouse FRS, were constructed by the SCS to protect Williams Air Force Base and agricultural lands and have a capacity to retain the 100-year flood. The fourth structure, Whitlow Ranch Dam on Queen Creek, was constructed by the COE and has a capacity to retain the SPF. Coolidge Dam, which is on the Gila River, can retain at least the 100-year flood and has never been overtopped since 1920. Two projects are presently under construction. Spook Hill FRS is being constructed by the SCS and will have a capacity of retaining the 100-year flood. The Cave Buttes Dam, which is being constructed by the COE, is designed to retain the SPF. The Salt River Project, located on the Salt and Verde Rivers, involves six dams for water conservation. These dams provide some protection for the county during the 10-year and less recurrence interval floods.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in Maricopa County, standard hydrologic and hydraulic study methods were used to determine the flood

hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the flooding sources.

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 in the county.

Flood-frequency data for all flooding sources, except the Salt and Gila Rivers, were developed from discharge-frequency relationships of historic floods and gage records (Reference 10). Stream discharges were modified, based on field inspection, to reflect current hydrologic and hydraulic conditions. 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 11). Discharges for the 500-year floods of all streams were determined by straight-line extrapolation of a single-log graph of flood discharges computed for frequencies of up to 100 years.

Hydrology of the Gila and Salt Rivers was developed by Harris-Toups Associates in an extensive study which analyzed all previous reports done for this drainage basin (Reference 12).

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 for the backwater analyses of all flooding sources studied in detail, except the Gila and Salt Rivers, were field surveyed. Digitized cross sections used for the Gila and Salt Rivers were developed from topographic maps at a scale of 1:4,800 with a contour interval of 4 feet (Reference 13). Cross sections were located at close intervals above and below bridges in order to compute the significant backwater effects of these structures. 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 2).

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1). Water-surface elevations of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 water-surface profiles computer program (Reference 14). Starting water-surface elevations for all streams, except the Salt River, were determined by the slope area method. For the Salt River, starting elevations were taken at the confluence with the Gila River. 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 this study are shown on the maps.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles are thus considered valid only if hydraulic structures in general remain unobstructed and dams and other flood-control structures operate properly and do not fail.

Flooding along approximate study streams which flow through undeveloped areas of the county or streams with small drainage areas was determined through use of the following: (1) Flood Plain Information Studies prepared by the COE (References 1-5); (2) USGS Flood-Prone Area Maps (Reference 15); (3) USGS Slope Maps (Reference 16); (4) high-resolution Skylab photographs (References 17 and 18); (5) City of Mesa, Arizona, Flood Insurance Study (Reference 19); (6) Drainage Study for the City of Phoenix, Arizona (Reference 20); and (7) additional information published by the USGS (References 7, 9, 21, and 22).

The flatness of the land causes local rainfall to run off in a sheet-flow pattern and become ponded to depths of less than 1.0 foot behind man-made features and in local depressions. Therefore, many areas within the county have been designated Zone B (Section 5.3) as determined by field investigations by experienced hydraulic engineers and by local observations during heavy rainfall. For this reason, on many of the smaller streams, no 500-year discharge was calculated.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, 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 FIA 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 scales of 1:3,600 and 1:4,800 with contour intervals of 2 to 5 feet (Reference 13) and at a scale of 1:6,000 with a contour interval of 5 feet (Reference 23). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

The methodology for the delineation of approximate flood boundaries is described in the last paragraph of Section 3.2.

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 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 FIA 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 for 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 1).

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. Due to the lack of a defined channel, no floodway has been computed for Scatter Wash East.

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 2.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA 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 Maricopa County.

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
7.0 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Agua Fria River								
A	0.00	3,950		4.5	924.3	915.6[4]	915.6	0.0
B	0.80	3,730		4.3	924.3	923.6[4]	924.4	0.8
C	1.32	3,100		3.9	932.1	932.1	932.9	0.8
D	1.52	2,800		4.8	934.0	934.0	934.6	0.6
E	1.99	2,750		6.9	938.0	938.0	938.9	0.9
F	2.63	2,050[2]		5.5	944.8	944.8	945.8	1.0
G	3.12	2,300		5.0	950.5	950.5	951.4	0.9
H	3.46	2,500		4.0	954.2	954.2	955.1	0.9
I	3.65	2,500		6.0	956.9	956.9	957.4	0.5
J	3.84	2,650		4.2	959.4	959.4	960.4	1.0
K	3.97	1,350		8.1	963.1	963.1	963.6	0.5
L	4.03	1,350[2]		7.1	963.8	963.8	964.1	0.3
M	4.31	3,340[2]		3.1	966.2	966.2	967.2	1.0
N	4.74	3,050[2]		3.5	970.1	970.1	971.1	1.0
O	5.21	3,500[2]		4.4	975.9	975.9	976.5	0.6
P	5.45	3,800[2]		2.5	977.6	977.6	978.5	0.9
Q	6.33	3,200		3.2	985.0	985.0	986.0	1.0
R	6.96	2,890		4.4	991.2	991.2	992.0	0.8
S	7.65	2,750		4.1	999.2	999.2	1000.1	0.9

[1] Stream distance in miles above confluence with the Gila River
[2] This width extends beyond county boundary
[3] Not computed
[4] Elevations computed without consideration of backwater effects from the Gila River

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

AGUA FRIA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION[3] AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Agua Fria River (continued)								
T	8.18	4,600		4.5	1006.3	1006.3	1006.9	0.6
U	8.21	4,600		2.5	1006.8	1006.8	1007.5	0.7
V	8.60	1,600		4.9	1009.9	1009.9	1010.5	0.6
W	8.64	1,600		8.5	1010.2	1010.2	1010.5	0.3
X	9.50	4,200		3.3	1022.0	1022.0	1022.9	0.9
Y	10.10	5,600		3.6	1029.8	1029.8	1030.8	1.0
Z	11.10	3,950		3.5	1038.5	1038.5	1039.3	0.8
AA	11.75	2,160		1.9	1047.3	1047.3	1047.3	0.0
AB	11.98	1,110		7.9	1048.6	1048.6	1048.6	0.0
AC	12.06	1,400[2]		2.9	1051.7	1051.7	1051.7	0.0
AD	12.38	3,100		2.4	1055.9	1055.9	1056.7	0.8
AE	12.70	3,400		4.6	1062.9	1062.9	1063.9	1.0
AF	13.04	3,050		3.1	1067.5	1067.5	1068.0	0.5
AG	13.40	2,390		4.9	1073.6	1073.6	1074.2	0.6
AH	14.04	1,650		6.3	1081.6	1081.6	1082.6	1.0
AI	14.50	2,700		3.5	1086.4	1086.4	1087.4	1.0
AJ	15.00	2,400		4.1	1093.8	1093.8	1094.7	0.9
AK	15.44	1,850[2]		4.9	1101.2	1101.2	1101.7	0.5
AL	16.10	2,220[2]		4.7	1110.6	1110.6	1111.0	0.4

[1] Stream distance in miles above confluence with the Gila River
[2] This width extends beyond county boundary
[3] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

AGUA FRIA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.) [2]	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Agua Fria River (continued)								
AM	17.15	1,620		3.7	1128.8	1128.8	1128.8	0.0
AN	17.40	2,800		3.7	1129.3	1129.3	1130.3	1.0
AO	17.90	1,265		3.4	1133.4	1133.4	1133.5	0.1
AP	18.61	2,230		6.7	1142.5	1142.5	1142.8	0.3
AQ	19.00	2,400		5.1	1151.7	1151.7	1152.3	0.6
AR	19.48	2,590		4.2	1157.8	1157.8	1158.5	0.7
AS	19.70	1,500		3.2	1163.4	1163.4	1164.1	0.7
AT	20.08	2,080		5.5	1165.1	1165.1	1165.9	0.8
AU	20.48	1,700		4.1	1172.7	1172.7	1173.5	0.8
AV	20.86	2,190		1.8	1180.1	1180.1	1180.9	0.8
AW	21.26	2,600		4.0	1187.8	1187.8	1188.5	0.7
AX	21.87	2,000		4.9	1194.3	1194.3	1194.5	0.2
AY	22.72	2,550		3.9	1205.9	1205.9	1206.7	0.8
AZ	22.97	2,500		3.5	1210.3	1210.3	1210.8	0.5
BA	23.33	2,500		3.2	1214.7	1214.7	1215.4	0.7
BB	24.04	1,800		4.3	1224.5	1224.5	1225.5	1.0
BC	24.32	1,900		2.1	1230.3	1230.3	1230.8	0.5

[1] Stream distance in miles above confluence with the Gila River
[2] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

AGUA FRIA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.) [3]	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
New River								
A	0.95	2,250		3.2	1041.6	1041.6	1042.0	0.4
B	1.52	1,840		4.9	1049.0	1049.0	1049.8	0.8
C	2.00	850		4.2	1055.0	1055.0	1055.2	0.2
D	2.56	1,810		9.8	1068.0	1068.0	1068.0	0.0
E	2.95	1,430		9.7	1074.1	1074.1	1074.5	0.4
F	3.73	390		12.7	1084.6	1084.6	1084.8	0.2
G	4.29	860		7.2	1092.4	1092.4	1092.6	0.2
H	4.80	410		14.4	1100.6	1100.6	1100.6	0.0
I	6.28	1,020[2]		9.1	1124.3	1124.3	1124.4	0.1
J	6.91	1,584[2]		4.1	1141.8	1141.8	1141.9	0.1
K	7.28	1,691		4.9	1147.6	1147.6	1148.6	1.0
L	7.65	1,800		5.7	1152.7	1152.7	1153.4	0.7
M	7.91	1,825		2.8	1159.2	1159.2	1159.2	0.0
N	8.58	3,415		4.3	1168.4	1168.4	1169.2	0.8
O	9.71	5,530		4.2	1196.1	1196.1	1196.7	0.6
P	9.98	5,600		3.9	1204.3	1204.3	1204.5	0.2
Q	10.51	4,280		3.3	1216.0	1216.0	1216.7	0.7
R	11.66	4,000		2.7	1245.2	1245.2	1245.2	0.0
S	12.39	4,350		5.5	1262.8	1262.8	1262.8	0.0
T	12.97	5,280		4.2	1276.6	1276.6	1276.8	0.2

[1] Stream distance in miles above confluence with the Agua Fria River
[2] This width extends beyond county boundary
[3] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

NEW RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
New River (continued)								
U	13.24[1]	5,660		5.3	1282.1	1282.1	1283.0	0.9
V	13.50[1]	4,200		4.7	1289.1	1289.1	1289.3	0.2
W	13.70[1]	2,950		2.4	1295.5	1295.5	1295.5	0.0
X	13.95[1]	2,900		5.8	1301.5	1301.5	1302.5	1.0
Y	14.27[1]	2,870		6.3	1310.9	1310.9	1311.6	0.7
Z	14.48[1]	3,040		5.2	1316.5	1316.5	1317.3	0.8
Hassayampa River								
A	40.00[2]	380		--[3]	1843.0	1843.0	1843.0	0.0
B	40.31[2]	250		--[3]	1859.0	1859.0	1859.0	0.0
C	40.75[2]	500		--[3]	1865.0	1865.0	1865.0	0.0
D	41.46[2]	1,070		--[3]	1877.0	1877.0	1877.0	0.0
E	41.77[2]	510		--[3]	1885.0	1884.0	1885.0	1.0
F	42.21[2]	550		--[3]	1896.0	1896.0	1896.0	0.0
G	42.69[2]	780		--[3]	1922.5	1922.5	1922.5	0.0
H	43.33[2]	700		--[3]	1927.0	1927.0	1927.0	0.0
I	43.82[2]	700		--[3]	1940.0	1940.0	1940.0	0.0
J	44.26[2]	570		--[3]	1953.0	1953.0	1953.0	0.0
K	44.63[2]	900		--[3]	1963.5	1963.5	1963.5	0.0

[1] Stream distance in miles above confluence with the Agua Fria River
[2] Stream distance in miles above confluence with the Gila River
[3] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

NEW RIVER AND HASSAYAMPA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Hassayampa River (continued)								
L	45.04[1]	1,420		--[4]	1974.5	1974.5	1974.5	0.0
M	45.60[1]	1,150		--[4]	1988.0	1988.0	1988.0	0.0
N	46.30[1]	980		--[4]	2009.5	2009.5	2009.5	0.0
O	46.61[1]	1,050		--[4]	2018.5	2018.5	2018.5	0.0
P	47.98[1]	1,000		--[4]	2052.0	2052.0	2053.0	1.0
Q	48.17[1]	1,200		--[4]	2058.0	2058.0	2059.0	1.0
R	48.38[1]	960		--[4]	2062.5	2062.5	2063.0	0.5
S	48.52[1]	1,190		--[4]	2067.0	2067.0	2068.0	1.0
T	48.68[1]	1,350		--[4]	2070.0	2070.0	2071.0	1.0
U	48.91[1]	2,000		--[4]	2074.0	2074.0	2075.0	1.0
V	49.29[1]	1,580		--[4]	2085.5	2085.5	2086.5	1.0
W	49.53[1]	2,200		--[4]	2,091.5	2091.5	2091.5	0.0
Skunk Creek								
A	0.50[2]	--[3]		2.7	1176.9	1176.9	1177.3	0.4
B	1.00[2]	--[3]		2.7	1187.3	1187.3	1187.6	0.3
C	1.50[2]	1,980		3.5	1197.6	1197.6	1198.3	0.7
D	1.90[2]	1,490		5.6	1206.5	1206.5	1207.4	0.9

[1] Stream distance in miles above confluence with the Gila River
[2] Stream distance in miles above confluence with the New River
[3] Combined floodway for New River and Skunk Creek
[4] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

HASSAYAMPA RIVER AND SKUNK CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Skunk Creek (continued)								
E	2.50	1,405		3.6	1221.3	1221.3	1221.6	0.3
F	3.00	840		5.5	1231.8	1231.8	1232.2	0.4
G	3.50	950		4.9	1242.1	1242.1	1242.9	0.8
H	4.40	1,470		4.4	1265.3	1265.3	1266.1	0.8
I	4.50	2,000		2.5	1270.9	1270.9	1271.9	1.0
J	5.00	1,520		4.5	1280.2	1280.2	1281.2	1.0
K	5.50	1,125		5.5	1294.1	1294.1	1294.8	0.7
L	5.90	1,110		5.0	1305.4	1305.4	1305.9	0.5
M	6.50	1,755		5.1	1319.5	1319.5	1319.8	0.3
N	6.84	--[2]		4.8	1328.9	1328.9	1329.6	0.7
O	7.00	790		7.8	1335.2	1335.2	1336.0	0.8
P	7.50	920		5.3	1347.6	1347.6	1348.4	0.8
Q	8.00	870		6.0	1359.9	1359.9	1360.8	0.9
R	8.80	1,220		5.3	1383.5	1383.5	1384.1	0.6
S	9.10	1,550		4.5	1393.5	1393.5	1394.5	1.0
T	9.50	1,900		4.2	1403.8	1403.8	1404.6	0.8
U	10.00	865		2.8	1419.6	1419.6	1420.5	0.9
V	10.50	620		5.4	1437.1	1437.1	1437.9	0.8

[1] Stream distance in miles above confluence with the New River
[2] Combined floodway for Scatter Wash and Skunk Creek
[3] Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

SKUNK CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION[2] AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Skunk Creek (continued)								
W	11.00	1,990		4.2	1453.1	1453.1	1453.3	0.2
X	11.45	630		6.8	1468.5	1468.5	1468.7	0.2
Y	11.70	1,025		6.4	1477.8	1477.8	1477.8	0.0
Z	12.00	1,030		13.1	1488.0	1488.0	1488.0	0.0
AA	12.50	1,160		4.9	1505.1	1505.1	1505.2	0.1
AB	13.00	1,420		6.9	1522.9	1522.9	1523.6	0.7
AC	13.50	940		7.0	1544.7	1544.7	1545.6	0.9
AD	14.00	1,280		6.9	1565.7	1565.7	1566.7	1.0
AE	14.40	840		10.7	1581.1	1581.1	1581.8	0.7
AF	15.00	993		9.3	1606.2	1606.2	1606.3	0.1
AG	15.50	870		6.5	1627.3	1627.3	1627.3	0.0
AH	16.00	779		9.2	1649.8	1649.8	1649.8	0.0
AI	16.50	710		9.5	1670.7	1670.7	1670.7	0.0
AJ	16.70	688		11.3	1678.0	1678.0	1678.0	0.0

[1]Stream distance in miles above confluence with the New River
[2]Not computed

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

SKUNK CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Gila River								
A	69.62	6,627	47,659	4.2	780.2	780.2	781.2	1.0
B	70.45	3,880	47,241	4.2	786.4	786.4	787.1	0.7
C	71.17	2,895	46,076	4.4	795.1	795.1	795.9	0.8
D	71.73	4,828	77,858	2.6	798.3	798.3	799.2	0.9
E	72.25	3,563	57,421	3.5	799.1	799.1	800.0	0.9
F	72.61	3,956	49,730	4.0	800.1	800.1	801.0	0.9
G	72.86	4,769	62,383	3.2	804.0	804.0	804.6	0.6
H	73.28	5,917	85,825	2.3	806.0	806.0	806.6	0.6
I	73.76	6,112	99,836	2.0	807.2	807.2	807.8	0.6
J	74.09	5,702	80,755	2.5	807.9	807.9	808.5	0.6
K	74.62	5,141	76,972	2.6	809.6	809.6	810.3	0.7
L	75.06	4,396	63,953	3.2	810.8	810.8	811.5	0.7
M	75.32	4,162	53,752	3.8	811.8	811.8	812.5	0.7
N	75.65	5,205	65,294	3.1	813.7	813.7	814.3	0.6
O	76.14	5,723	65,013	3.1	814.8	814.8	815.5	0.7
P	76.38	5,294	60,580	3.3	815.5	815.5	816.2	0.7
Q	77.25	5,274	60,079	3.4	818.5	818.5	819.4	0.9
R	77.98	6,418	77,314	2.6	820.4	820.4	821.3	0.9
S	78.35	6,533	69,814	2.9	821.7	821.7	822.5	0.8

[1]Stream distance in miles decreasing downstream from 115th Avenue - Sta. 100.00

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

GILA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Gila River (continued)								
T	79.01	6,366	57,194	3.5	826.7	826.7	826.8	0.1
U	79.29	6,269	46,812	4.3	827.7	827.7	828.1	0.4
V	79.57	6,570	72,449	2.8	829.3	829.3	829.9	0.6
W	79.88	6,467	61,820	3.3	830.5	830.5	831.2	0.7
X	80.48	5,474	52,810	3.9	833.5	833.5	834.3	0.8
Y	80.77	5,358	52,050	3.9	836.3	836.3	837.0	0.7
Z	80.93	5,330	56,570	3.6	838.2	838.2	838.8	0.6
AA	81.15	5,070	55,822	3.7	840.1	840.1	840.6	0.5
AB	81.78	7,180	62,492	3.3	844.9	844.9	845.4	0.5
AC	82.38	7,449	62,973	3.2	848.4	848.4	849.2	0.8
AD	83.27	6,867	62,956	3.2	855.0	855.0	855.8	0.8
AE	83.86	7,494	70,738	2.9	856.8	856.8	857.7	0.9
AF	84.62	6,798	58,057	3.5	858.4	858.4	859.1	0.7
AG	85.44	5,993	49,526	4.1	861.8	861.8	862.2	0.4
AH	86.02	5,348	62,402	3.3	866.5	866.5	867.5	1.0
AI	86.58	4,570	54,953	3.7	869.0	869.0	870.0	1.0
AJ	86.91	4,330	42,780	4.8	870.2	870.2	871.0	0.8
AK	87.44	3,812	34,557	6.0	874.1	874.1	874.5	0.4

[1]Stream distance in miles decreasing downstream from 115th Avenue - Sta. 100.00

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

GILA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Gila River (continued)								
AL	87.83	4,669	46,294	4.4	876.3	876.3	877.0	0.7
AM	88.22	4,930	68,314	3.0	878.0	878.0	878.7	0.7
AN	88.82	4,984	50,702	4.1	878.9	878.9	879.7	0.8
AO	89.76	3,790	40,048	5.2	884.0	884.0	885.0	1.0
AP	90.45	4,660	40,776	5.1	887.6	887.6	888.2	0.6
AQ	91.04	5,217	42,769	4.8	891.1	891.1	892.0	0.9
AR	91.91	5,080	43,487	4.8	894.5	849.5	895 4	0.9
AS	92.88	3,548	35,335	5.9	900.9	900.9	901.9	1.0
AT	93.13	3,570	36,118	5.8	902.7	902.7	903.7	1.0
AU	93.90	3,359	39,452	5.3	908.6	908.6	909.1	0.5
AV	94.39	3,787	37,576	5.5	910.7	910.7	911.3	0.6
AW	95.34	3,498	30,941	6.7	917.1	917.1	918.1	1.0
AX	95.50	3,597	32,034	6.5	918.5	918.5	919.4	0.9
AY	95.64	3,700	36,434	5.7	919.8	919.8	920.6	0.8
AZ	95.93	3,510	36,887	5.6	922.8	922.8	923.8	1.0
BA	96.19	3,802	47,214	4.4	924.2	924.2	925.2	1.0
BB	97.09	5,800	54,919	3.8	926.8	926.8	927.6	0.8
BC	97.91	6,279	52,302	4.0	931.1	931.1	931.8	0.7

[1]Stream distance in miles decreasing downstream from 115th Avenue - Sta. 100.00

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

GILA RIVER

FLOODING SOURCE		FLOODWAY[3]			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Gila River (continued)								
BD	98.82[1]	7,019	52,603	4.0	937.7	937.7	938.6	0.9
BE	98.89[1]	7,355	50,837	4.1	939.0	939.0	940.0	1.0
BF	99.01[1]	7,475	53,260	3.9	939.1	939.1	940.1	1.0
BG	99.27[1]	8,749	74,819	2.8	940.9	940.9	941.8	0.9
BH	100.00[1]	7,207	49,060	4.3	946.9	946.9	947.3	0.4
Gila River Split Flow North of Buckeye Canal								
A	93.14[1]	--	--	--	903.6	903.6	--	--
B	93.67[1]	--	--	--	907.9	907.9	--	--
C	94.40[1]	--	--	--	914.4	914.4	--	--
D	95.01[1]	--	--	--	916.6	916.6	--	--
Salt River								
A	0.15[2]	7,300[4]	54,570	3.8	948.4	948.4	948.9	0.5
B	0.72[2]	6,732[4]	61,577	3.4	950.4	950.4	951.2	0.8
C	1.10[2]	6,254[4]	53,235	3.9	951.6	951.6	952.3	0.7

[1]Stream distance in miles decreasing downstream from 115th Avenue - Sta. 100.00
[2]Stream distance in miles increasing upstream from 115th Avenue - Sta. 0.00
[3]The Gila River floodway does not extend north of the Buckeye Canal
[4]This width extends beyond county boundary

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

GILA RIVER, GILA RIVER SPLIT FLOW NORTH OF BUCKEYE CANAL AND SALT RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Salt River (continued)								
D	1.90	3,012[2]	16,298	9.0	955.3	955.3	956.2	0.9
E	2.03	2,978[2]	24,259	6.1	958.4	958.4	959.2	0.8
F	2.90	3,302[2]	26,536	5.6	965.5	965.5	966.4	0.9
G	3.11	3,490[2]	28,247	5.3	967.0	967.0	967.8	0.8
H	3.30	3,230[2]	27,635	5.5	968.4	968.4	969.0	0.6
I	3.56	2,911[2]	23,942	6.3	970.1	970.1	970.5	0.4
J	3.76	2,856[2]	27,004	5.6	971.9	971.9	972.6	0.7
K	4.08	2,320[2]	20,303	7.5	974.6	974.6	975.4	0.8
L	4.50	2,910[2]	24,355	6.3	978.0	978.0	978.9	0.9
M	4.82	3,514	23,135	6.6	980.7	980.7	981.3	0.6
N	5.40	2,721	19,406	8.0	988.2	988.2	988.2	0.0
O	5.58	2,424	23,192	6.7	989.2	989.2	990.0	0.8
P	6.62	2,824	26,305	6.0	998.2	998.2	998.7	0.5
Q	7.00	3,250	21,697	7.3	1000.2	1000.2	1000.9	0.7
R	7.48	3,860	22,359	7.1	1004.8	1004.8	1005.5	0.7
S	7.88	3,880	33,923	4.7	1007.4	1007.4	1008.1	0.7
T	8.12	3,393	25,085	6.4	1008.1	1008.1	1008.8	0.7
U	8.80	3,121[2]	20,499	7.9	1015.7	1015.7	1016.2	0.5

[1]Stream distance in miles increasing upstream from 115th Avenue - Sta. 0.00
[2]This width extends beyond county boundary

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

SALT RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Salt River (continued)								
V	9.00	3,710[2]	21,832	7.5	1016.7	1016.7	1017.3	0.6
W	9.20	3,917[2]	24,665	6.6	1019.8	1019.8	1020.1	0.3
X	9.60	3,780[2]	29,325	5.6	1023.1	1023.1	1023.6	0.5
Y	10.18	3,260[2]	19,409	8.5	1027.9	1027.9	1028.1	0.2
Z	10.57	2,660[2]	23,445	7.0	1032.3	1032.3	1032.7	0.4
AA	10.96	2,780[2]	19,878	8.3	1035.3	1035.3	1035.8	0.5
AB	10.98	2,780[2]	16,631	9.9	1035.6	1035.6	1035.8	0.2
AC	11.39	2,100[2]	21,649	7.7	1039.8	1039.8	1040.2	0.4
AD	11.58	2,079[2]	38,378	4.4	1041.2	1041.2	1041.7	0.5
AE	24.36	1,860[2]	20,334	9.1	1164.2	1164.2	1164.4	0.2
AF	24.96	2,190[2]	23,685	7.8	1170.5	1170.5	1171.0	0.5
AG	25.51	2,027	21,262	8.8	1174.6	1174.6	1175.3	0.7
AH	25.92	1,813	29,224	6.4	1180.5	1180.5	1181.2	0.7
AI	26.35	2,091	33,056	5.8	1182.1	1182.1	1182.8	0.7
AJ	27.48	4,024[2]	21,976	8.8	1194.2	1194.2	1194.5	0.3
AK	27.86	3,676[2]	28,984	6.7	1198.2	1198.2	1198.8	0.6
AL	28.05	3,236[2]	22,908	8.5	1199.5	1199.5	1200.0	0.5
AM	28.55	3,335[2]	24,649	7.9	1205.3	1205.3	1205.7	0.4

[1]Stream distance in miles increasing upstream from 115th Avenue - Sta. 0.00
[2]This width extends beyond county boundary

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

SALT RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Salt River (continued)								
AN	28.83	3,370[2]	33,109	5.9	1208.8	1208.8	1209.0	0.2
AO	29.09	2,678[2]	16,441	11.8	1209.3	1209.3	1209.3	0.0
AP	29.44	1,214[2]	15,960	12.2	1213.4	1213.4	1213.4	0.0
AQ	29.93	4,176[2]	30,649	6.3	1219.1	1219.1	1219.4	0.3
AR	30.22	2,738[2]	16,175	12.0	1221.3	1221.3	1221.5	0.2
AS	30.65	5,175[2]	62,626	3.1	1227.1	1227.1	1228.1	1.0
Salt River Split Flow Between 35th Avenue and 51st Avenue								
A	5.79	--[3]	--[3]	--[3]	990.5	990.5	--	--
B	6.16	--[3]	--[3]	--[3]	991.4	991.4	--	--
C	6.34	--[3]	--[3]	--[3]	993.5	993.5	--	--
D	6.83	--[3]	--[3]	--[3]	995.8	995.8	--	--
E	7.49	--[3]	--[3]	--[3]	1002.6	1002.6	--	--
F	7.89	--[3]	--[3]	--[3]	1003.5	1003.5	--	--
G	8.32	--[3]	--[3]	--[3]	1007.6	1007.6	--	--
H	9.36	--[3]	--[3]	--[3]	1016.6	1016.6	--	--

[1]Stream distance in miles increasing upstream from 115th Avenue - Sta. 0.00
[2]This width extends beyond county boundary
[3]The Salt River floodway does not extend into the Split Flow Area

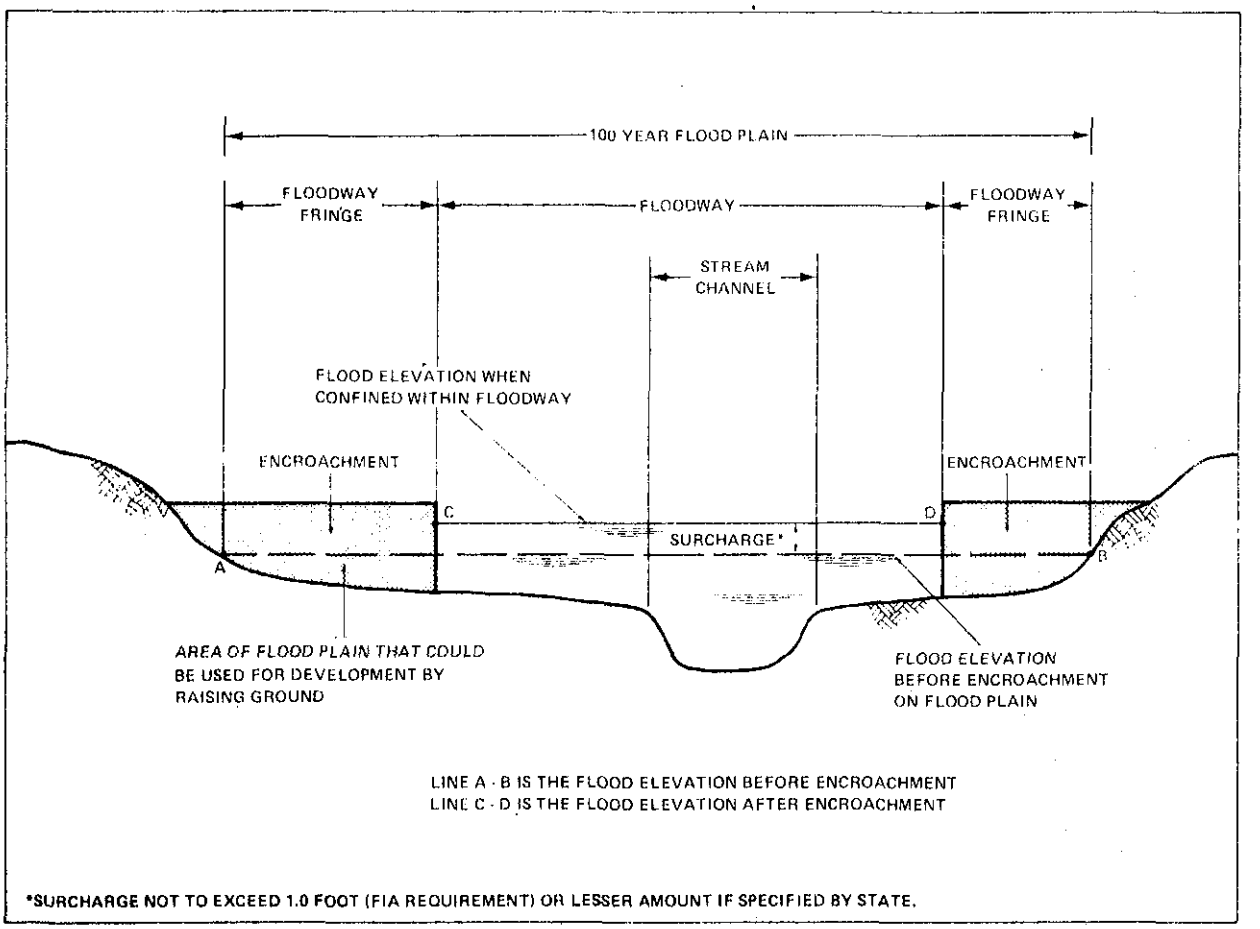
TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOODWAY DATA

SALT RIVER AND SALT RIVER SPLIT FLOW
BETWEEN 35TH AVENUE AND 51ST AVENUE



FLOODWAY SCHEMATIC Figure 2

The locations of reaches determined for the flooding sources of the unincorporated areas of Maricopa County are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 2).

5.2 Flood Hazard Factors

The FHF is the FIA 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

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.)			
Agua Fria River							
Reach 1	1505	-1.1	--	+1.2	010	A2	Varies
Reach 2	645,905,910, 915,920, 1205,1210, 1215,1505	-2.2	--	+1.4	020	A4	Varies
New River							
Reach 1	1210	-2.2	--	--	020	A4	Varies
Reach 2	1210	-4.3	--	--	045	A9	Varies
Reach 3	1210	-6.6	--	--	065	A13	Varies
Reach 4	920,1210	-3.4	--	--	035	A7	Varies
Reach 5	920	-6.7	--	--	065	A13	Varies
Reach 6	920	-4.7	--	--	045	A9	Varies
Reach 7	920	-6.3	--	--	065	A13	Varies
Reach 8	920	-7.2	--	--	070	A14	Varies
Reach 9	920	-3.3	--	--	035	A7	Varies
Reach 10	910,920	-2.5	--	--	025	A5	Varies
Reach 11	910	-2.2	--	--	020	A4	Varies
Reach 12	910	-2.8	--	--	030	A6	Varies
Reach 13	645,910	-1.7	--	--	015	A3	Varies

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

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

AGUA FRIA RIVER AND NEW RIVER

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.)			
New River (continued) Shallow Flooding Area 1	645,910	AVERAGE	DEPTH	1 FOOT	--	A0	--
Hassayampa River							
Reach 1	335	-13.5	-5.7	+10.7	135	A23	Varies
Reach 2	335	-5.7	-2.2	+4.2	055	A11	Varies
Reach 3	335	-6.0	-2.6	+5.5	060	A12	Varies
Reach 4	090,095,335	-4.0	-1.5	+3.1	040	A8	Varies
Reach 5	090	-2.9	-1.0	+3.0	030	A6	Varies
Skunk Creek							
Reach 1	910	-2.4	--	--	025	A5	Varies
Reach 2	655,665,910, 930	-2.0	--	--	020	A4	Varies

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

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

NEW RIVER, HASSAYAMPA RIVER AND SKUNK CREEK

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.)			
Gila River							
Reach 1	1465	-5.5	-1.1	+1.9	055	A11	Varies
Reach 2	1465,1470,	-9.5	-1.9	+3.5	095	A19	Varies
Reach 3	1480, 1485,1490, 1495,1505	-7.0	-1.3	+2.6	070	A14	Varies
Reach 4	1505	-5.1	-1.3	+2.2	050	A10	Varies
Shallow Flooding Area 1	1470	AVERAGE	DEPTH	2 FEET	--	A0	--
Shallow Flooding Area 2	1485	AVERAGE	DEPTH	2 FEET	--	A0	--
Gila River Split Flow at Buckeye Canal Reach 1	1485,1505	-2.7[4]	--	+1.8	025	A5	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted average
[3]Rounded to the nearest foot - see map
[4]Difference between 100-year flood and ground elevations

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

GILA RIVER AND GILA RIVER SPLIT FLOW AT BUCKEYE CANAL

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.)			
Salt River							
Reach 1	1510,1530	-5.1	-1.3	+2.2	050	A10	Varies
Reach 2	1265	-7.2	-1.8	+3.8	070	A14	Varies
Reach 3	1270	-5.7	-1.4	+2.7	055	A11	Varies
Reach 4	1270	-6.1	-1.7	+3.1	060	A12	Varies
Shallow Flooding Area 1	1530	AVERAGE	DEPTH	2 FEET	--	A0	--
Salt River Split Flow Between 35th Avenue and 51st Avenue							
Reach 1	1510,1530	-4.0[4]	--	+3.1	040	A8	Varies
Reach 2	1530	-5.2[4]	--	+4.5	050	A10	Varies
Reach 3	1530	-3.4[4]	--	+4.1	035	A7	Varies
Indian Bend Wash							
Reach 1	1255	-3.0	-1.0	+2.6	030	A6	Varies
Reach 2	975	-2.0	-0.6	+1.5	020	A4	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted average
[3]Rounded to the nearest foot - see map
[4]Difference between 100-year flood and ground elevations

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

SALT RIVER, SALT RIVER SPLIT FLOW BETWEEN 35TH AVENUE AND 51ST AVENUE AND INDIAN BEND WASH

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Indian Bend Wash Shallow Flooding Area 1	1255	AVERAGE	DEPTH	3 FEET	--	AO	--

[1]Flood Insurance Rate Map Panel
[2]Weighted average

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

INDIAN BEND WASH

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 unincorporated area of Maricopa County 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 A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A19, A23:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown and zones assigned according to the FHFs.
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.
Zone D:	Areas of undetermined, but possible flood hazard.

Table 2, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in Maricopa County.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Maricopa County 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 FIA.

6.0 OTHER STUDIES

The Los Angeles District of the U. S. Army Corps of Engineers has published five Flood Prone Information Studies for Maricopa County (References 1, 2, 3, 4, and 5). These studies were used for the delineation of the 100-year flood boundaries for those segments of the flooding sources that were not studied by detailed methods.

Yost and Gardner, Engineers, have prepared a drainage study for the City of Phoenix, Arizona, which was used for the delineation of approximate A zones in the area adjacent to Cave Creek (Reference 19).

Harris-Toups Associates prepared a detailed hydrologic study on the Gila River (Reference 12) and a detailed hydraulic study on the Gila and Salt Rivers (Reference 24) which were used in the preparation of this Flood Insurance 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 Federal Insurance Administration, Regional Director, 450 Golden Gate Avenue, P. O. Box 36003, San Francisco, California 94102.

8.0 BIBLIOGRAPHY AND REFERENCES

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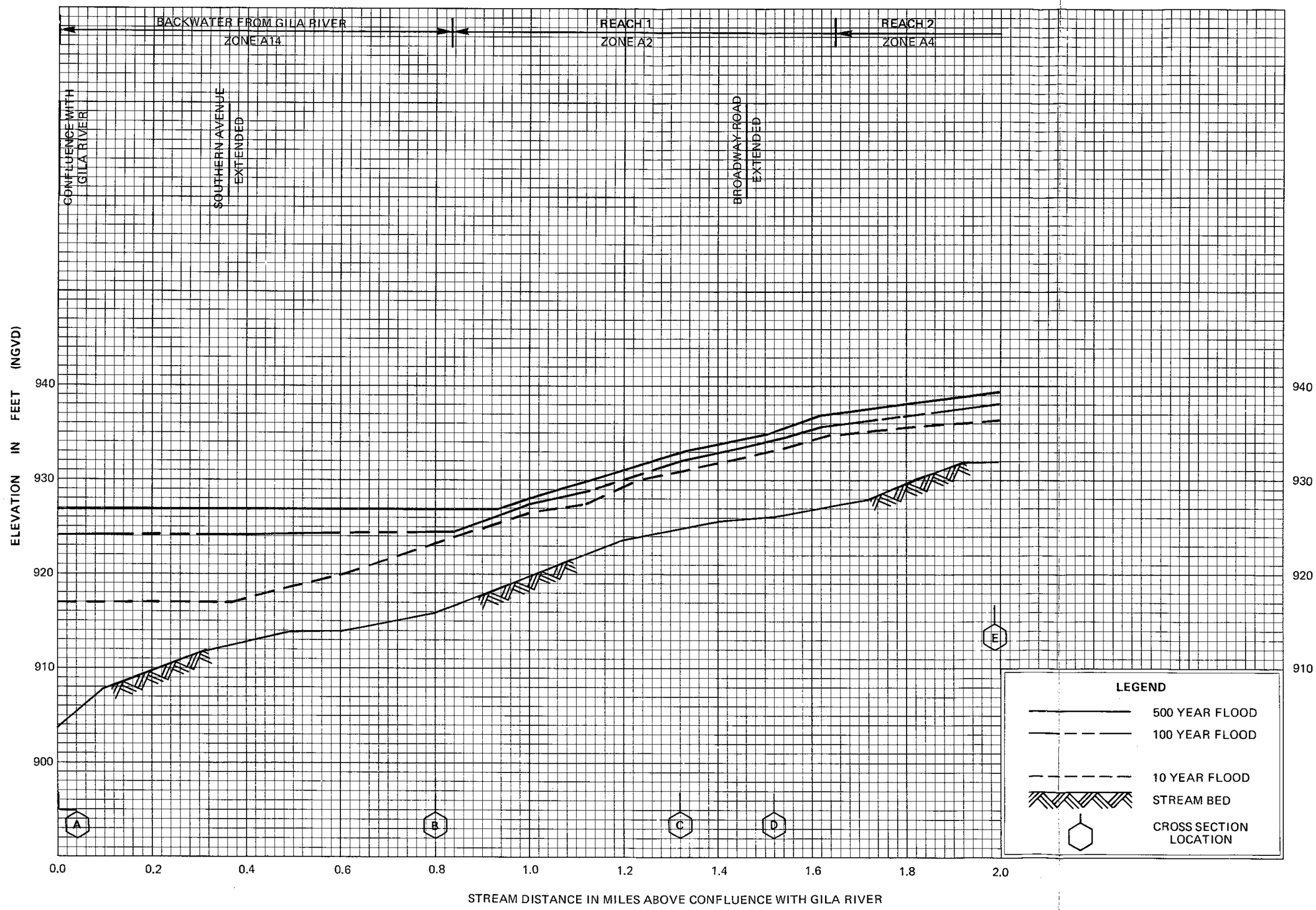


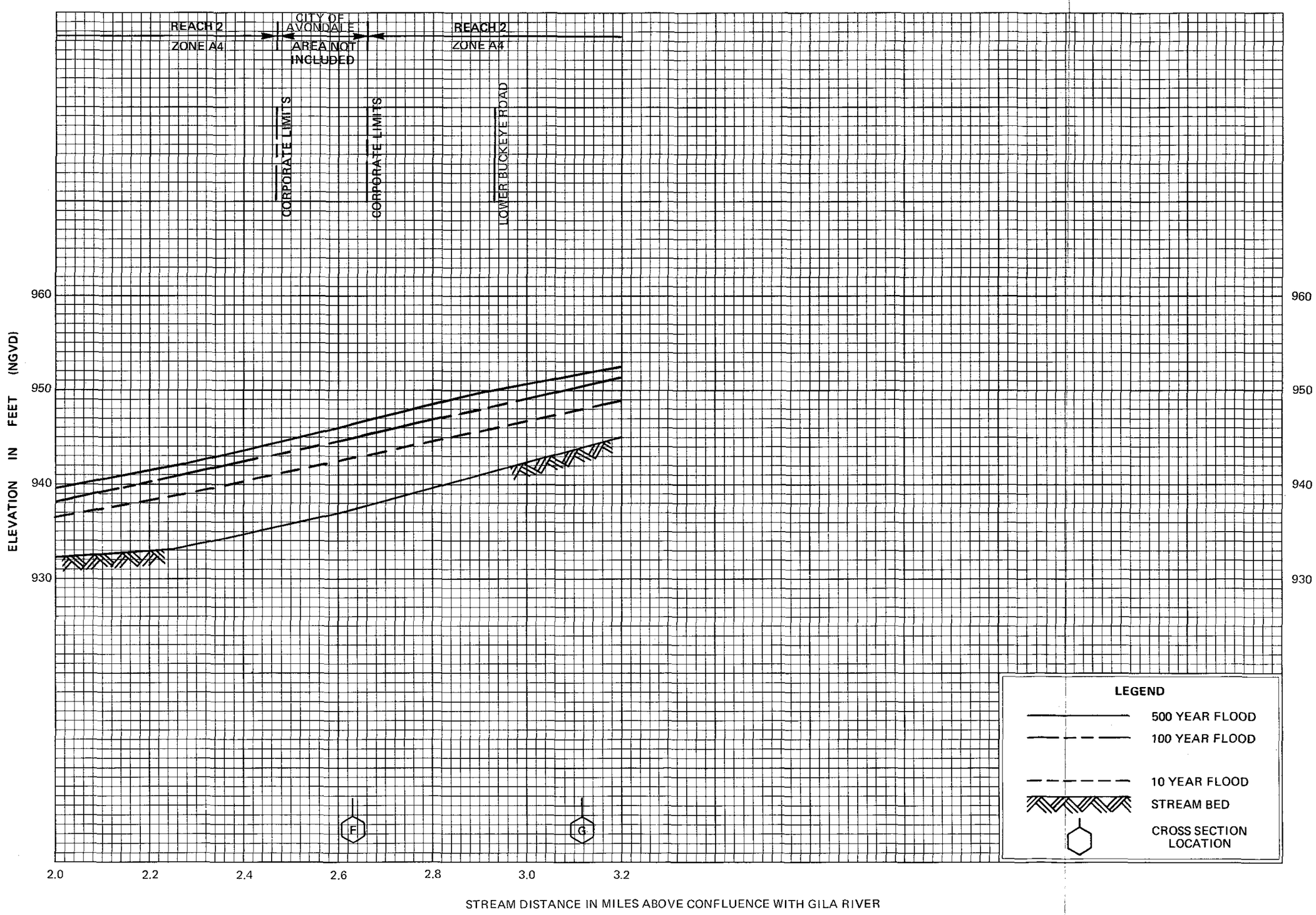
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

01P



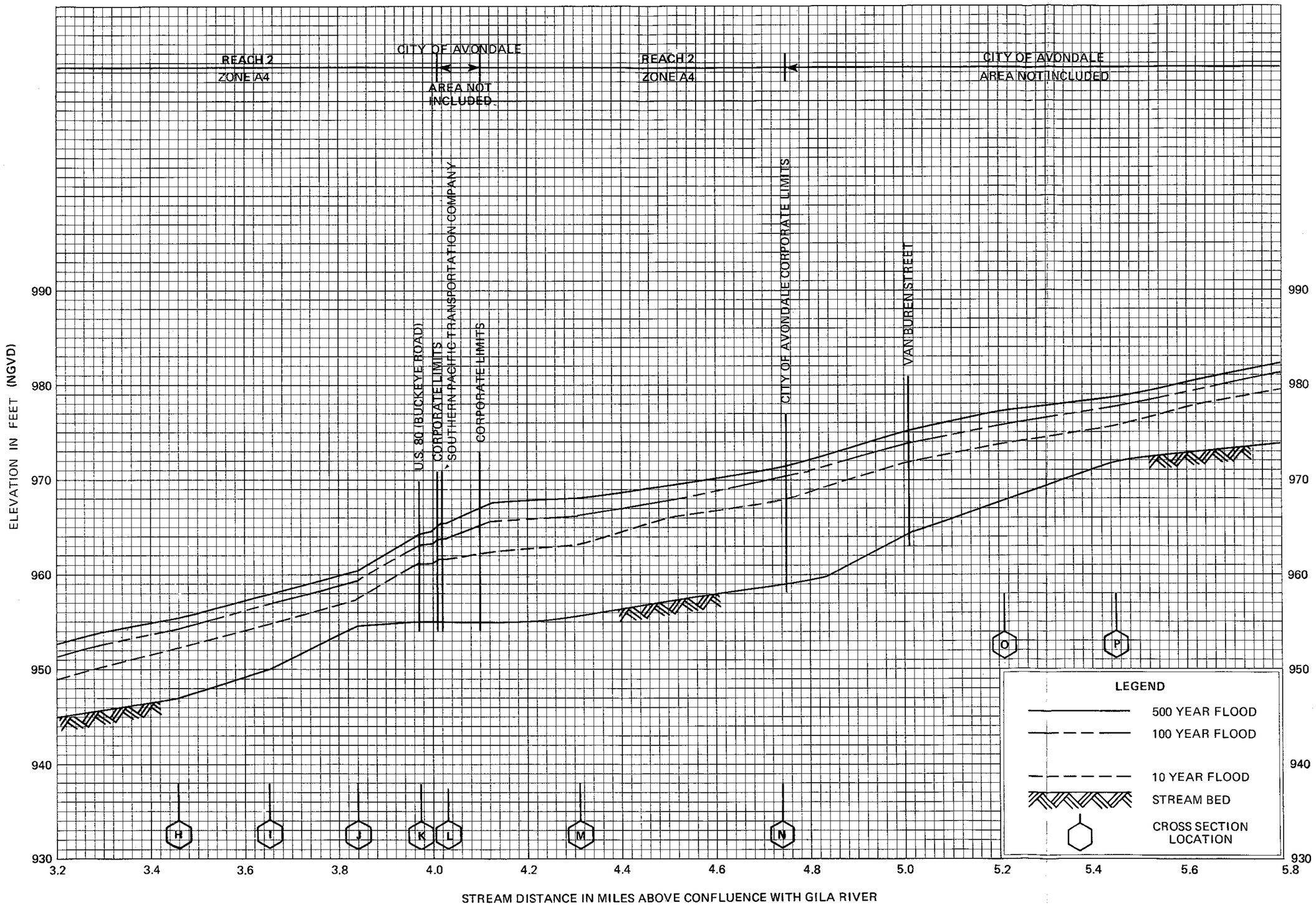
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

02P



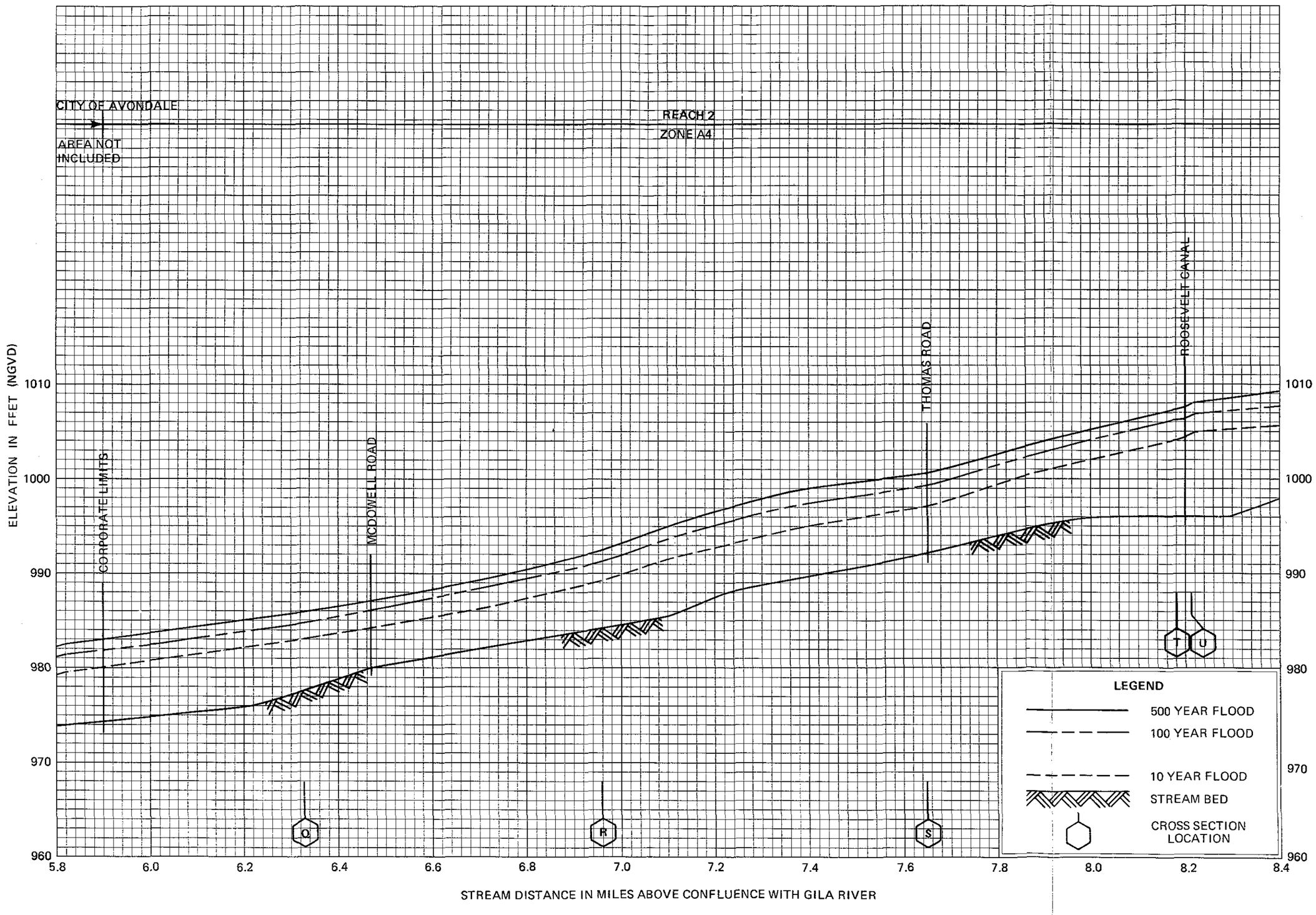
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

03P



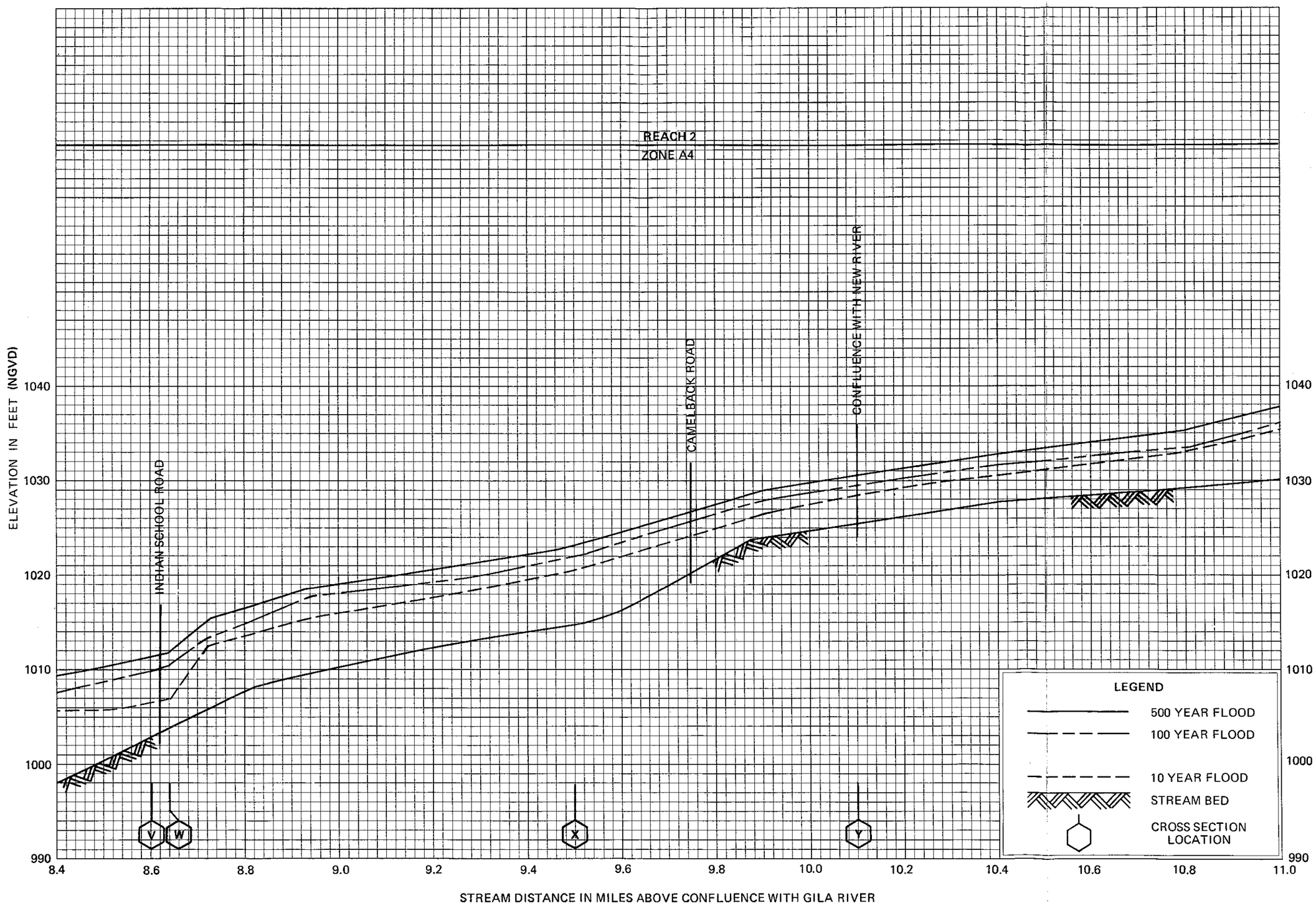
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

04P



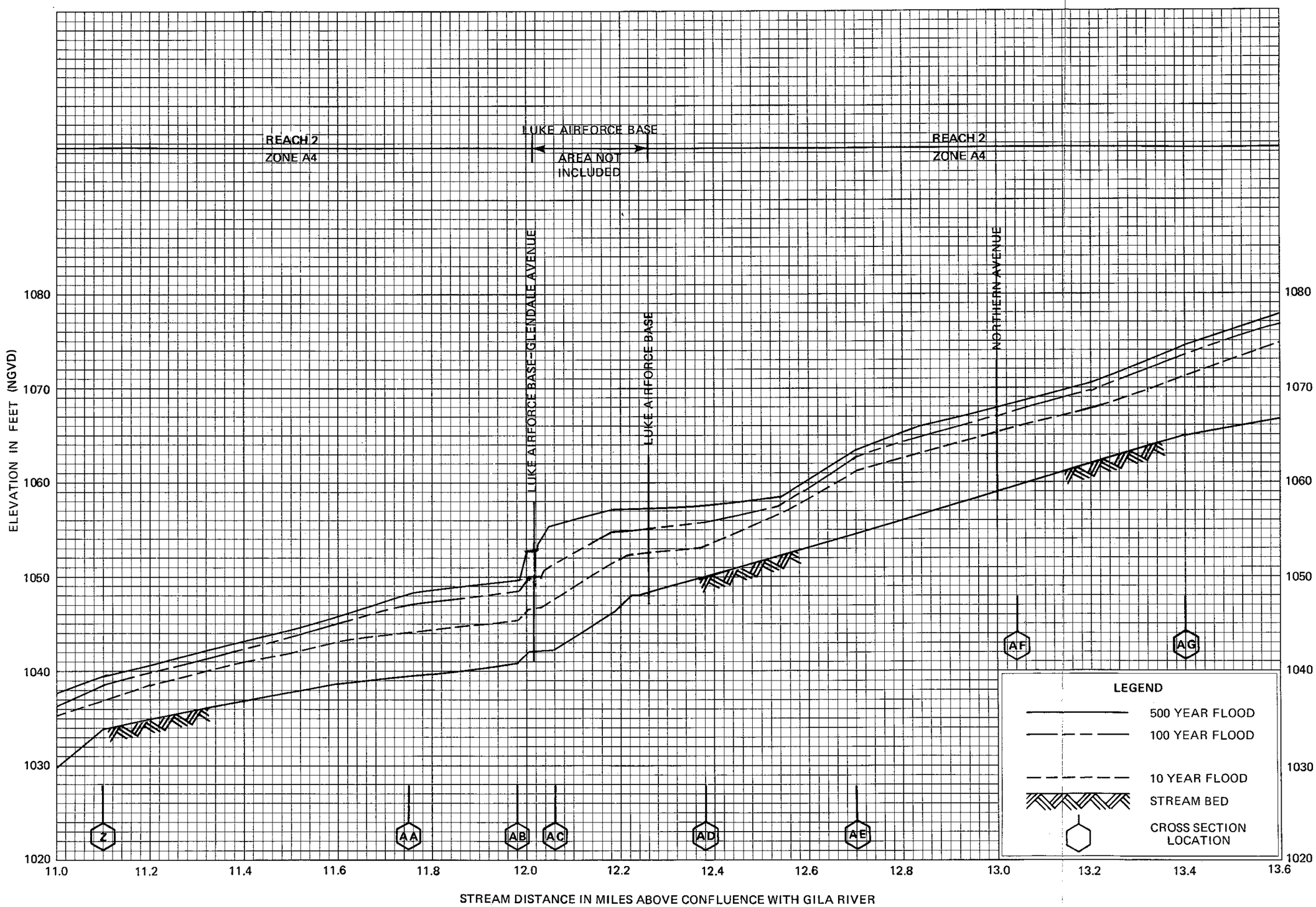
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

05P



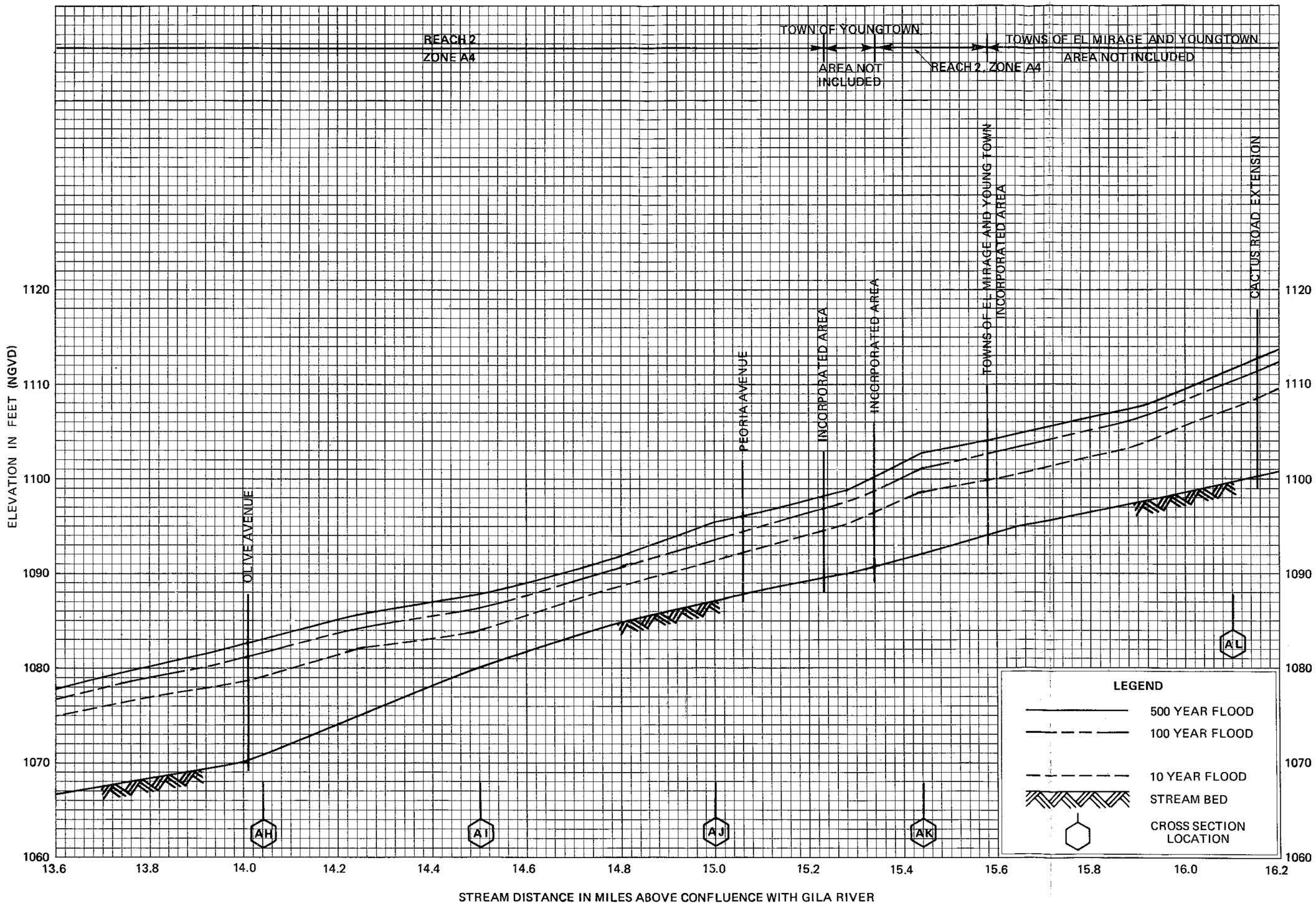
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

06P



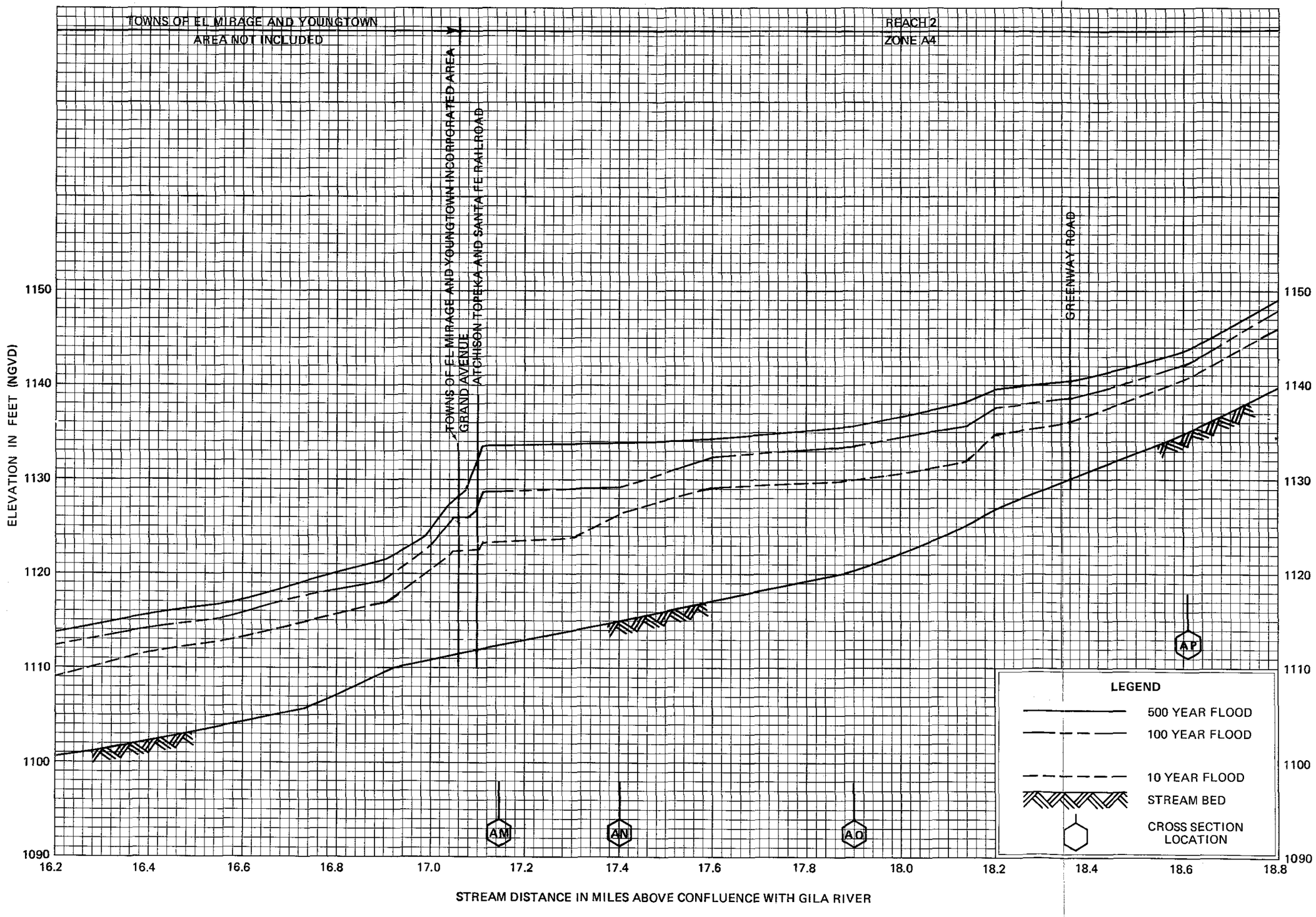
FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

07P



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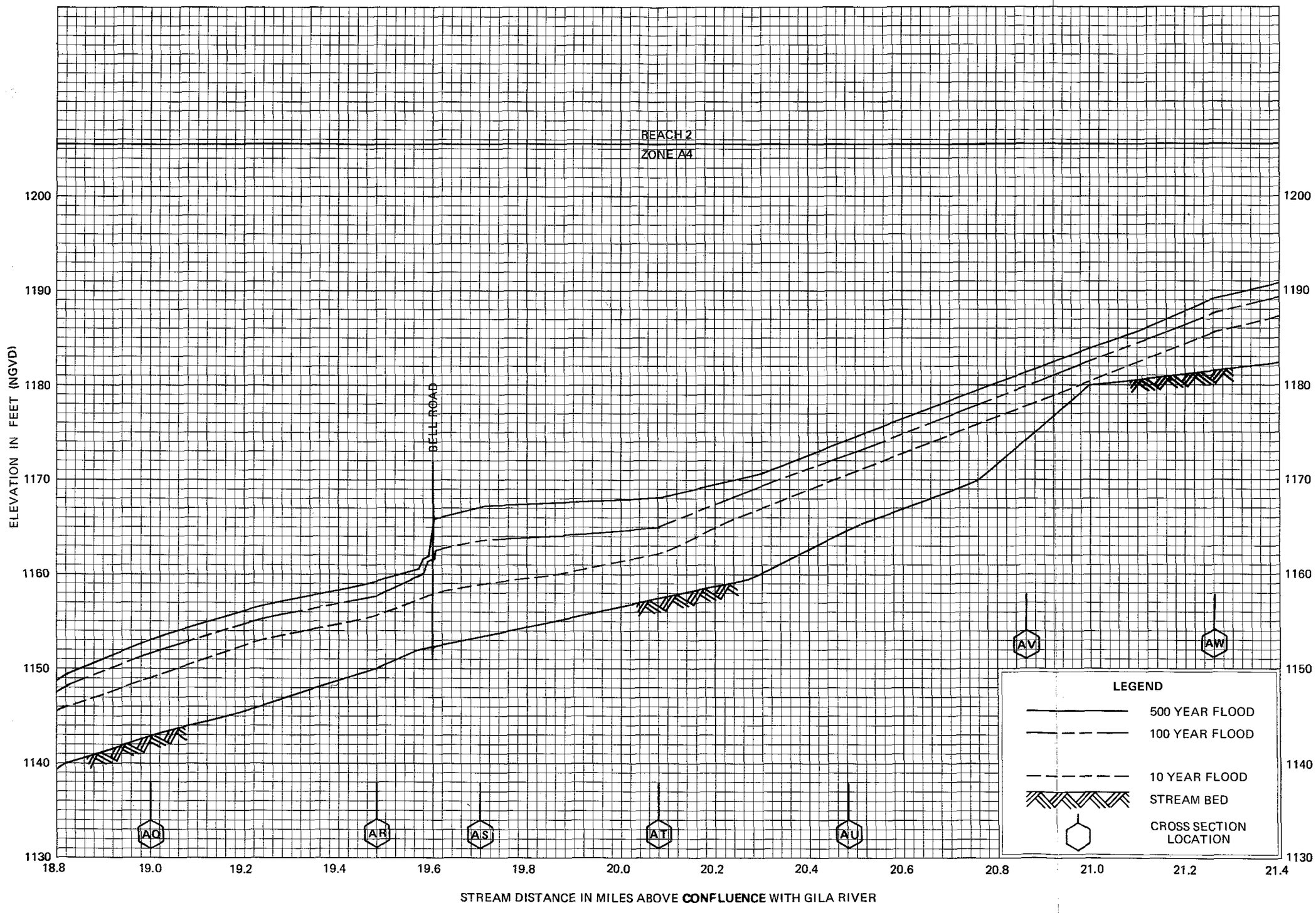
AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

08P



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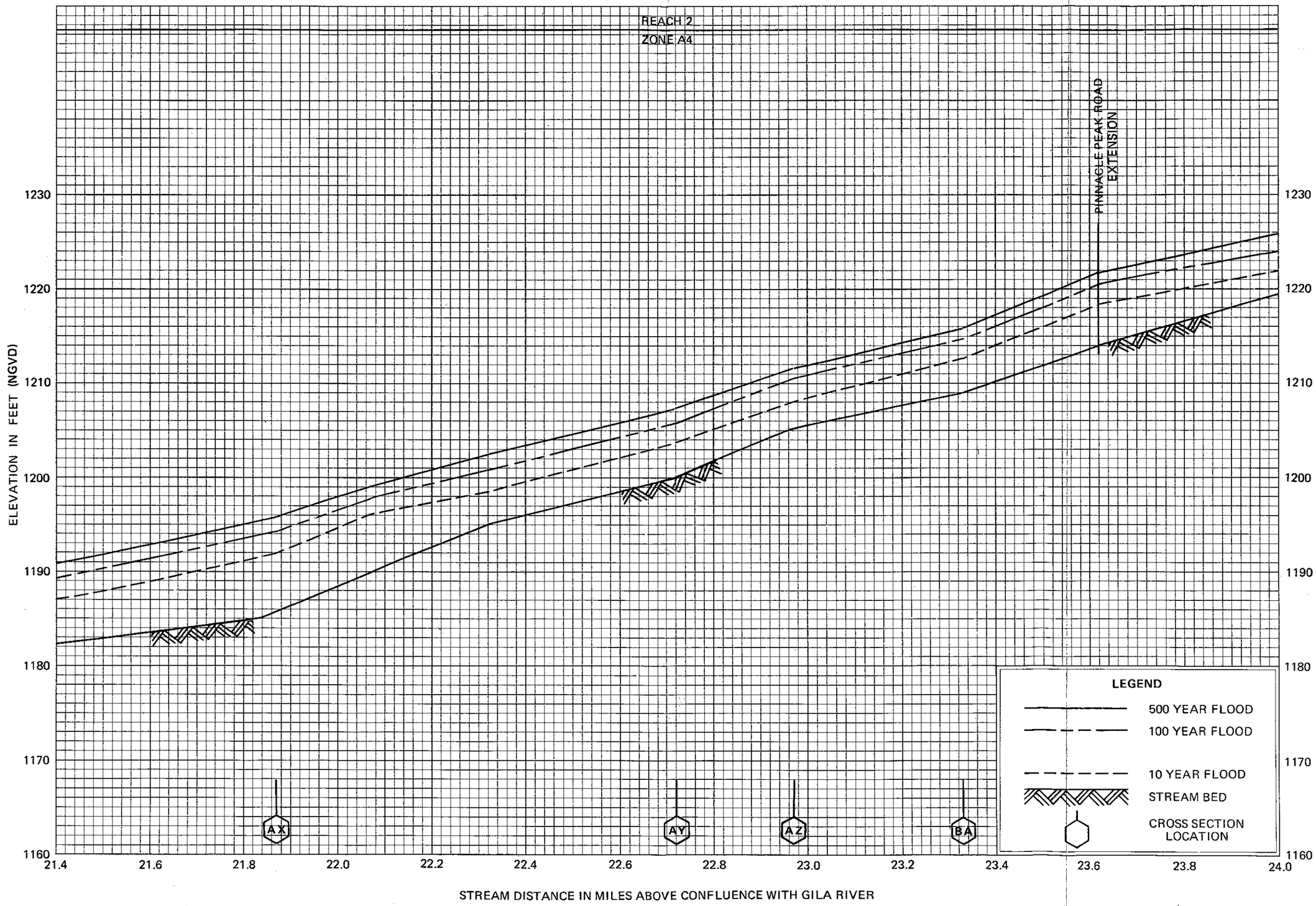
AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

09P



FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ

UNINCORPORATED AREAS

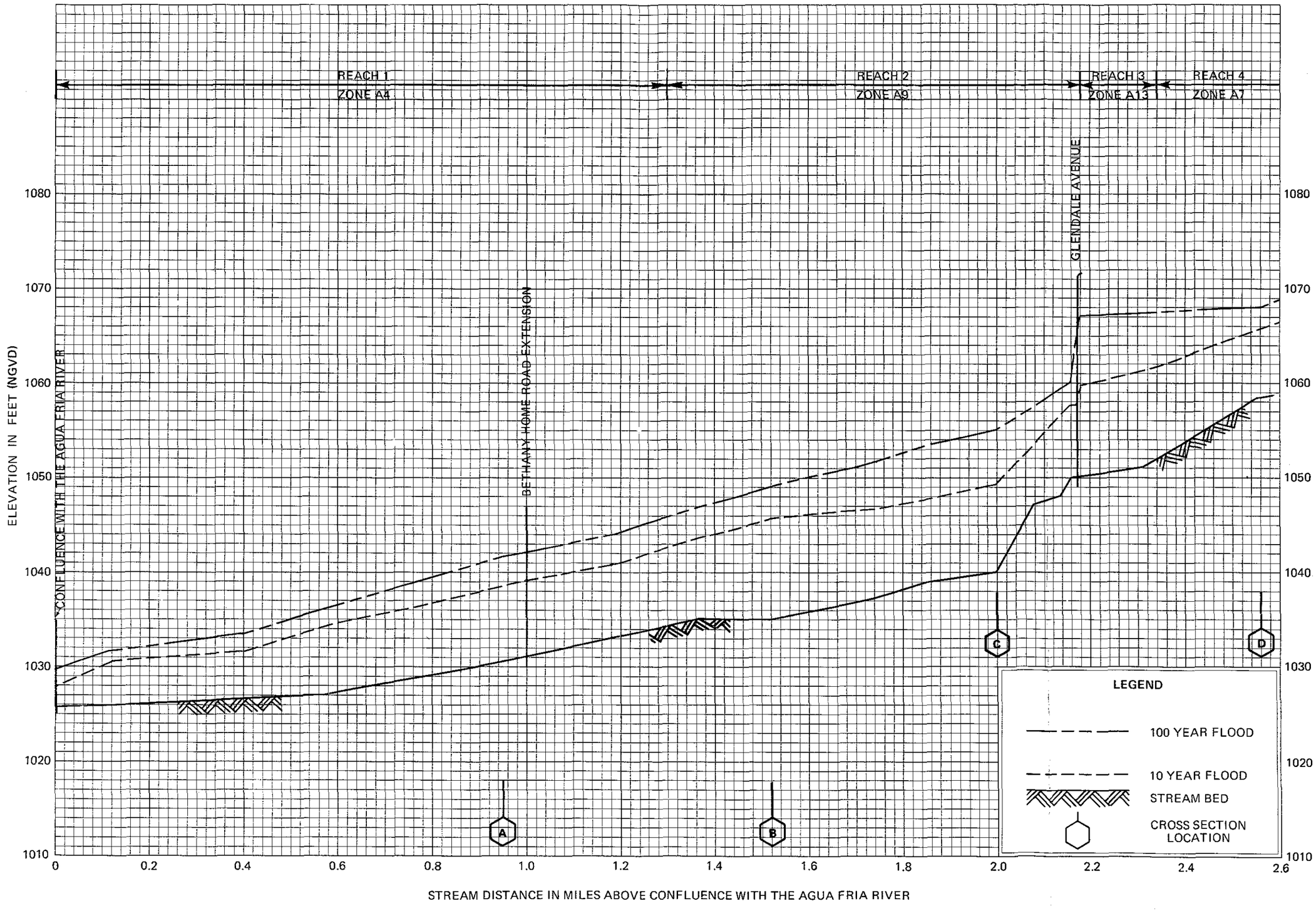
10P

FLOOD PROFILES

AGUA FRIA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



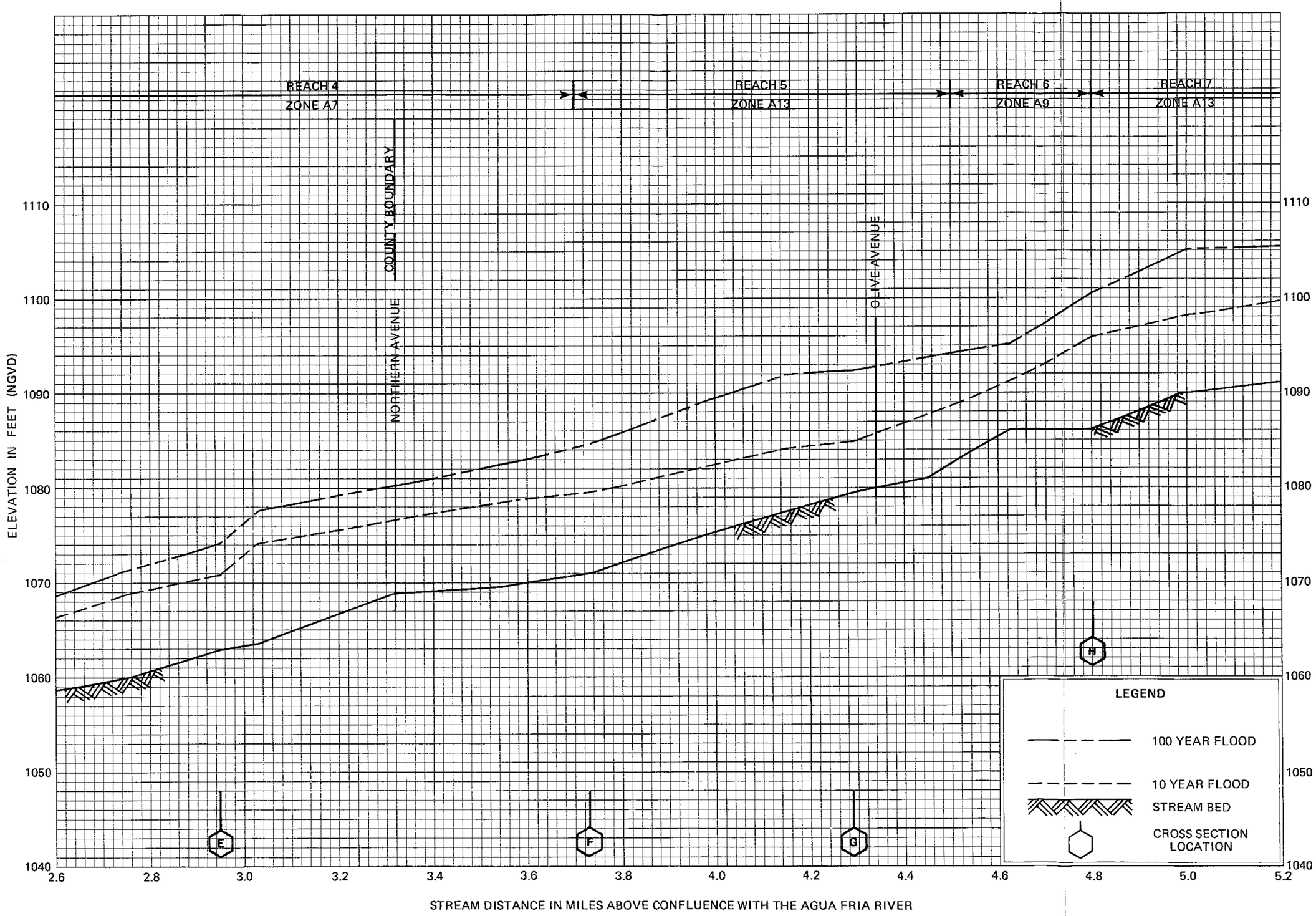
FLOOD PROFILES

NEW RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

12P



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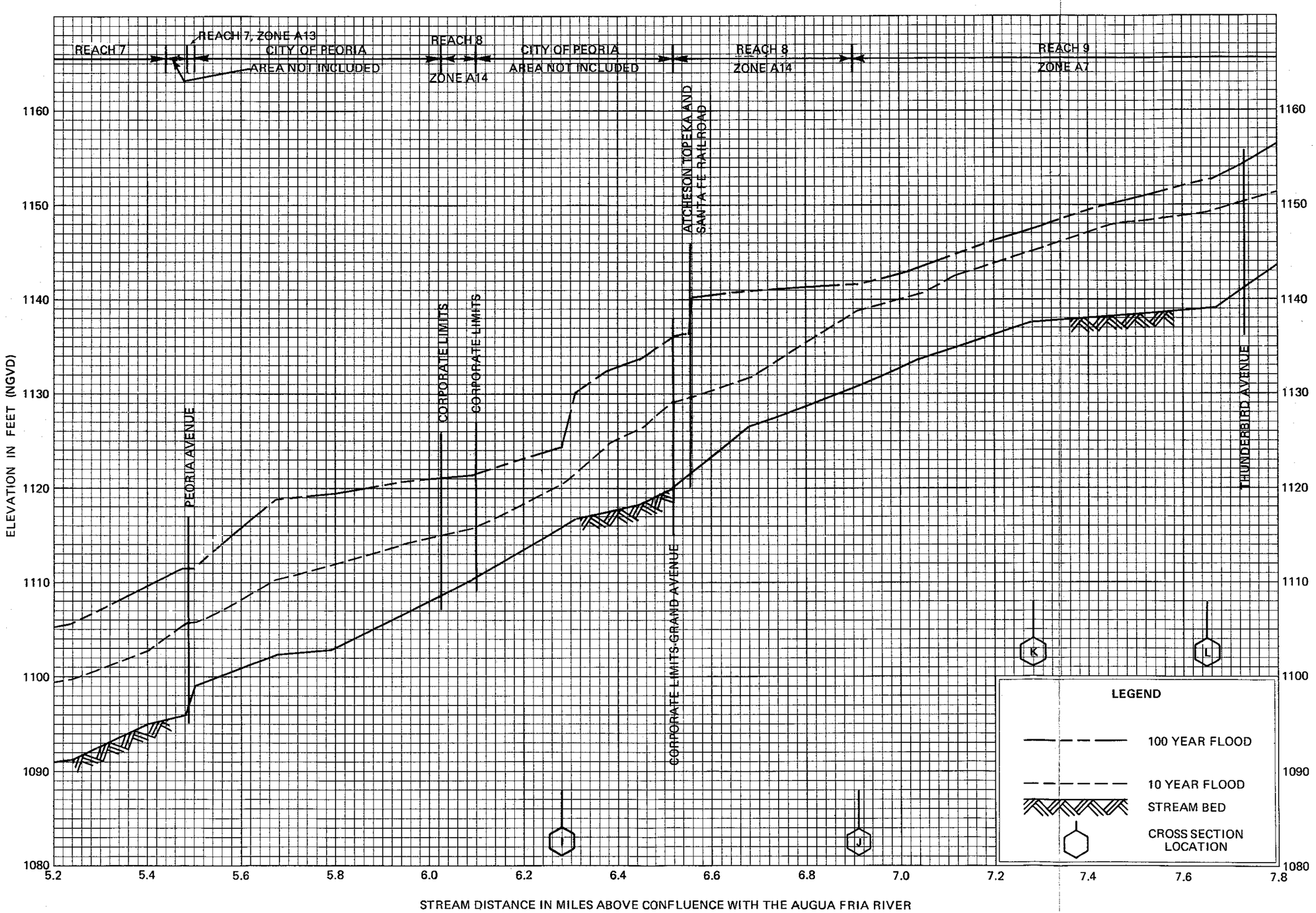
NEW RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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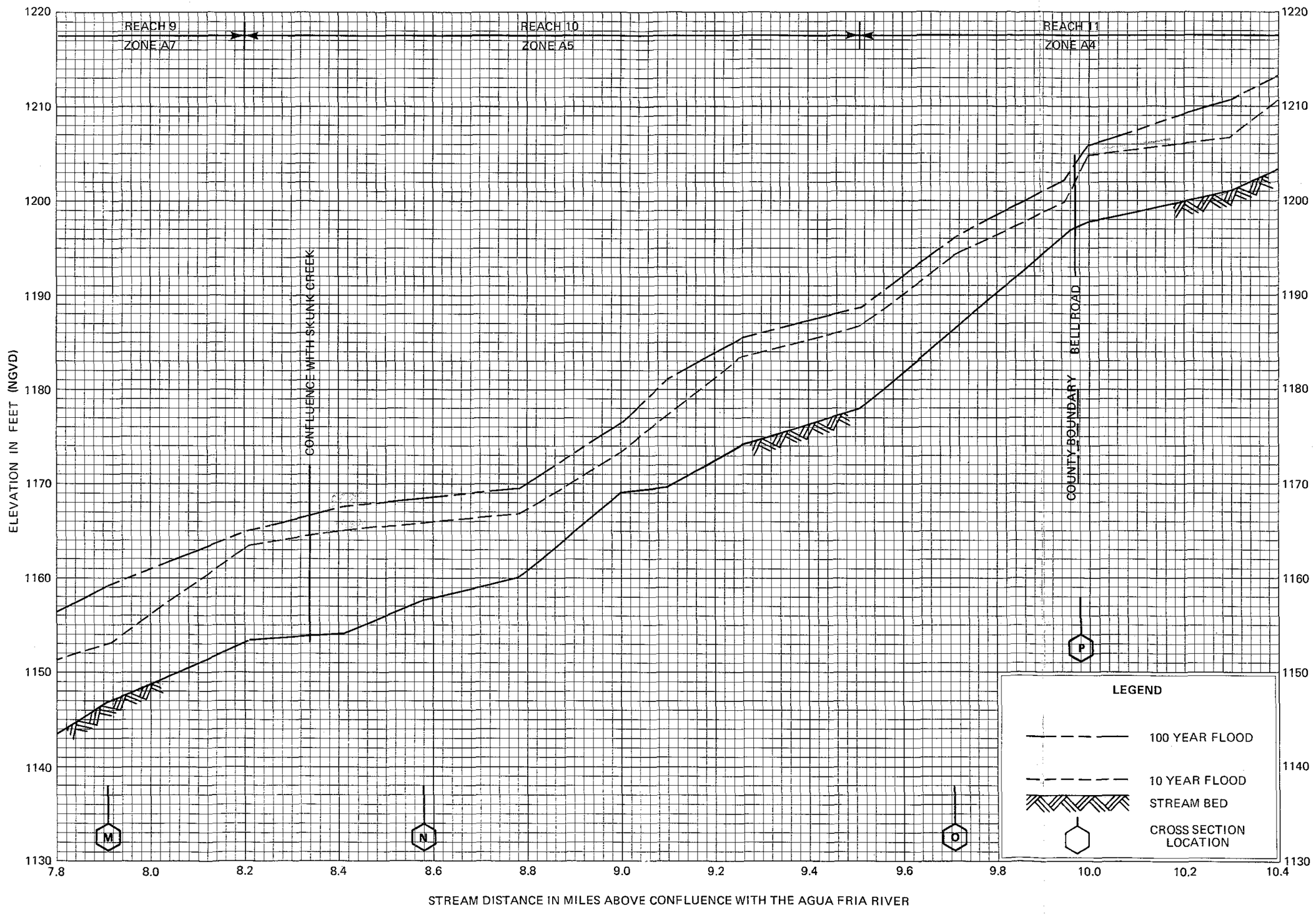
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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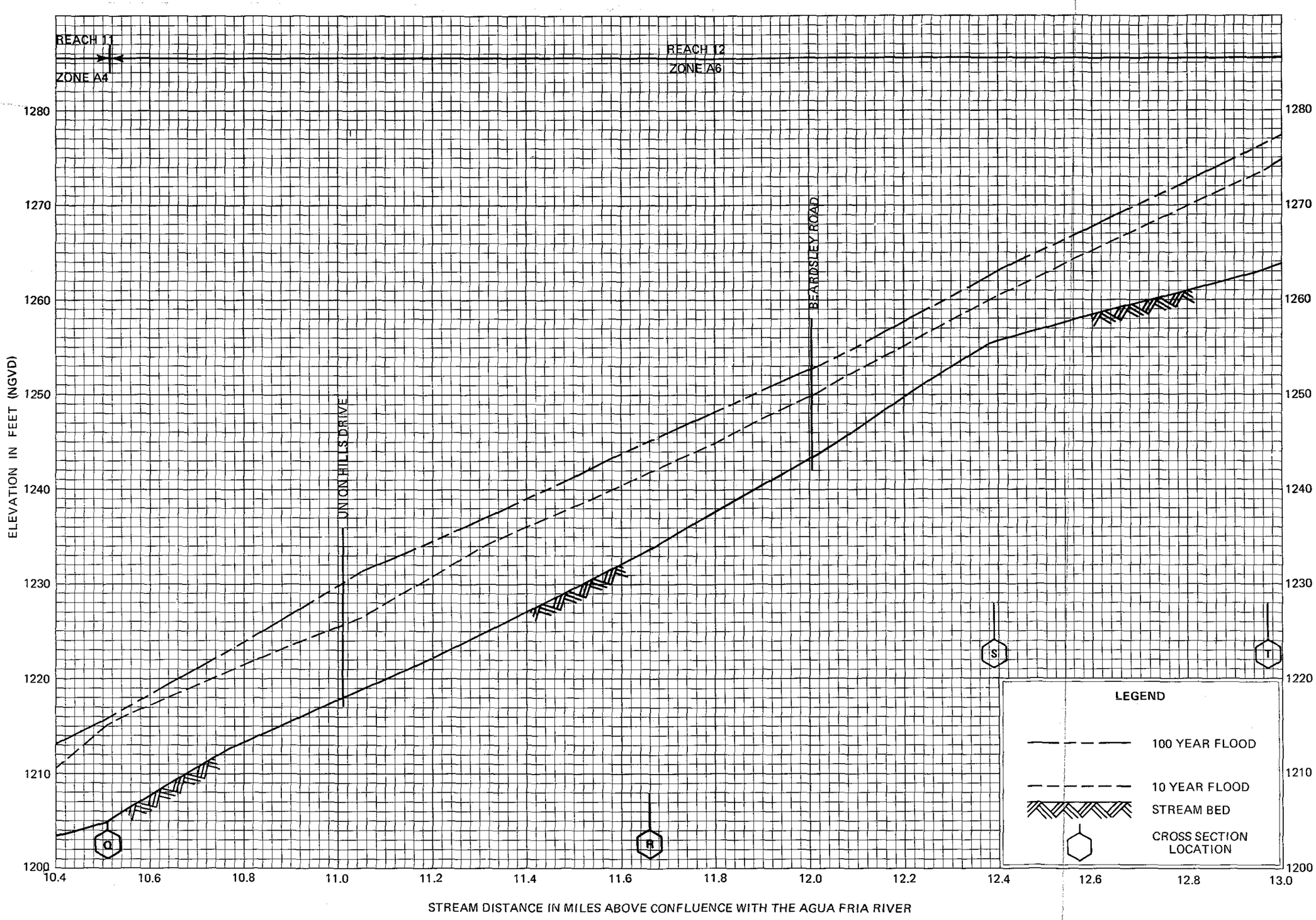
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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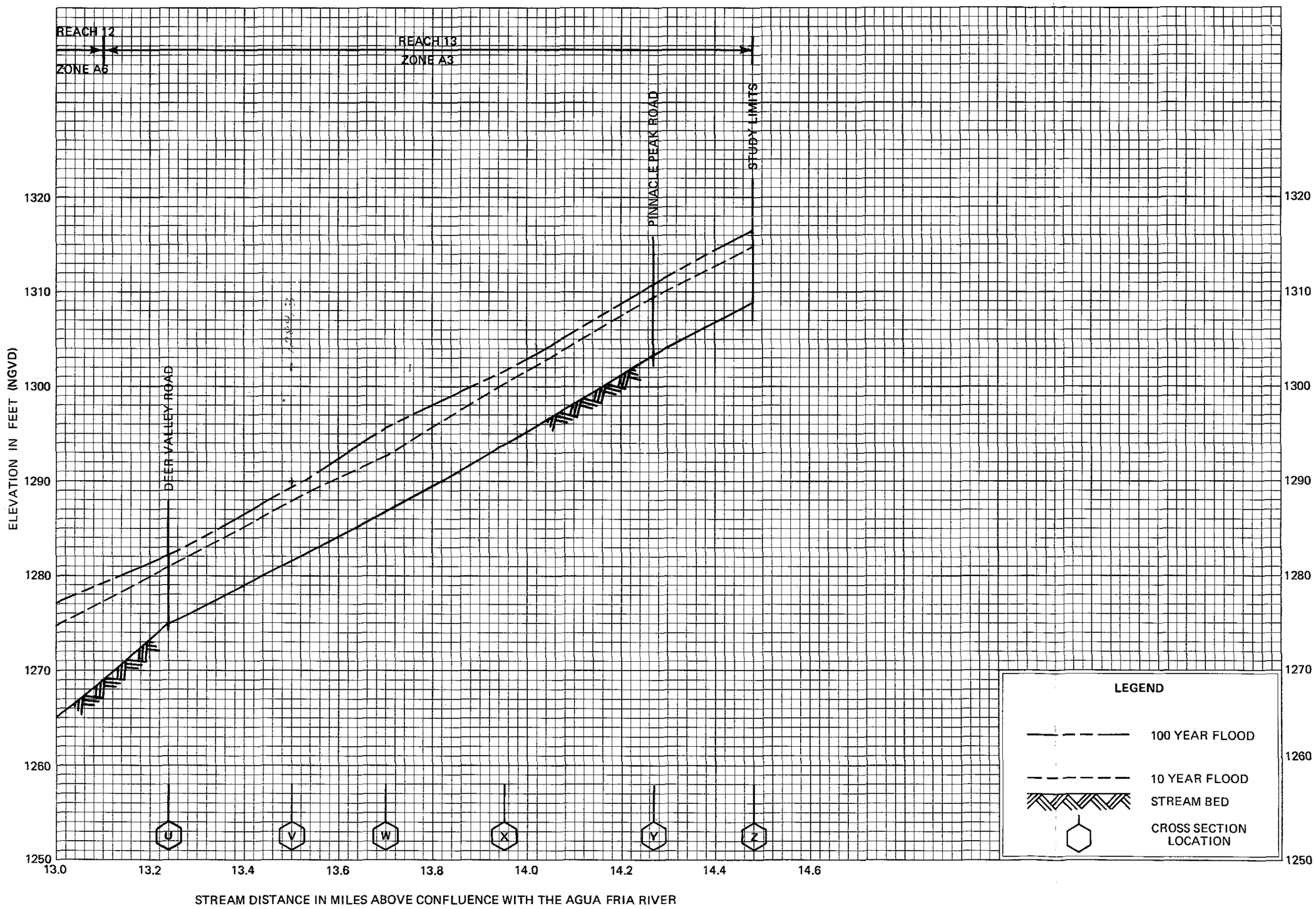
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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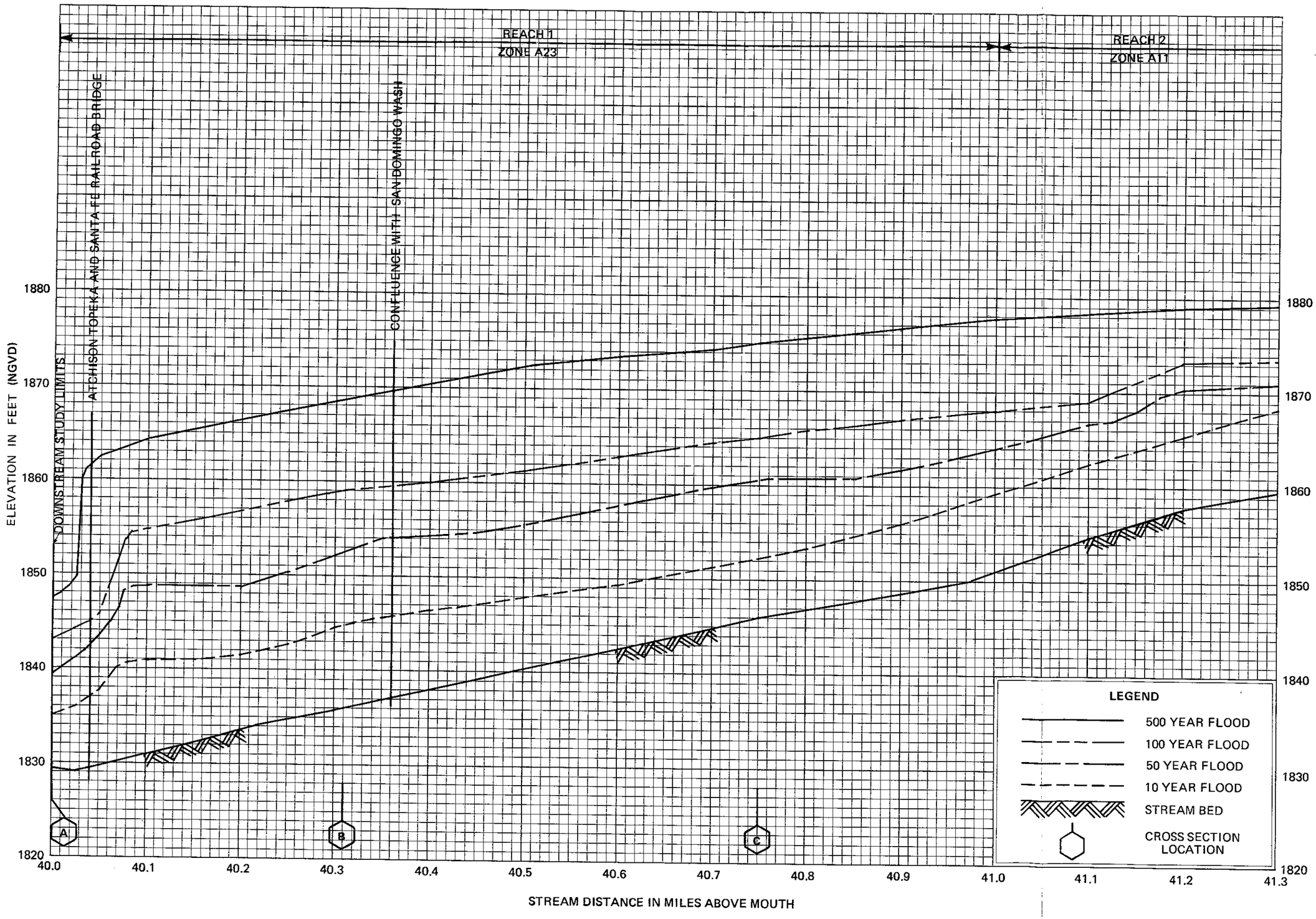
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

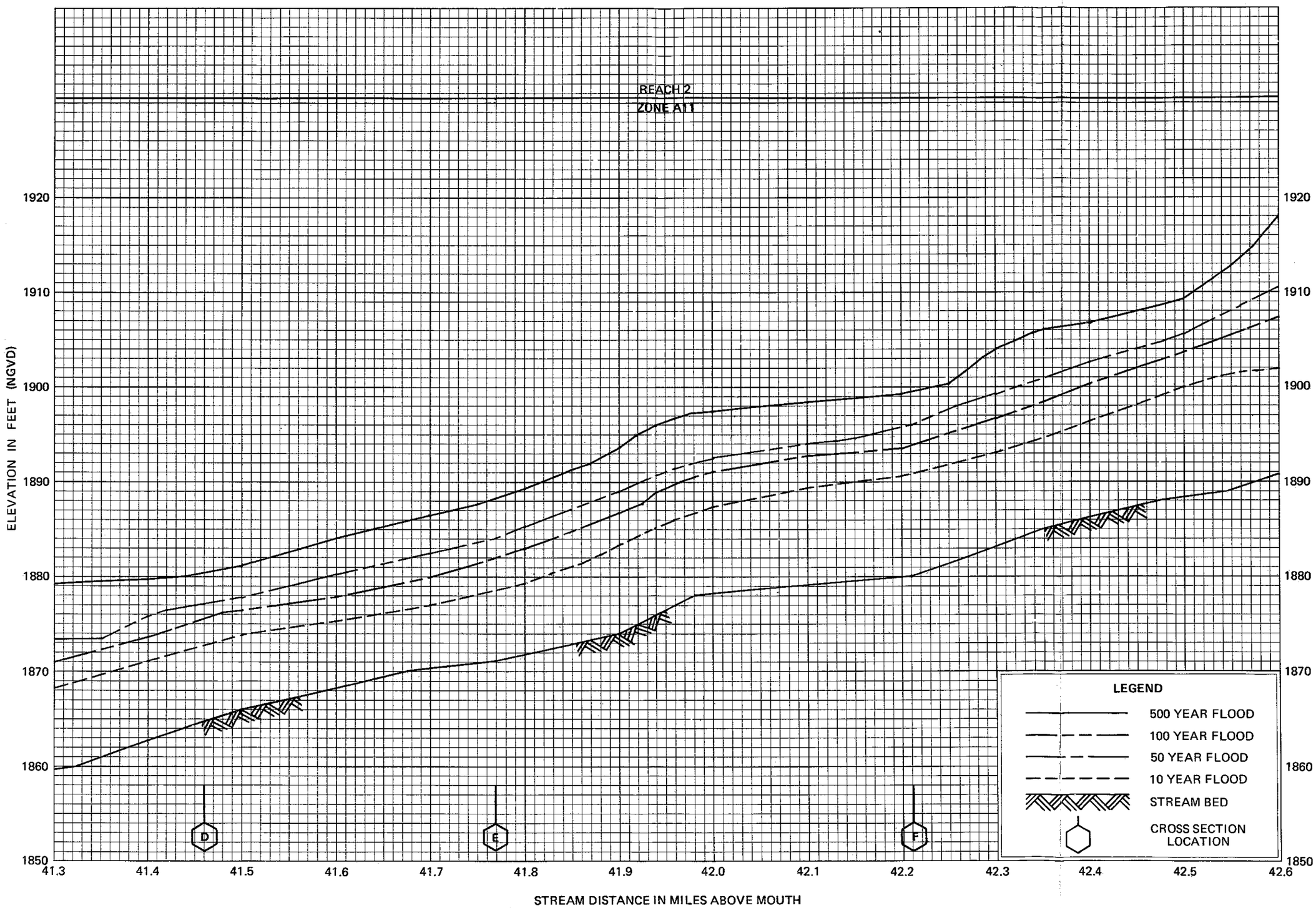


FLOOD PROFILES

HASSAYAMPA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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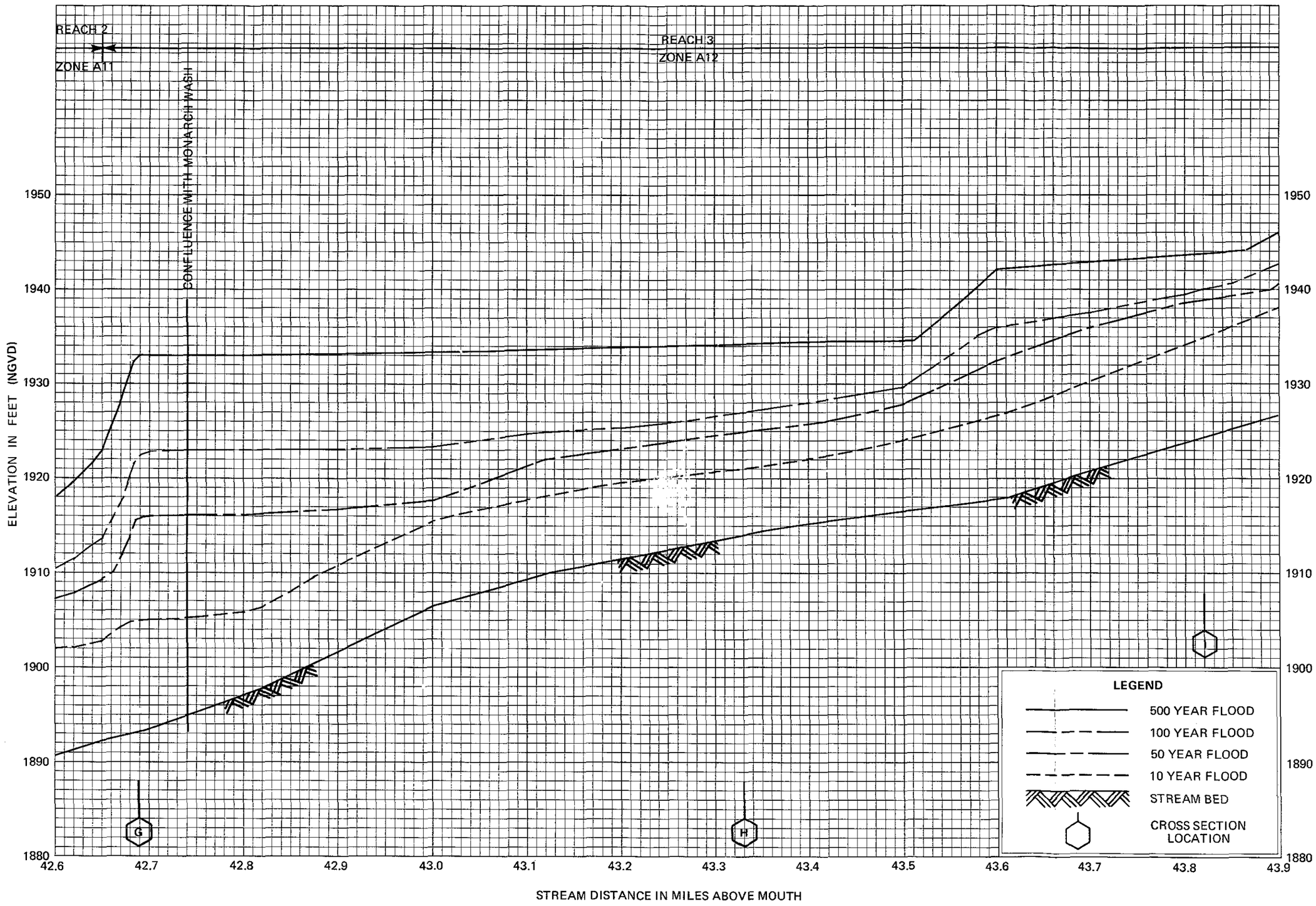
MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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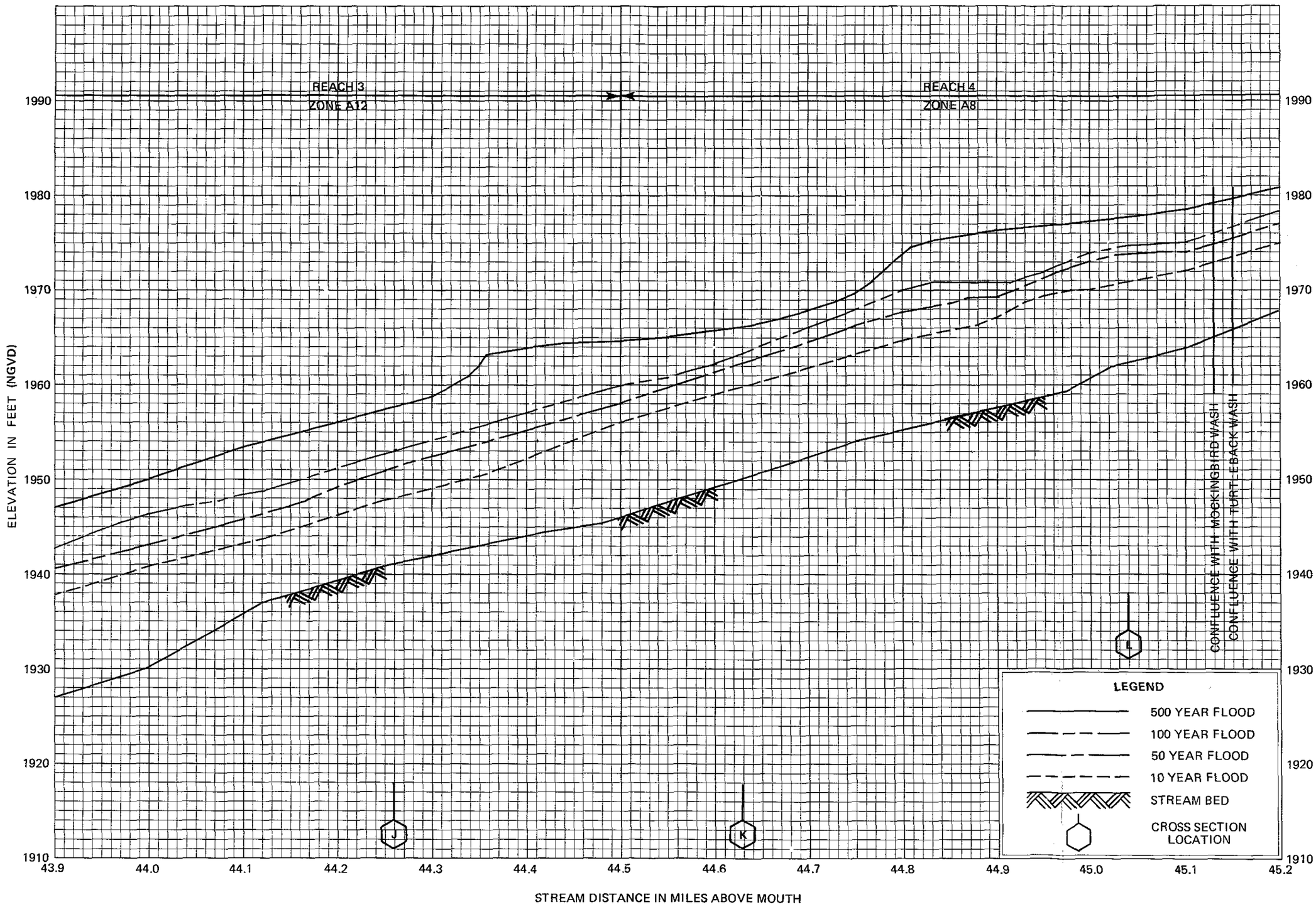
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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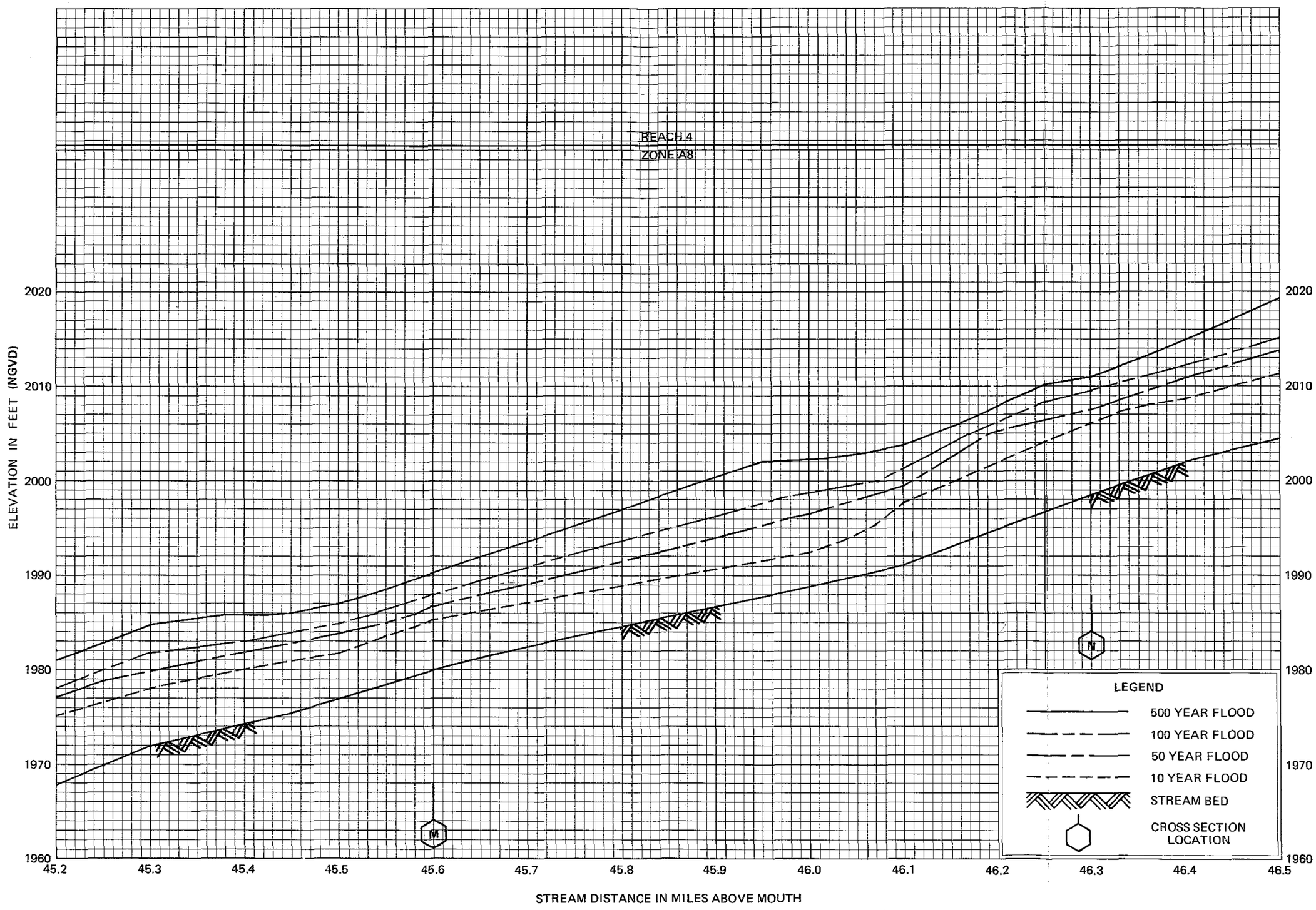

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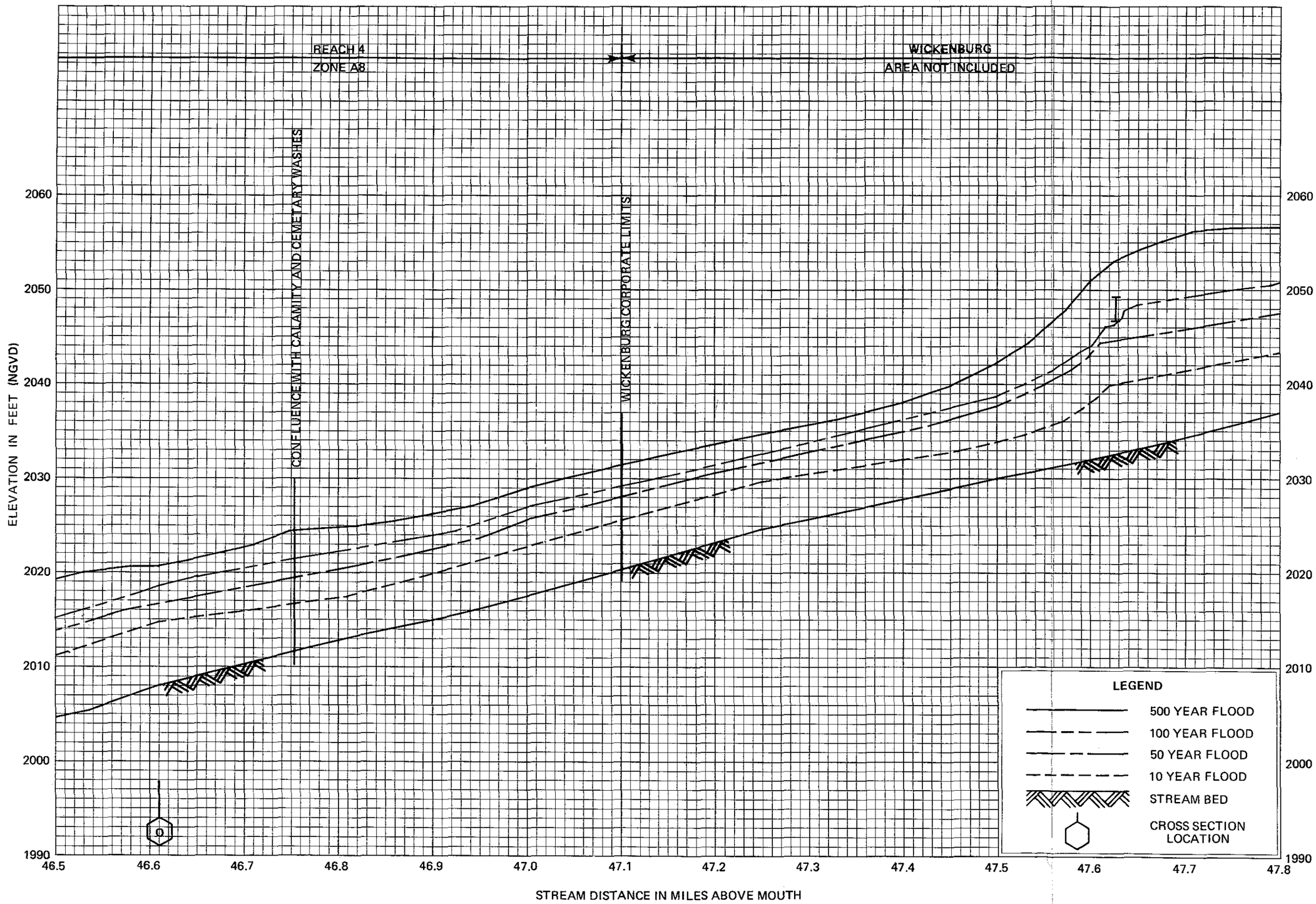

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Federal Insurance Administration

MARICOPA COUNTY, AZ
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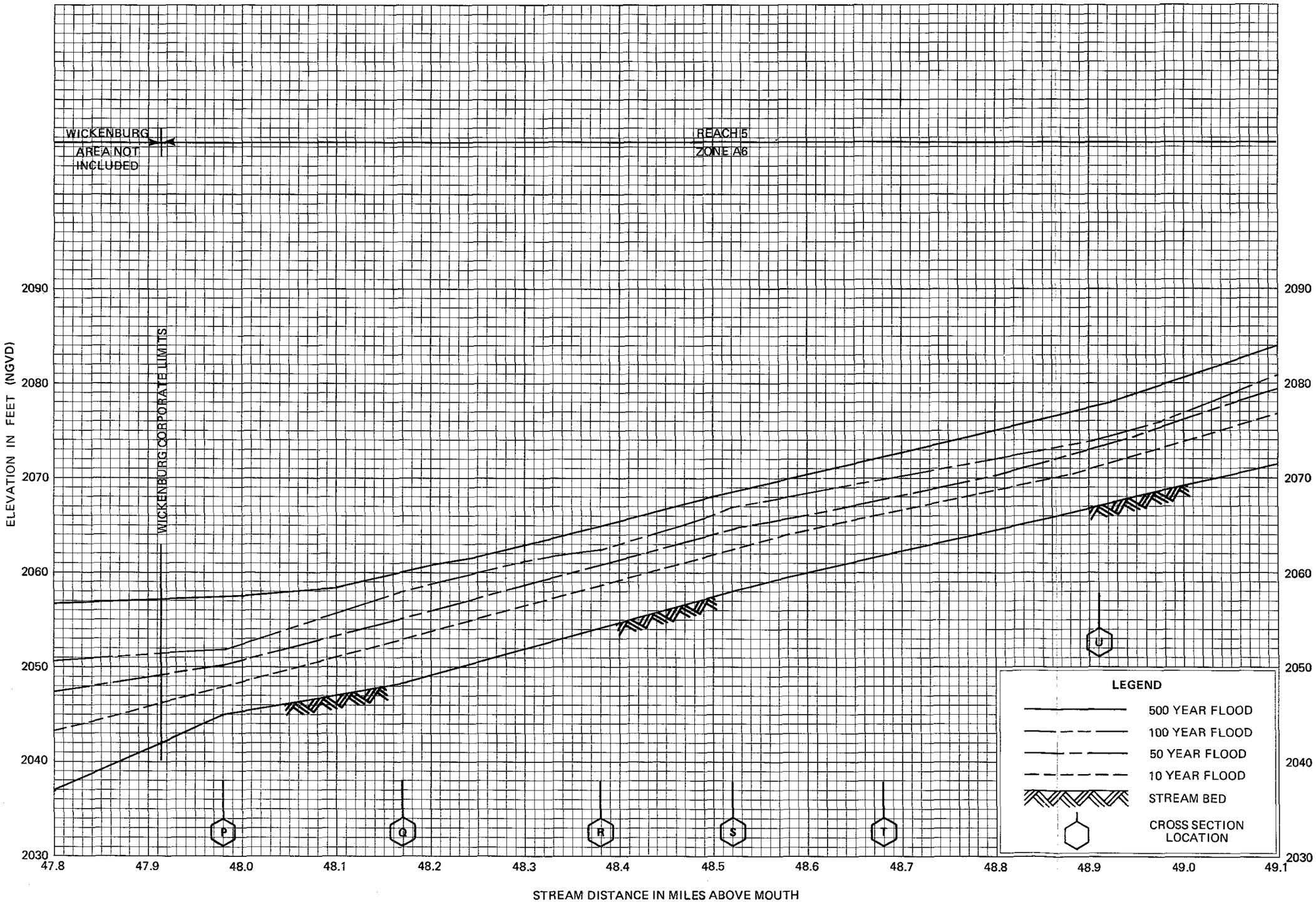

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Federal Insurance Administration

MARICOPA COUNTY, AZ
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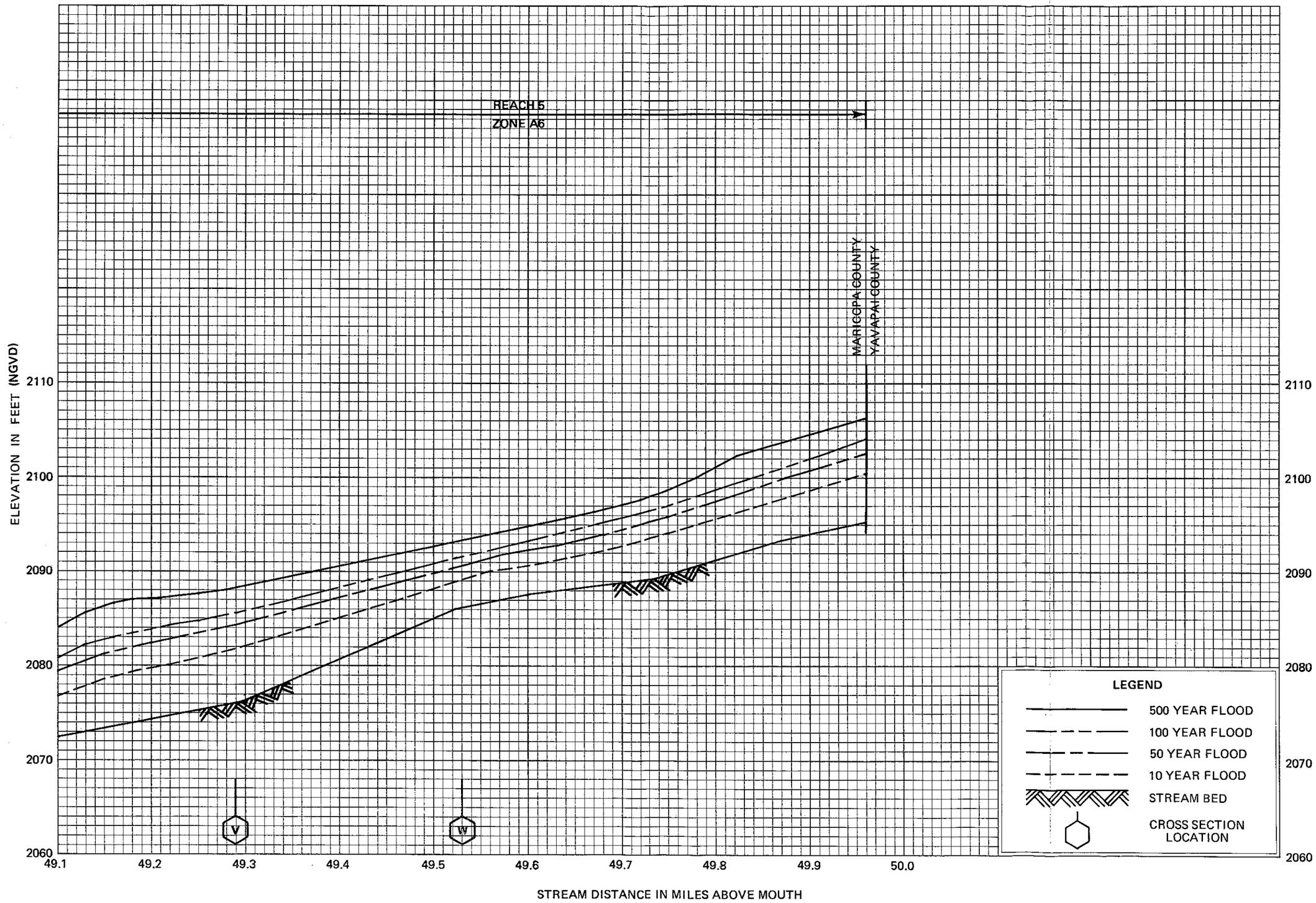

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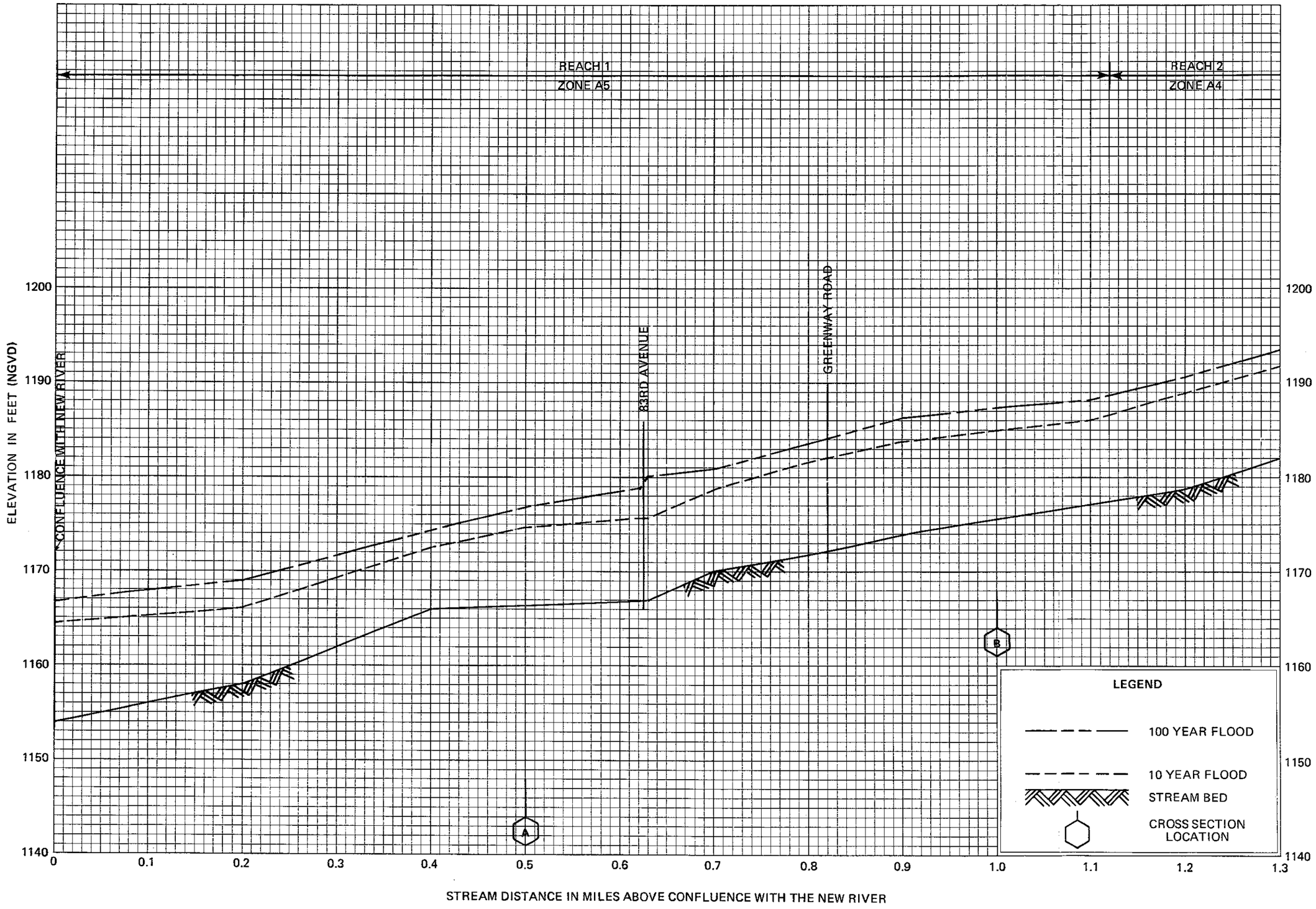
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



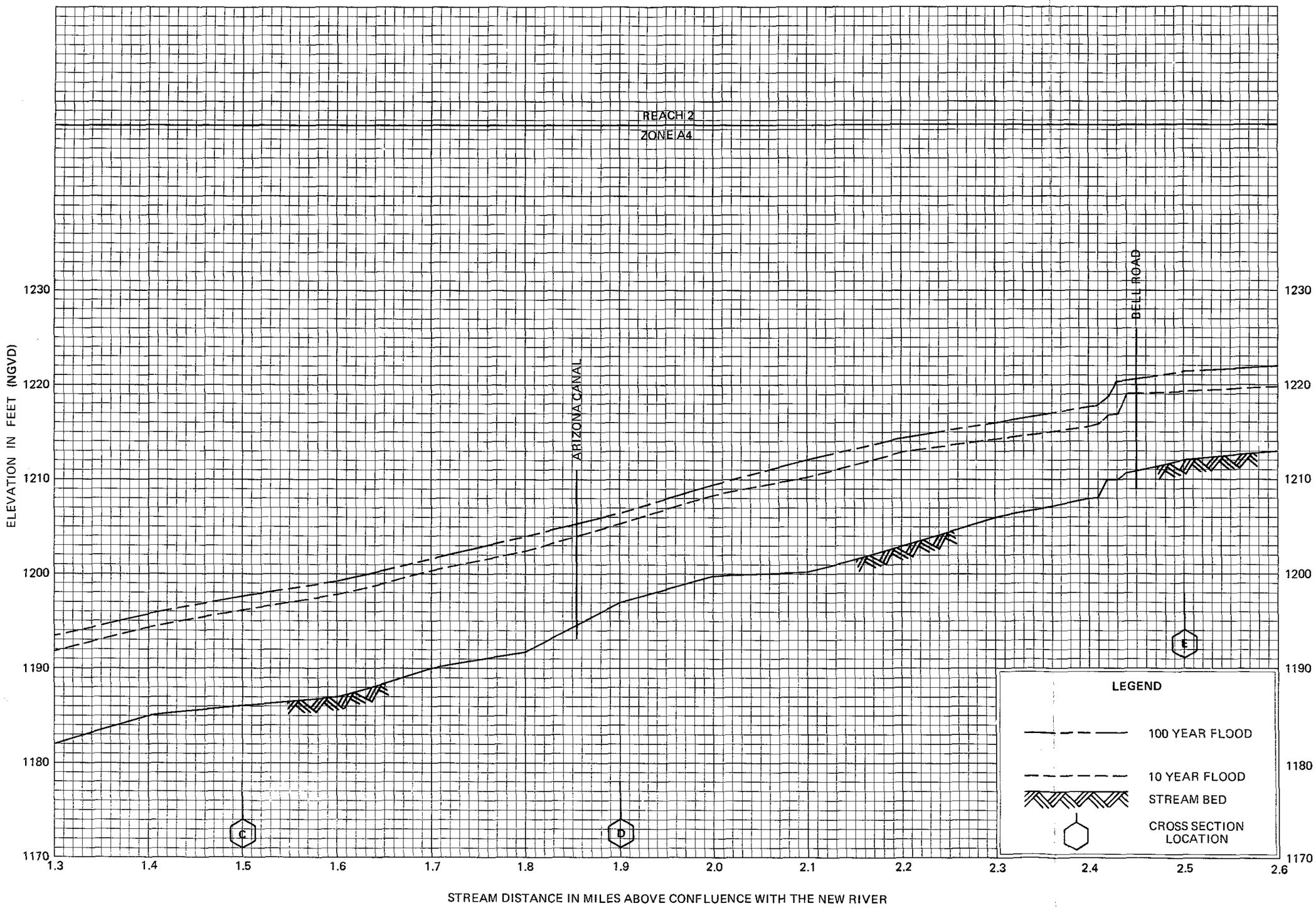
FLOOD PROFILES

SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ

UNINCORPORATED AREAS

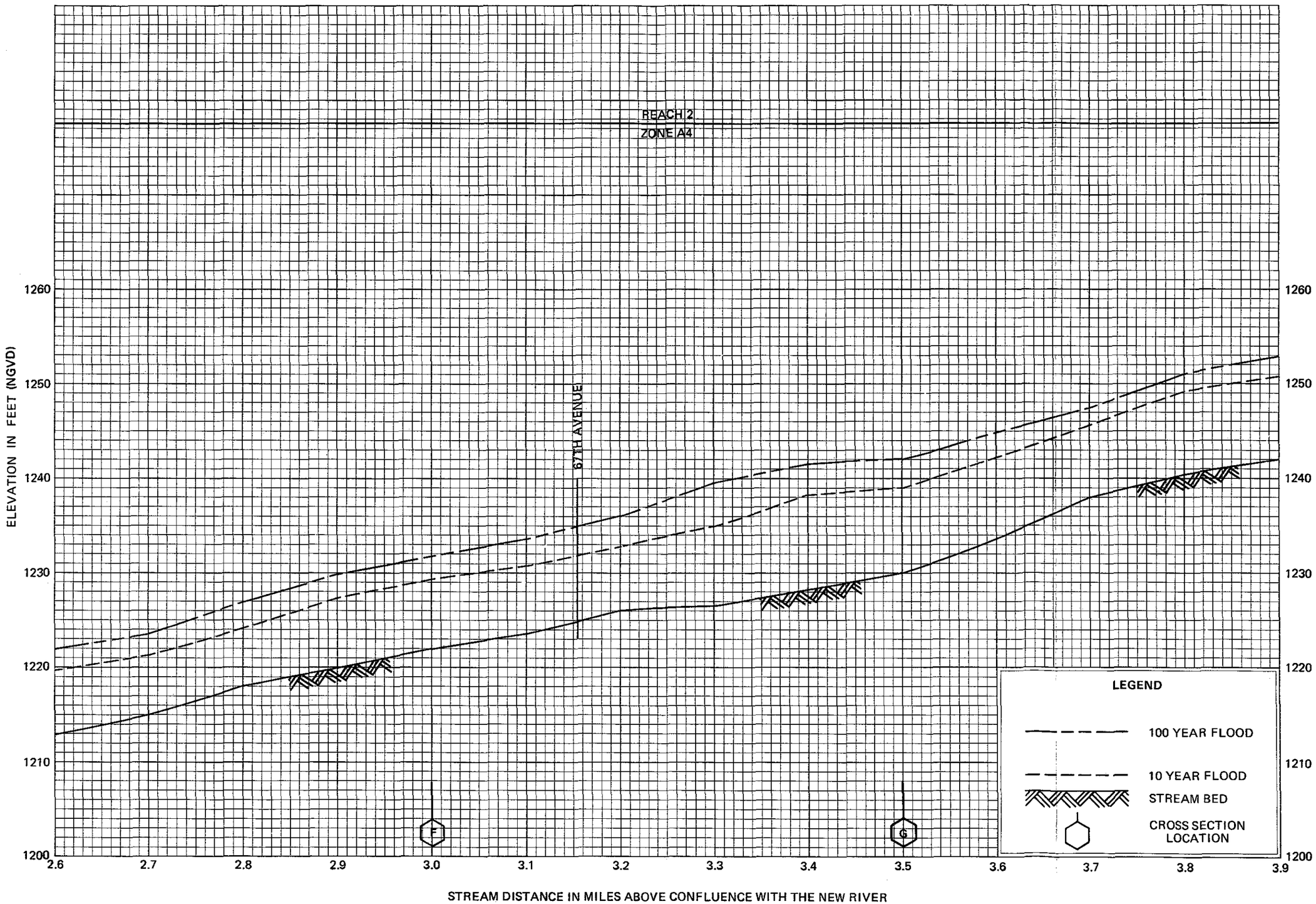


FLOOD PROFILES

SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

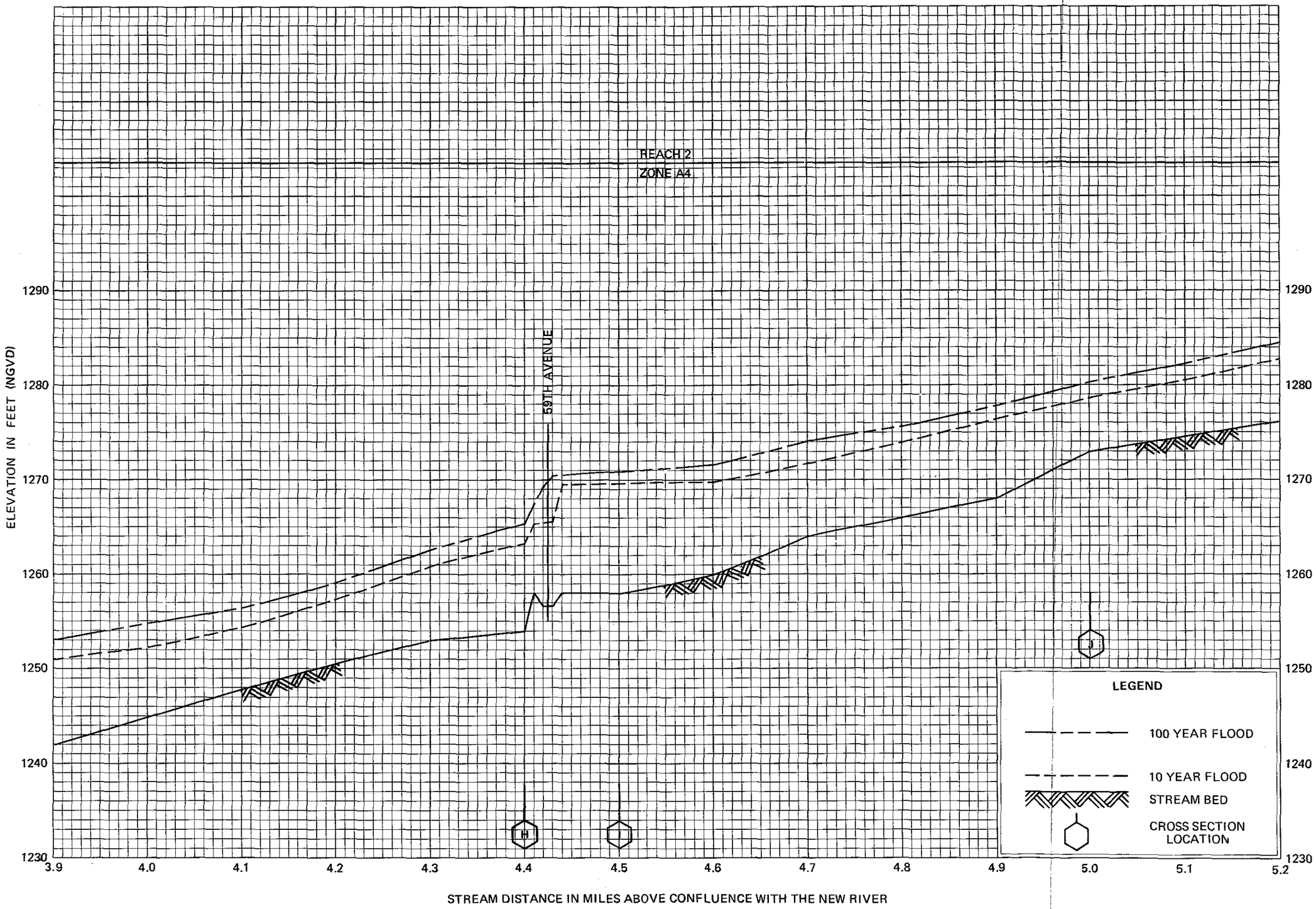


FLOOD PROFILES

SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, A
UNINCORPORATED AREAS



FLOOD PROFILES

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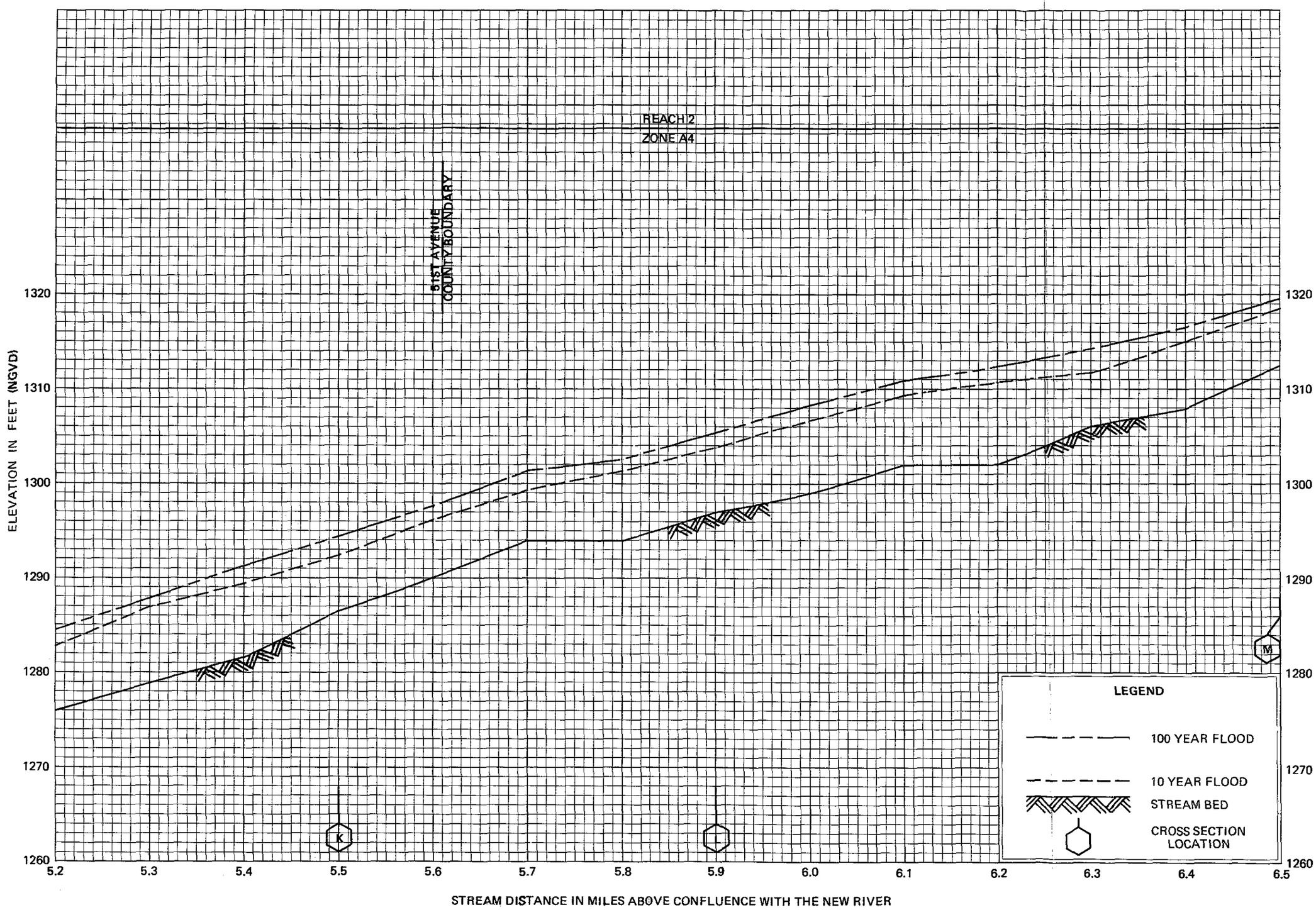
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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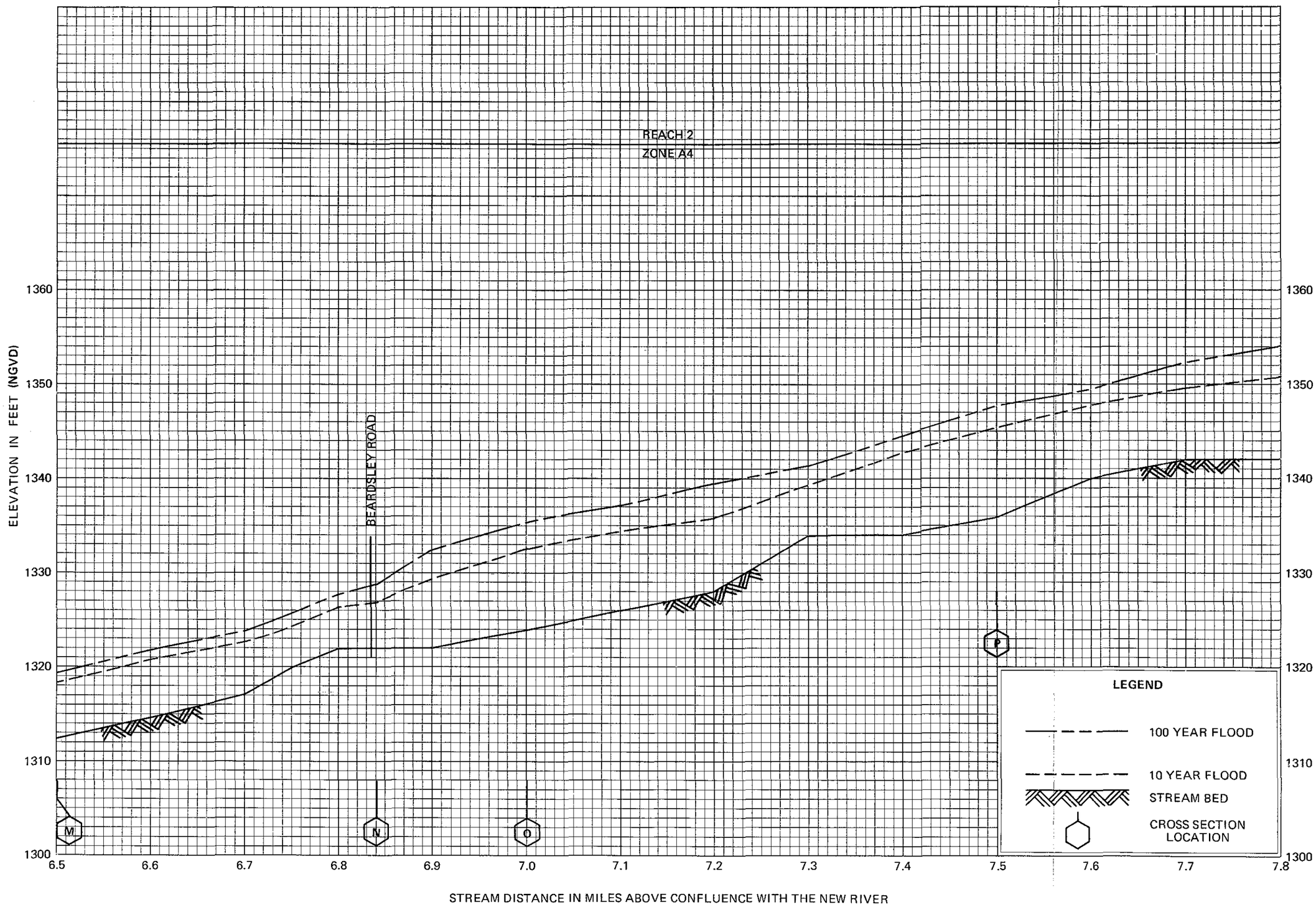

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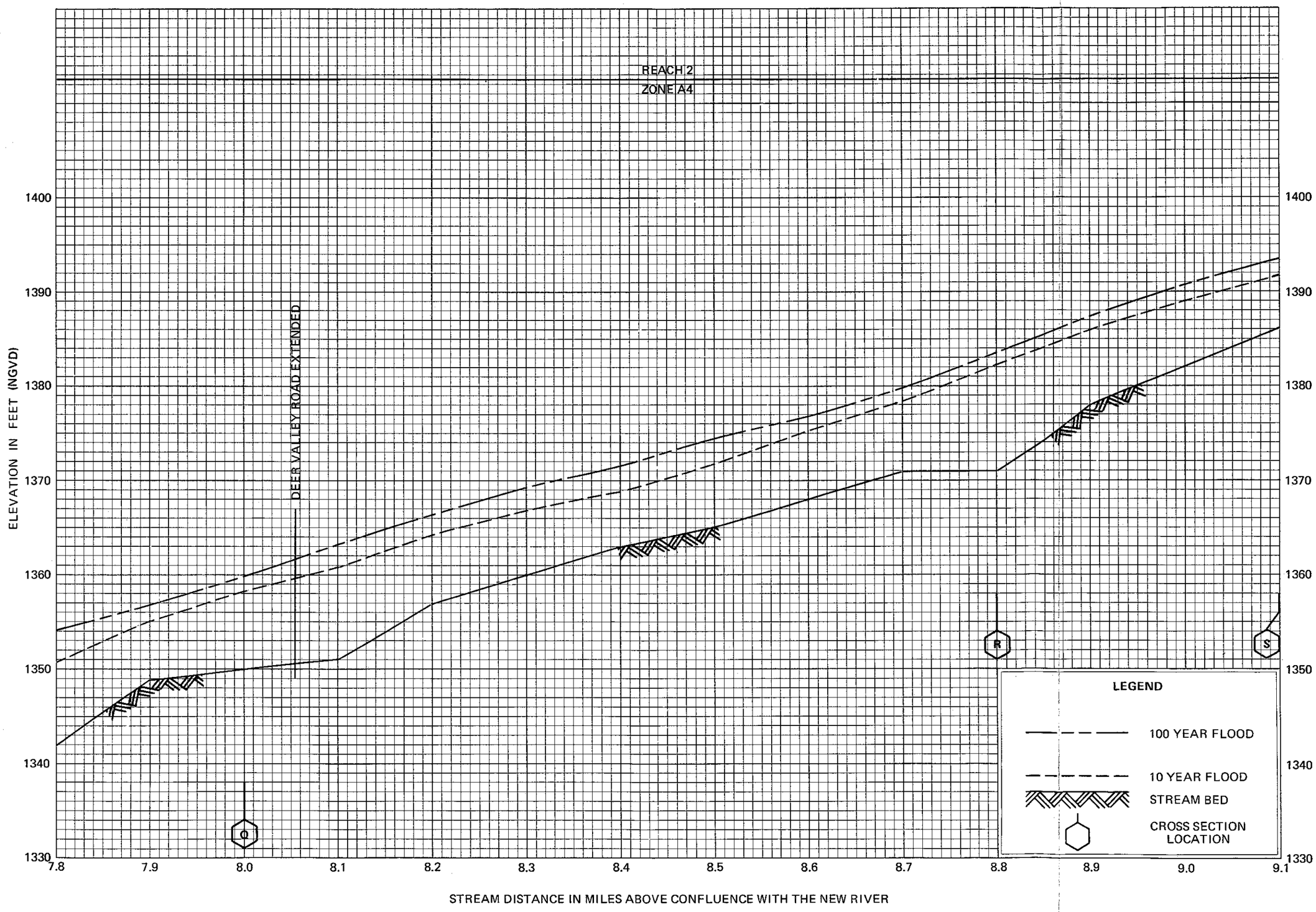

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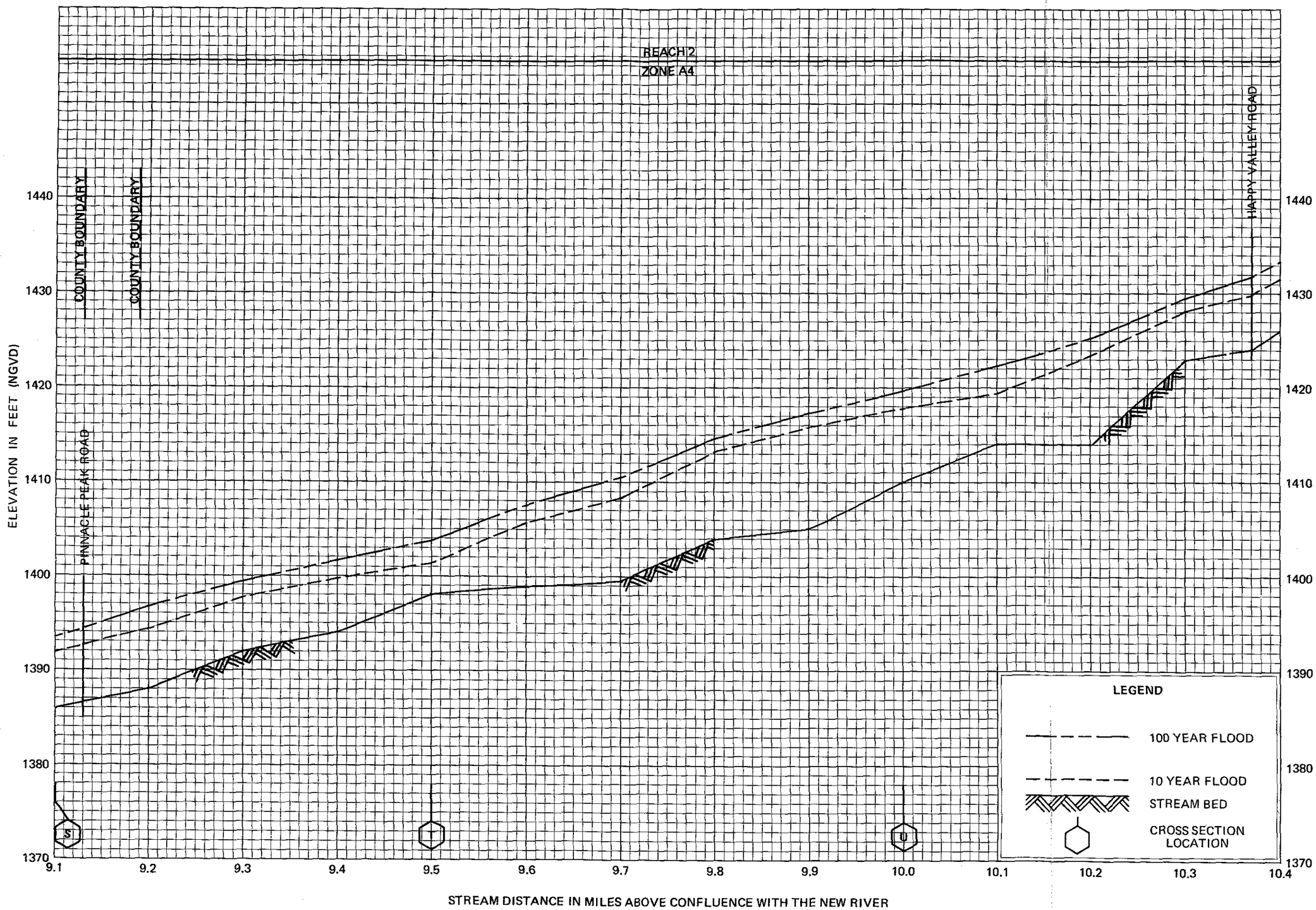
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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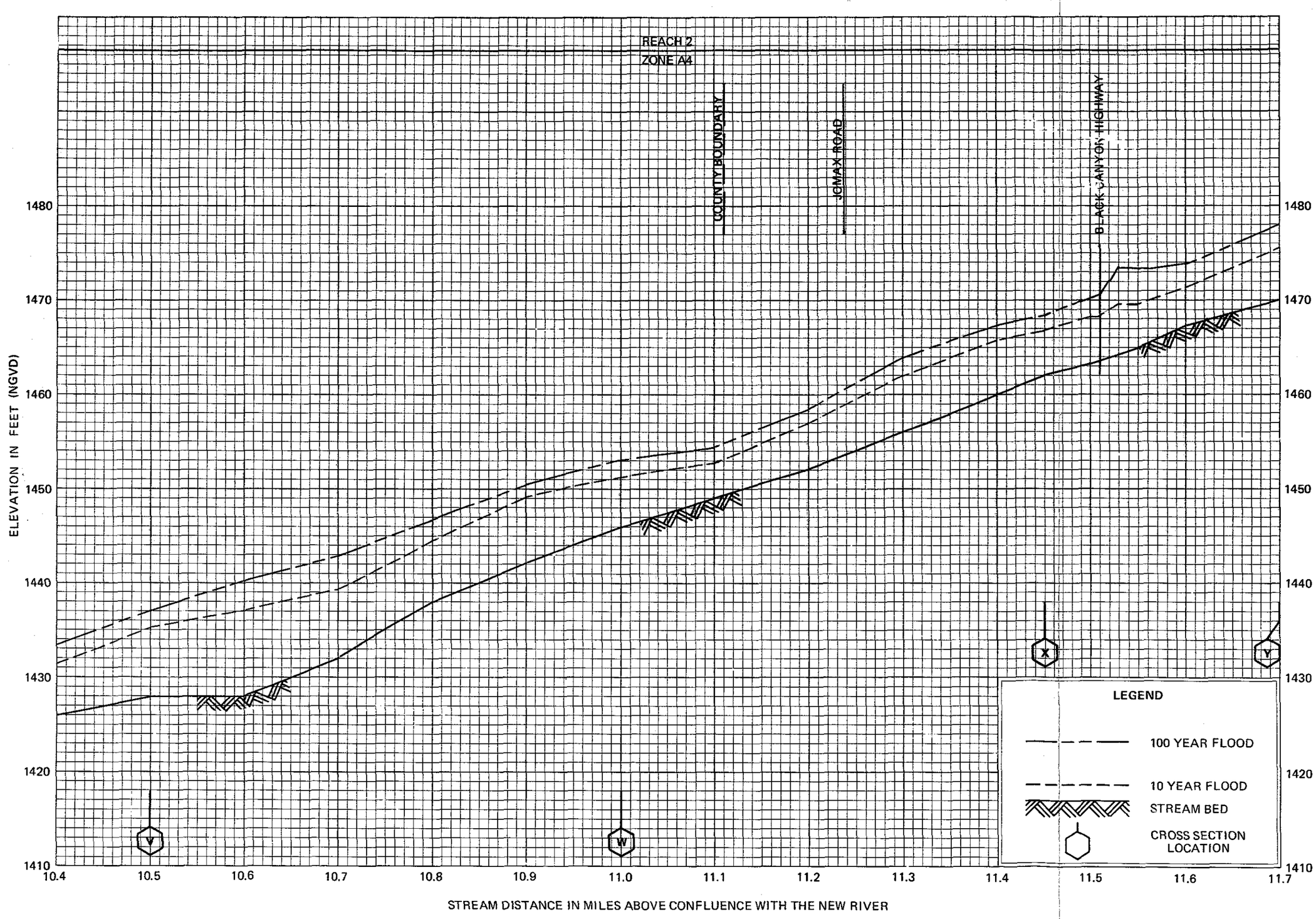
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



FLOOD PROFILES

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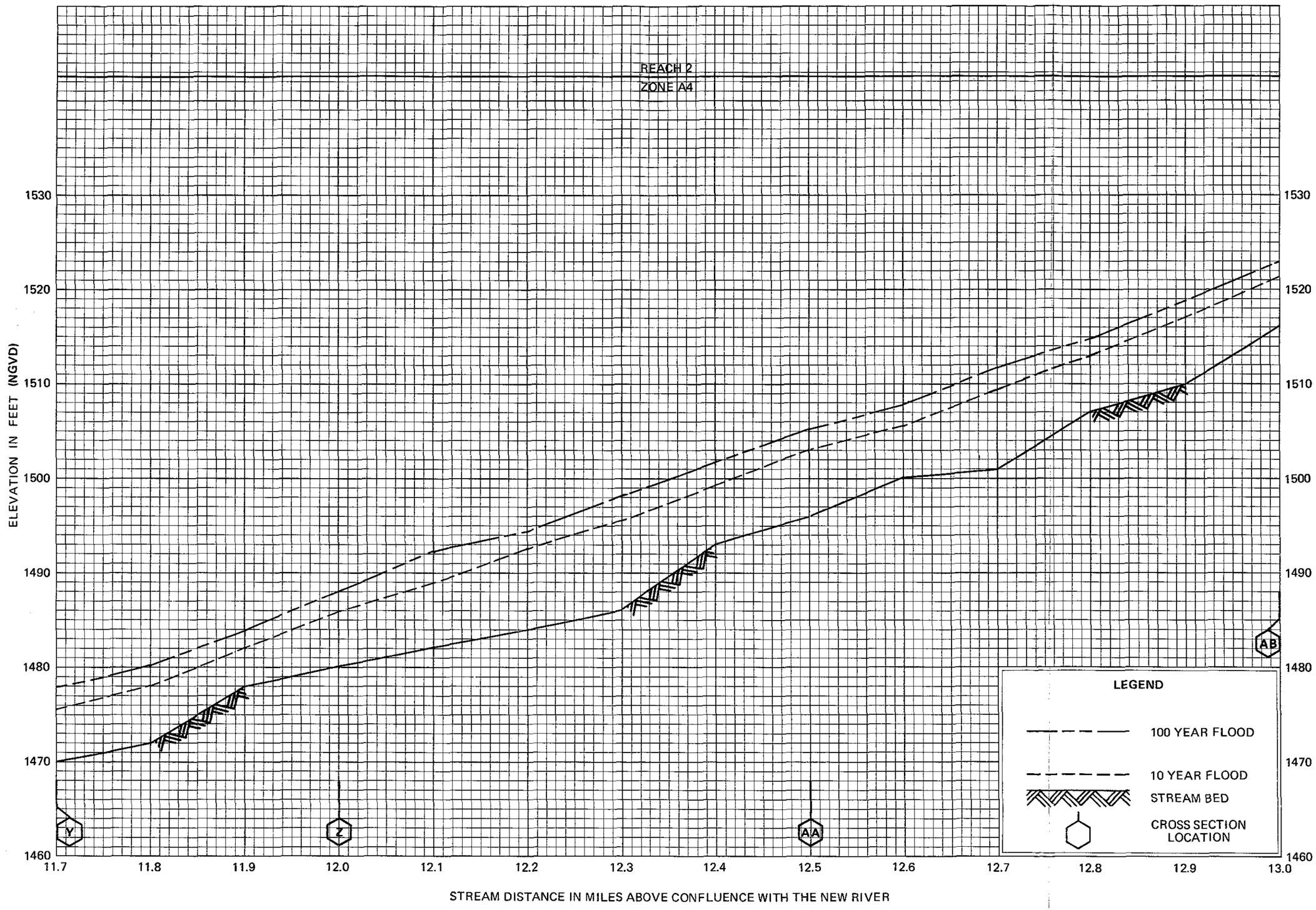
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



FLOOD PROFILES

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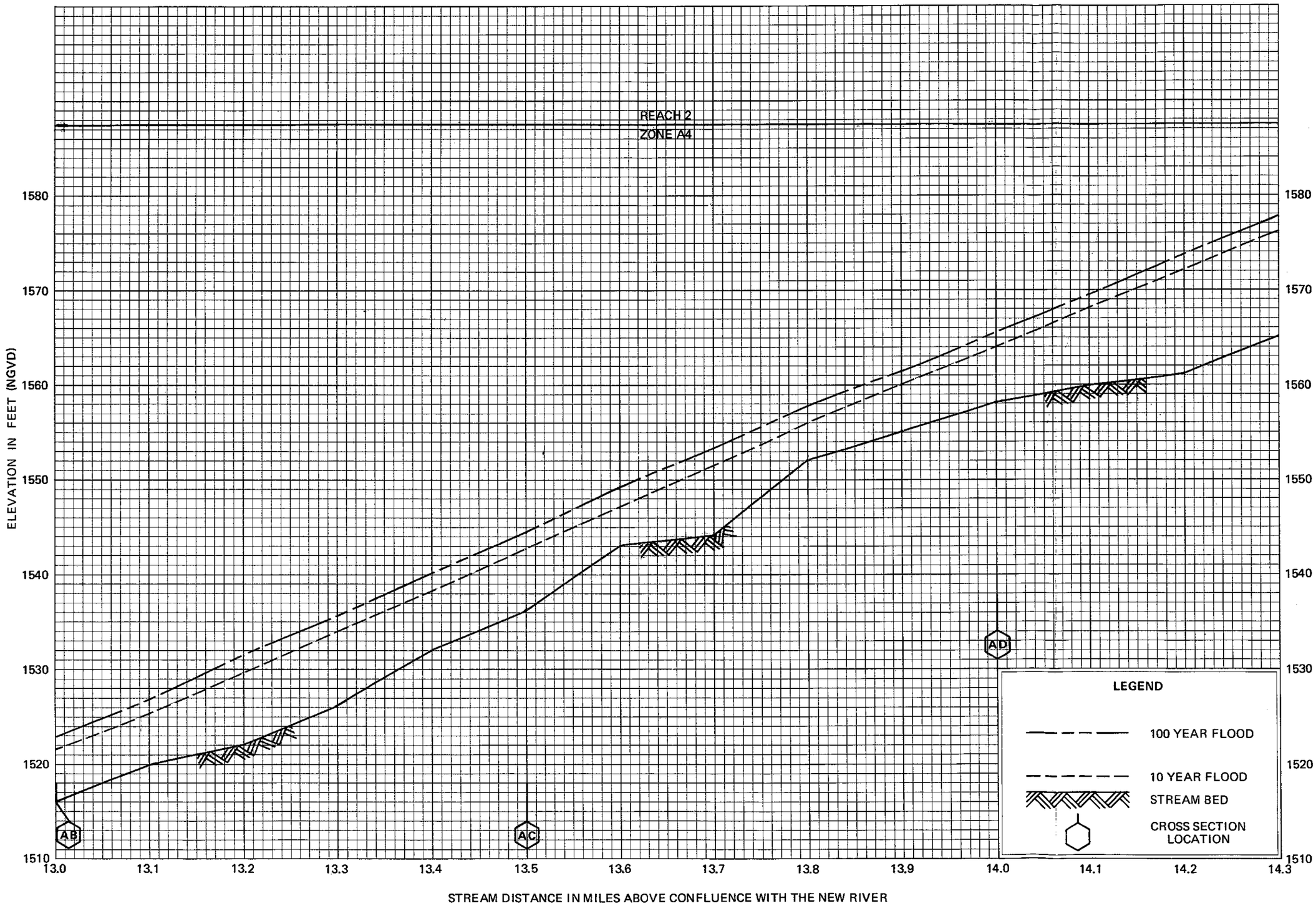
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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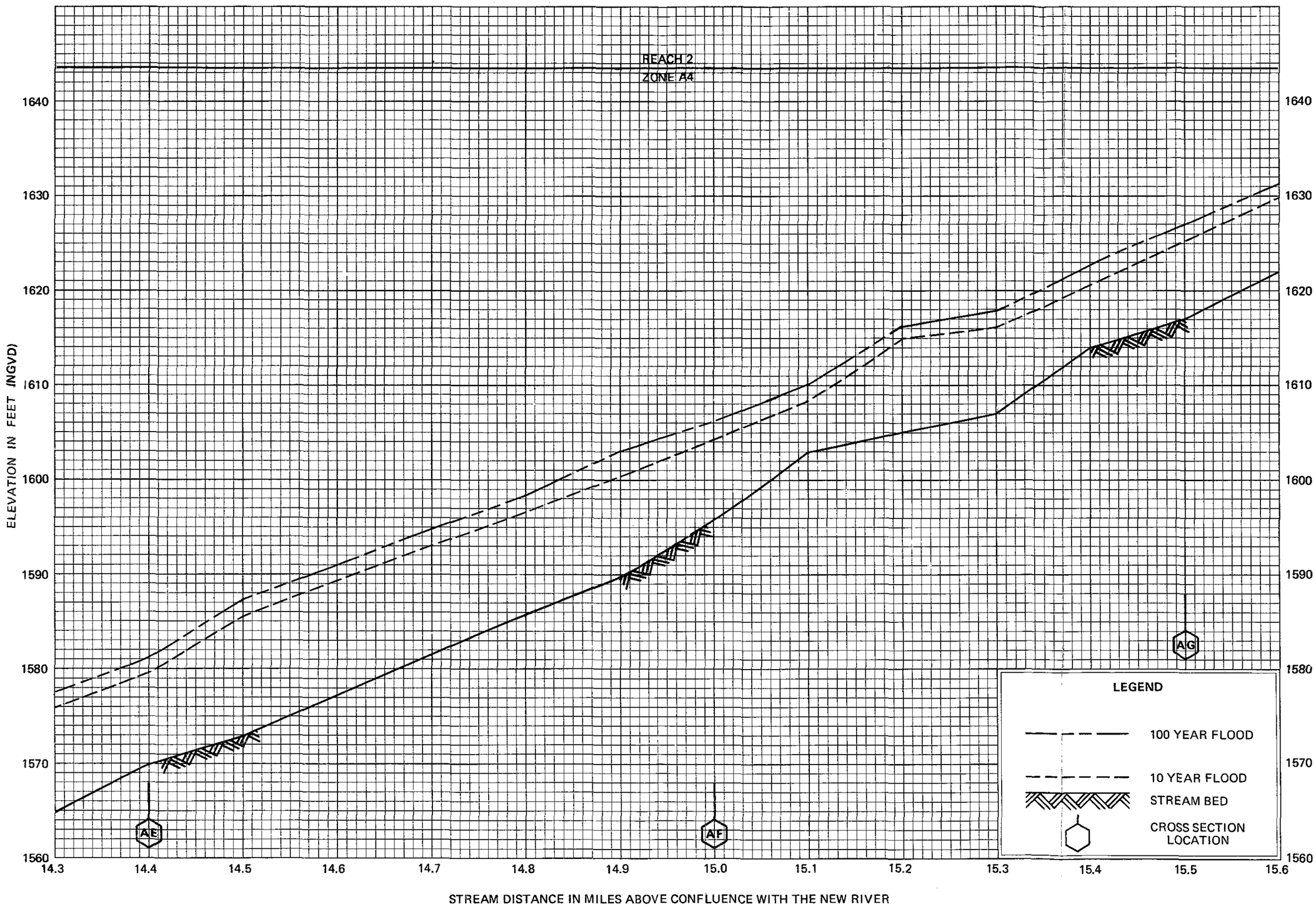
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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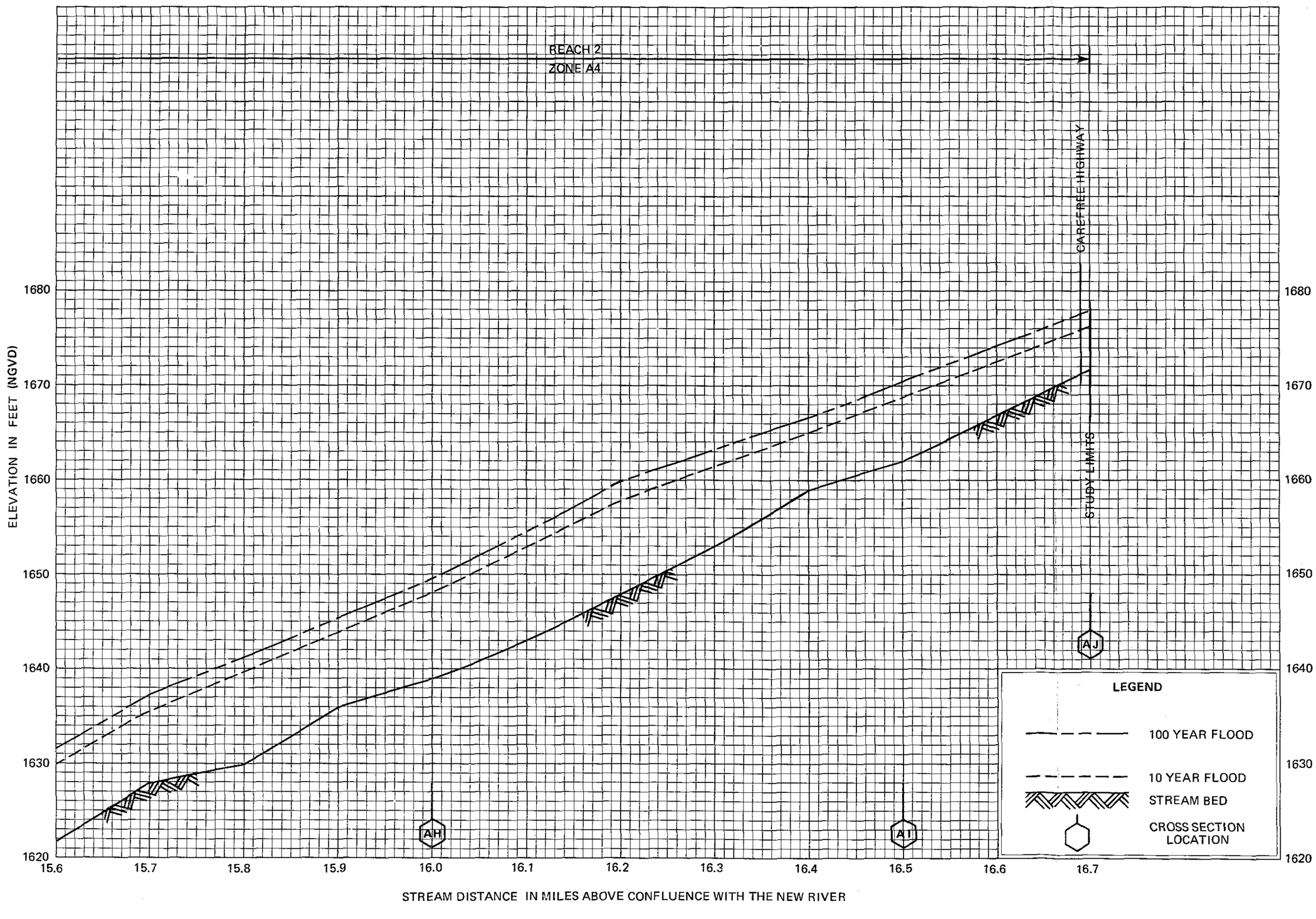
MARICOPA COUNTY, AZ
UNINCORPORATED AREAS



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SKUNK CREEK

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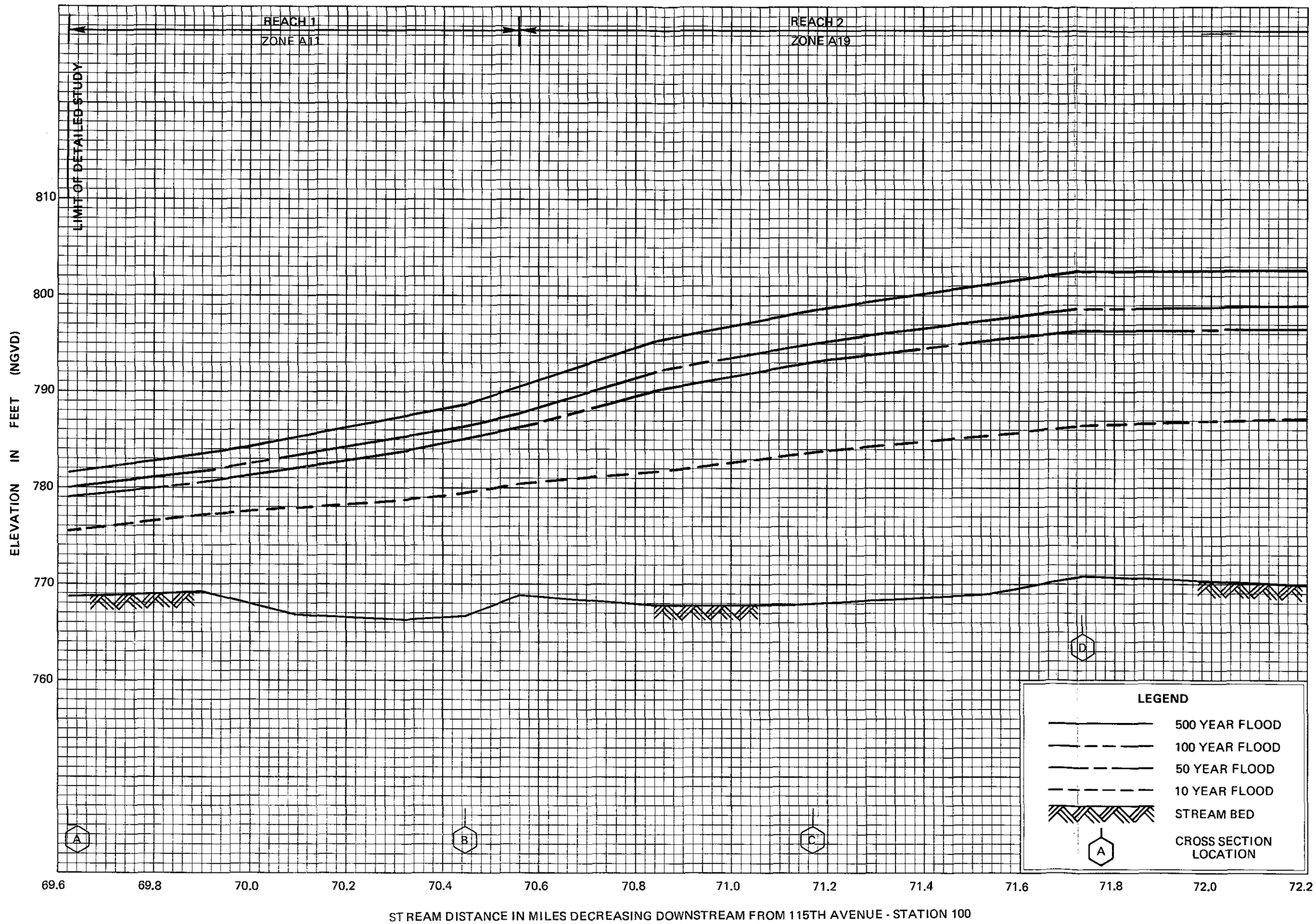
MARICOPA COUNTY, AZ
UNINCORPORATED AREAS

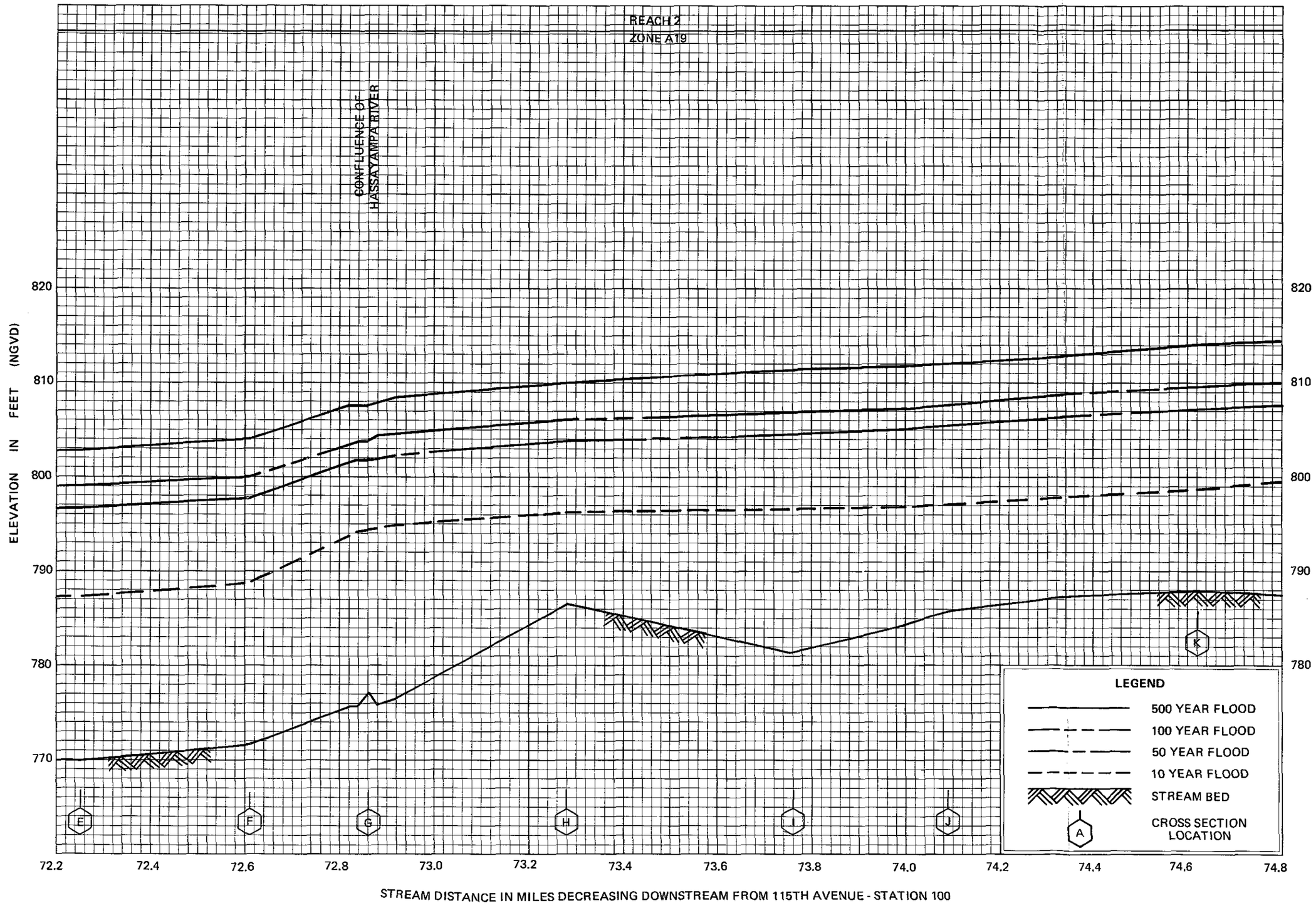


FLOOD PROFILES

GILA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



FLOOD PROFILES

GILA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

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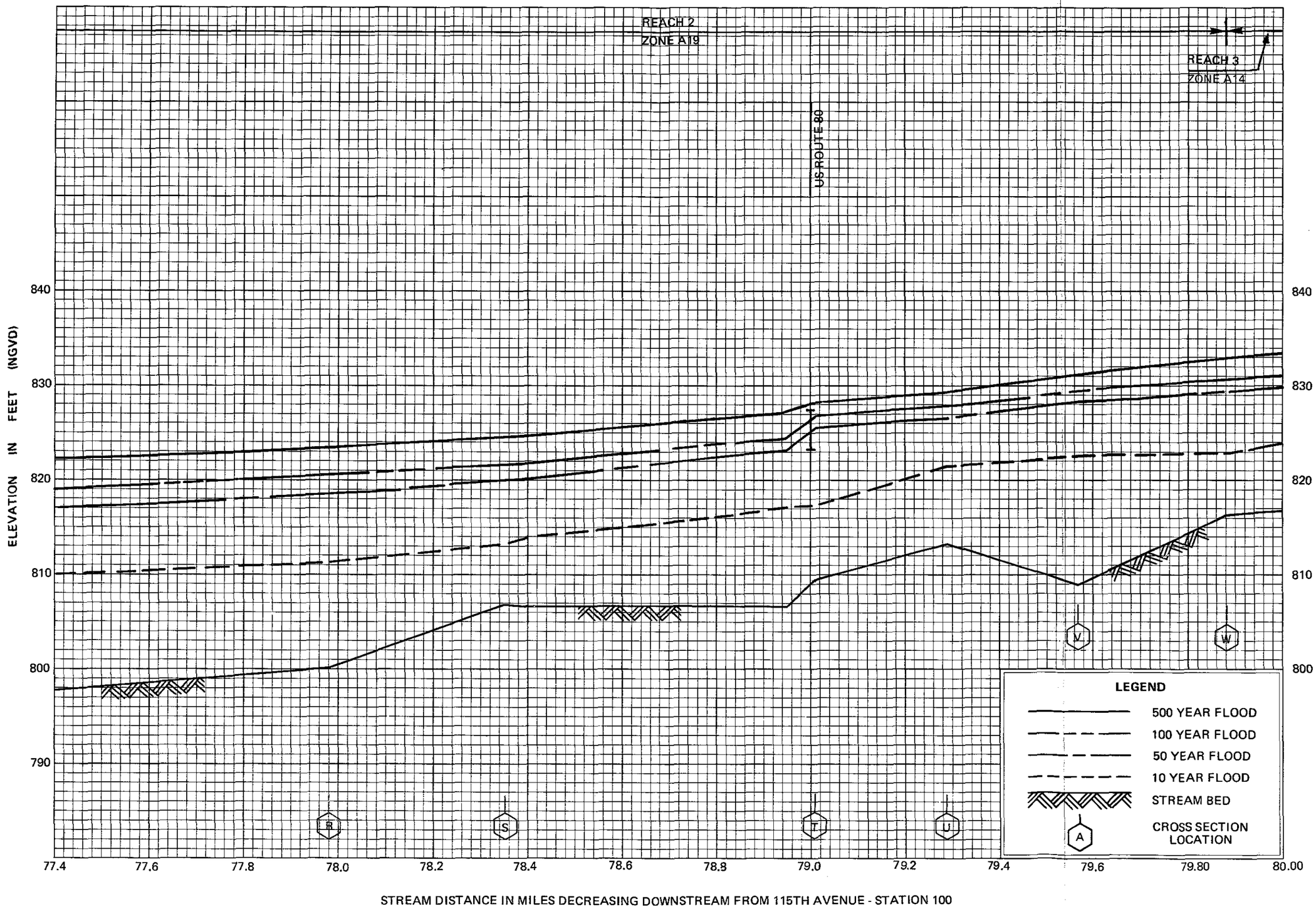
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



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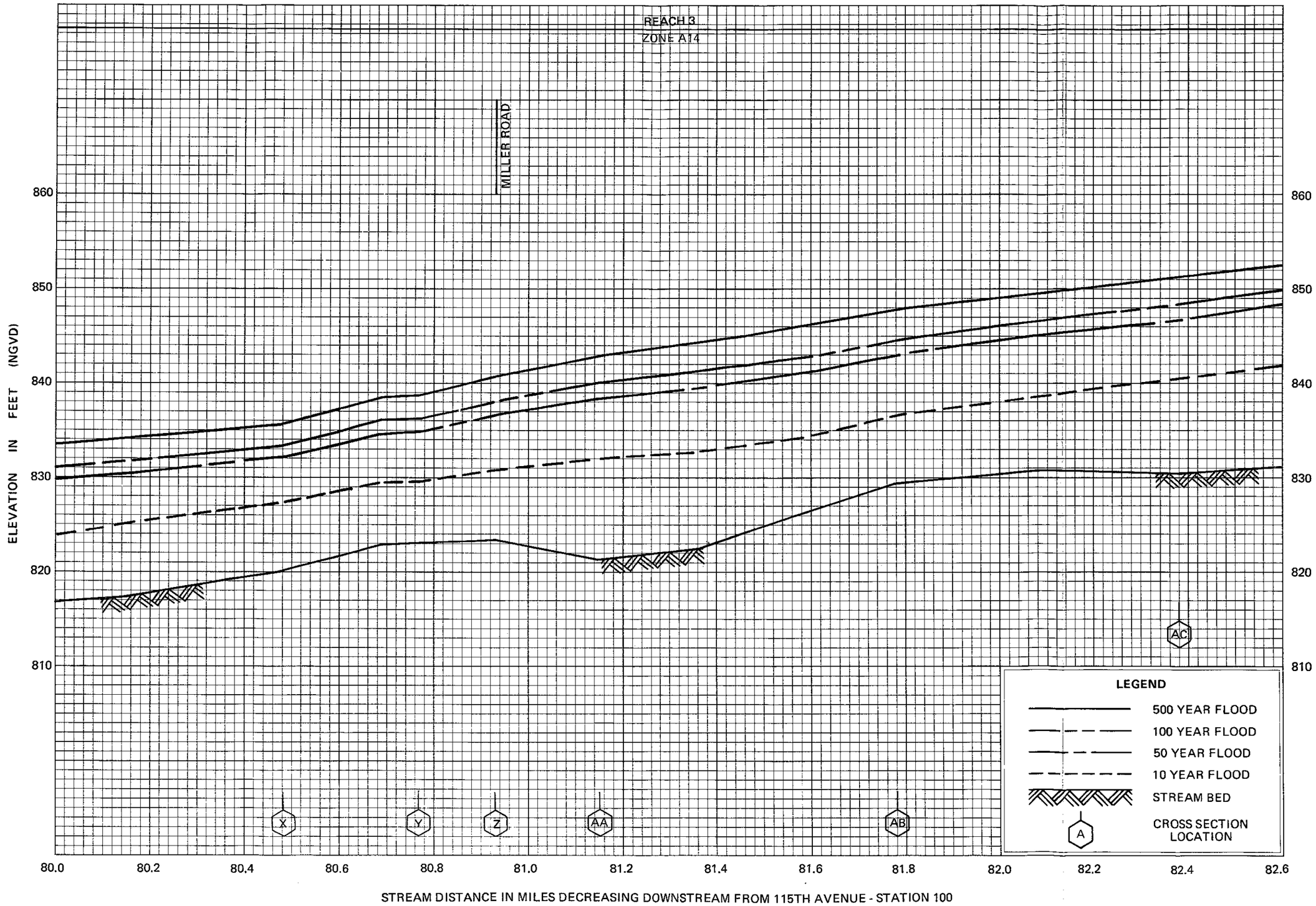
(UNINCORPORATED AREAS)



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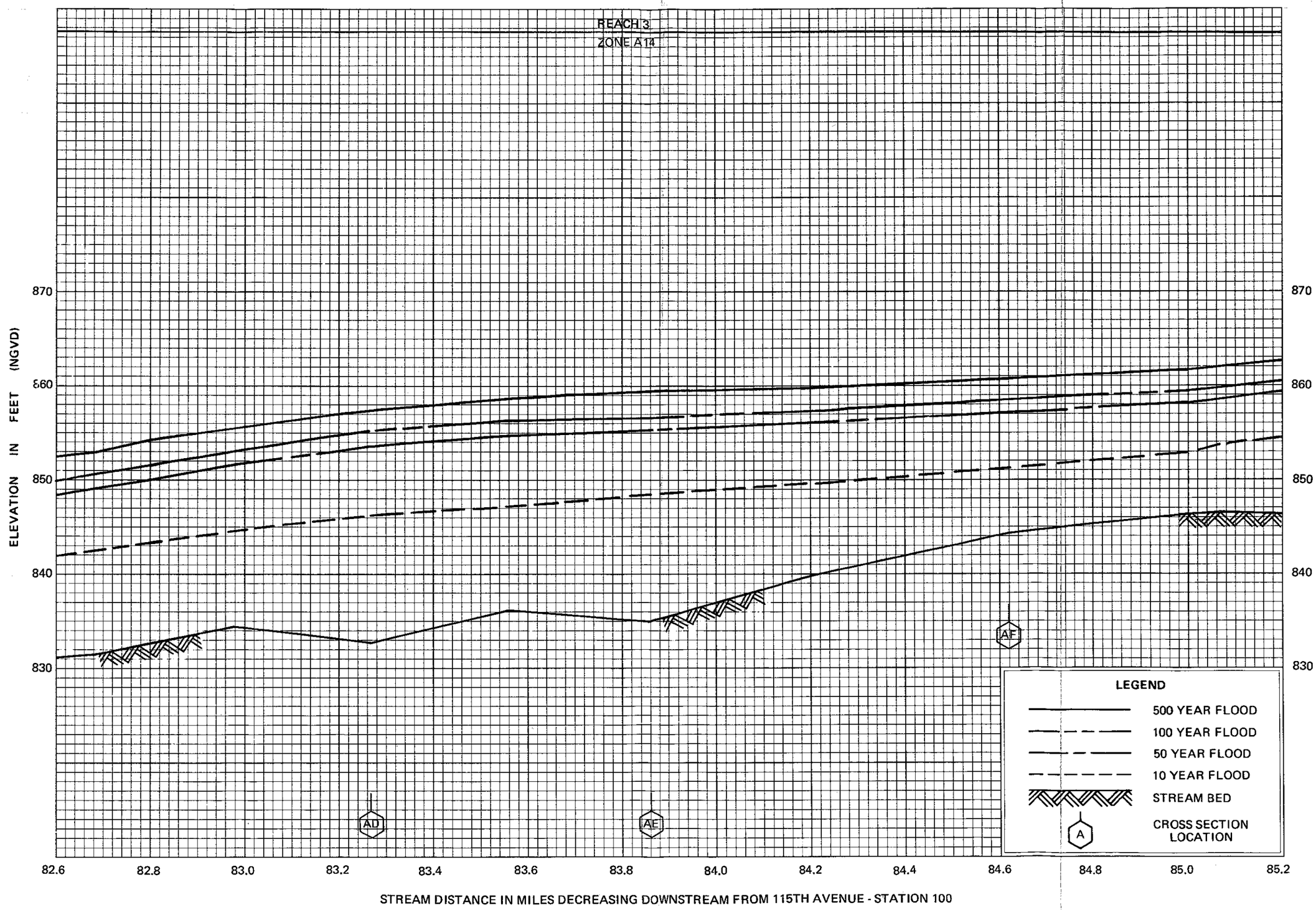
MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



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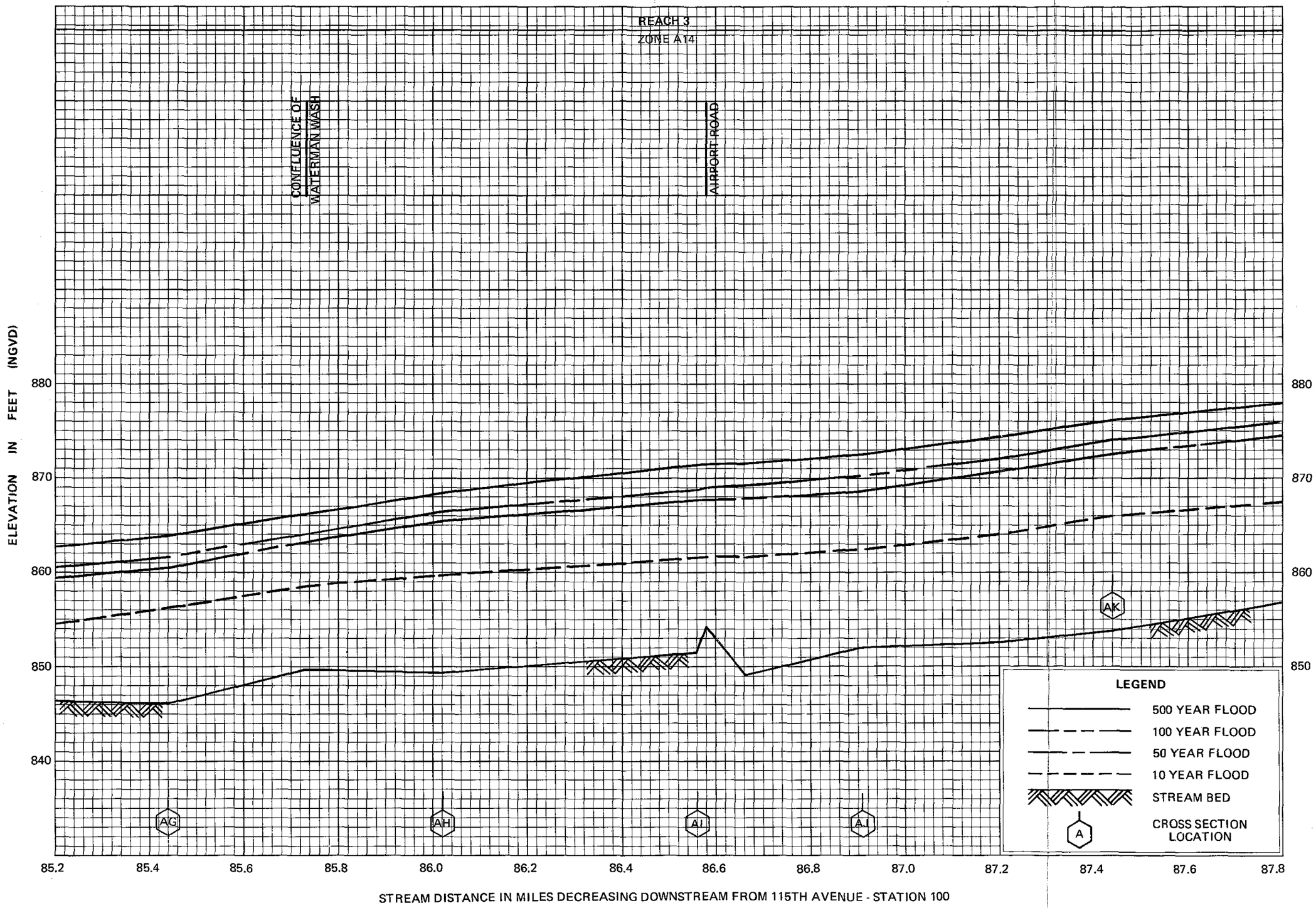
MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



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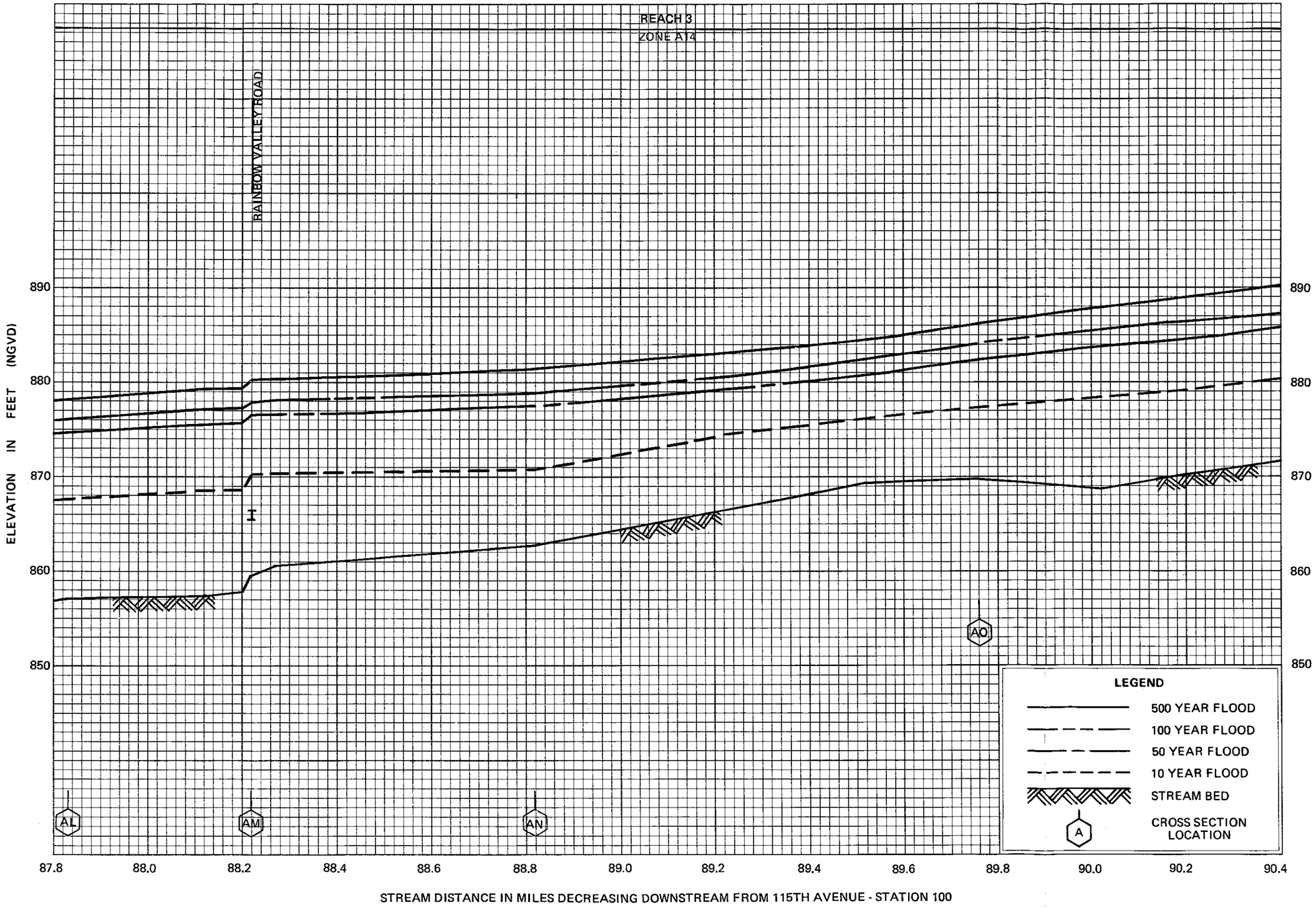
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



FLOOD PROFILES

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MARICOPA COUNTY, AZ
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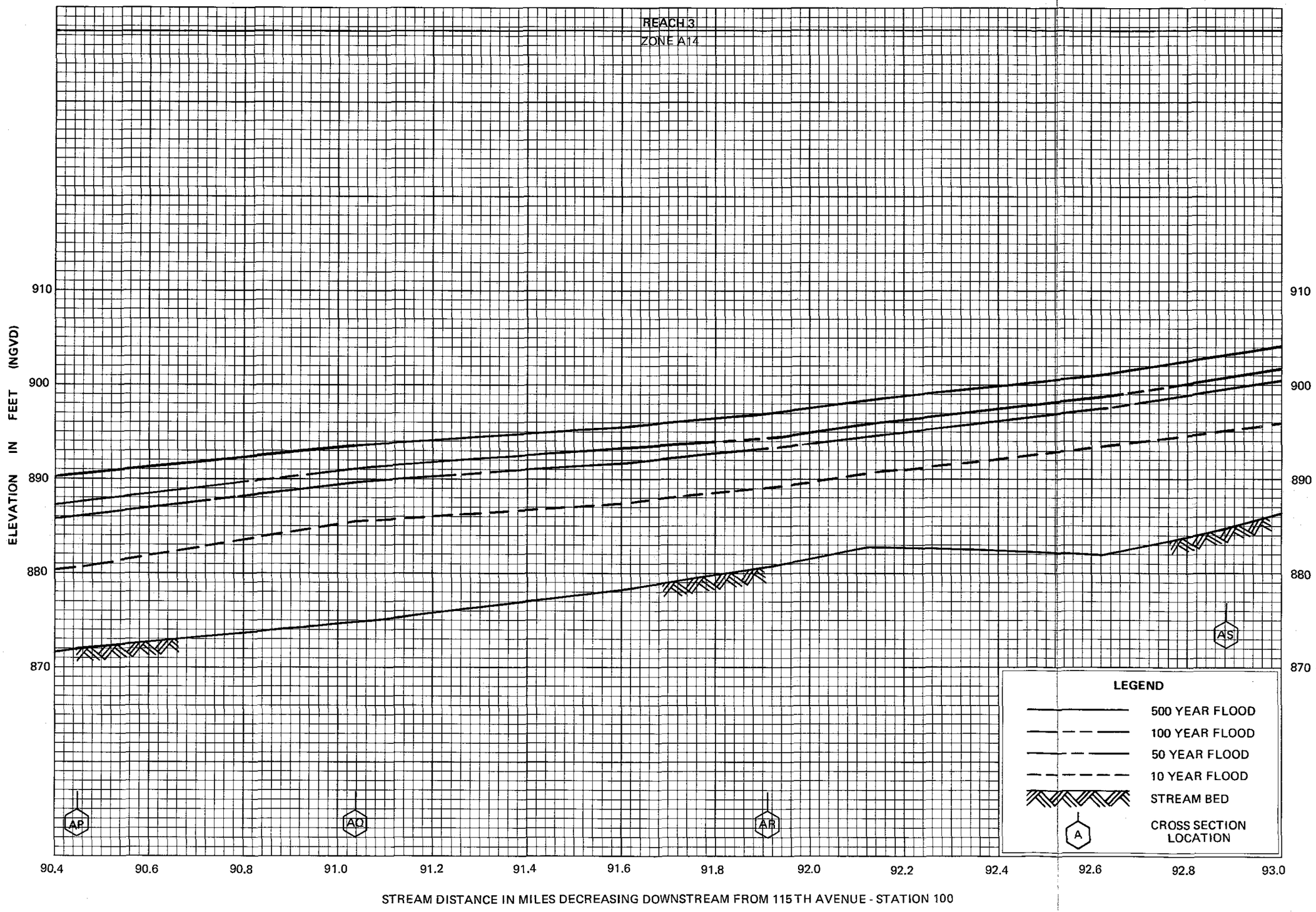

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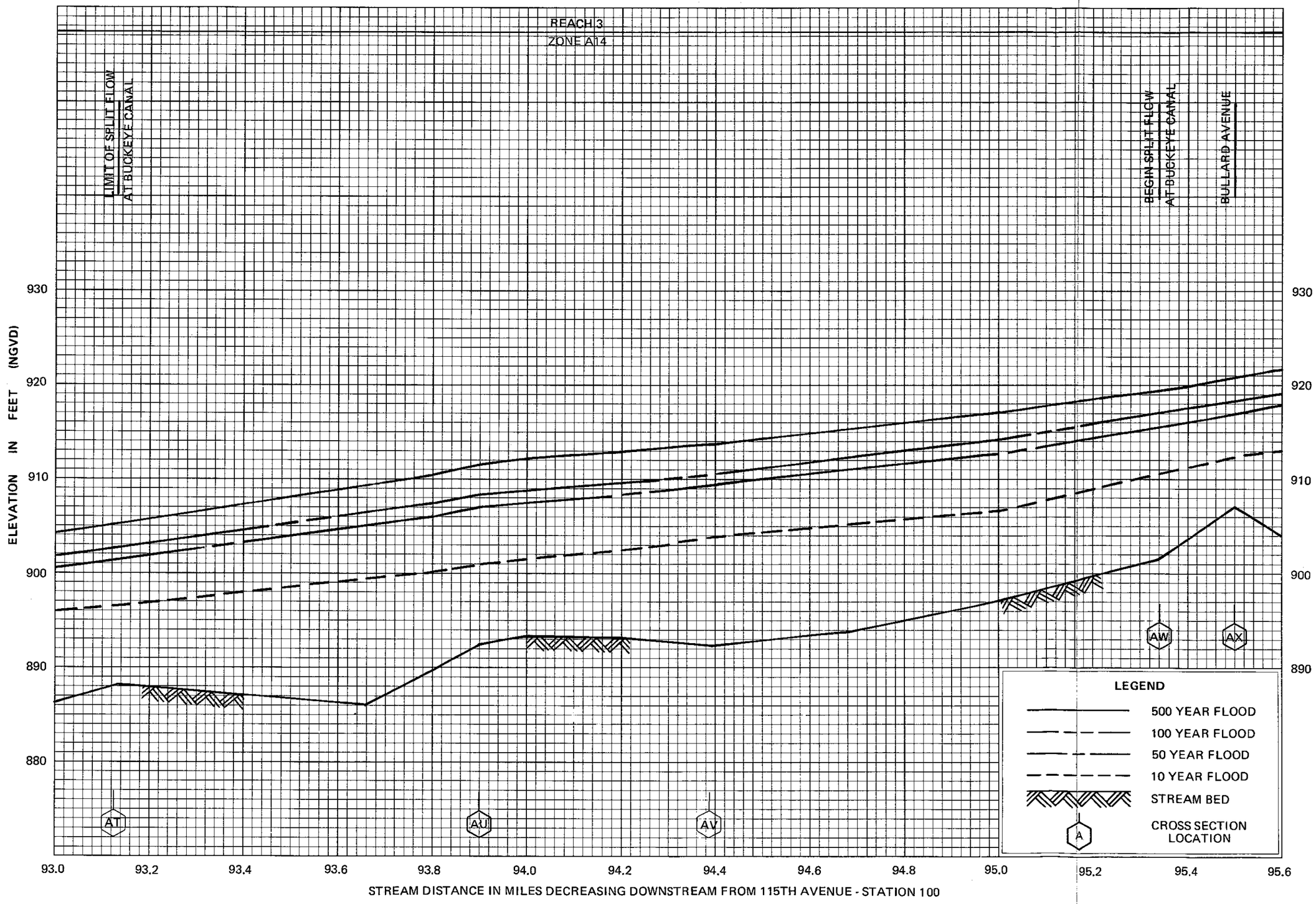
(UNINCORPORATED AREAS)



FLOOD PROFILES

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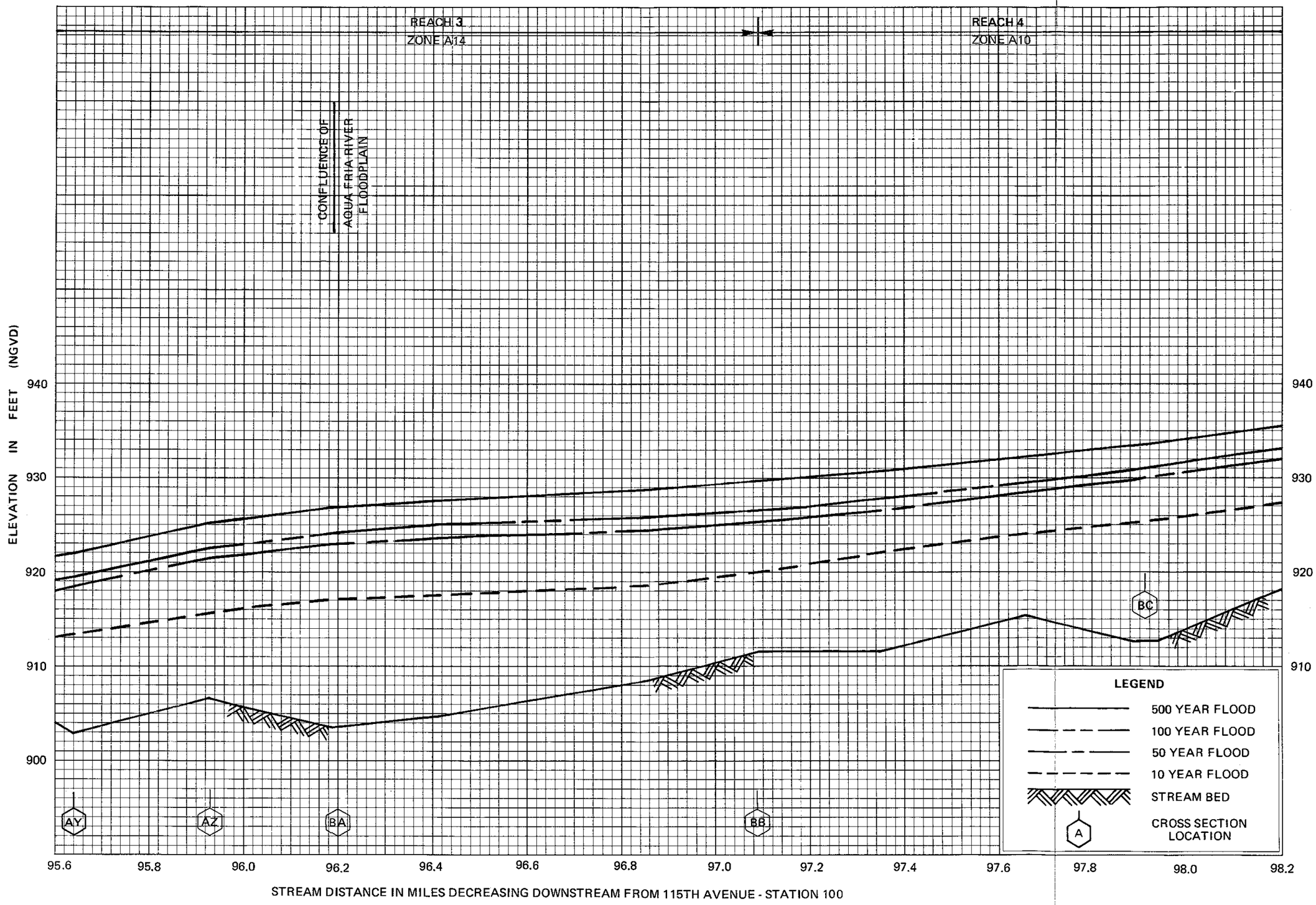
(UNINCORPORATED AREAS)



FLOOD PROFILES

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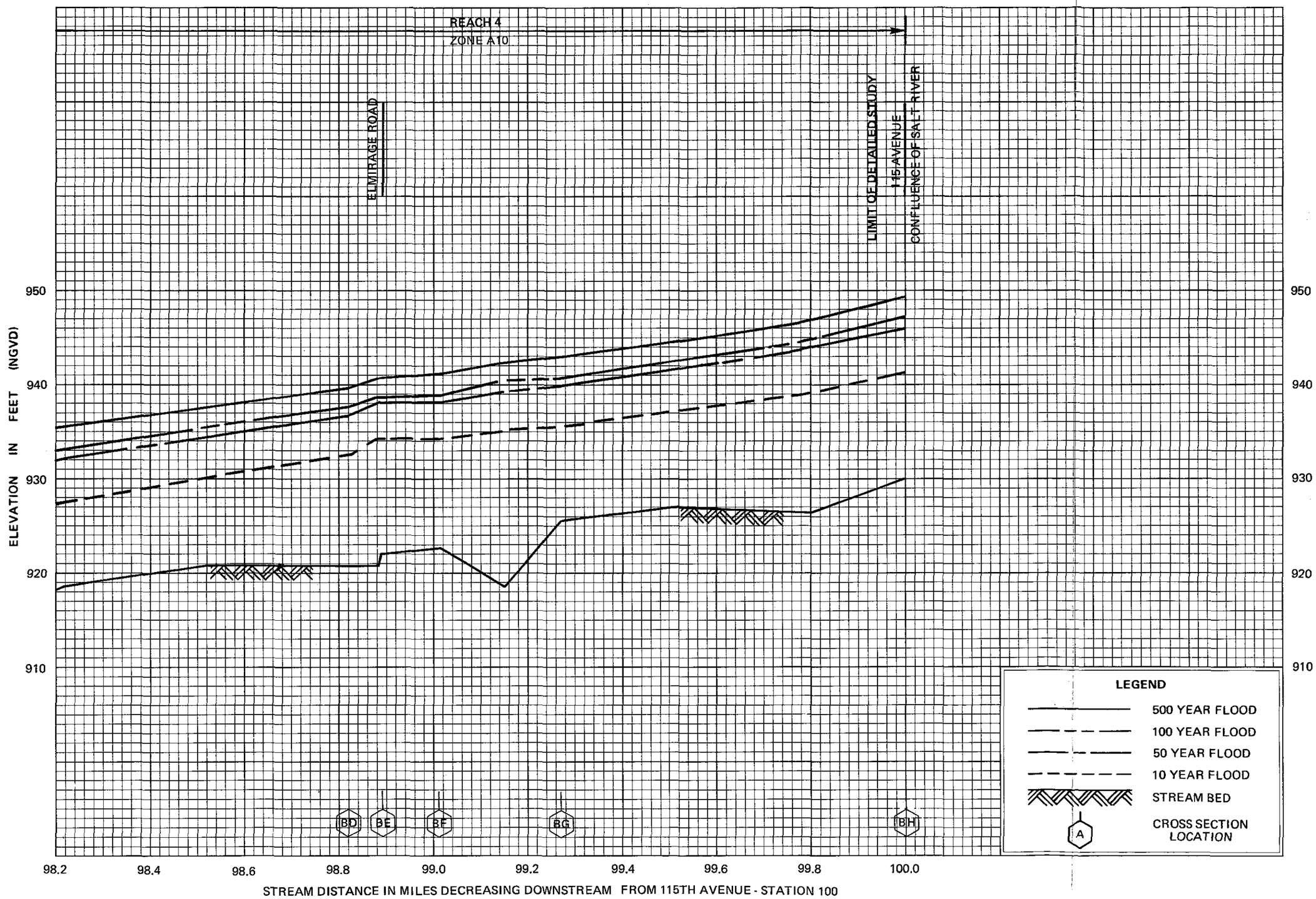

FLOOD PROFILES

GILA RIVER

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Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

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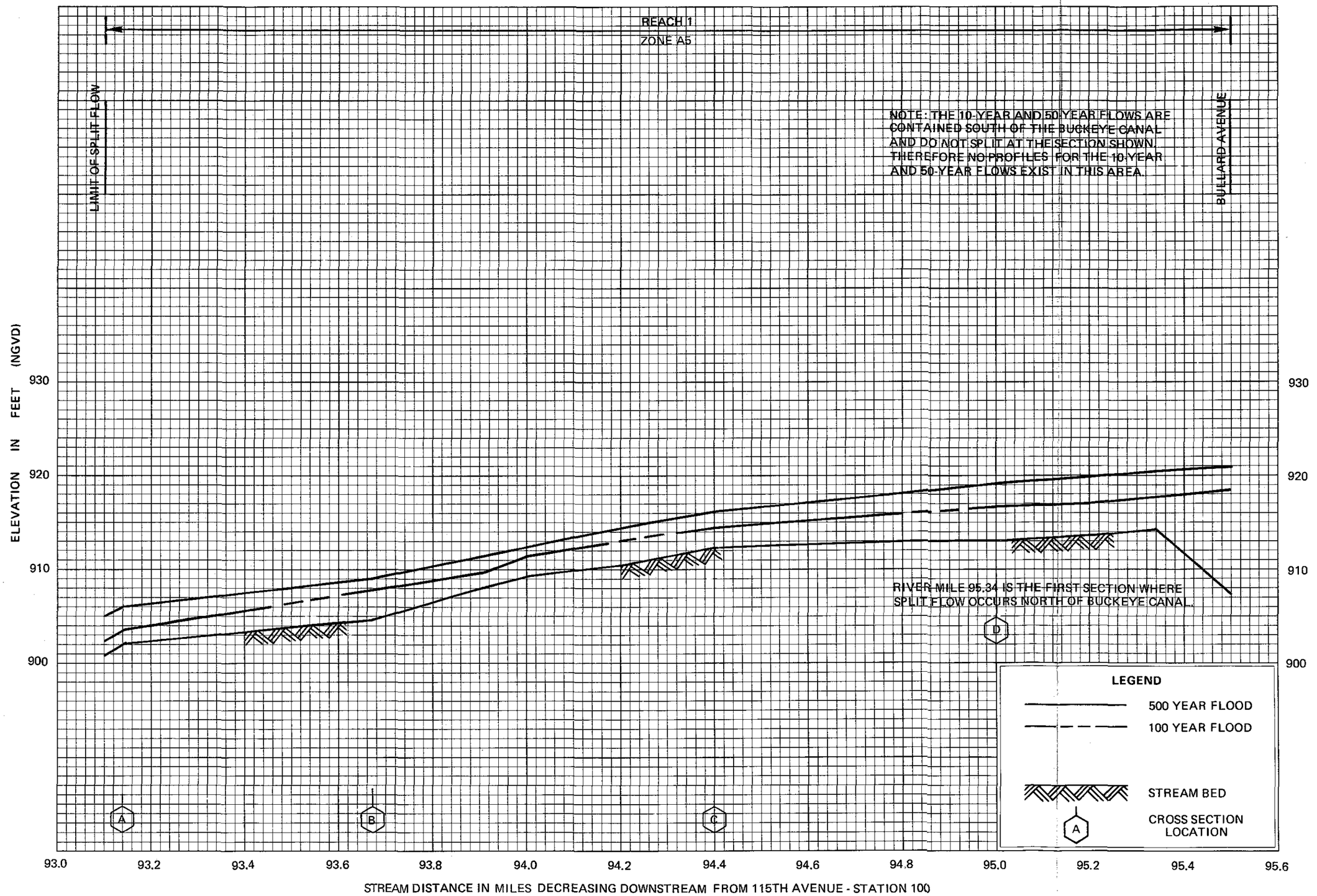
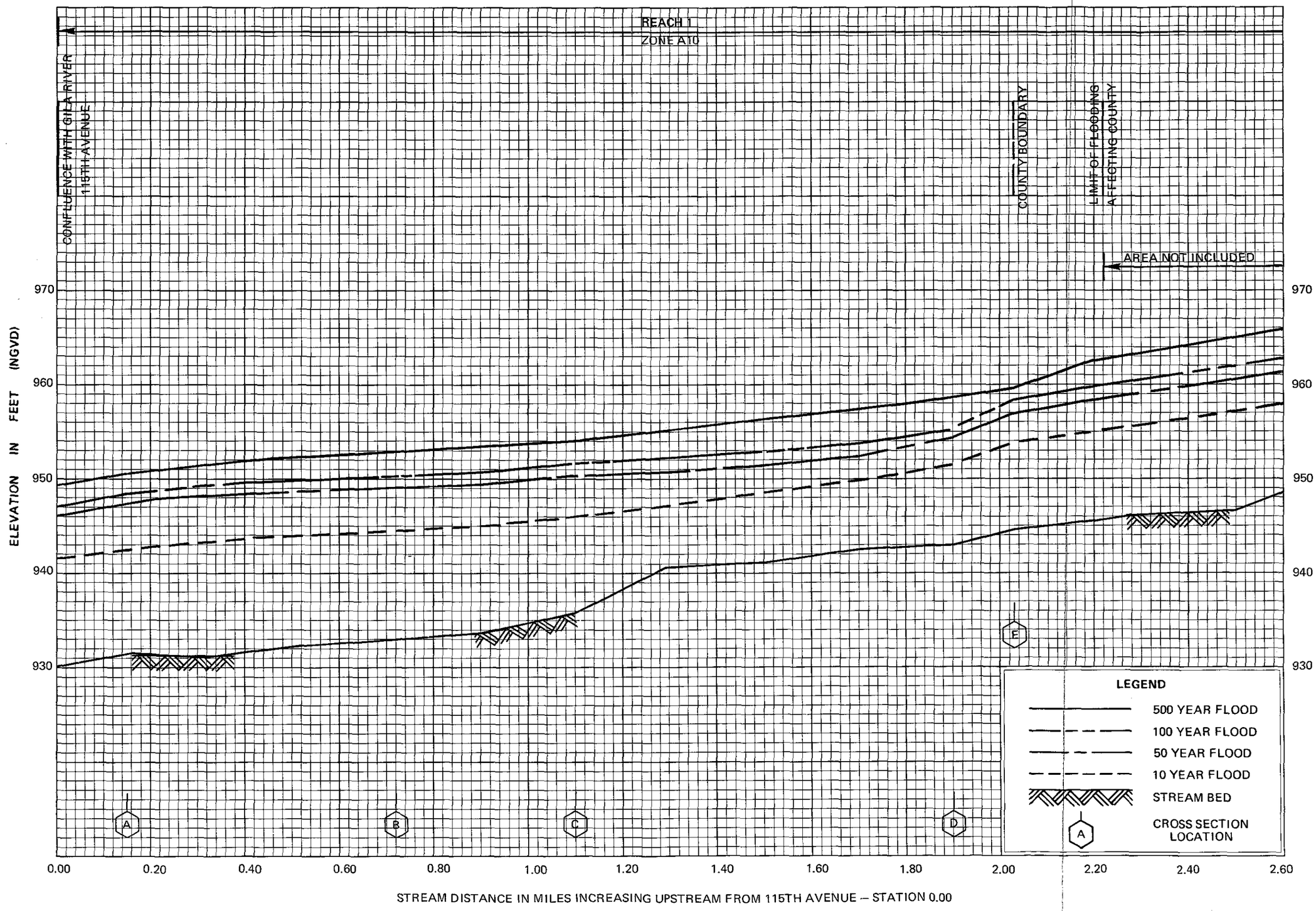


FLOOD PROFILES

GILA RIVER SPLIT FLOW AT BUCKEYE CANAL

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



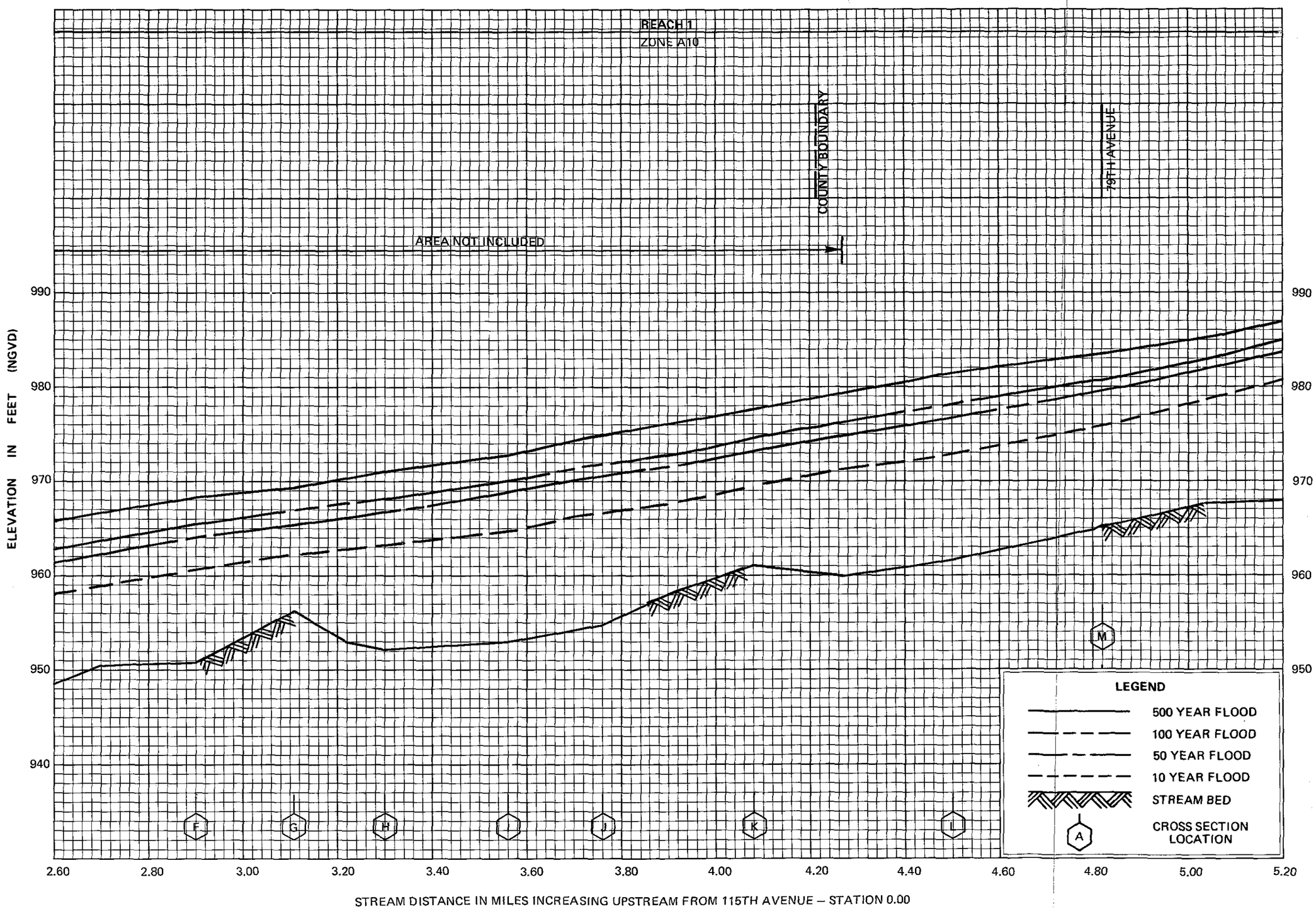
FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

52P

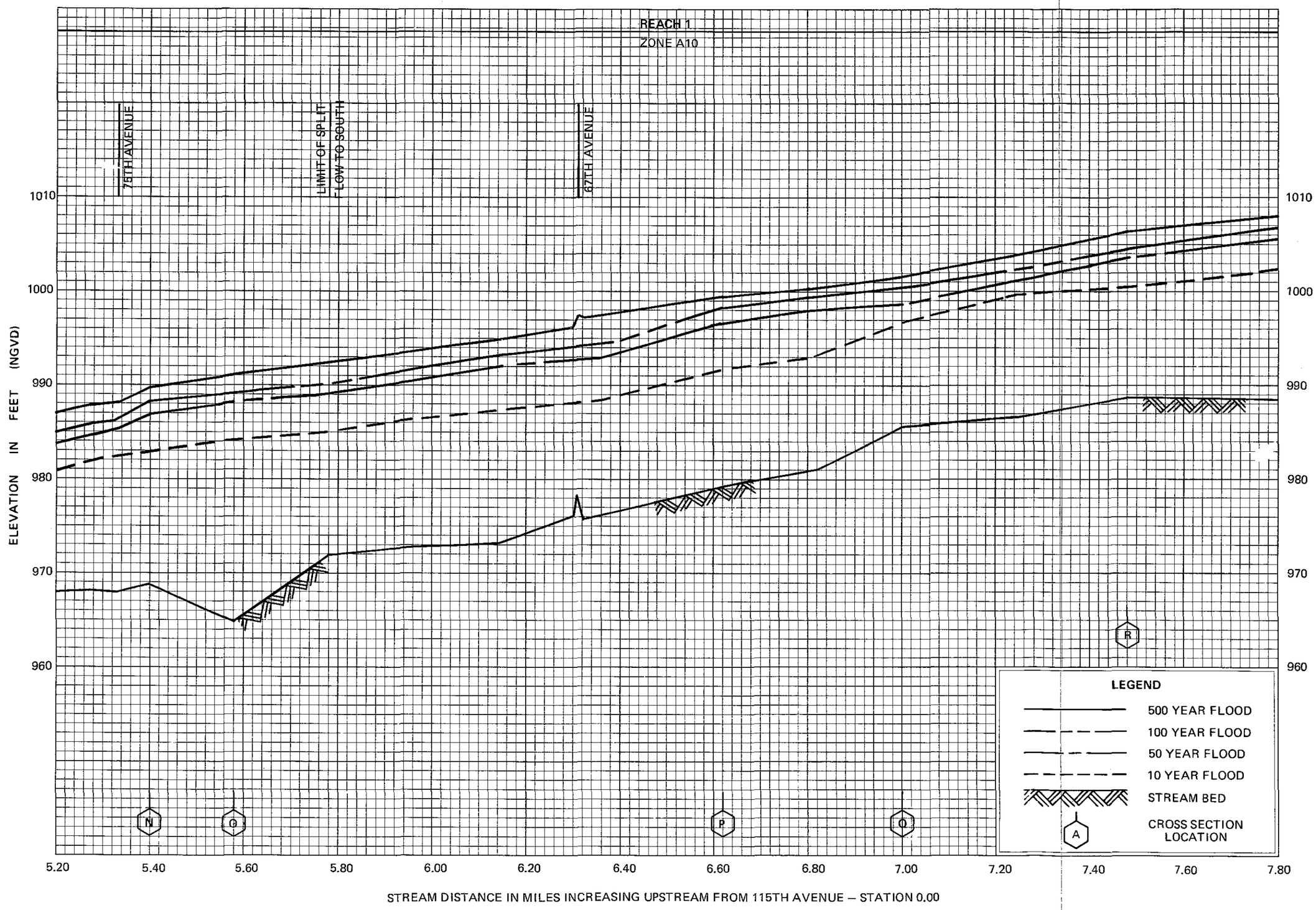


FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

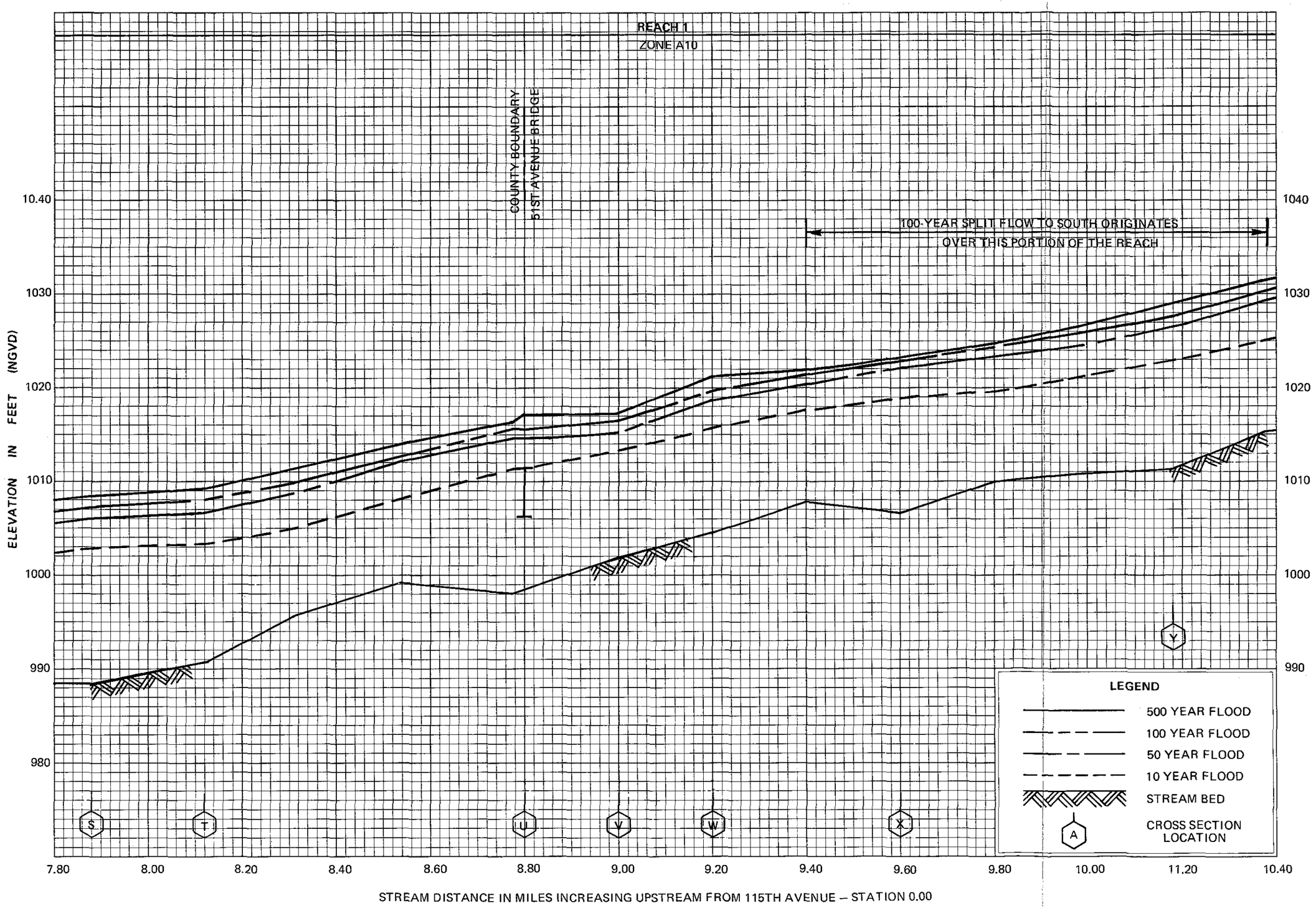


FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

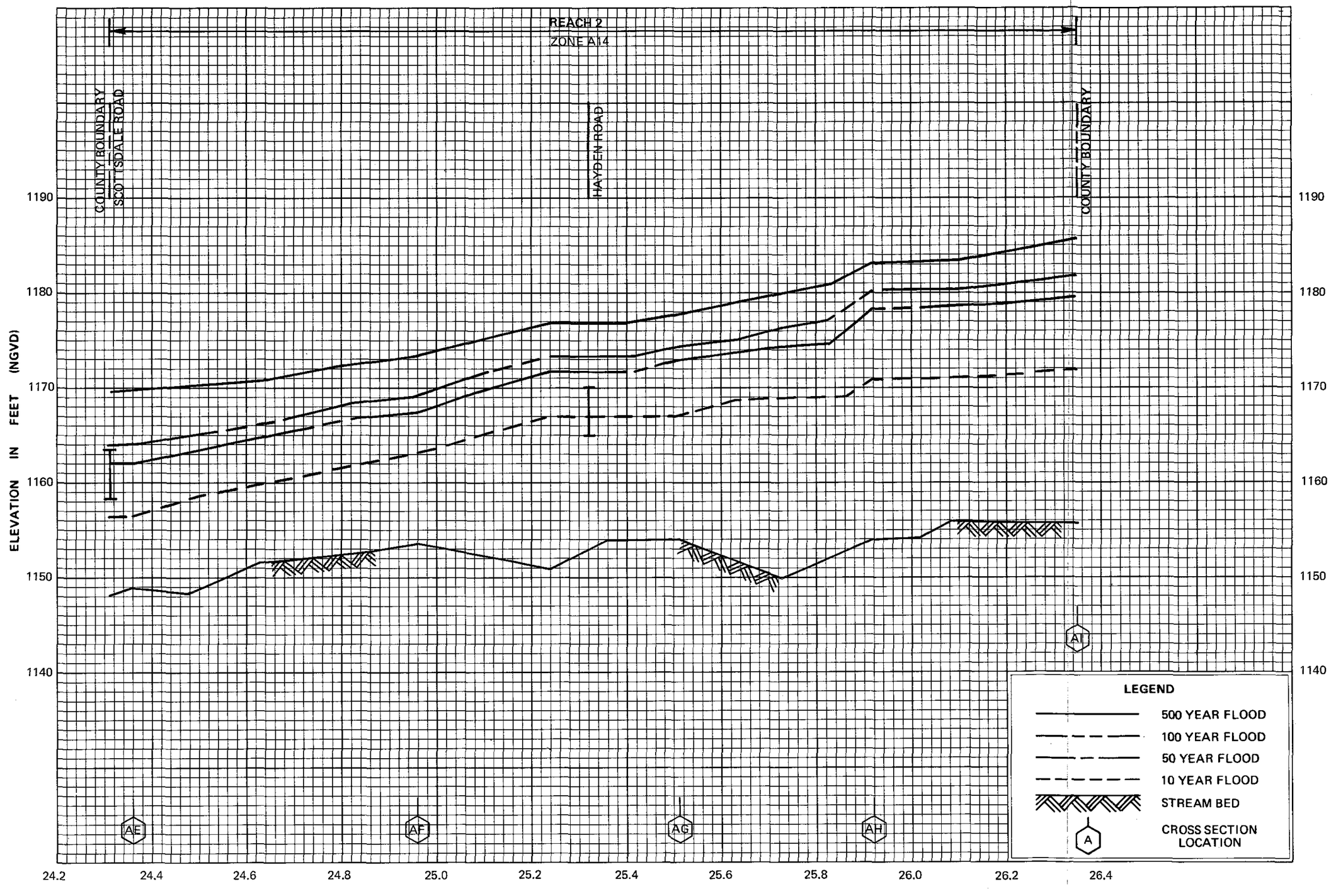
MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

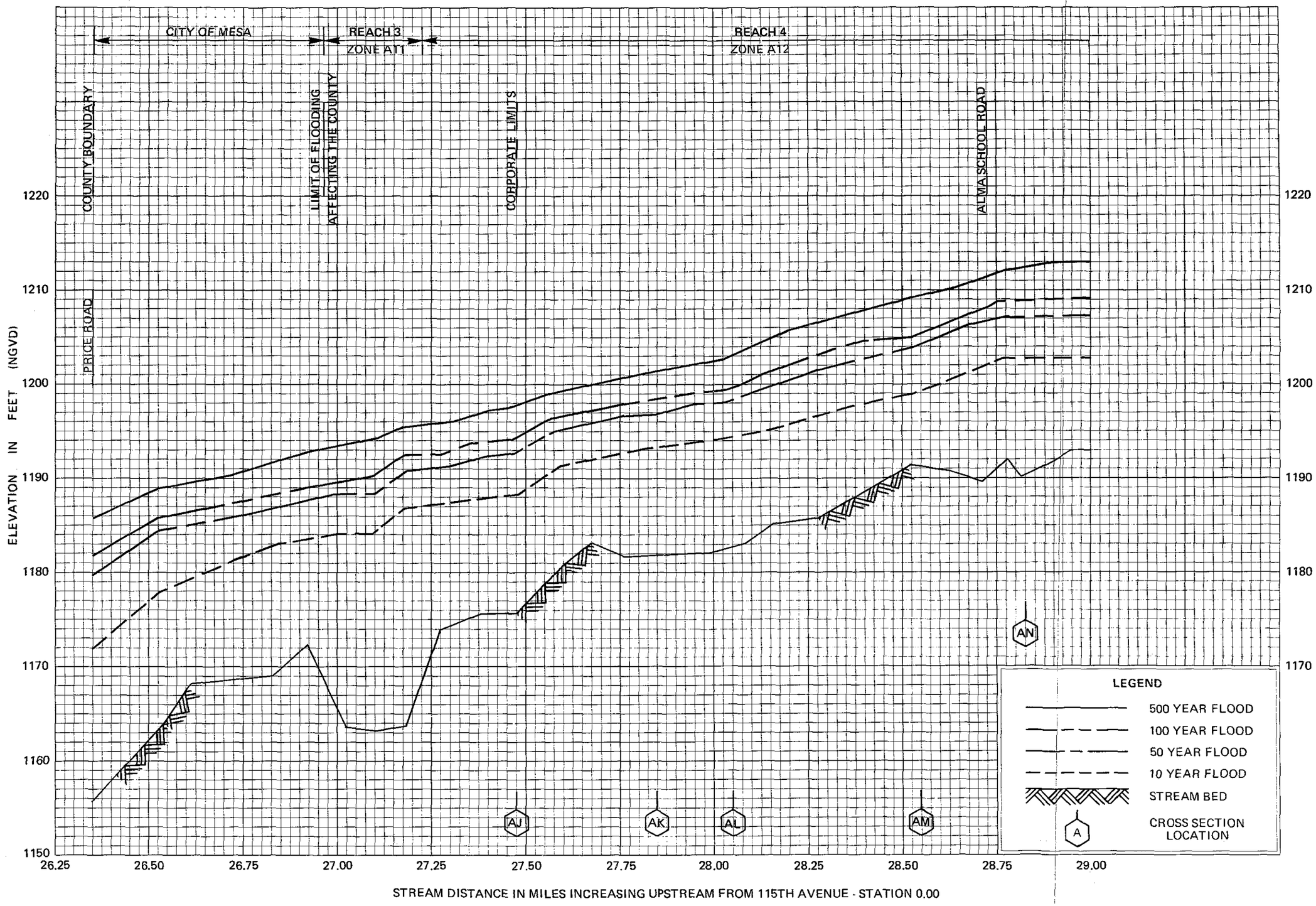


FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY
(UNINCORPORATED AREAS)



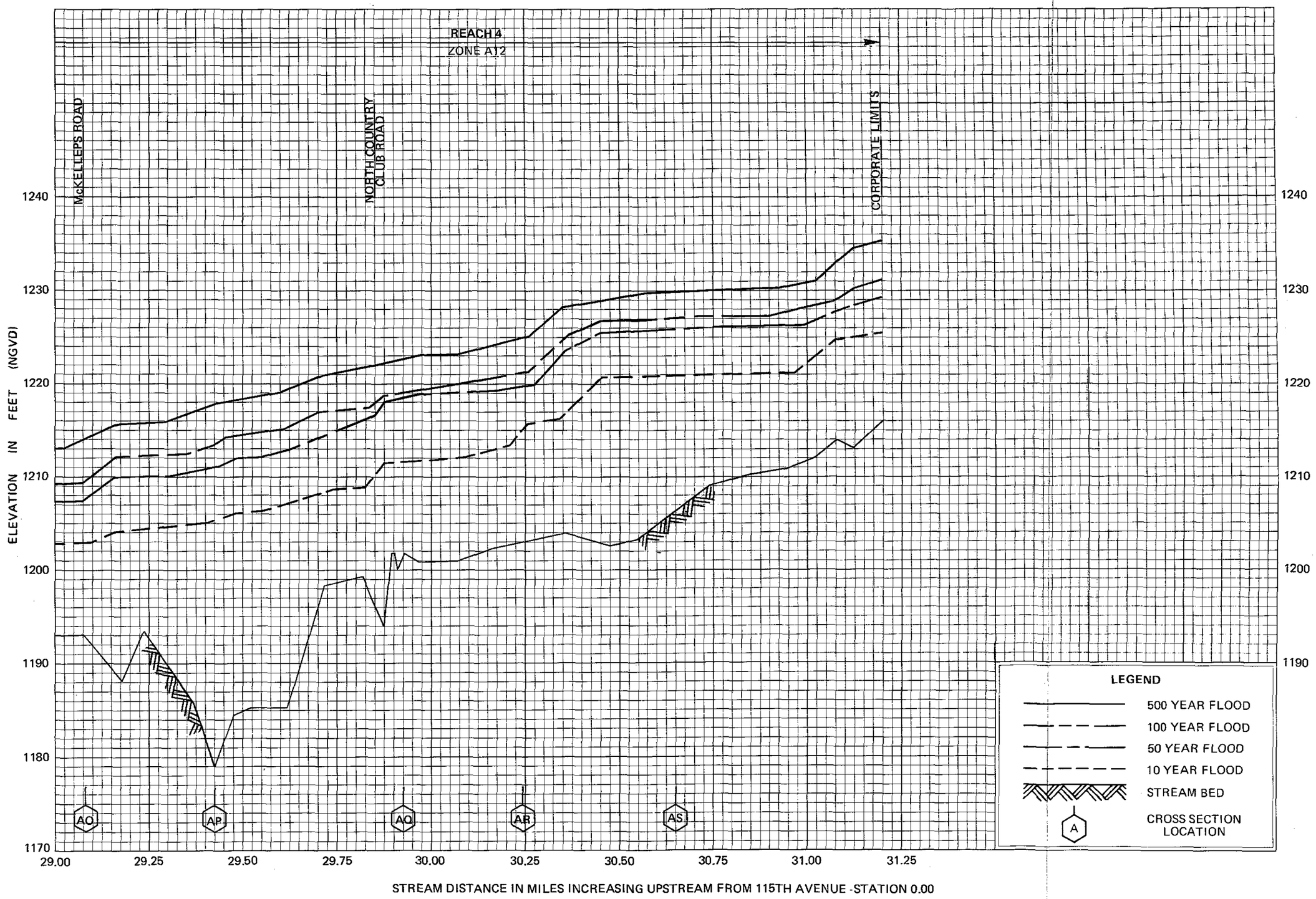
FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

58P

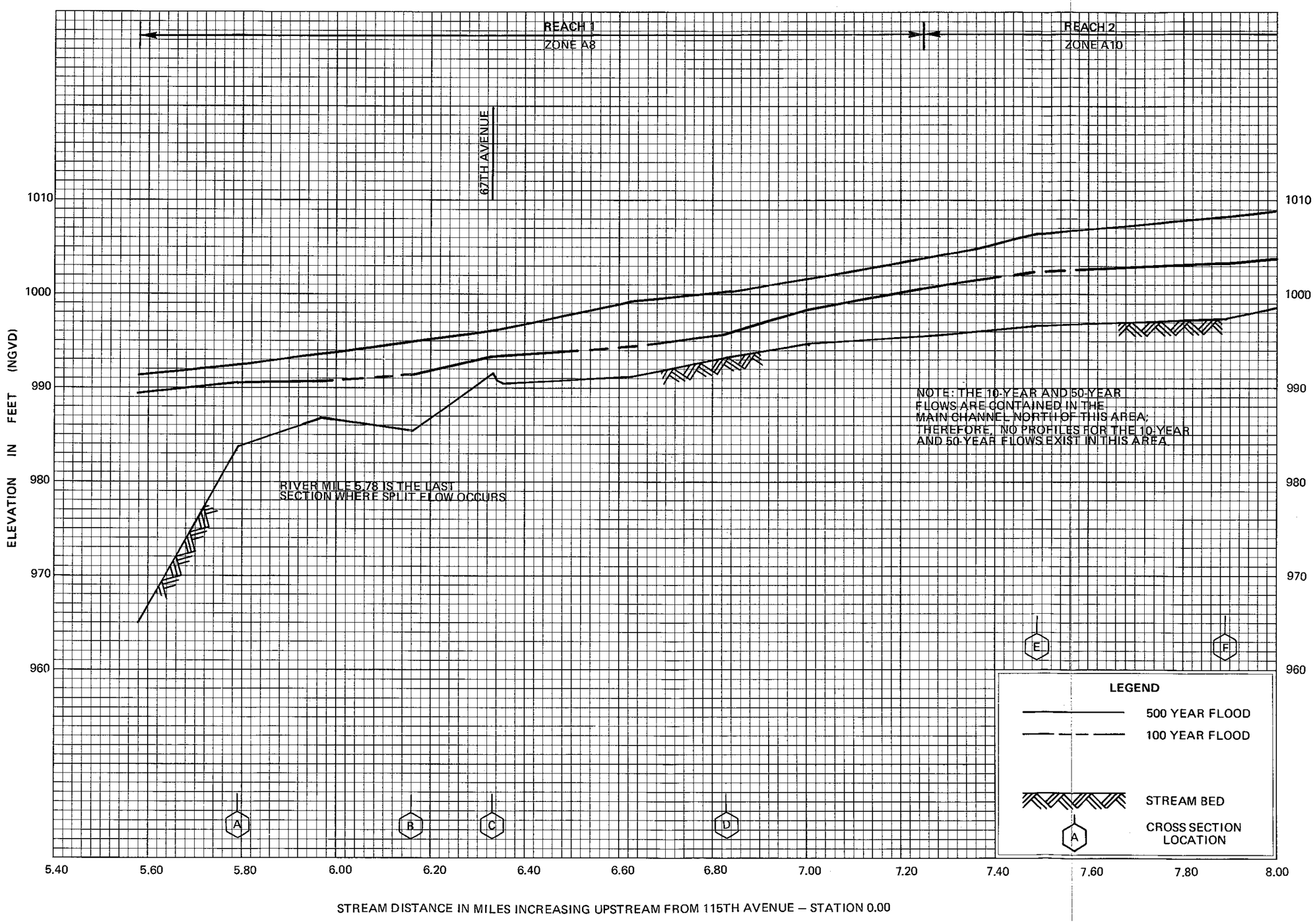


FLOOD PROFILES

SALT RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)



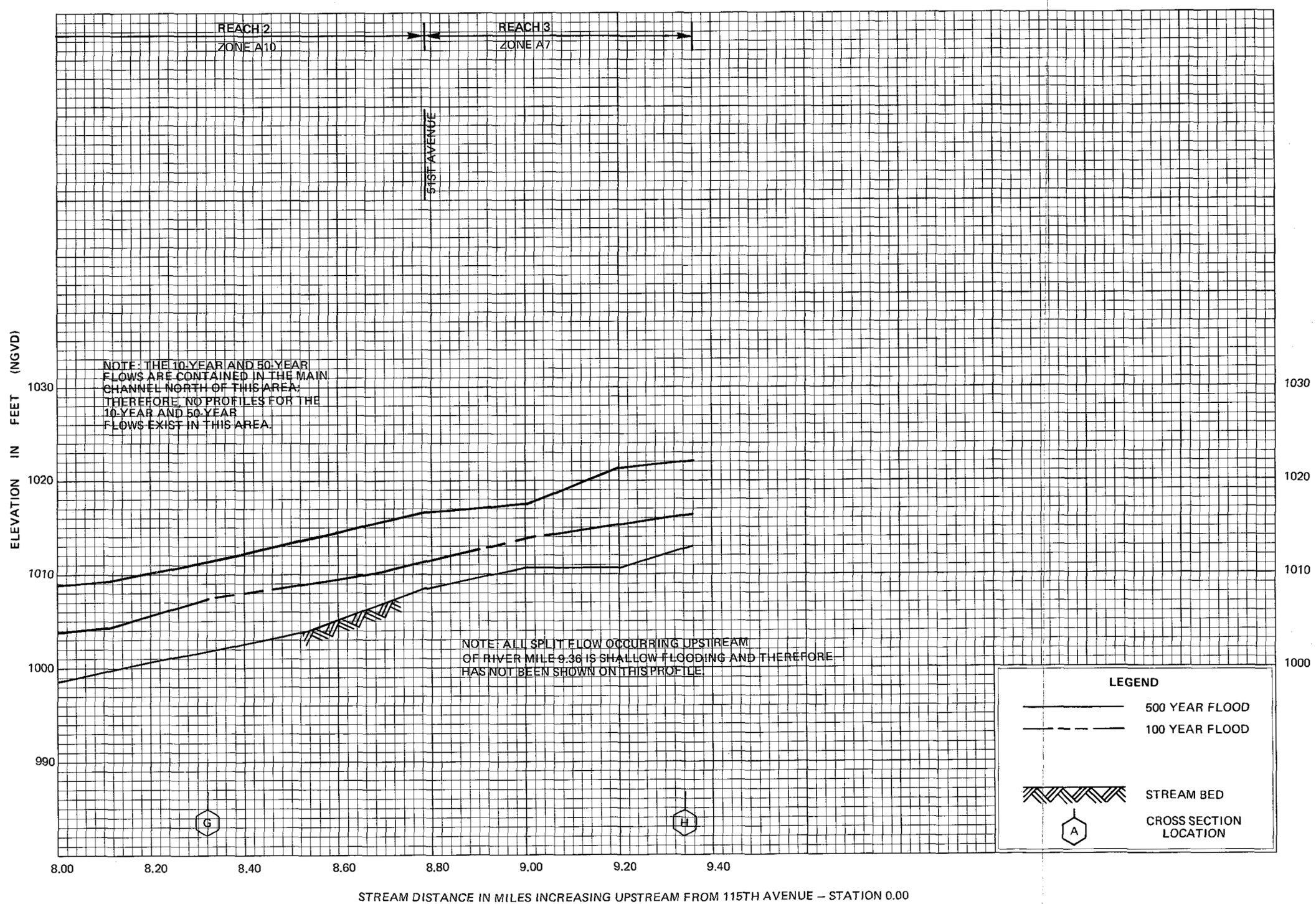
FLOOD PROFILES

SALT RIVER SPLIT FLOW BETWEEN 35TH AVENUE AND 51ST AVENUE

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

60P



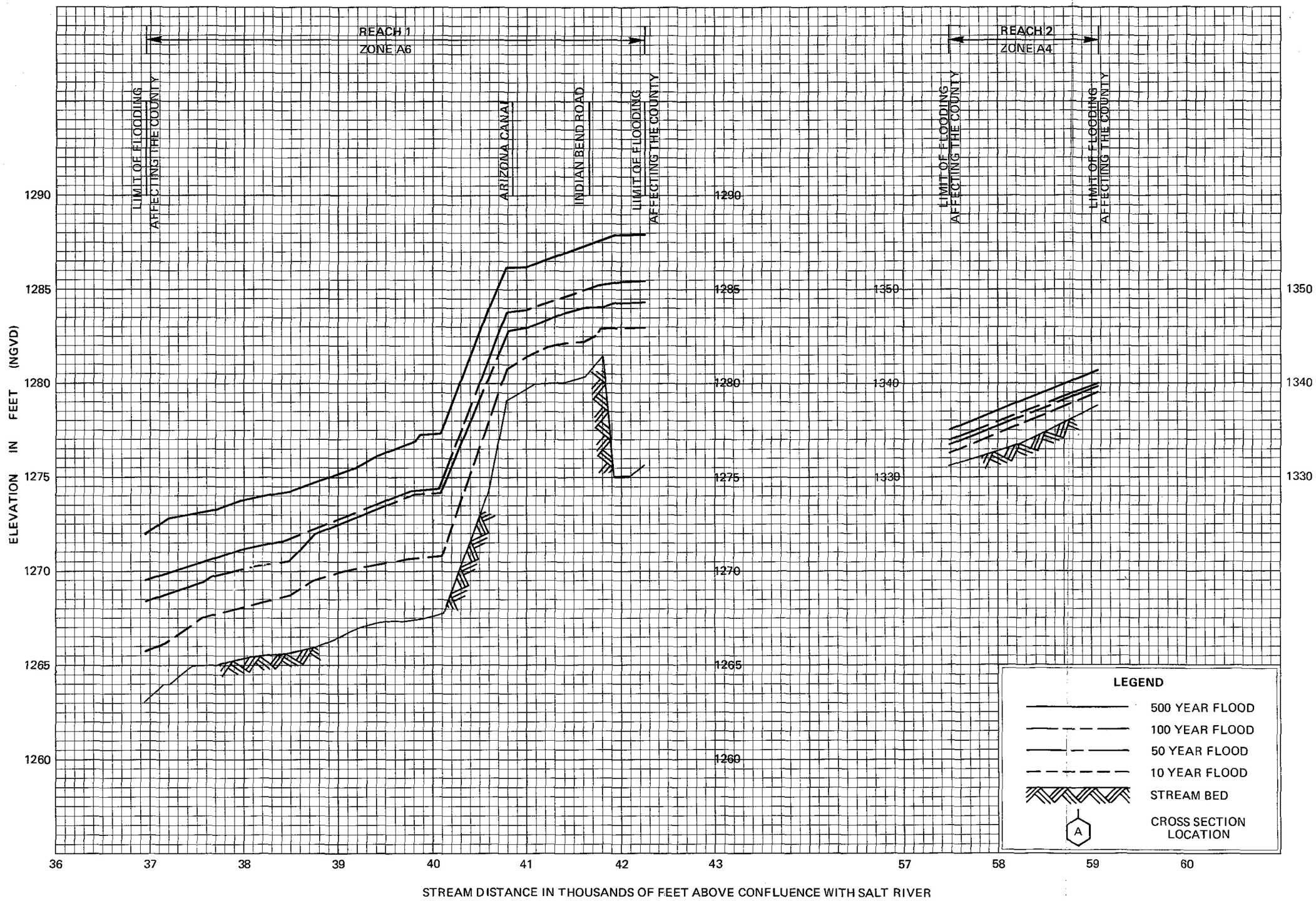
FLOOD PROFILES

SALT RIVER SPLIT FLOW BETWEEN 35TH AVENUE AND 51ST AVENUE

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

61P



FLOOD PROFILES

INDIAN BEND WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
(UNINCORPORATED AREAS)

62P