

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood

ary

F

Phoenix, AZ 85009

ary

Phoenix, AZ 85009

FLOOD INSURANCE STUDY

UNINCORPORATED AREAS OF
MARICOPA COUNTY, ARIZONA

PREPARED BY:

HARRIS-TOUPS ASSOCIATES
4131 N. 24th Street
Phoenix, Arizona 85016

January, 1979

PROPERTY OF HUD
FEDERAL INS. ADM
Prep. By: HARRIS TOUPS

REVIEW DRAFT

PREPARED FOR:

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

80-1-00-8-01/79

TABLE OF CONTENTS

	PAGE
I. Study Contractor Information	1
II. FIS Contract Information	1
III. Coordination	1
IV. Scope of Study	2
V. Unincorporated County Description	6
VI. Principal Flood Problem	8
VII. Flood Protection Measures	8
VIII. Hydrologic Analysis	8
IX. Hydraulic Analysis	8
Headings VI, VII, VIII, IX are discussed for the following study areas:	
Aguila	9
Apache Junction	12
Arizona Canal	16
Cave Creek Wash and 6 Tributaries	18
Grand Canal	22
Lizard Acres Wash	23
Morristown - Little San Domingo Wash	26
Skunk Creek	28
Theba	30
Wickenburg - Mockingbird Wash	31
Wickenburg - Powder House Wash	33
Wittman	35

TABLES

Table 1 - Floodway Data

Table 2 - Flood Insurance Zone Data

EXHIBITS

Exhibit 1 - Flood Profiles

✓ Aguila	01P
✓ Cave Creek Wash	03P
✓ Andora Hills Wash	09P
✓ Galloway	14P
✓ Rowe Wash	19P
✓ Grapevine Wash	24P
✓ Ocotillo Wash	26P
✓ Willow Springs Wash	30P
✓ Lizard Acres Wash	33P
✓ Morristown - Little San Domingo Wash	36P
Skunk Creek	38P
✓ Wickenburg - Mockingbird Wash	48P
✓ Wickenburg - Powder House Wash	50P
✓ Wittman	52P

Exhibit 2 - Reference Bench Marks

Published Separately

Work Maps

01-16 F & R

I. Study Contractor Information

Name of Study Contractor: Harris-Toups
Street Address of Study Contractor: 4131 N. 24th St., Phoenix, Arizona 85016
Telephone No. of Study Contractor: 602-264-9665
Study Contractor Project Manager to be Contacted for Additional Information
Edward A. Adair P.E.

II. FIS Contract Information

Name of FIS Community: Unincorporated Areas
County: Maricopa County
State: Arizona
Private Contractor's Contract No. H-4008
Public Agency Interagency Agreement Nos. _____
Public Agency Project Order Nos. _____

III. Coordination

List the positions of the Community Officials and names of the Federal and local agencies with whom the following aspects of the FIS were coordinated:

Base Maps Maricopa County Planning Department

Surveying Arizona Dept. of Transportation - Division of Photogrammetry
and mapping U.S.G.S.

Hydrology and Hydraulics Chief of Hydrology Section
Maricopa County Flood Control District

Floodway _____

Date of Time and Cost Meeting April 6, 1976

Date of Initial CCO Meeting _____

Additional Remarks: (Use separate sheet)

IV. Scope of Study

Areas excluded from study: _____

Areas of Extraterritorial Jurisdiction _____

Water Courses Studied:

Name: Aguila

Location: Northwest Maricopa County

Direction of Flow: Grass Wash - Northwest; Railroad - West

Limits of Study: 2.2 miles Grass Wash; 1.5 miles of Atchison,

Topeka and Santa Fe Railroad (Aguila Farm Channel)

Type of Study: Detail

Name: Apache Junction

Location: Northeast Maricopa County

Direction of Flow: Southwest direction

Limits of Study: 3.7 miles along state route 88

Type of Study: Detail

Name: Arizona Canal

Location: Central Maricopa County

Direction of Flow: Northwest

Limits of Study: 67th Avenue to Skunk Creek

Type of Study: Detail

Additional Remarks: (Use separate sheet)

Water Courses Studied:

Name: Cave Creek Wash + Tributaries

Location: Northeast Maricopa County

Direction of Flow: Main wash - southwest; tributaries - south

Limits of Study: Downstream limit Carefree Highway to 6.5 miles
upstream

Type of Study: Detail

Name: Grand Canal

Location: Central Maricopa County

Direction of Flow: Southwest

Limits of Study: Camelback Road to Bethany Home Road
vicinity of 75th Avenue

Type of Study: Detail

Name: Lizard Acres Wash

Location: North central Maricopa County

Direction of Flow: Southeasterly through the Town of Surprise

Limits of Study: Downstream limit is 0.8 miles upstream of Agua Fria River.
to East boundary of Surprise, then from North boundary of Surprise to a point

3.08 miles upstream from Agua Fria River.
Type of Study: Detail

Additional Remarks: (Use separate sheet)

Water Courses Studied:

Name: Little San Domingo Wash, Morristown

Location: North central Maricopa County

Direction of Flow: Southwest

Limits of Study: U.S. Route 89 (downstream) to 0.7 miles upstream

Type of Study: Detail

Name: Skunk Creek

Location: North central Maricopa County

Direction of Flow: South

Limits of Study: Carefree Highway downstream to 8.8 miles upstream

Type of Study: Detail

Name: Gila Bend Canal, Theba

Location: Southwest Maricopa County

Direction of Flow: Westerly along Southern Pacific Railroad to canal
then Southwesterly along canal.

Limits of Study: 2 miles Southwest of intersection of Southern

Pacific Railroad with Gila Bend Canal to 1.5 Northeast of intersection.

Type of Study: Detail

Additional Remarks: (Use separate sheet)

Water Courses Studied:

Name: Mockingbird Wash, near Wickenburg

Location: Northwest Maricopa County

Direction of Flow: Southwest

Limits of Study: downstream route 60 to 0.7 miles upstream

Type of Study: Detail

Name: Powder House Wash, Wickenburg

Location: Northwest Maricopa County

Direction of Flow: Southwest

Limits of Study: 0.3 miles upstream from confluence of Hassayampa River
to 0.9 miles upstream.

Type of Study: Detail

Name: Wittman

Location: Northwest Maricopa County

Direction of Flow: Southerly

Limits of Study: State Route 60, 70, 89 & U.S. Rt. 93 to a point
3265' upstream

Type of Study: Detail

Additional Remarks: (Use separate sheet)

V. UNINCORPORATED COUNTY DESCRIPTION

A. Location and Population

1. South central Arizona
2. Major cities in Maricopa County; Phoenix, Tempe, Mesa, Glendale
3. Population 969,425
4. 1970 Census

B. Development

1. Residential development is expanding rapidly in the Phoenix metropolitan area. Most cities and towns have annexed large amounts of county land in anticipation of continued growth and developers are actively subdividing agricultural land both in the cities and on the surrounding county lands.

Commercial development has followed the trend away from the city centers to neighborhood shopping centers and large shopping malls.

2. Most of the streams studied in the unincorporated county lie in undeveloped areas. However, in areas with communities both agricultural and residential development has occurred in the floodplains of the normally dry washes.
3. Most of the land area in Maricopa County is undeveloped but the major land use is agricultural.

C. Meteorology

1. Temperature
Summer (July) Low = 78° High = 104°
Winter (January) Low = 38° High = 65°

2. Annual Rainfall = 7.4 inches
3. The only way snowmelt becomes a factor to flooding in Maricopa County is when the Salt River or the Gila River flow with runoff from snowmelt, flooding has occurred in Maricopa County in the past when warm spring rains have melted the snow in the higher elevations of the watersheds resulting in runoff which exceeds the capacity of the reservoirs along these rivers.
4. Flooding is caused by general storms of long duration and/or by local thunderstorms of high intensity and short duration.

D. Factors Affecting Flooding

1. Topography

The natural terrain in Maricopa County consists basically of scattered rugged mountain ranges which are encompassed by alluvial fans and desert valleys.

2. Geomorphology

Throughout the county there are many desert washes. The major streams that traverse the county are the Salt River, the Gila River, the Agua Fria River and the Verde River.

3. Soils

The alluvium comprising most of the desert valleys is predominantly sand and silty sand containing varying amounts of caliche. Recent alluvium is found along the streambed channels and consists of uncemented silts, sands, gravels, cobbles and boulders.

4. Vegetation

In general, vegetation is sparse. Cacti grow throughout the area along with other desert shrubs. The vegetation tends to be thicker along the stream courses and may include some small trees. Perennial grasses form a very small portion of the vegetation but a good cover of annual grasses occur after the winter rains.

5. Drainage Features

Bridges or culverts have been constructed at the major water courses along the principal roadways. Minor routes generally cross the water courses in dip sections.

VI. PRINCIPAL FLOOD PROBLEMS

VII. FLOOD PROTECTION MEASURES

VIII. HYDROLOGIC ANALYSIS

IX. HYDRUALIC ANALYSIS

It was determined the four headings listed above could most effectively be considered through discussion of the individual water courses studied. The following is such a discussion.

UNINCORPORATED COMMUNITY OF AGUILA

AREA STUDIED

Aguila is located 79 miles northwest of Phoenix, Arizona, on U.S. Highway 60. The Atchison, Topeka and Santa Fe Railroad traverses the community and is parallel to Highway 60 in the western portion of the study area. On the west side of the community the highway and the railroad cross Grass Wash with bridge structures. Studied in detail was the flooding hazards associated with a 2.2 mile reach of Grass Wash and a 1.5 mile reach of the Atchison, Topeka and Santa Fe Railroad.

HYDROLOGY

Hydrologic determinations for all drainage areas affecting the community of Aguila were obtained by use of the Soil Conservation Service Computer Program TR-20. Peak discharges for the 24-hour storm of the required return frequencies are given in Table 1.

HYDRAULICS

Hydraulic calculations for this study were performed using the Corps of Engineers Computer Program HEC-2.

Grass Wash

From the detailed topographic maps produced by Harris-Toups Associates having a scale of 1" = 400' and a contour interval of 4 feet, sections were obtained for the HEC-2 computer analysis. Geometrics of the highway and RR bridges were obtained from construction plans and from measurements taken in the field. A floodway (based on equal loss of conveyance) was computed upstream of the bridges but not on the downstream side because a diversion dike has been constructed below the bridges which diverts low flows out of the natural course. However, this uncompacted earthen dike will not adequately divert larger flows in Grass Wash. The only land use in this area is agricultural. Due to the indeterminate nature of the diversion a floodway was not computed downstream of the bridges. Mannings "n" values were chosen from field inspection and determined to range from 0.025 to 0.040 for the channel and 0.025 to 0.045 for the over-bank. Starting water surface elevations were obtained by the slope area method.

HYDRAULICS (Continued)

Atchison Topeka and Santa Fe Railroad

Flows originating north of the railroad are collected in a large drainage channel along the railroad and conveyed through the Aguila Farms fields to Centennial Wash. The maximum capacity of the channel is estimated to be 5000 cfs. The excess flow spreads out over a large area at two feet average depth for the 100-year flood and finally merge with the Grass Wash flows. A backwater analysis was performed using HEC-2. Manning's "n" values were chosen from field investigation and determined to be 0.030 for the channel and 0.040 for the overbank area. Starting water surface elevations were obtained by the slope area method. A 500-year flood frequency was not investigated due to the area being subject to shallow flooding conditions.

FLOOD ZONES

Flood zones were determined to be Zone A2 and B.

AGUILA

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> <u>Square miles</u>	<u>PEAK DISCHARGES (cfs)</u>		
		<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>
GRASS WASH at Highway 60	83	6,380	11,600	14,400
AGUILA FARMS CHANNEL at Eagle Eye Avenue	216	5,450	12,000	16,000
CHANNEL BETWEEN HIGHWAY 60 & RAILROAD at Eagle Eye Avenue	2.8	400	735	915

Note: The 500-year discharges were not computed because the entire vicinity of Aguila is subject to shallow flooding less than one foot in depth (Zone B).

UNINCORPORATED COMMUNITY OF APACHE JUNCTION

AREA STUDIED

Apache Junction is located on an alluvial fan at the base of the Superstition Mountains. The drainage area affecting the flood insurance study area of Apache Junction is composed of 14.4 square miles which is controlled by flood control structures of the Soil Conservation Services and the natural drainage boundary. The flood control structures which divert and store the 100 year storm discharge, thus regulating the drainage area, are the Spook Hill Dam, Signal Butte Floodway, Signal Butte Dam, and the Pass Mountain Dam. The Apache Junction Floodway and the Apache Junction Dam were not considered in the drainage boundary due to their anticipated project schedule. The runoff generated by the drainage area flows in a southwest direction, where ground slopes are at one percent. Residential development is found throughout the drainage area with commercial development located along U.S. Route 60.

HYDROLOGY

Hydrology was performed by use of Soil Conservation Services Computer Program TR-20. Flood peaks and volumes for the various areas are presented in Table 1.

HYDRAULICS

A vast network of intermingling channels are found throughout the alluvial fan. These erodable channels do not allow an accurate account of flooding limits but lead to the conclusion that overland flow and channel flow will co-exist for the 100 year storm discharges. Since flooding over alluvial fans exhibits erratic and unpredictable behavior a potential flood hazard zone of AFI has been designated. This zone is based on hydraulic calculations of typical sections throughout the study area. FIA's general study requirements for shallow flooding areas apply to alluvial fans, so that only 100 year flooding is evaluated, and water surface profiles are not computed.

FLOOD ZONES

Apache Junction is located on an alluvial fan, therefore the special flood insurance zone of AFI has been assigned.

TABLE 1. SUMMARY OF DISCHARGES

APACHE JUNCTION

I.D. * NUMBER	DRAINAGE AREA square miles	PEAK DISCHARGES		
		10-Year	50 Year	100 Year
1	3.18	517	1000	1232
2	3.62	533	1025	1261
3	2.64	433	831	1021
4	3.50	501	958	1177
7	4.81	683	1320	1626
10	5.27	707	1362	1677
13	6.33	824	1584	1951
16	7.31	931	1800	2219

* See Drainage Area Map

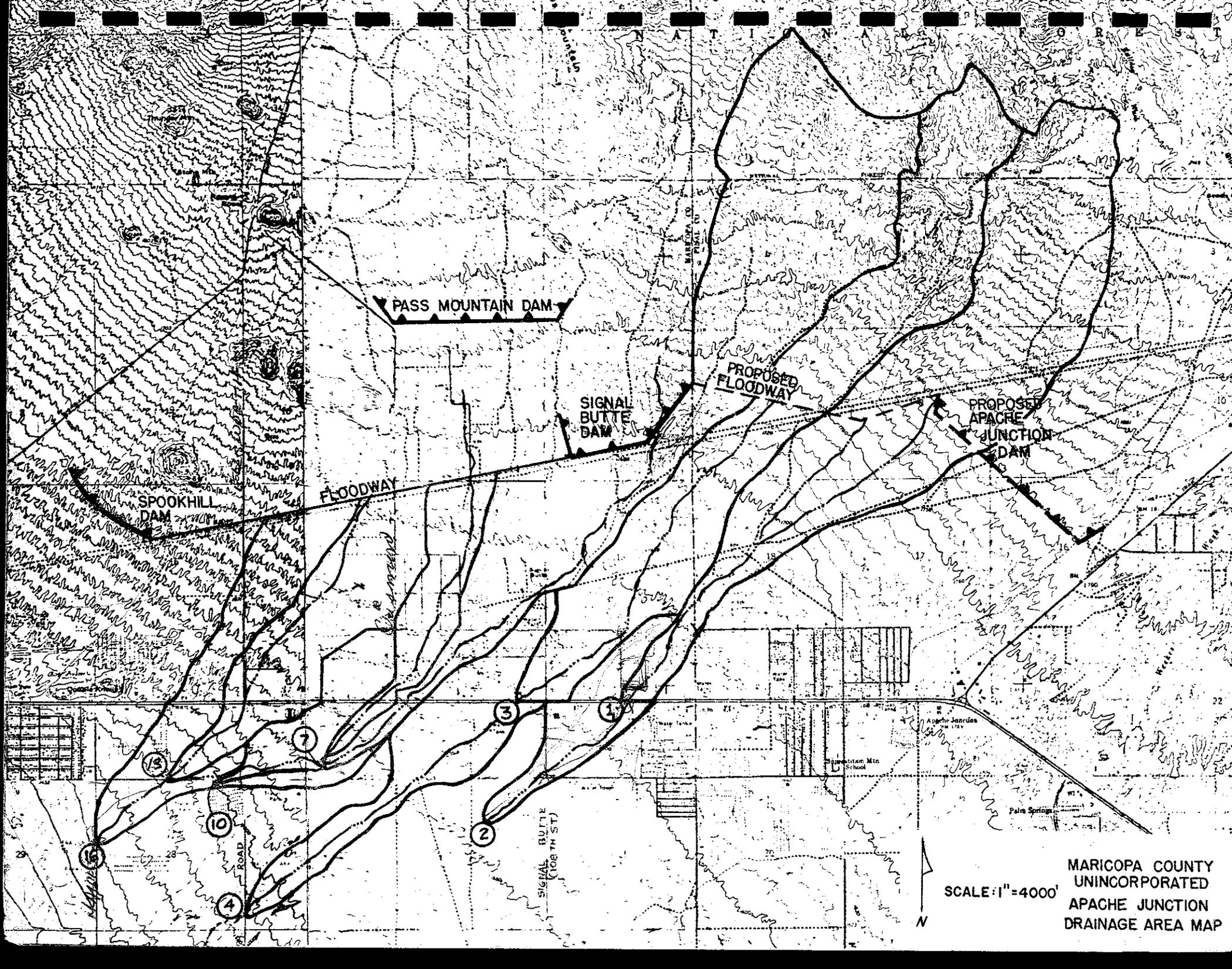


TABLE 1. SUMMARY OF DISCHARGES

APACHE JUNCTION

I.D. * NUMBER	DRAINAGE AREA square miles	PEAK DISCHARGES		
		10-Year	50 Year	100 Year
1	3.18	517	1000	1232
2	3.62	533	1025	1261
3	2.64	433	831	1021
4	3.50	501	958	1177
7	4.81	683	1320	1626
10	5.27	707	1362	1677
13	6.33	824	1584	1951
16	7.31	931	1800	2219

* See Drainage Area Map

UNINCORPORATED AREA OF MARICOPA COUNTY

ARIZONA CANAL

AREA STUDIED

The Arizona Canal is an irrigation canal under the jurisdiction of the Salt River Water Users Association. The canal has a capacity of 800 cfs and provides limited flood control by intercepting low flows. Larger flood flows either break the canal directly or cause flow to pond and be diverted along the canal bank. The canal was analyzed from 67th Avenue to Skunk Creek.

HYDROLOGY

The S.C.S. TR-20 Computer Program for hydrology was used to determine flood peaks and volumes. A peak discharge of 1220 cfs with an associated volume of 410 acre feet was computed for the 100-year storm.

HYDRAULICS

The hydraulic analyses was based upon detailed topographic mapping - 200 scale with 4 foot contour intervals. Cross-sections were taken perpendicular to the canal banks, flood hazard areas were then determined by projecting top of canal banks to upstream natural ground. The canal banks do not provide permanent retention for storm flows but rather divert storm flows along its bank. A downstream flooding hazard due to potential breaks in the canal levees was analyzed for canal banks exceeding two feet in height. This analysis consisted of a determination of the distance required for flow through a break in the canal bank to spread and be reduced to one foot in depth. This analysis is based on the following assumptions:

1. A canal breach can occur at any point.
2. The width of the break in the canal bank would be from 50 to 100 feet.
3. From the break in the canal bank, flood waters would spread at a theoretical 45° angle from the canal bank.
4. Downstream section where flow is to be reduced to one foot in depth is analyzed by Manning's equation using an 'n' value of .08 for developed conditions.
5. The peak discharge to be analyzed at a potential canal break was the maximum canal capacity or the concentration of peak flows from runoff in the watershed, whichever is greater. As a result of this analysis,

a family of curves was developed to obtain the distance required for the flow to be reduced to one foot in depth with the height of the canal bank and the discharge at the point of the break. The resulting flood hazard areas below the banks of the Arizona Canal is shown on the accompanying work maps.

FLOODING ZONES

The shallow flooding zones were computed for Arizona Canal, Zone A02 and Zone A03. Zone B for areas outside of the A0 Zones.

UNINCORPORATED COMMUNITY OF CAVE CREEK

CAVE CREEK WASH AND 6 TRIBUTARIES

AREA STUDIED

Cave Creek Wash and its numerous tributaries drain a mountainous area of 127 square miles. The following washes were studied in detail; Cave Creek Wash, Willow Springs Wash, Ocotillo Wash, Rowe Wash, Galloway Wash, Grapevine Wash, ^{and} Andora Hills Wash, and ~~an unnamed wash approximately 2.3 miles downstream of Andora Hills Wash.~~ The area studied is upstream of the proposed Cave Buttes Dam and the existing Cave Creek Dam. There are no major flood control structures within the investigated drainage area. Cave Creek Wash is the main wash, it flows in a southwest direction over terrain sloping at 0.9%.

HYDROLOGY

Hydrology was performed through the use of Soil Conservation Services Computer Program TR-20. Flood peaks for the various areas are presented in Table 1.

HYDRAULICS

Water surface profiles were computed for Cave Creek Wash and six tributaries using the U.S. Army Corps of Engineers computer program HEC-2. Floodplain delineations were computed for 10, 50, 100 and 500-year flooding. Because of excessive stream velocities, a floodway was acceptable for only the lower portion of Cave Creek Wash from Sec. 29.00 - 32.66. The floodway was calculated using equal loss of conveyance on each side with a maximum one foot rise in water surface. Manning's "n" values were determined to range from .020 to .045 for the channel and .020 to .052 for overbanks. Field investigations produced the "n" values. Initial computer runs indicated supercritical flow. Some washes were producing a critical depth at every section. This condition was discussed by Harris-Toups with Maricopa County and FIA. It was agreed upon that supercritical flow does not effectively represent the hydraulic flow conditions of this area. Computer models would reflect subcritical flows with starting water surface elevations reflecting the slope area method.

FLOOD ZONES

Flood zones were determined to be A2, A3, A4, A5, D and Zone B.

CAVE CREEK WASH AND TRIBUTARIES

TABLE 1 SUMMARY OF DISCHARGES

*I.D.	FLOODING SOURCE & LOCATION	DRAINAGE AREA (Square Miles)	PEAK DISCHARGES (CFS)			
			10-Year	50-Year	100-Year	500-Year
A	Cave Creek Wash below Carefree Highway.	126.92	20,600	32,975	36,860	52,000
B	Cave Creek Wash above Carefree Highway	121.52	20,130	32,180	35,900	51,000
C	Cave Creek Wash at intersection with Andora Hills Wash	115.14	19,640	31,430	35,000	50,000
D	Cave Creek Wash above intersection with Willow Springs Wash	80.28	13,210	21,480	23,600	33,000
E	Willow Springs Wash above confluence with Cave Creek Wash	5.03	3,735	5,565	6,240	8,250
F	Willow Springs Wash, 0.70 river miles above confluence with Cave Creek Wash	4.83	3,810	5,660	6,340	8,400
G	Willow Springs Wash, 0.80 river miles above confluence with Cave Creek Wash	3.10	2,920	4,300	4,800	6,220
H	Ocotillo Wash near intersection of Rockaway Hills Drive and Fleming Springs Road	2.84	2,800	4,140	4,630	6,200
I	Ocotillo Wash above confluence with Cave Creek Wash	3.75	3,200	4,820	5,420	7,200

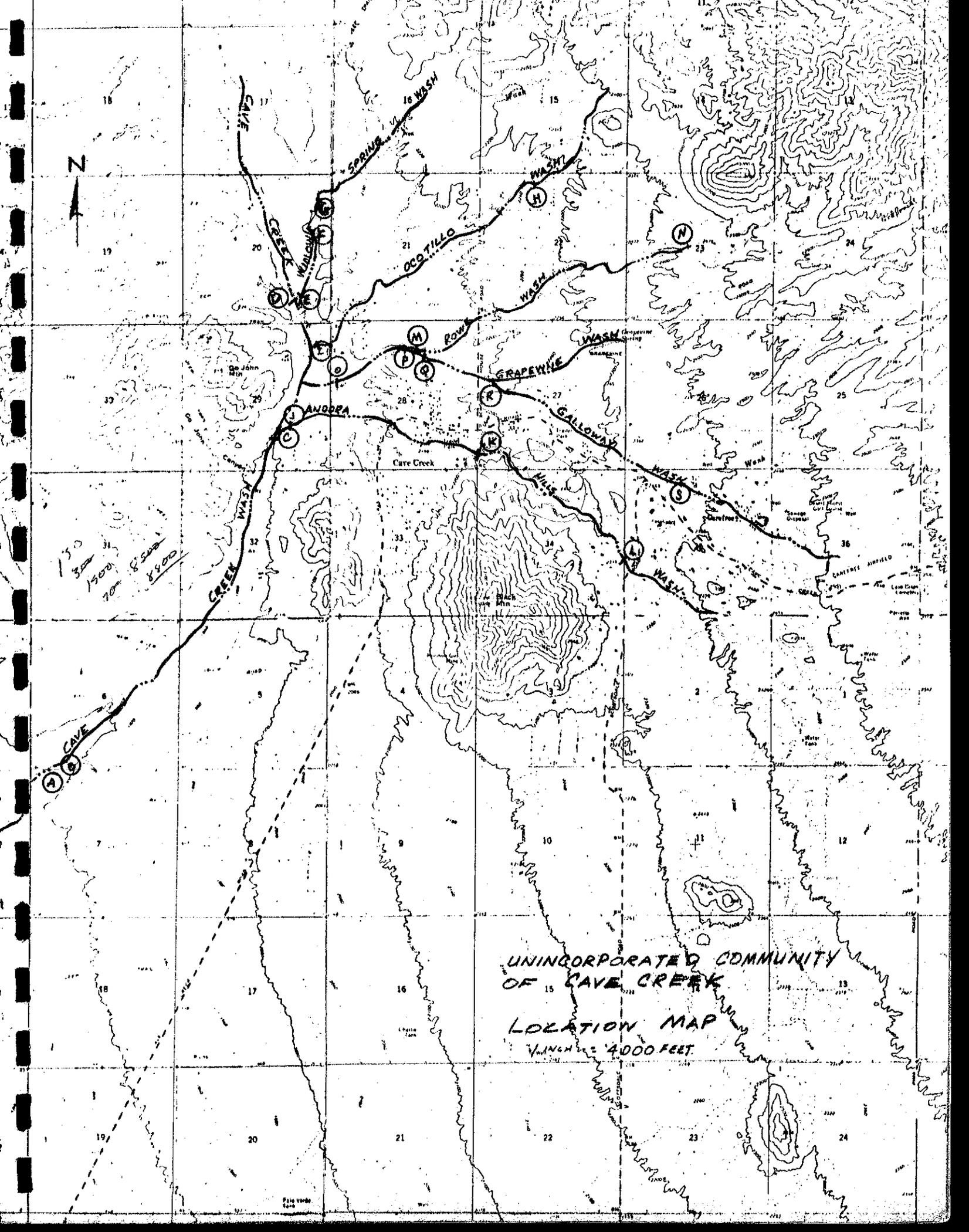
* See Location Map

CAVE CREEK CONTINUED

TABLE 1 SUMMARY OF DISCHARGES (Continued)

*I.D.	FLOODING SOURCE & LOCATION	DRAINAGE AREA (Square Miles)	PEAK DISCHARGES (CFS)			
			10-Year	50-Year	100-Year	500-Year
J	Andora Hills Wash above confluence with Cave Creek Wash	2.75	1,450	2,275	2,585	3,550
K	Andora Hills Wash above School House Road	1.60	1,070	1,615	1,820 ✓	2,500
L	Andora Hills Wash below Scottsdale Road	.56	415	635	715	980
M	Rowe Wash above confluence with Galloway Wash	5.49	4,165	6,190	6,940	9,200
N	Rowe Wash, 2.5 river miles above confluence with Galloway Wash	4.81	4,030	5,940	6,645	8,800
O	Galloway Wash, 0.21 river miles above confluence with Cave Creek Wash	20.86	10,720	16,675	18,900	26,000
P	Galloway Wash at intersection with Spur Cross Road	20.47	10,870	16,920	19,180	26,400
Q	Galloway Wash, above confluence with Rowe Wash	14.98	7,430	11,770	13,400	18,700
R	Galloway Wash, at intersection with Grapevine Wash	14.55	7,470	11,800	13,425	18,700
S	Galloway Wash, 1.37 river miles above confluence with Grapevine Wash.	.35	170	285	330	485

* See Location Map



1500
3000
1500
7000
8500
19000

UNINCORPORATED COMMUNITY
OF CAVE CREEK

LOCATION MAP
SCALE = 4000 FEET

UNINCORPORATED AREA OF MARICOPA COUNTY

GRAND CANAL

AREA STUDIED

The Grand Canal is an irrigation canal under the jurisdiction of the Salt River Water Users Association. The canal has a capacity of 600 cfs and provides limited flood control by intercepting low flows. Larger flood flows either break the canal directly or cause flow to pond and be diverted along the canal bank. The canal was analyzed from Camelback Road to Bethany Home Road.

HYDROLOGY

The S.C.S. TR-20 Computer Program for hydrology was used to determine flood peaks and volumes. A peak discharge of 5200 cfs with an associated volume of 2800 acre feet was computed for the 100-year storm.

HYDRAULICS

The hydraulic analyses was based upon detailed topographic mapping - 400 scale with 4 foot contour intervals. Flood hazard areas were determined by projecting top of canal banks to upstream natural ground. A zone designation was then based on average depth of water. The canal banks do not provide permanent retention for storm flows but rather divert storm flows along its bank. Based on the canal being one foot above grade, it was determined that there will be no special flood hazard on the downstream side of Grand Canal between Camelback Road and Bethany Home Road.

FLOODING ZONES

A zone of A01 was determined for the upstream segment of Grand Canal. A B Zone was determined for the downstream segment of Grand Canal.

UNINCORPORATED MARICOPA COUNTY

LIZARD ACRES WASH

AREA STUDIED

Lizard Acres Wash is approximately 20 miles Northwest of Phoenix. Approximately two miles of Lizard Acres Wash was studied in detail. The drainage area contributing to the study reach is composed of 8.4 square miles. The watershed slopes generally to the Southeast at 0.6%. Major structures in the area are the McMicken Dam outlet channel and the channel located north of Deer Valley Road. The McMicken Dam ~~is under the jurisdiction of Maricopa County Municipal Water Conservation District #1 and~~ was designed to control runoff from 238 square miles with an initial storage capacity of 19,300 acre feet when constructed by the Corps of Engineers in 1956. No recent surveys for storage capacity have been undertaken. The dam serves as a barrier to floodwaters North of the structure. Present development is sparse although there exists high residential growth potential because of the areas nearness to the Town of Surprise and the community of Sun City.

HYDROLOGY

Hydrologic determinations of the 10, 50 and 100 year discharges for Lizard Acres Wash were computed by use of the Soil Conservation Service Computer Program TR-20. The 500 year discharge was derived using a Gumbol plot. Peak discharges and drainage areas are given in Table I.

HYDRAULICS

The Corps of Engineers HEC-2 computer program was used to determine water surface profiles. Manning's "n" values were determined by field inspection and range from 0.034 to 0.070 for the overbanks. Normal depth was used for the starting water surface elevations. The floodway

UNINCORPORATED MARICOPA COUNTY
LIZARD ACRES WASH

HYDRAULICS (con't)

was determined by equal conveyance reduction. Due to the flatness of the drainage areas, lands outside of defined flow paths cause local rainfall to runoff in sheet flow patterns. Because of manmade features and local depressions this land is capable of flooding to a depth of 1.0 foot or less from local rainfall. Therefore, all areas outside of the 100 year flood delineation have been designated as Zone B.

FLOODING ZONES

Flood zones were determined to be A3 and B.

LIZARD ACRES WASH

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> <u>Square miles</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-year</u>	<u>50-year</u>	<u>100-year</u>	<u>500-year</u>
El Mirage Road, 1/4 mile South of Bell Road	8.37	777	1745	2114	3000
South of Bell Road, 1/4 mile East of Dysart Road	6.66	545	1228	1489	2500
Near Bell Road, 1/4 mile East of Dysart Road	1.77	261	568	683	1500

UNINCORPORATED COMMUNITY OF MORRISTOWN

AREA STUDIED

Little San Domingo Wash is a well defined wash with deep side walls which convey water in a southwest direction over average ground slopes of 1%. The wash drains 6.2 square miles of desert highlands. U.S. Route 89 is the only major structure in the study area, Route 89 crosses Little San Domingo Wash with 4-10 foot wide by 7 foot high box culverts. The crossing is located north of Morristown which consists of small houses and mobile homes.

HYDROLOGY

Hydrology was performed by use of Soil Conservation Services Computer Program TR-20. Flood peaks for the various areas are presented in Table 1.

HYDRAULICS

A backwater analysis was performed using HEC-2. Based on hazardous high velocities a floodway was not computed for San Domingo Wash. Starting water surface elevations were determined from a culvert analysis. Manning's "n" values were chosen from field inspections and determined to be 0.03 for the channel and 0.04 for the overbanks.

FLOOD ZONES

The entire reach was found to be within a flood zone; that zone being A3.

MORRISTOWN

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> <u>Square miles</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-year</u>	<u>50-year</u>	<u>100-year</u>	<u>500-year</u>
Little San Domingo Wash at U.S. Route 89	6.2	1685	2616	3091	4250

UNINCORPORATED AREA OF MARICOPA COUNTY

SKUNK CREEK

AREA STUDIED

The Skunk Creek Flood Insurance Study includes 8.8 miles of detail study located north of the Carefree Highway. The Carefree Highway crosses Skunk Creek 16.7 river miles upstream of its confluence with New River and 24 miles north of downtown Phoenix. The section of Skunk Creek being studied flows from north to south at an average one percent slope in a well-defined wash which exhibits a limited amount of braiding.

HYDROLOGY

Hydrologic determinations of 10, 50 and 100-year discharges for the Skunk Creek drainage area were obtained by use of the Soil Conservation Service Computer Program TR-20. The 500-year discharges were obtained from a Gumbol Plot. Drainage area size and peak discharges for selected concentration points along Skunk Creek are given in Table 1. Hydrologic computations were continued south of the study area to Deer Valley Road so that the discharges at this location could be compared with the 1976 study at this location by the Corps of Engineers. The discharges were found to be in close agreement.

HYDRAULICS

Detailed topographic maps were prepared for the study area having a scale of 1" = 400' and a contour interval of 4'. Cross-sections were selected at regular intervals along Skunk Creek. The Corps of Engineers Computer Program HEC-2 was used to compute the water surface profiles. There are no bridges or drainage structures located in the study area. Starting water surface elevations were computed by the slope area method. The "n" values vary from .035 to .050 for the channel and from .045 to .050 for the overbanks. The "n" values are relatively high in some areas because of the density of established vegetation consisting of Palo Verde Trees, Ironwood and Creosote Bushes and Cactus of various varieties. All "n" values were determined by field investigations.

FLOODING ZONES

Flood zones were determined to be A3, B and D.

SKUNK CREEK

TABLE 1. SUMMARY OF DISCHARGES

LOCATION	DRAINAGE AREA (Sq.Mi.)	PEAK DISCHARGE			
		10-Year	50-Year	100-Year	500-Year
SKUNK CREEK					
at Carefree Highway	49.7	14,600	21,400	31,300	40,800
at Rodger Creek	41.00	13,100	19,100	28,100	36,000
at Cline Creek	33.08	11,100	16,200	23,800	30,000
at Tejon Drive	16.86	5,870	8,590	12,600	16,000
at Zorrillo Drive	11.06	4,390	6,400	9,390	11,800
at New River Road	8.02	3,370	4,910	7,200	9,200
at Upper Study Limit	2.83	1,730	2,500	3,650	4,600

UNINCORPORATED COMMUNITY OF THEBA

AREA STUDIED

Theba is located nine miles west of Gila Bend, Arizona, on Interstate 8. The surrounding developments are strictly agricultural and related interests. The community is made up of about 15 residences, with major buildings limited to a general store, an elementary school, a cotton gin, a machine shop and an equipment yard. Major features in the area are the Southern Pacific Railroad, Interstate Highway 8 and the Gila Bend Canal.

HYDROLOGY

The drainage area contributing runoff to the study reach is 16 square miles of alluvial fan and runoff from the 100 year flood will be impeded by the railroad embankment and the banks of the Gila Bend Canal. The estimated volume of runoff is 2,100 acre-feet with a total peak discharge of 2,880 cfs for the 100 year event. Peak volume is from a 24 hour storm and peak runoff occurs from a 3 hour storm (S.C.S. Method: Part II).

HYDRAULICS

The maximum available volume of storage behind the railroad and the canal is 450 acre-feet, therefore overtopping will occur. The flooding limits due to ponding behind the banks was determined by projecting the average height of embankment, less one foot to allow for shallow flooding less than one foot in depth (Zone B).

Since the canal banks may be overtopped, a flooding hazard exists downslope from potential canal breaches. By using Mannings Equation and an estimated peak discharge the distance required for the flow to spread at 45 degree angles and be reduced to one foot in depth was calculated.

FLOOD ZONES

The resulting special flood hazard areas are shown as A02 Zones and average depths of flooding are indicated. Runoff will generally occur in sheet flow fashion with average depth less than one foot; hence the general area is designated Zone B.

UNINCORPORATED AREA OF MARICOPA COUNTY

MOCKINGBIRD WASH - VICINITY OF WICKENBURG

AREA STUDIED

Mockingbird Wash, a tributary of the Hassayampa River, is located approximately 2 miles southeast of Wickenburg. The wash is well defined with steep side walls. Mockingbird Wash drains seven square miles of desert highland in a southwest direction over an average slope of 2.3 percent. U.S. Route 60 crosses the wash with two 20' x 6' box culverts. There is development upstream of Route 60, particularly in the western portion of the wash. This development consists of residential homes.

HYDROLOGY

Hydrology was performed through the use of Soil Conservation Services Computer Program TR-20. Flood peaks are presented in Table 1.

HYDRAULICS

A backwater analysis was performed using HEC-2. Manning's "n" values were chosen from field investigation, and determined to range from 0.030 to 0.037 for the channel and 0.035 to 0.042 for the overbank areas. Starting water surface elevations are based on a culvert analysis. A floodway was not computed because of the excessively high velocities encountered. There exists two sections downstream just before the highway where the ENDST does not match the delineation. It was determined that a breakout or divide flow condition will exist upstream of this area. The breakout water will stay in this overbank area and not return to the designated channel area. Thus the reason for the delineation along the western border.

FLOOD ZONES

Flood zones were determined to be A2 and A7.

MOCKINGBIRD WASH

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> <u>Square miles</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-year</u>	<u>50-year</u>	<u>100-year</u>	<u>500-year</u>
Mockingbird Wash at U.S. Route 60	6.87	2750	4040	5060	7400
3210 Upstream of U.S. Route 60	5.11	2079	3056	3830	6000

UNINCORPORATED AREA OF MARICOPA COUNTY

POWDER HOUSE WASH - VICINITY OF WICKENBURG

AREA STUDIED

Powder House Wash, a tributary of the Hassayampa River, passes through a portion of the Town of Wickenburg before discharging into the Hassayampa River. The wash drains two square miles of desert highlands. The wash is well defined and carries flows in a southwest direction over an average slope of 2.2 percent. There exists a limited amount of residential development in the downstream area of the study.

HYDROLOGY

Floodpeaks were reviewed and accepted from the Corps of Engineers 1965 report titled FLOODPLAIN INFORMATION STUDY FOR MARICOPA COUNTY, AZ., VOLUME IV, WICKENBURG REPORT. Flood peaks are presented in Table 1. The 50 and 100-year peak flows were obtained from plate 5 of the above report and the 10 and 500-year peak flows were obtained using a Gumbol plot.

HYDRAULICS

A backwater analysis was performed using computer program HEC-2. Roughness coefficient ("n" values) were determined from a field investigation. A value of 0.03 was assigned to the channel, while 0.035 was assigned to the overbank areas. Starting water surface elevations were determined by the slope area method. A floodway was not computed for the upper portion of the wash, due to high flow velocities.

FLOOD ZONES

The entire wash was found to be within Zone A4.

POWER HOUSE WASH

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> Square miles	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-year</u>	<u>50-year</u>	<u>100-year</u>	<u>500-year</u>
Power House Wash 1690 feet above confluence with Hassayampa River	2.0	300	1300	1900	4400

UNINCORPORATED COMMUNITY OF WITTMAN

AREA STUDIED

The unincorporated community of Wittman is located approximately 25 miles northwest of Phoenix on U.S. Highway 60, 70 & 89. The drainage area affecting the flood insurance study for the Wittman area consists of 8.63 square miles. The runoff flows in a southerly direction with an approximate slope of 1.2 percent. Major structures in the area are the Atchison Topeka and Santa Fe Railroad, and U.S. Highway 60, 70 & 89, which run parallel to each other in a north-west direction through Wittman.

HYDROLOGY

Hydrologic determination of the 10, 50 and 100-year discharges for the drainage area affecting the Wittman area were obtained by use of the Soil Conservation Service Computer Program TR-20. This data allowed the 500 year discharge magnitude to be obtained from a Gumbel plot, which is a plot of discharges versus recurrence intervals. Peak discharges and drainage areas are given in Table 1. The areas outside the 100 year floodplain (generated from backwater analysis) were determined to be subject to shallow flooding of one foot or less, therefore, there is no separation between this condition and the 500 year floodplain from the backwater analysis.

HYDRAULICS

The Corps of Engineers HEC-2 computer program was used to determine water surface profiles. Manning's "n" values were determined to be 0.035 for overbank flow and .033 for channel flow by field inspection. The backwater causing effects of the highway and railroad bridges were taken into account in the backwater analysis. Starting water elevations were determined by the slope area method and a computed highwater of the highway bridge. A floodway was not computed because of excessive velocities above Center Street and divided flow below Center Street.

FLOODING ZONES

Flood zones were determined to be A2 and B.

WITTMAN

TABLE 1. SUMMARY OF DISCHARGES

<u>LOCATION</u>	<u>DRAINAGE AREA</u> Square miles	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-year</u>	<u>50-year</u>	<u>100-year</u>	<u>500-year</u>
AT&SF Railroad, 1/4 mile East of Center Street	8.63	1759	2770	3063	4350

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ²	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
—							
A	5.54	224	1471	9.5	2157.3	2157.3	0.0
B	5.76	1030	5350	2.6	2160.1	2159.6	0.5
C	6.14	1100	2824	5.0	2162.5	2161.5	1.0
D	6.45	1000	3666	3.8	2167.4	2166.8	0.6
E	6.81	1300	4848	2.9	2170.1	2169.2	0.9
F	7.11	1050	2953	4.7	2173.0	2172.7	0.3

1. FLOODWAY TERMINATED BELOW THIS SECTION
2. MILES INCREASING UPSTREAM

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOODWAY DATA

AGUILA, GRASS WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
A	29.00	450	3088	11.9	1833.3	1833.3	0.0
B	29.19	446	2892	12.7	1841.1	1841.1	0.0
C	29.39	551	4316	8.5	1849.6	1848.6	1.0
D	29.57	530	2974	12.4	1859.0	1859.0	0.0
E	29.70	535	3064	12.0	1866.3	1866.2	0.1
F	29.73	520	4503	8.2	1869.6	1868.9	0.7
G	29.74	530	4370	8.4	1869.6	1868.9	0.7
H	29.80	500	3355	11.0	1870.4	1869.6	0.8
I	29.94	791	4680	7.9	1875.7	1875.2	0.5
J	30.10	730	3553	10.4	1880.2	1880.2	0.0
K	30.33	579	3233	11.1	1891.7	1891.7	0.0
L	30.54	327	2596	13.8	1909.9	1909.9	0.0

¹MILES ABOVE MOUTH CONFLUENCE WITH SALT RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOODWAY DATA

CAVE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
M	30.86	691	4622	7.8	1919.7	1918.7	1.0
N	31.06	783	3220	11.2	1928.3	1928.2	0.6
O	31.30	555	3902	9.2	1942.0	1941.5	0.5
P	31.49	551	3128	11.5	1949.9	1949.4	0.5
Q	31.65	501	3389	10.6	1958.0	1957.5	0.5
R	31.82	301	2573	14.0	1965.5	1965.0	0.5
S	32.03	435	4406	8.1	1974.2	1973.4	0.8
T	32.24	367	2541	14.1	1979.7	1979.3	0.4
U	32.47	502	3929	9.1	1992.3	1991.6	0.7
V	32.66	370	2594	13.5	2001.0	2001.0	0.0
W ²							

¹ MILES ABOVE MOUTH CONFLUENCE WITH SALT RIVER

² Floodway terminates above this section

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOODWAY DATA

CAVE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
A	0.0	140	555	3.8	1140.1	1139.1	1.0
B	0.07	100	275	7.7	1141.0	1140.8	.2
C	0.16	90	409	5.2	1143.8	1143.2	.6
D	0.21	100	364	5.8	1145.6	1144.5	1.0
E	0.28	129	478	4.4	1147.2	1146.9	.3
F	0.44	100	356	5.9	1150.1	1149.1	1.0
G	0.71	110	416	5.1	1155.7	1155.0	.7
H	1.77	71	171	8.7	1184.6	1184.2	.4
I	2.02	79	324	2.1	1189.5	1188.7	.8
J	2.26	60	99	6.9	1193.4	1193.4	0.0
K	2.41	114	290	2.4	1197.9	1197.2	.7
L	2.50	50	212	3.2	1198.6	1197.8	.8

MILES ABOVE MOUTH CONFLUENCE WITH AGUA FRIA RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY

UNINCORPORATED AREA

FLOODWAY DATA

LIZARD ACRES WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
M	2.66	95	521	1.3	1199.2	1198.4	.8
N	2.85	70	102	6.7	1209.6	1209.2	.4
O	3.08	115	236	2.9	1216.4	1215.4	.9

¹MILES ABOVE MOUTH CONFLUENCE WITH AGUA FRIA RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY

UNINCORPORATED AREA

FLOODWAY DATA

LIZARD ACRES WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
A	16.69	710	2811	11.1	1678.8	1678.8	0.0
B	16.87	900	3169	9.9	1690.7	1690.1	0.6
C	17.10	949	3958	7.9	1702.7	1701.7	1.0
D	17.30	870	3224	9.7	1712.4	1711.8	0.6
E	17.56	950	4982	6.3	1722.5	1721.8	0.7
F	17.78	809	3083	10.2	1731.0	1731.0	0.0
G	18.06	610	4109	7.6	1744.0	1743.5	0.5
H	18.34	910	3801	8.2	1754.2	1754.2	0.0
I	18.72	770	4037	7.0	1769.9	1769.5	0.4
J	18.95	790	2867	9.8	1780.7	1780.6	0.1
K	19.16	680	4109	6.8	1790.6	1790.4	0.2
L	19.38	700	2535	11.1	1800.0	1800.0	0.0

¹MILES ABOVE CONFLUENCE WITH NEW RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

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.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
M	19.58	730	3384	8.3	1812.9	1812.9	0.0
N	19.92	1170	4200	6.7	1826.1	1826.1	0.2
O	20.23	800	2870	7.8	1841.8	1841.3	0.5
P	20.39	850	3761	7.5	1850.6	1849.8	0.8
Q	20.73	780	3075	9.1	1866.5	1866.2	0.3
R	21.00	700	3242	8.7	1879.3	1878.7	0.6
S	21.24	660	3456	8.1	1889.5	1839.1	0.4
T	21.59	1410	4125	6.8	1907.4	1907.4	0.0
U	21.85	1330	4214	6.7	1922.1	1921.7	0.4
V	22.06	933	3871	7.3	1932.1	1932.0	0.1

¹MILES ABOVE MOUTH CONFLUENCE WITH NEW RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

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.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
W	22.25	820	3535	7.9	1940.8	1940.4	0.4
X	22.62	730	2606	9.1	1963.2	1963.2	0.0
Y	22.81	600	3137	7.6	1973.4	1972.8	0.6
Z	23.09	630	2958	8.0	1984.5	1984.2	0.3
AA	23.42	420	2205	10.8	2002.6	2002.0	0.6
AB	23.72	460	2228	5.7	2017.3	2017.0	0.3
AC	23.98	210	1086	11.6	2026.7	2026.7	0.0
AD	24.31	450	1989	6.3	2044.4	2043.9	0.5
AE	24.55	340	1356	9.3	2055.2	2054.8	0.4
AF	24.78	280	1113	6.6	2066.1	2065.2	0.9
AG	24.99	300	1030	9.1	2076.7	2076.7	0.0
AH	25.27	710	1916	4.9	2089.8	2088.9	0.9

¹MILES ABOVE CONFLUENCE WITH NEW RIVER

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

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.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
AI — ²	25.48	374	1106	8.5	2098.9	2098.0	0.9

¹ MILES ABOVE MOUTH CONFLUENCE WITH NEW RIVER

² Floodway terminates above this section

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

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.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
A	16.70	130	350	5.4	2070.8	2070.0	0.8
B	20.20	148	280	6.8	2077.0	2076.9	0.1
C	21.84	130	244	7.3	2080.5	2080.5	0.0
D	24.94	55	183	10.4	2083.0	2087.6	0.4
E	28.14	115	231	8.2	2095.5	2095.0	0.5
F	30.34	70	198	9.6	2098.7	2098.6	0.1
G	32.94	144	280	6.8	2102.5	2102.5	0.0
— ²							

1. STATIONS INCREASING UPSTREAM FROM CONFLUENCE WITH HASSAYAMPA RIVER
2. FLOODWAY TERMINATES ABOVE THIS SECTION

TABLE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ
UNINCORPORATED AREA

FLOODWAY DATA

POWDER HOUSE WASH

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
GRASS WASH Reach 1	1	-1.2	-0.4	1.1	010	A2	Varies
AGUILA FARM CHANNEL Reach 1	1 & 2	-1.2	-0.3	— ⁴	010	A2	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP
4. 500 YEAR FREQUENCY NOT USED

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

AGUILA

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
APACHE JUNCTION	3	*	*	*	*	AF1	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
 2. WEIGHTED AVERAGE
 3. ROUNDED TO NEAREST FOOT - SEE MAP
- * ALLUVIAL FAN FLOODING; ONLY 100 YEAR STORM ANALYSED.

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

APACHE JUNCTION

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
ARIZONA CANAL (Upstream)	4	*	*	*	*	A02	Varies
ARIZONA CANAL (Downstream)	4	*	*	*	*	A03	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
 2. WEIGHTED AVERAGE
 3. ROUNDED TO NEAREST FOOT - SEE MAP
- * SHALLOW FLOODING; ONLY 100 YEAR STORM ANALYSED.

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

ARIZONA CANAL

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Cave Creek Wash Reach 1	5, 6 & 7	-2.4	-.5	1.7	025	A5	Varies
Willow Springs Wash Reach 1	5	-2.1	-.5	1.4	020	A4	Varies
		-.9	-.2	.6	010	A2	Varies
Ocotillo Wash Reach 1	5	-1.1	-.3	.7	010	A2	Varies
Grapevine Wash Reach 1	5 & 6	-1.0	-.3	.7	010	A2	Varies
Rowe Wash Reach 1	5	-.7	-.2	.5	005	A1	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

CAVE CREEK - WILLOW SPRINGS - OCOTILLO -
GRAPEVINE - ROWE

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Galloway Wash Reach 1	5 & 6	-1.9	-.5	1.3	020	A4	Varies
Reach 2		-.8	-.2	.7	010	A2	Varies
Andora Hills Wash Reach 1	6	-.9	-.2	.6	010	A2	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

CAYE CREEK CONTINUED

GALLOWAY - ANDORA HILLS

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
GRAND CANAL (Upstream)	8	*	*	*	*	A01	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
 2. WEIGHTED AVERAGE
 3. ROUNDED TO NEAREST FOOT - SEE MAP
- * SHALLOW FLOODING; ONLY 100 YEAR STORM ANALYSED.

TABLE
2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

GRAND CANAL

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
LIZARD ACRES WASH Reach 1	9	-1.3	-0.3	0.8	015	A3	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE
2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

LIZARD ACRES WASH

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Little San Domingo Wash Reach 1	10	-1.6	-.5	1.1	015	A3	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

LITTLE SAN DOMINGO WASH

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Skunk Creek Wash Reach 1	11 & 12	-1.5	-.8	.6	015	A3	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE
2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

SKUNK CREEK

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
THEBA	13	*	*	*		A02	Varies 2

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
 2. WEIGHTED AVERAGE
 3. ROUNDED TO NEAREST FOOT - SEE MAP
- * SHALLOW FLOODING ZONE; ONLY 100-YEAR STORM ANALYSED

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ,
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

THEBA

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Mockingbird Wash Reach 1	14	-3.7	-9	1.0	035	A7	Varies
Reach 2		-8	-3	.5	010	A2	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

MOCKINGBIRD WASH

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
Powder House Wash Reach 1	15	-1.8	-0.5	1.5	020	A4	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.

UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

POWDER HOUSE WASH

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION ³
		10% (10-YR)	2% (50-YR)	0.2% (500-YR)			
WITTMAN Reach 1	16	-0.8	-0.1	0.5	010	A2	Varies

1. FLOOD BOUNDARY AND FLOODWAY MAPS AND FLOOD INSURANCE RATE MAPS
2. WEIGHTED AVERAGE
3. ROUNDED TO NEAREST FOOT - SEE MAP

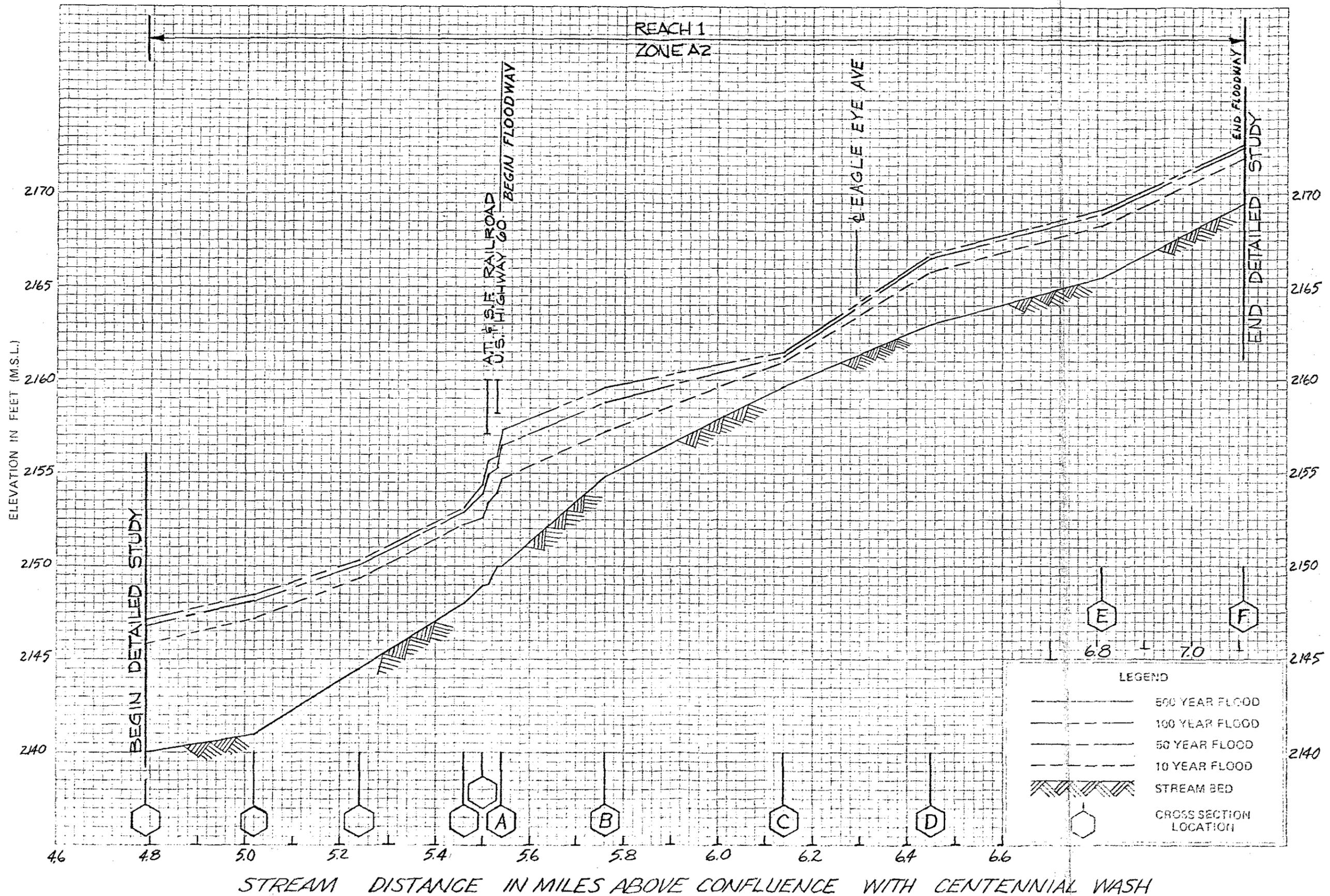
TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

FLOOD INSURANCE ZONE DATA

WITTMAN



FLOOD PROFILES

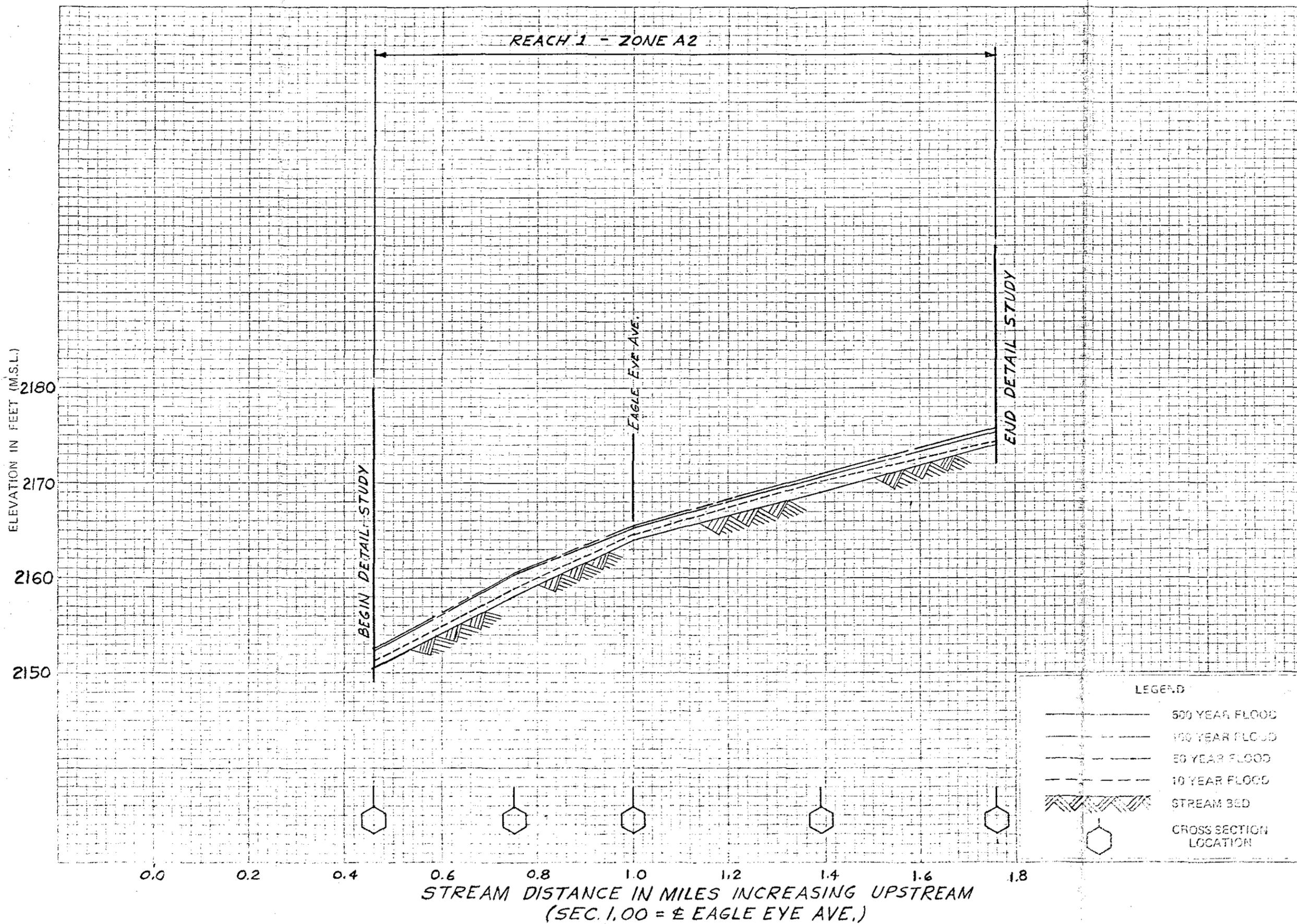
AGUILA - GRASS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

UNINCORPORATED MARICOPA COUNTY
(AGUILA)

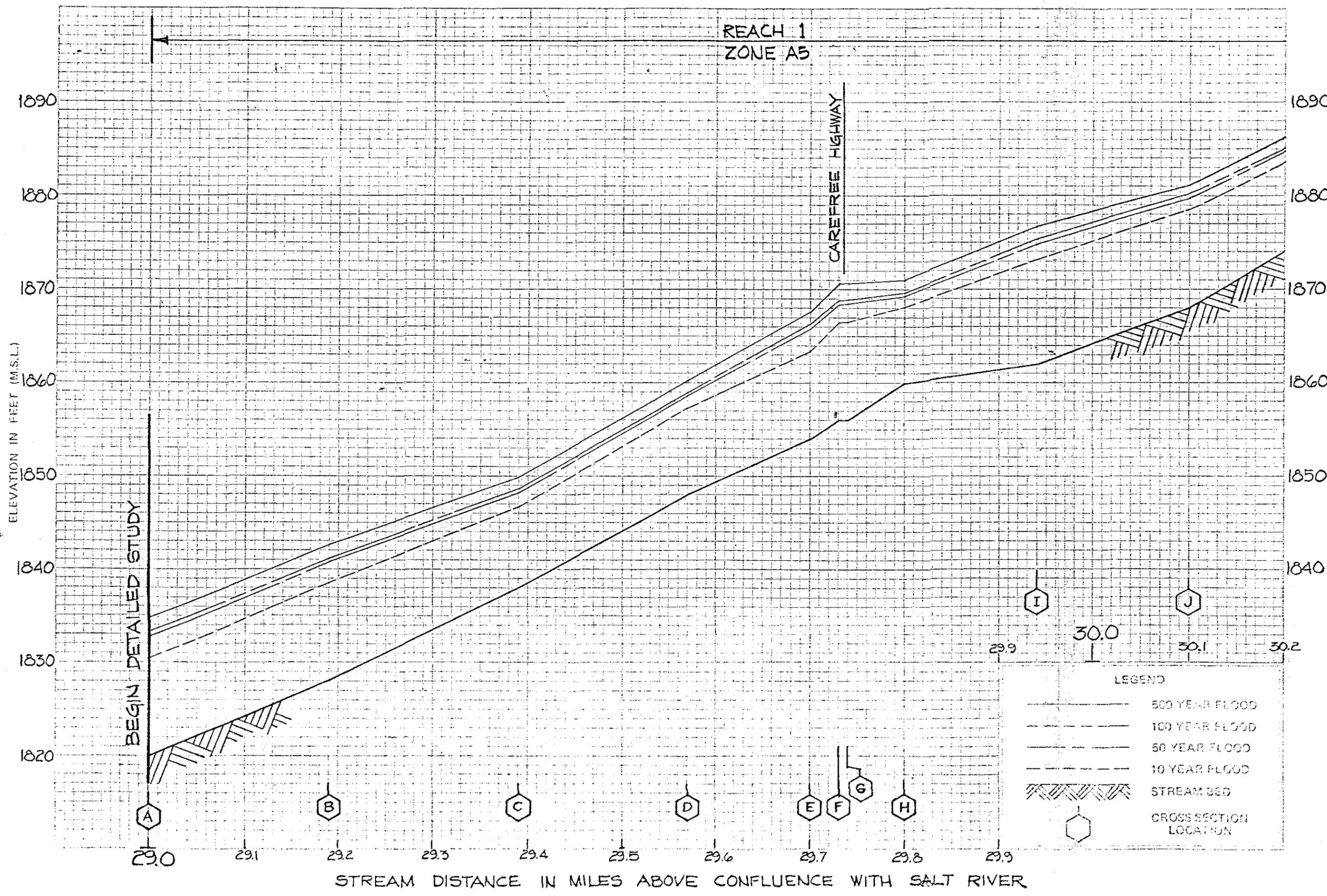
OIP

EXHIBIT 1



FLOOD PROFILES
AGUILA FARM CHANNEL

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY
UNINCORPORATED

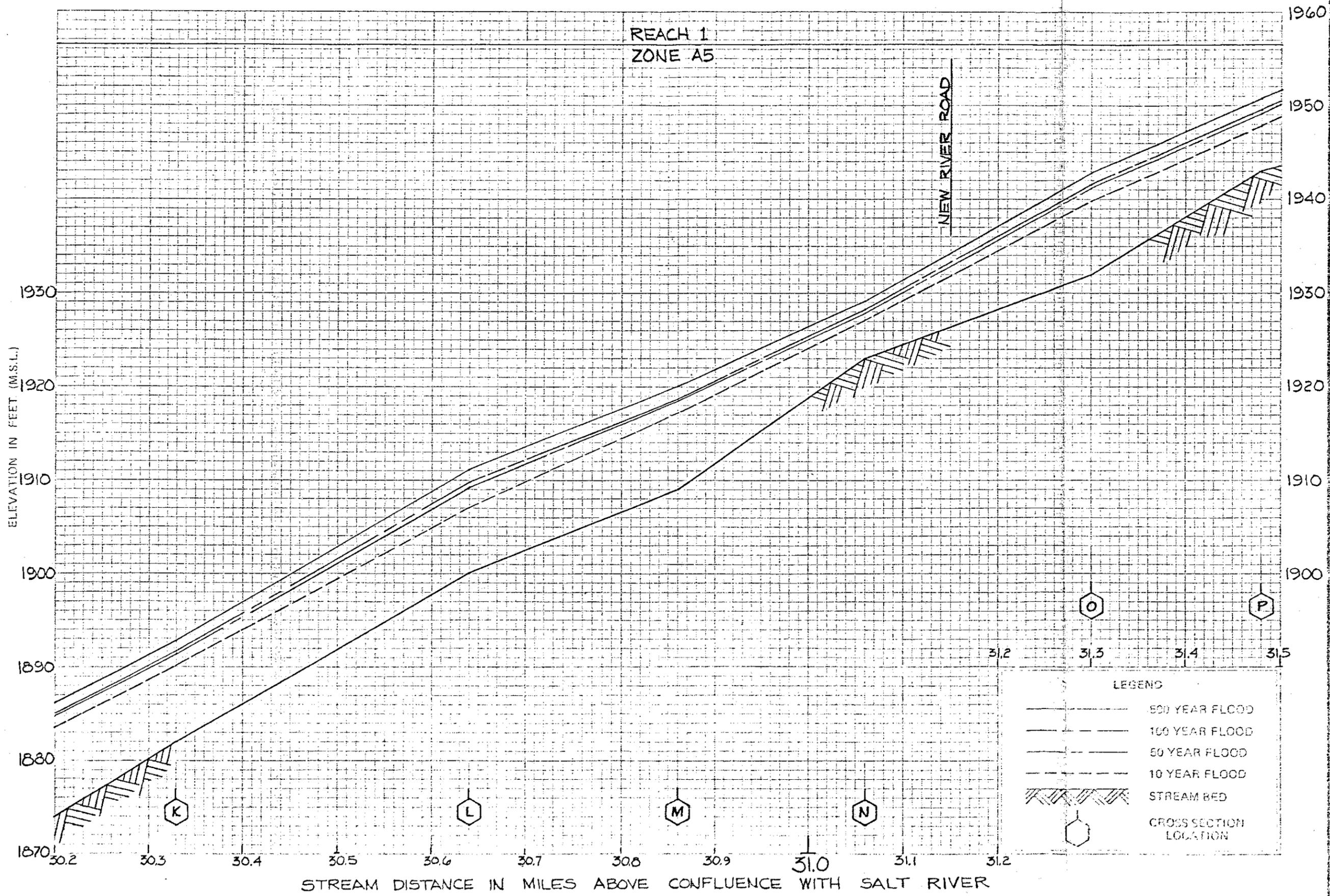


FLOOD PROFILES
CAVE CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

03P

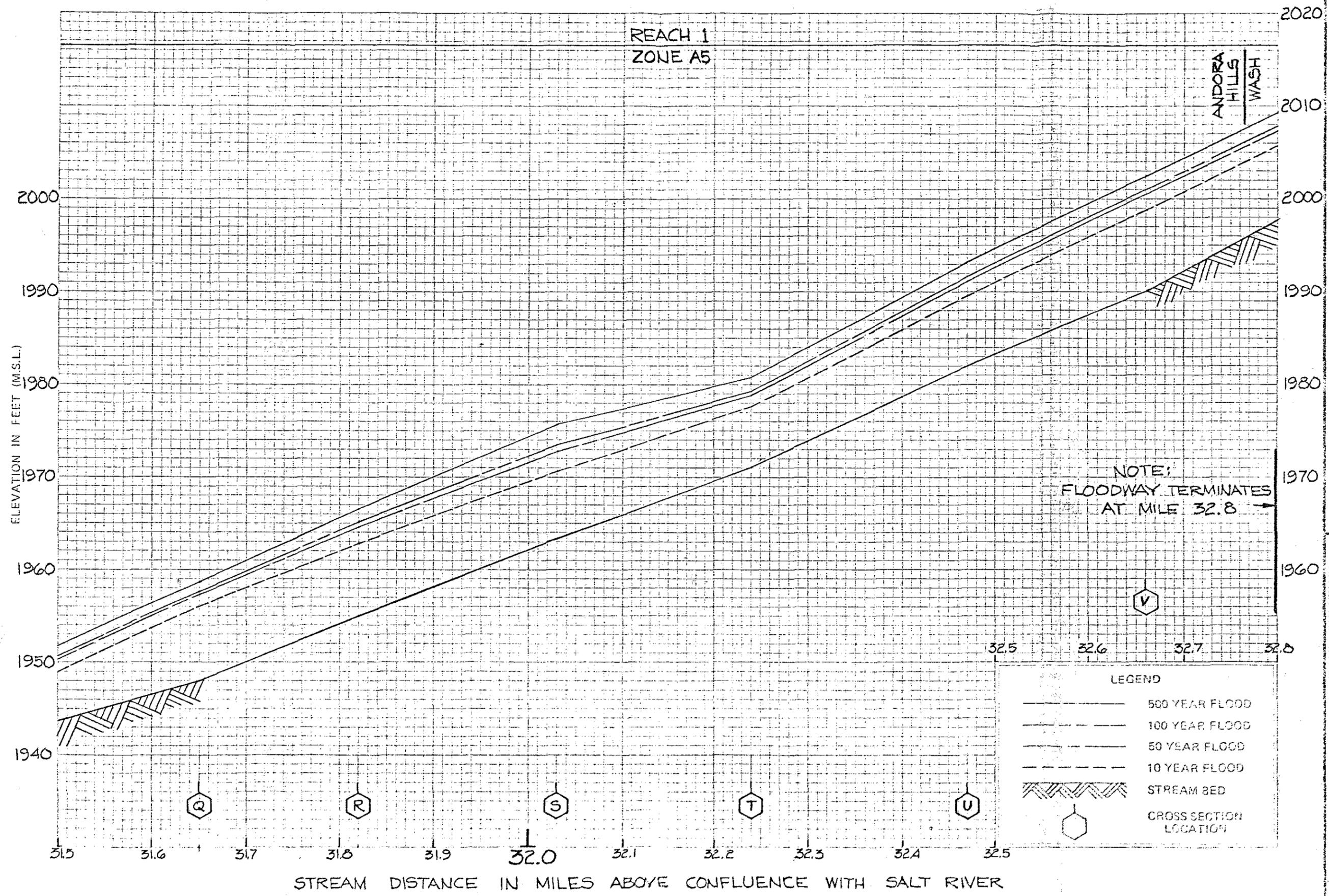
EXHIBIT 1



FLOOD PROFILES
CAVE CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

04P



FLOOD PROFILES

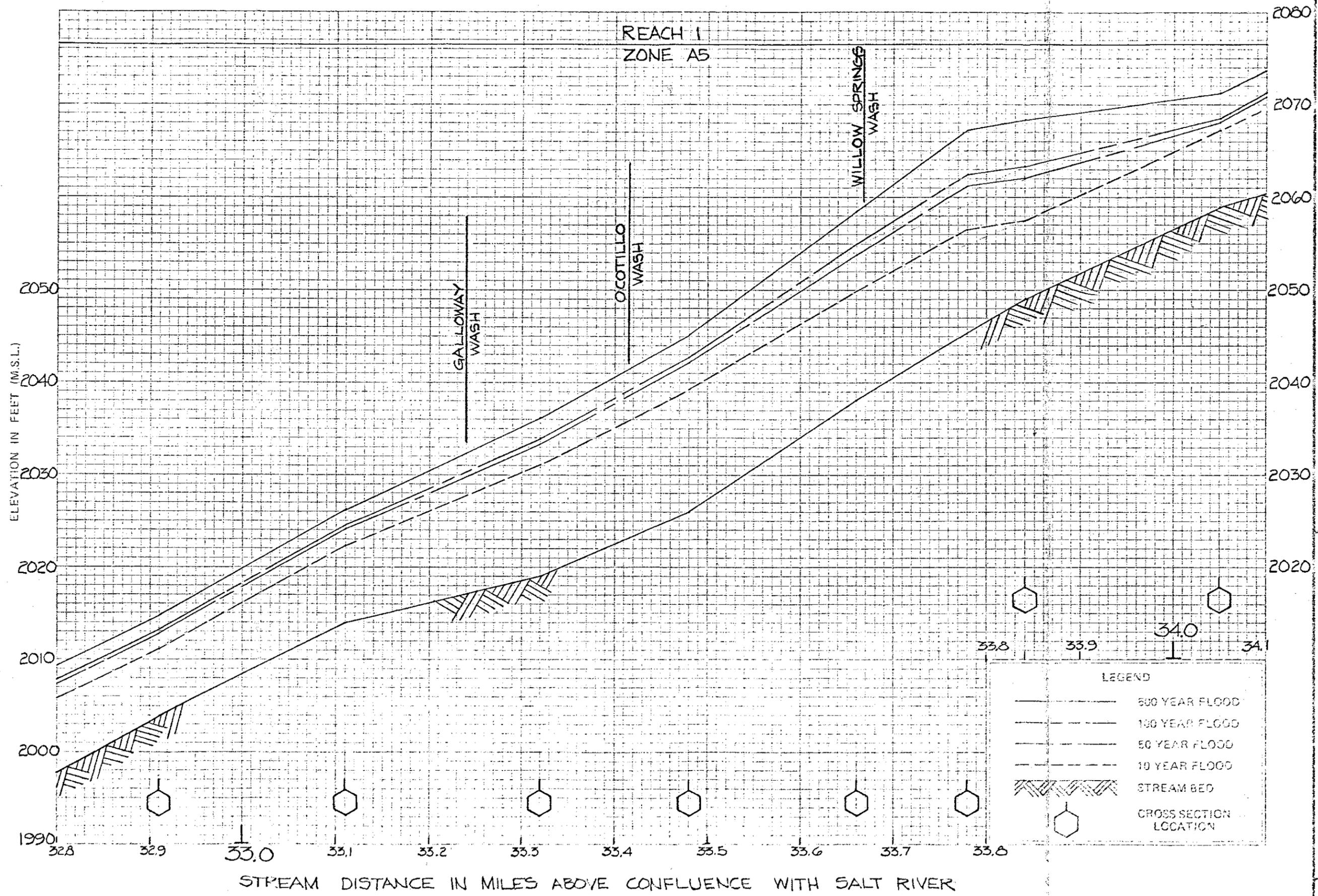
CAVE CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

UNINCORPORATED
MARICOPA COUNTY

05P

EXHIBIT 1



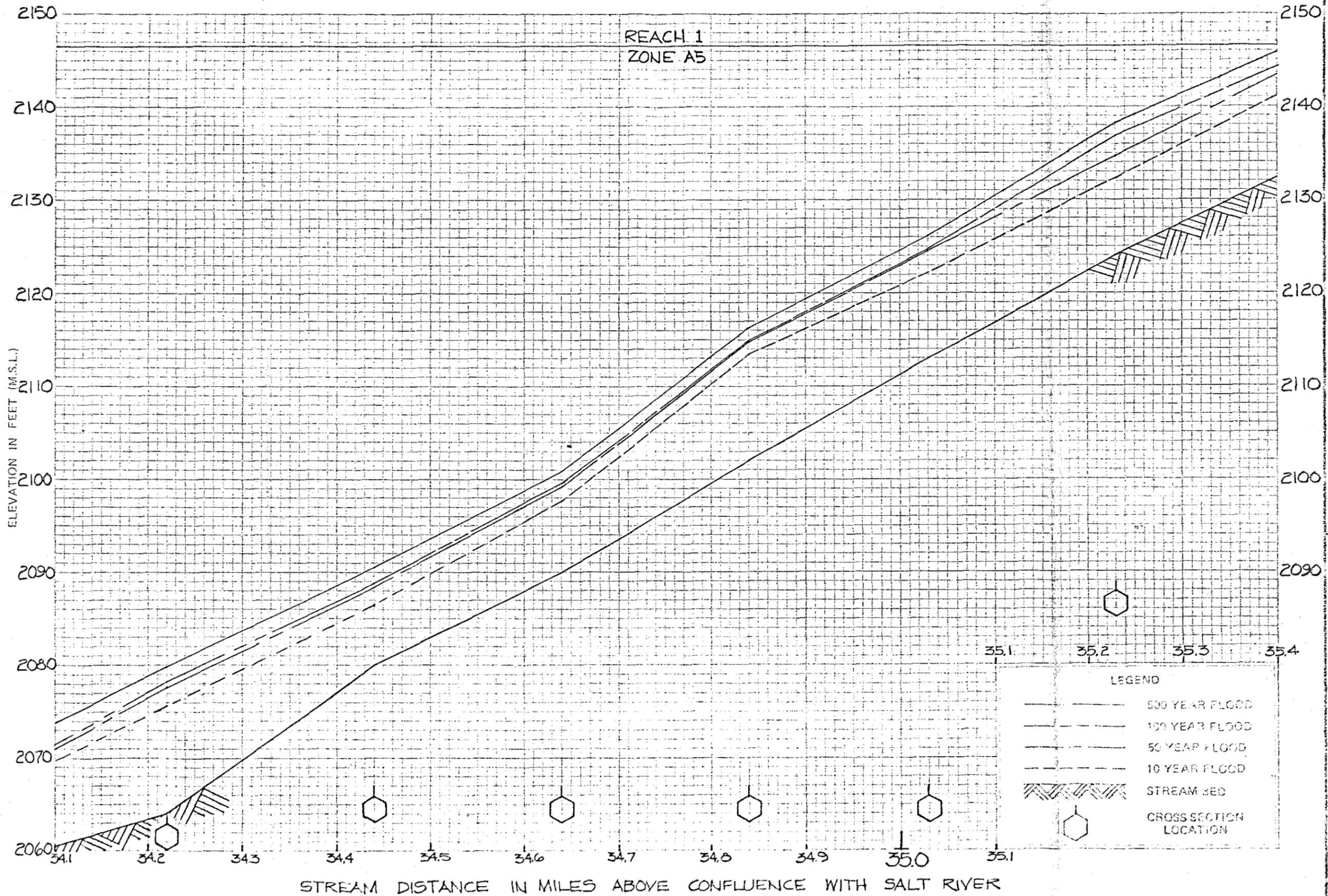
FLOOD PROFILES
CAVE CREEK

LEGEND

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

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

06P

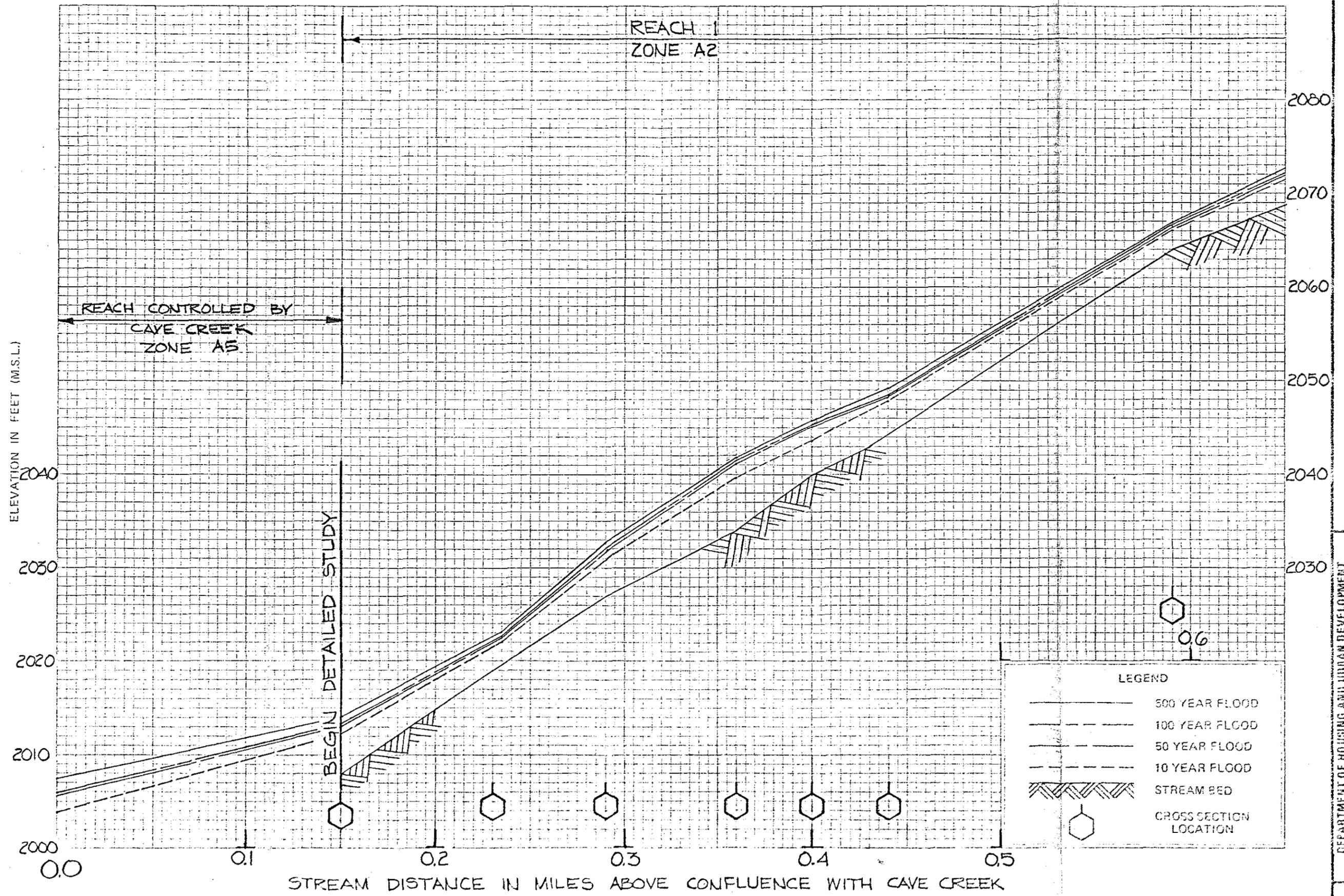


FLOOD PROFILES
CAVE CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

07P

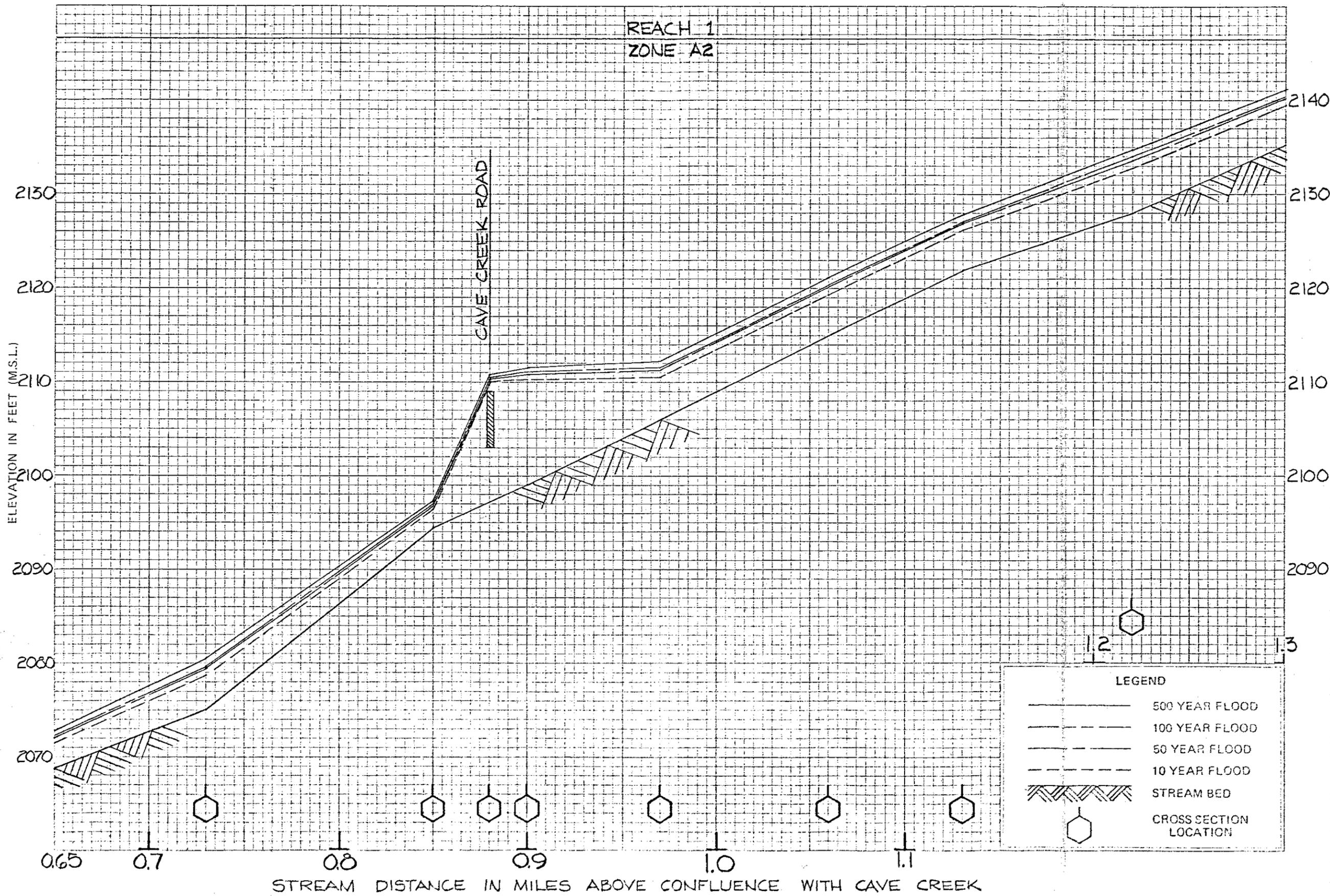
EXHIBIT 1



FLOOD PROFILES
 ANDORA HILLS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY

REACH 1
ZONE A2



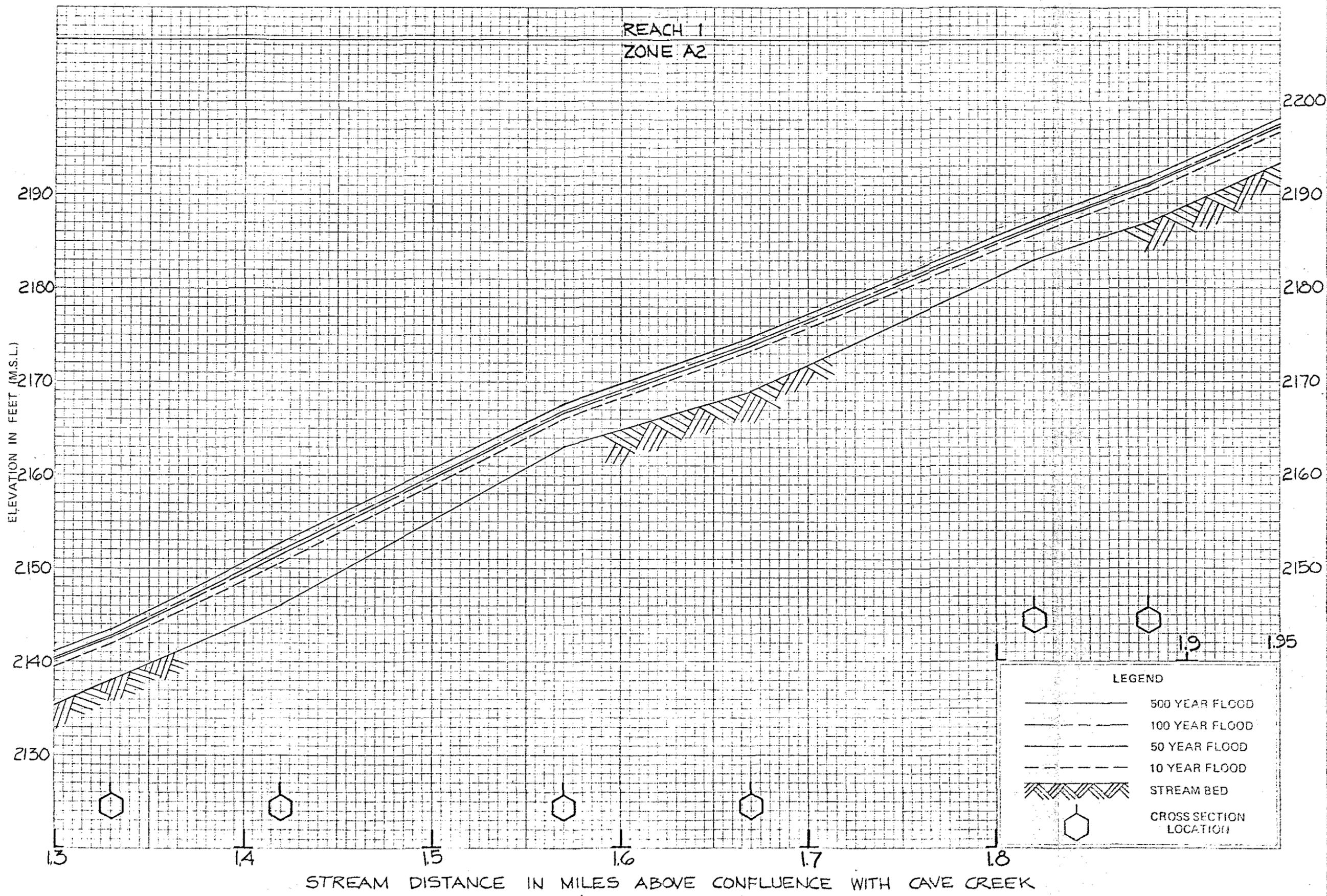
FLOOD PROFILES

ANDORA HILLS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

UNINCORPORATED
MARICOPA COUNTY

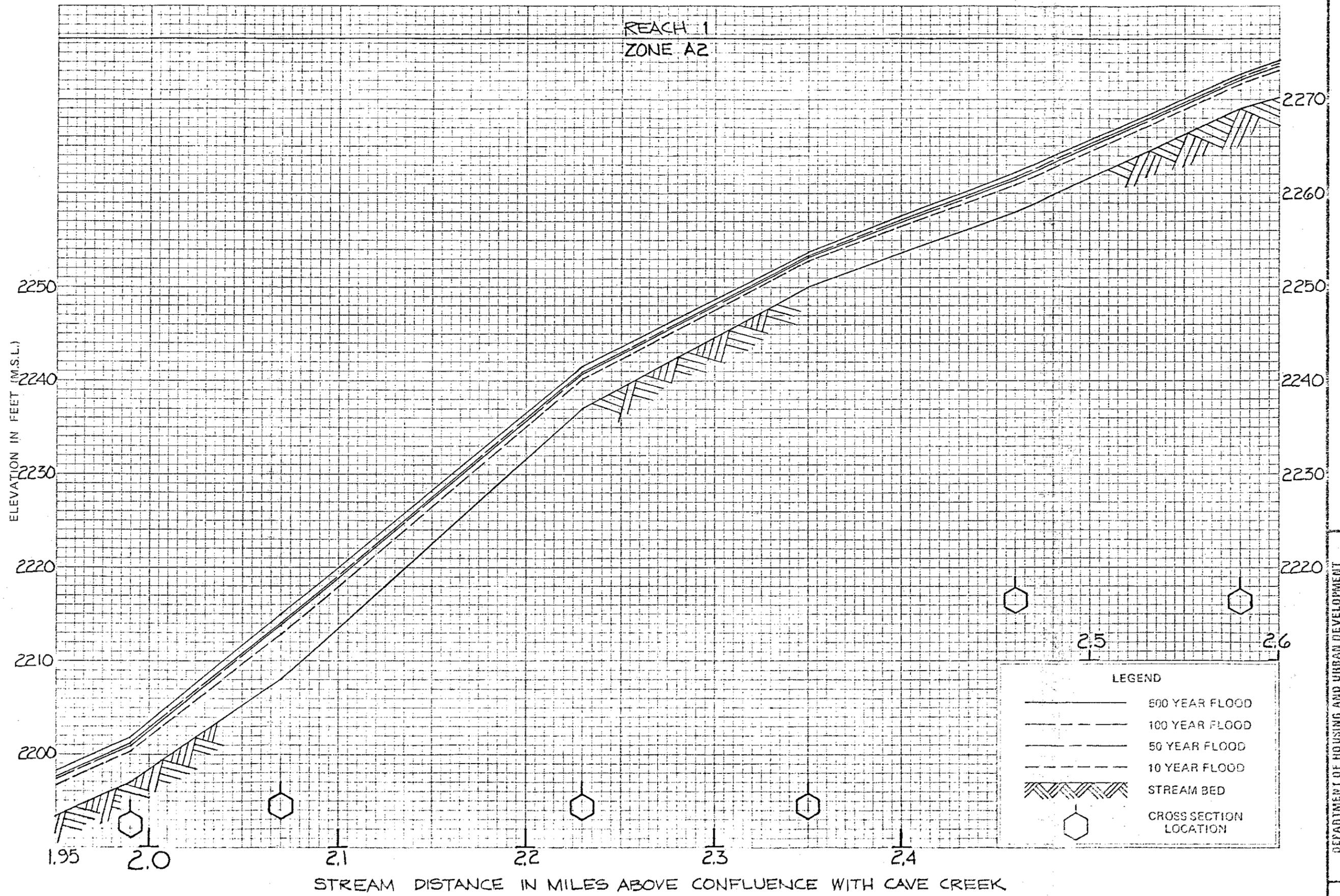
10P



FLOOD PROFILES
ANDORA HILLS WASH

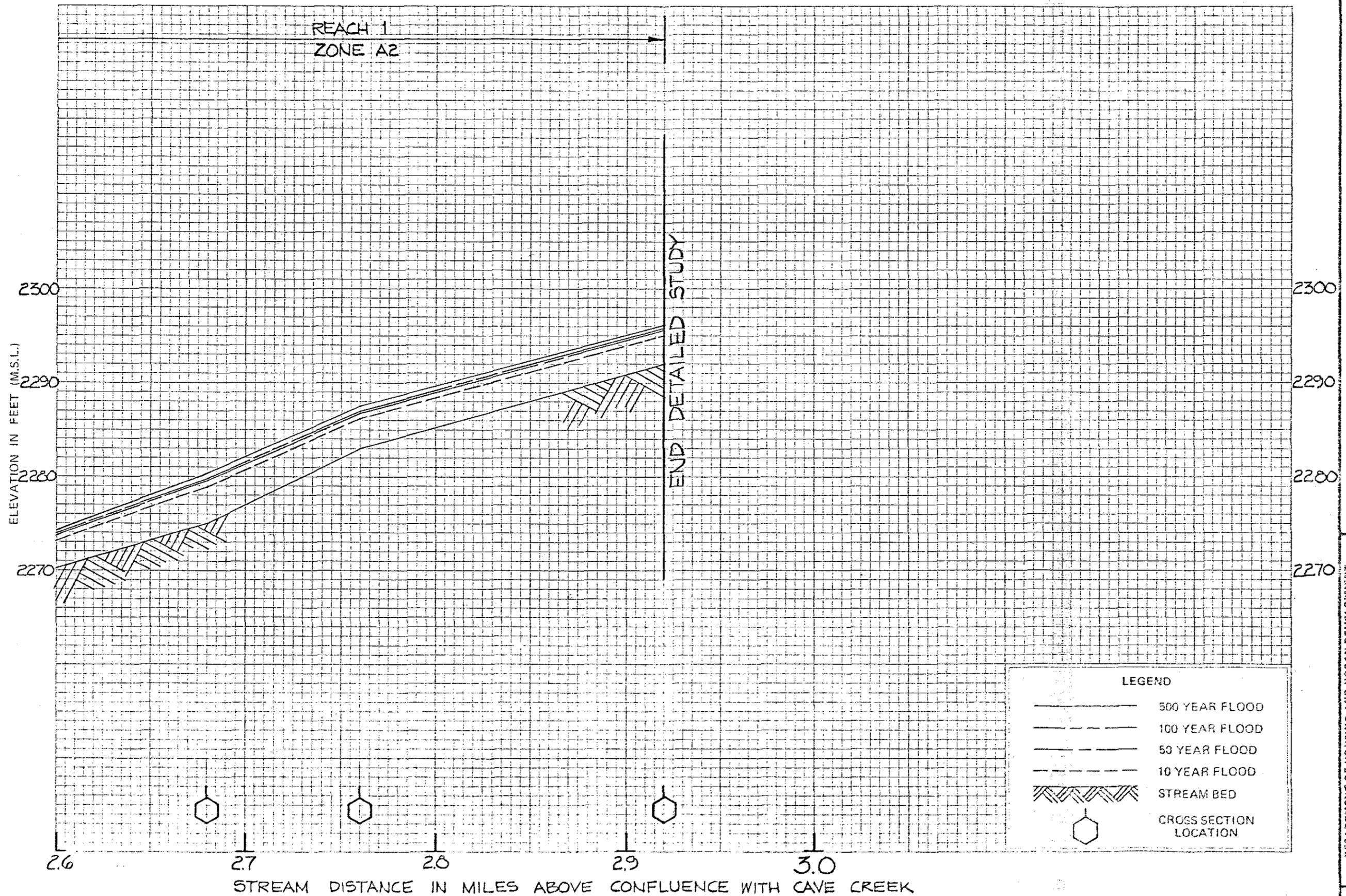
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

11P



FLOOD PROFILES
ANDORA HILLS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY



FLOOD PROFILES

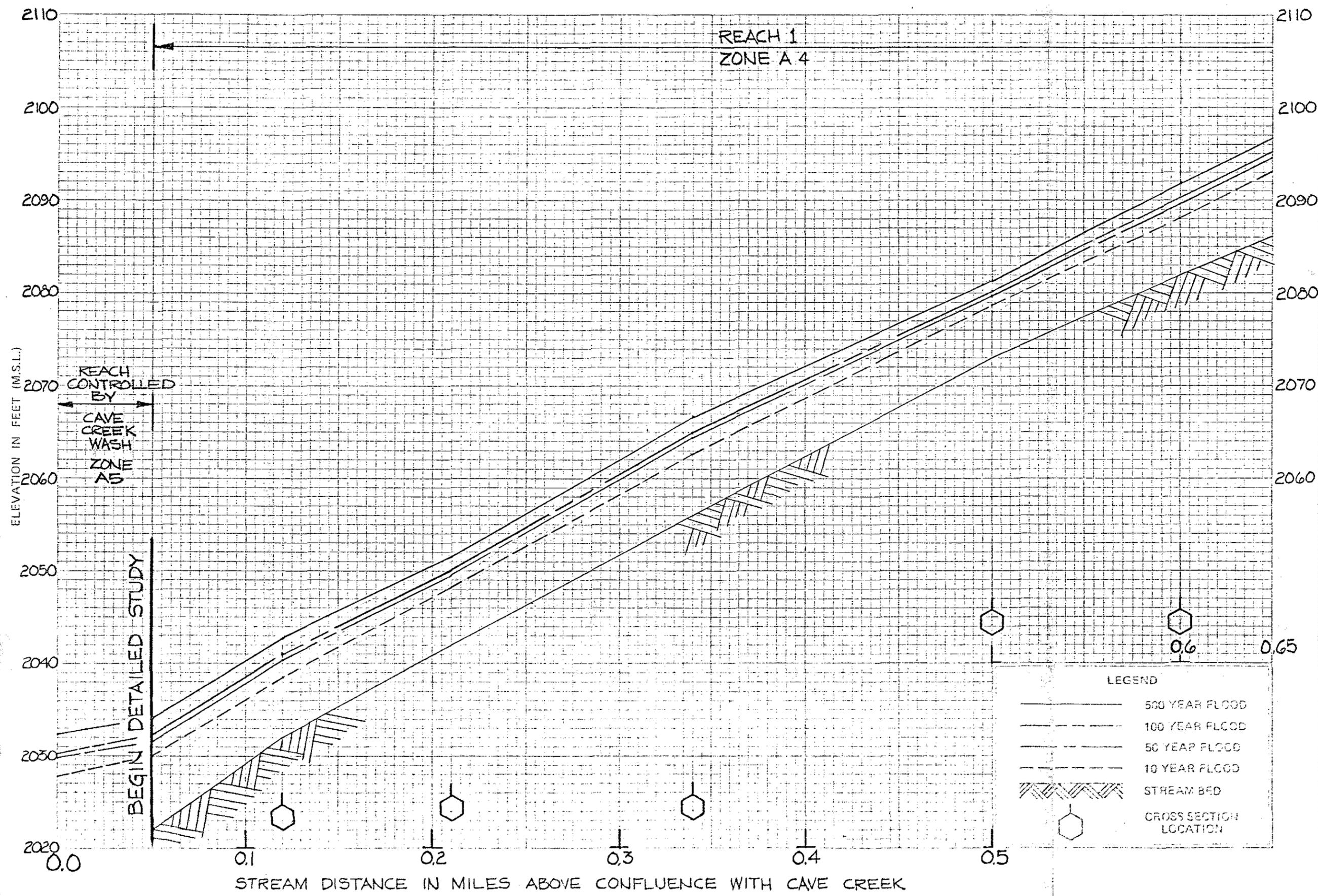
ANDORA HILLS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

UNINCORPORATED
MARICOPA COUNTY

13P

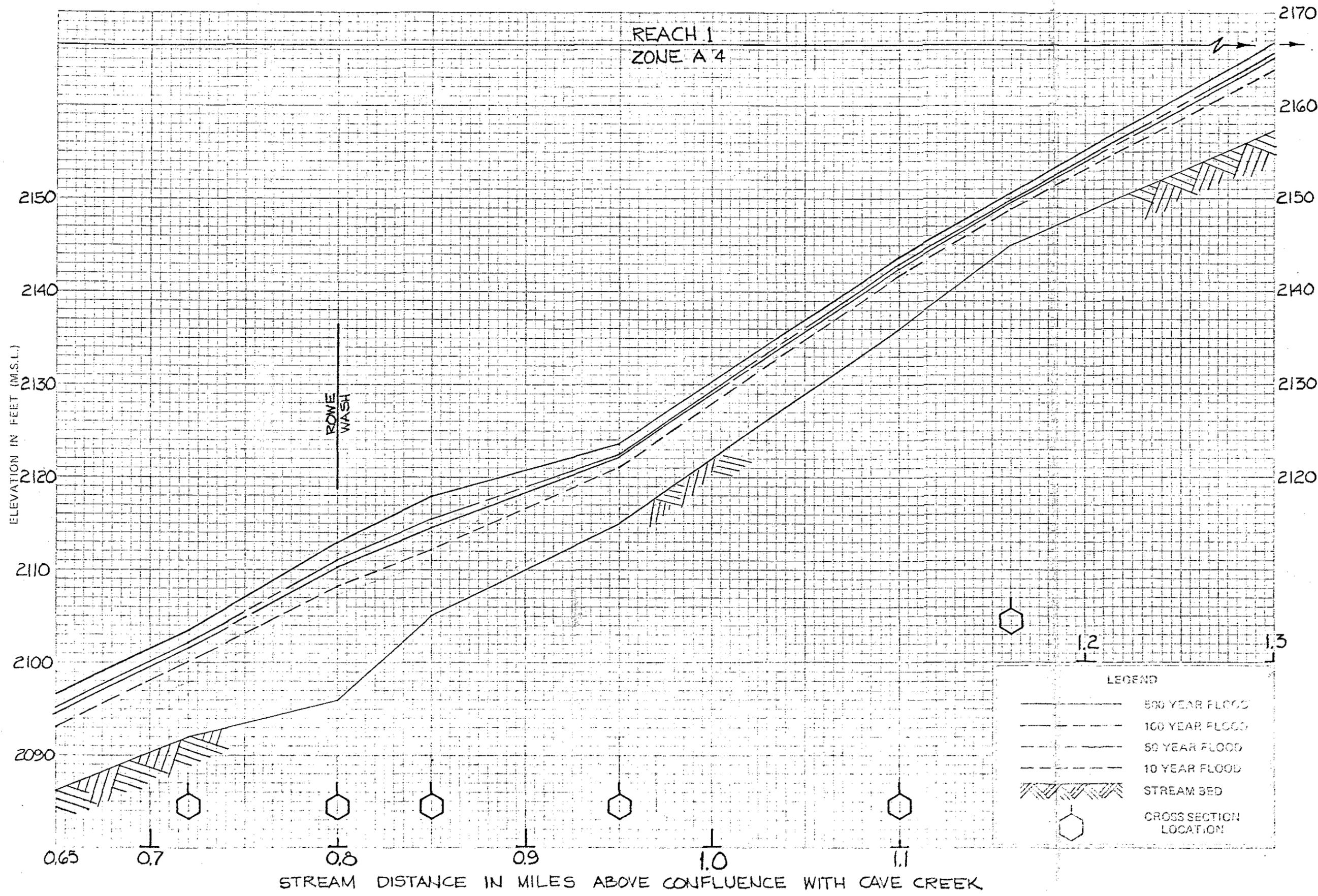
EXHIBIT 1



FLOOD PROFILES
 GALLOWAY WASH

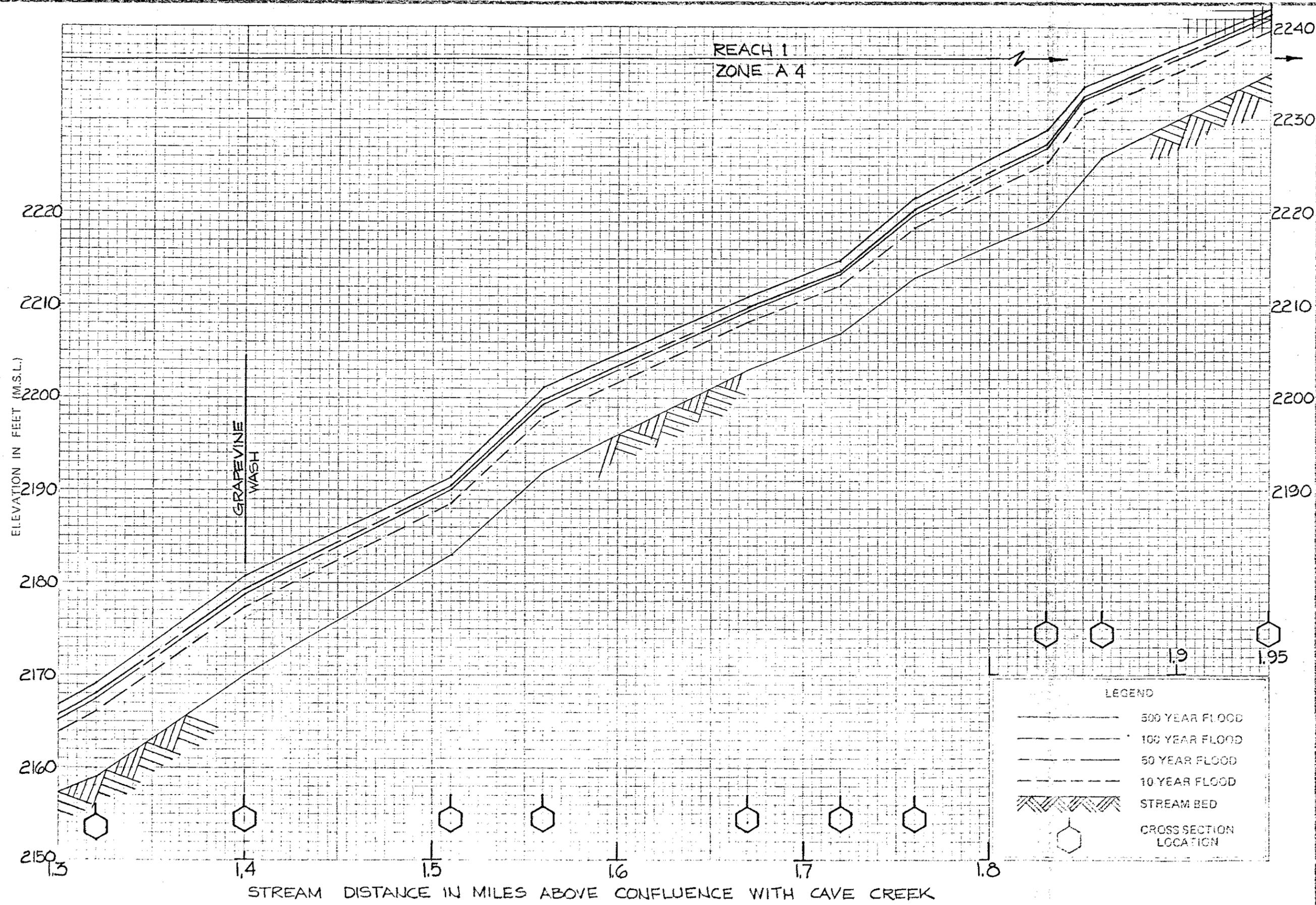
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY

14P



FLOOD PROFILES
GALLOWAY WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

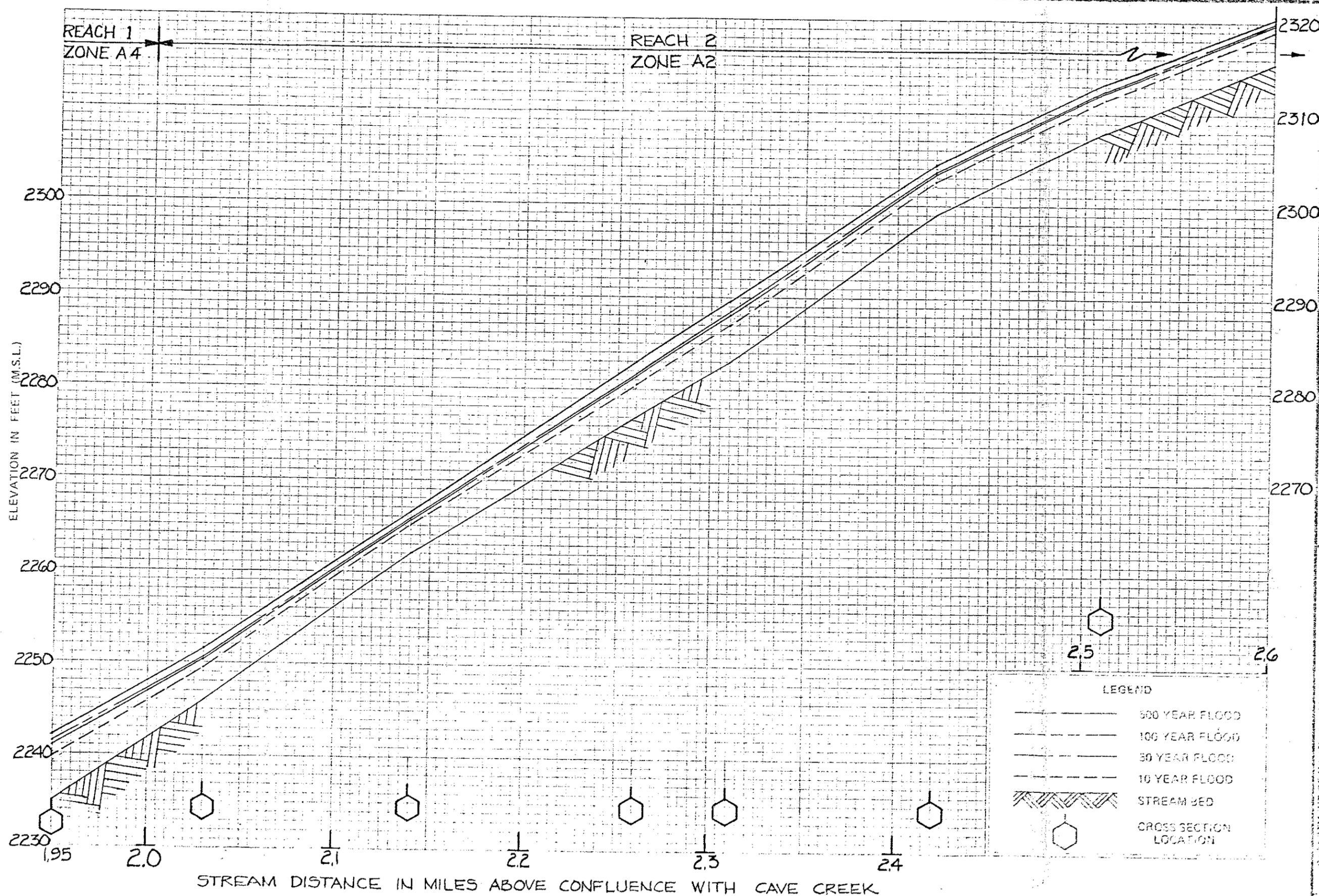


FLOOD PROFILES
 GALLOWAY WASH

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

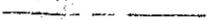
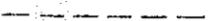
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY

16P



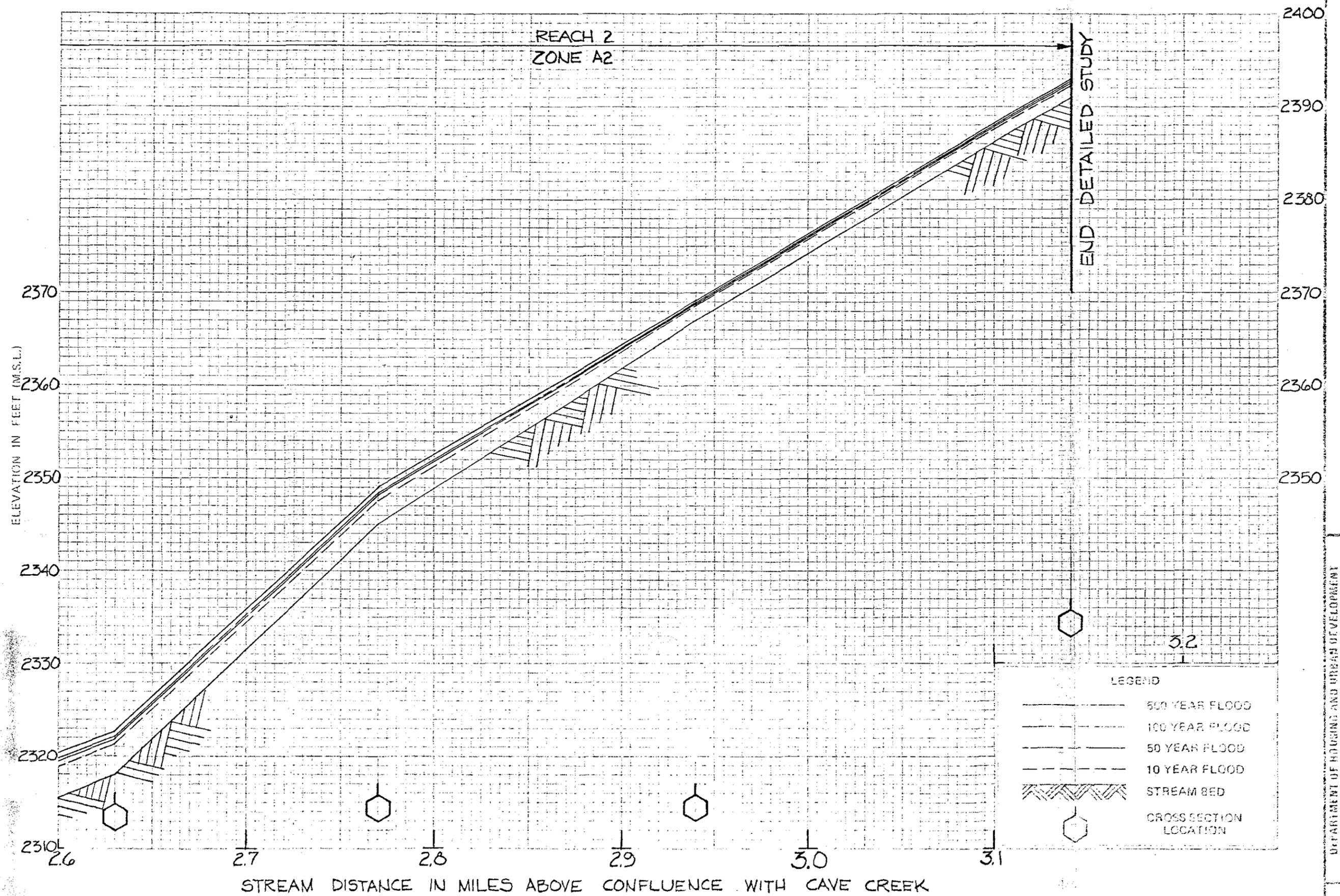
FLOOD PROFILES
 GALLOWAY WASH

LEGEND

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

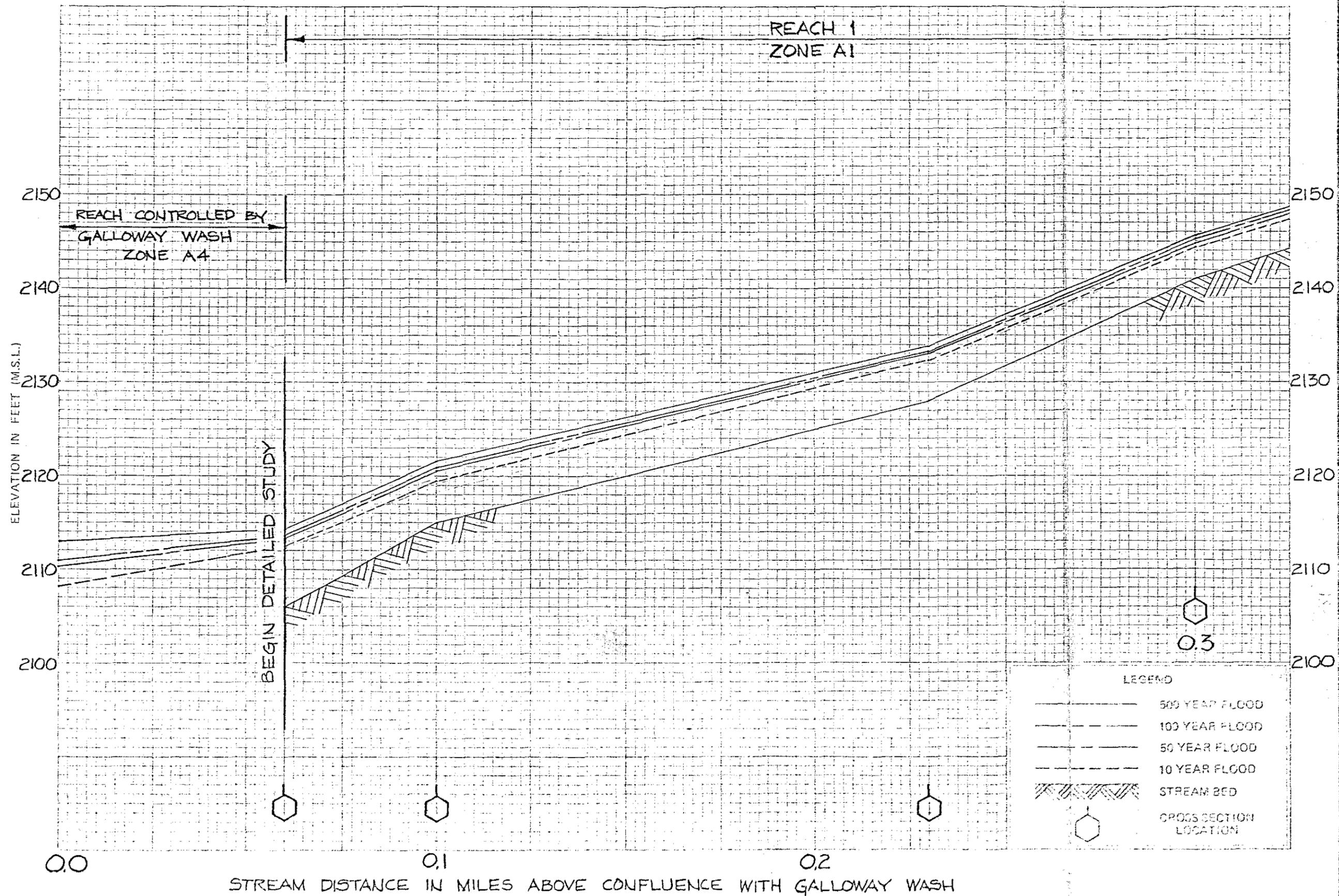
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration

UNINCORPORATED
 MARICOPA COUNTY



FLOOD PROFILES
GALLOWAY WASH

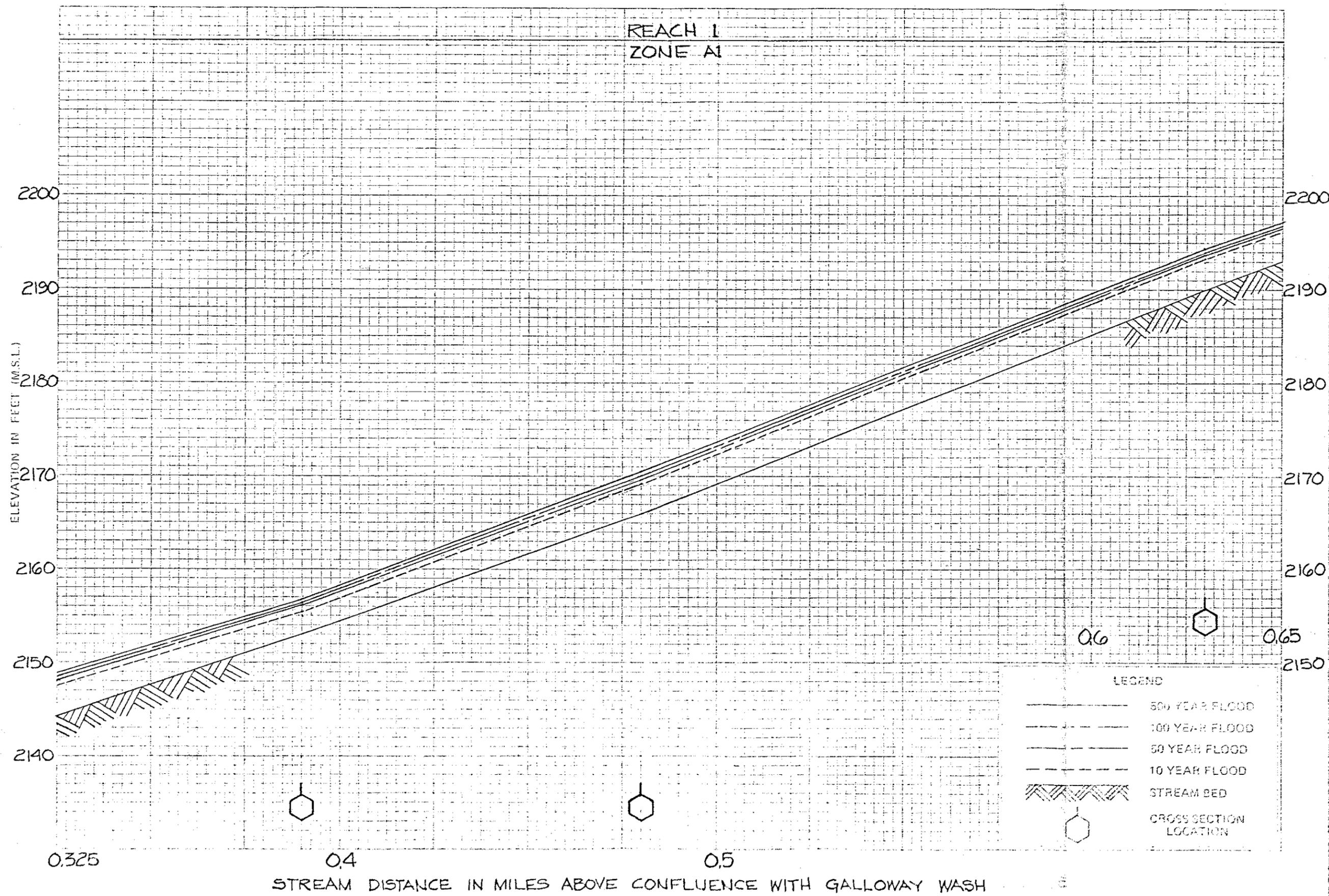
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY



FLOOD PROFILES
 ROWE WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY

REACH 1
ZONE A1

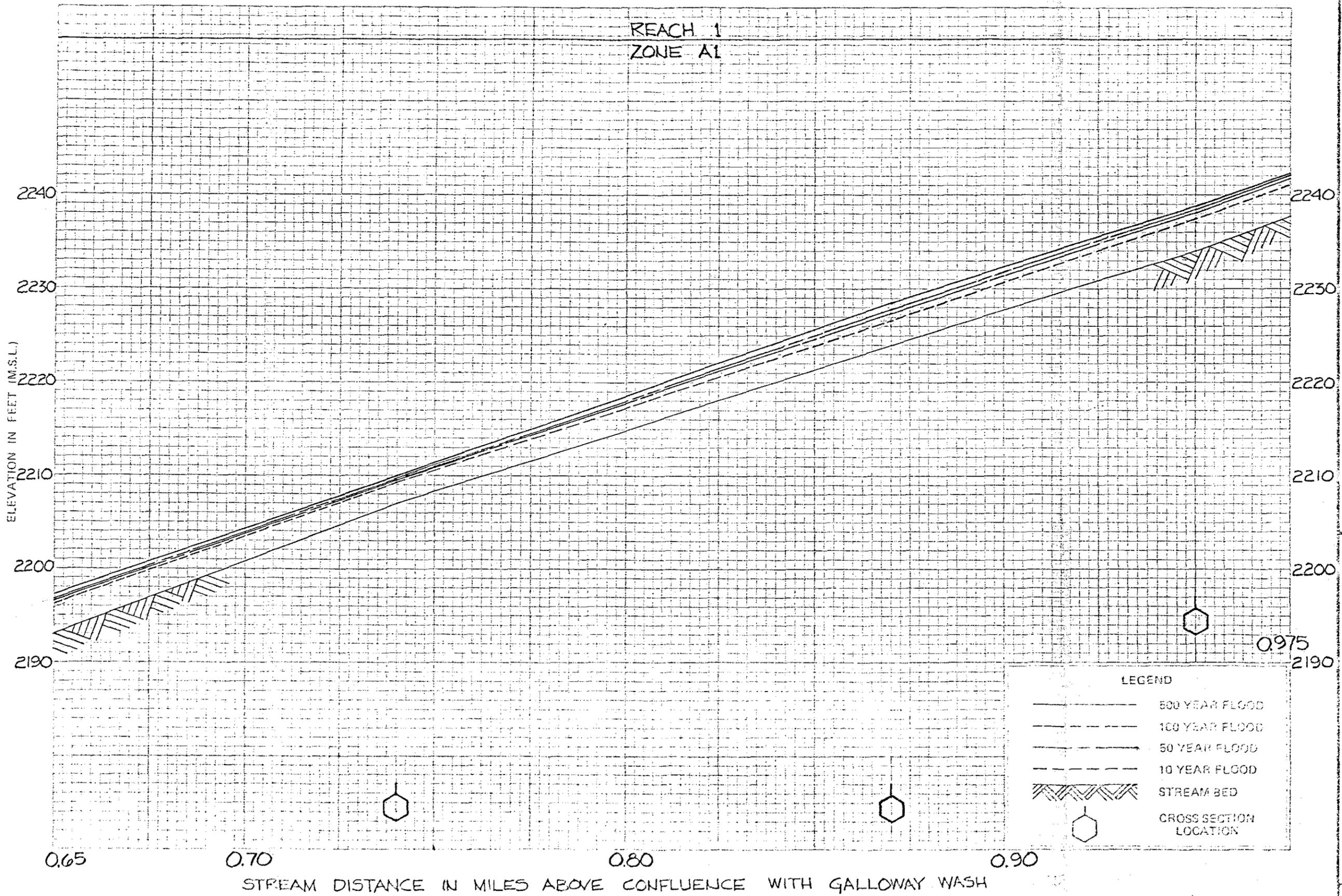


LEGEND

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

FLOOD PROFILES
ROWLE WASH

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

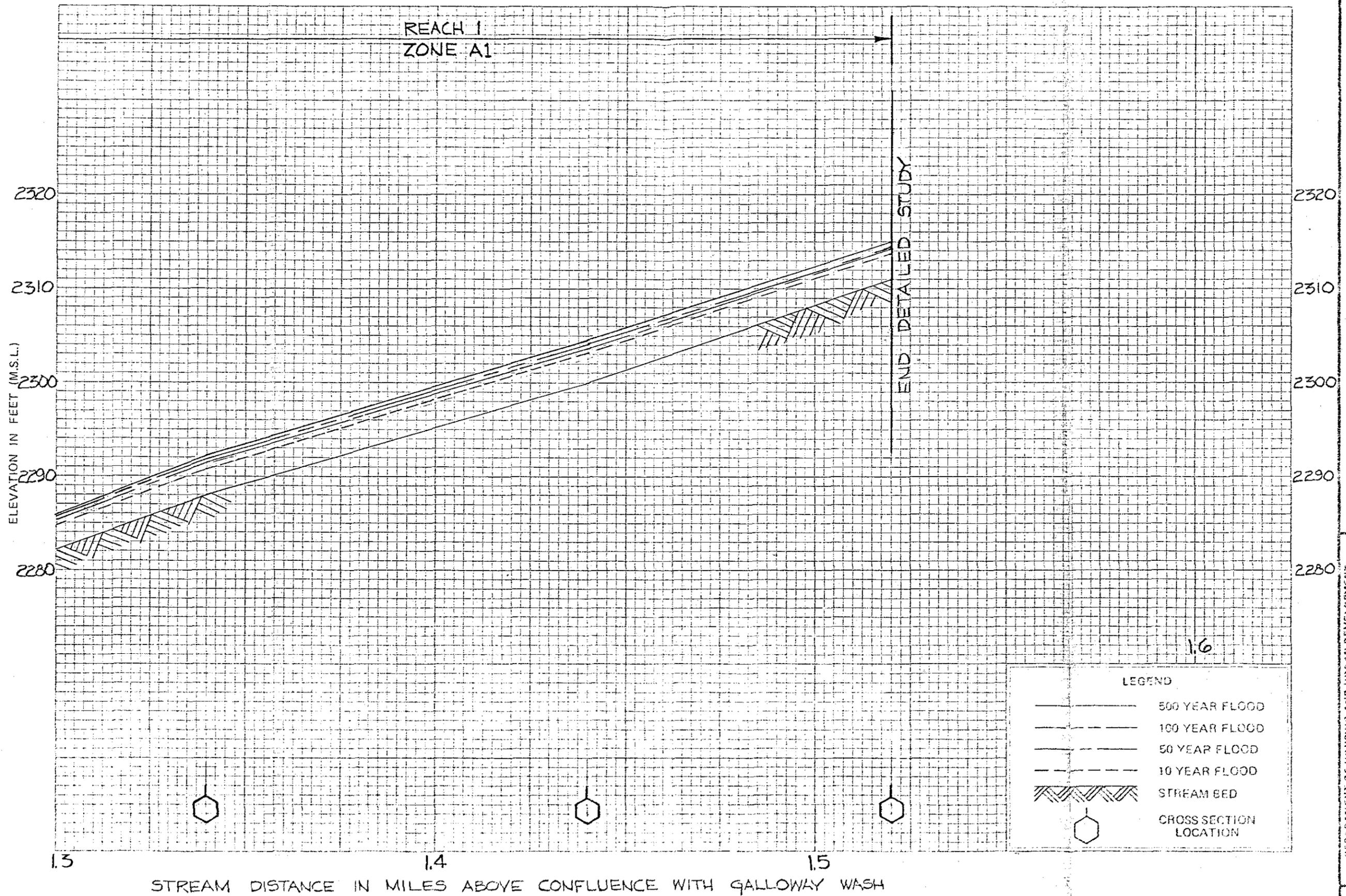


FLOOD PROFILES
ROWE WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

21P

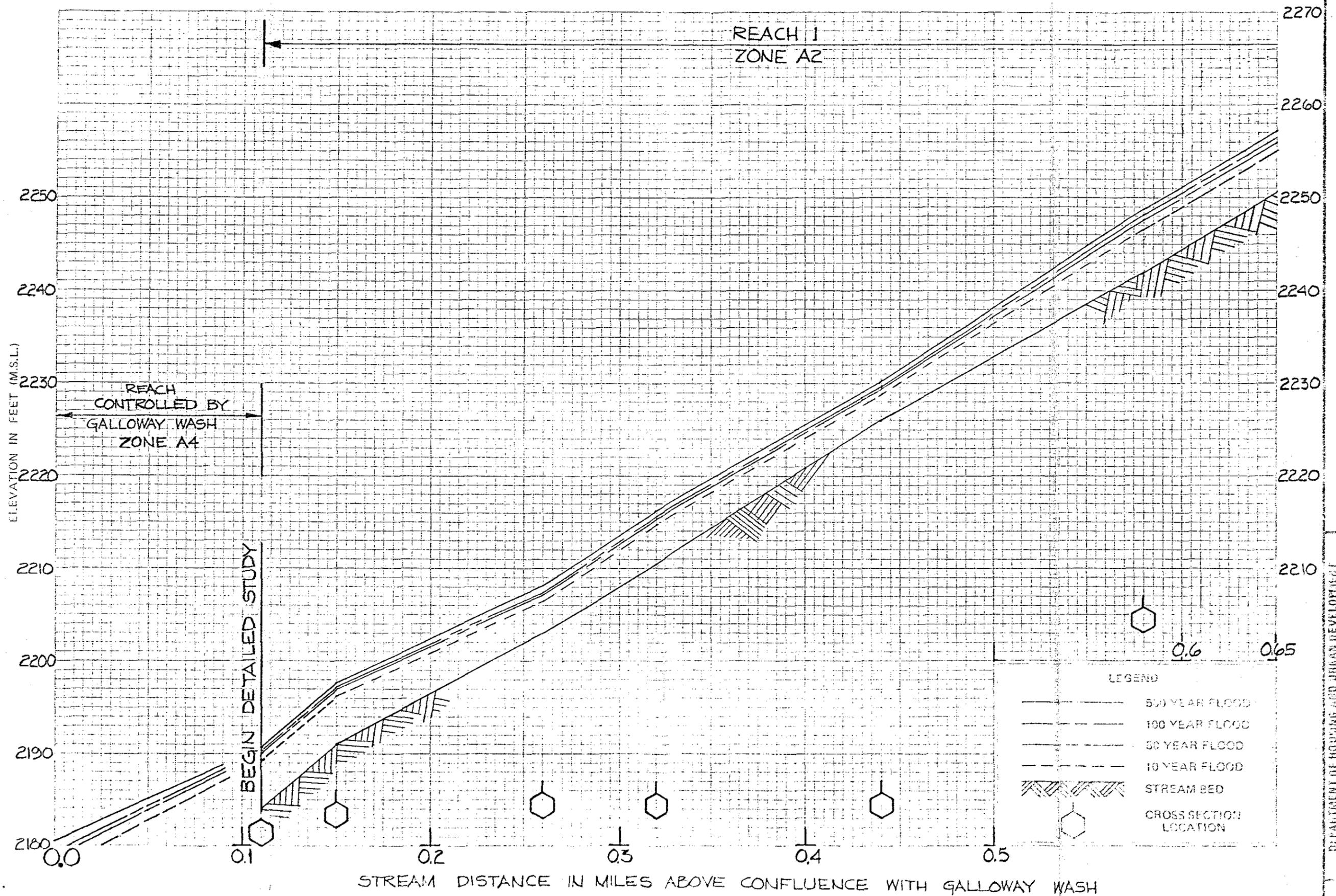
EXHIBIT 1



FLOOD PROFILES
ROWE WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

23P

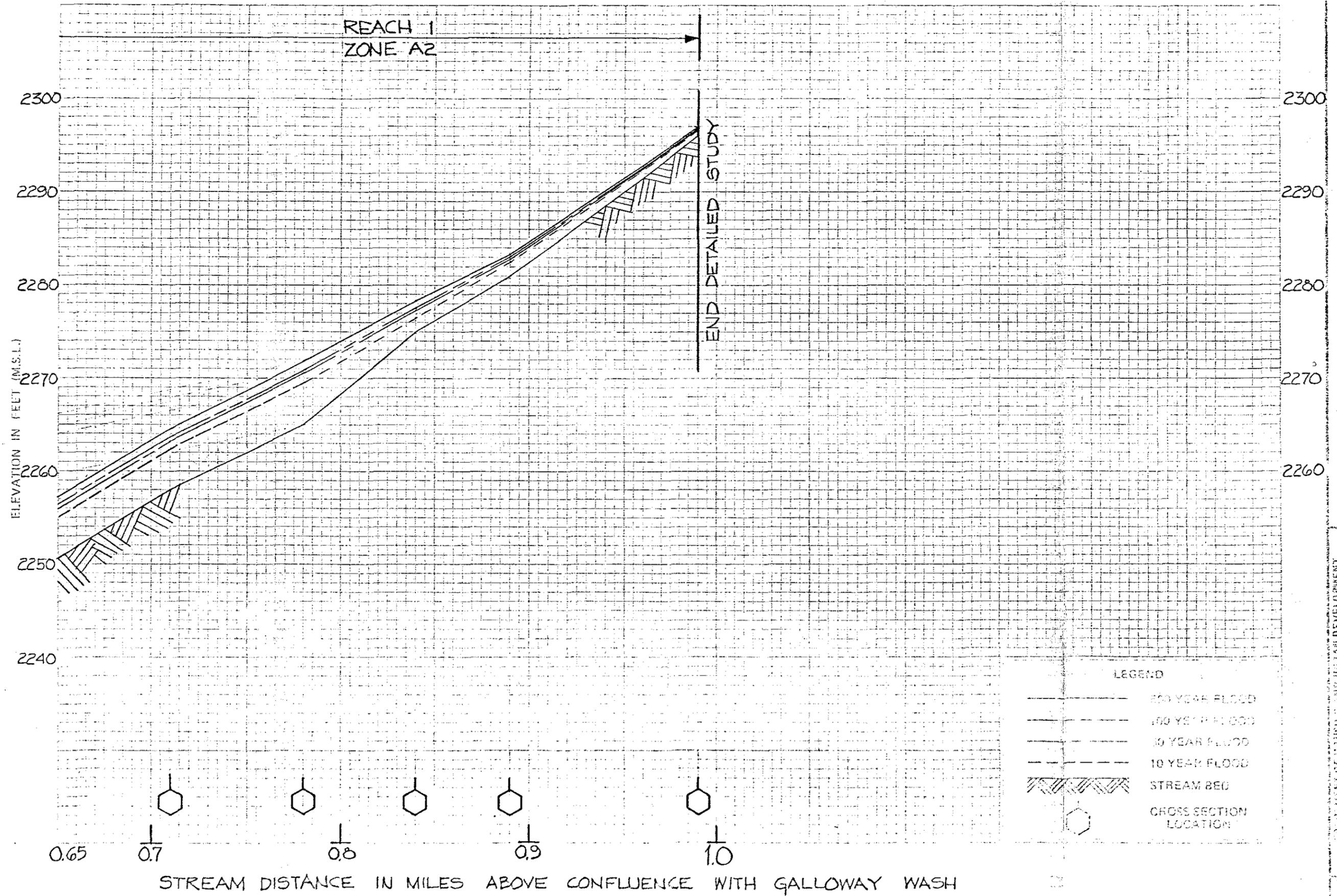


FLOOD PROFILES
 GRAPEVINE WASH

LEGEND

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

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Housing Administration
 UNINCORPORATED
 MARICOPA COUNTY



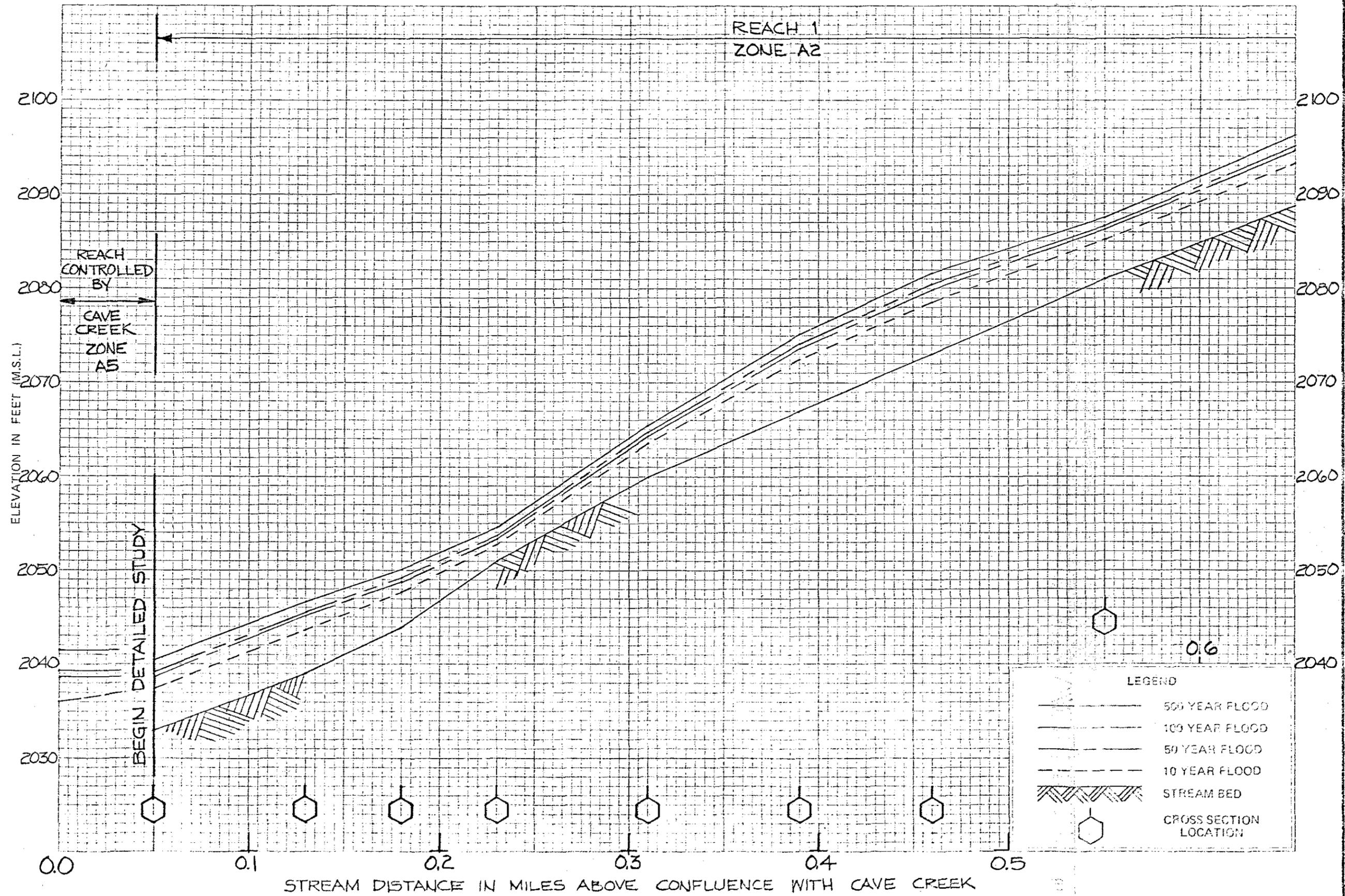
FLOOD PROFILES
 GRAPEVINE WASH

UNINCORPORATED
 MARICOPA COUNTY

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Housing Administration

LEGEND

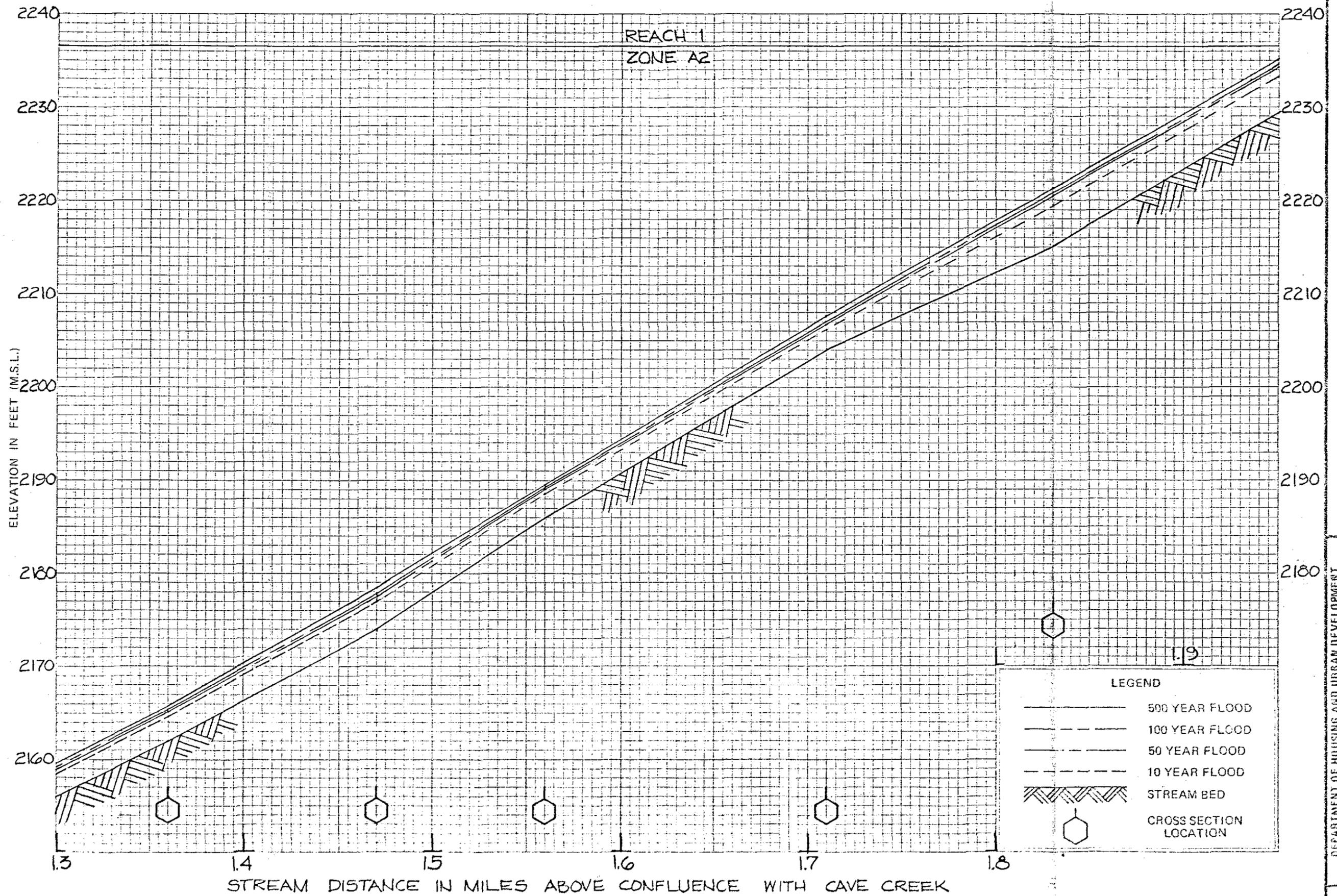
	500 YEAR FLOOD
	100 YEAR FLOOD
	10 YEAR FLOOD
	1 YEAR FLOOD
	STREAM BED
	CROSS SECTION LOCATION



FLOOD PROFILES
OCOTILLO WASH

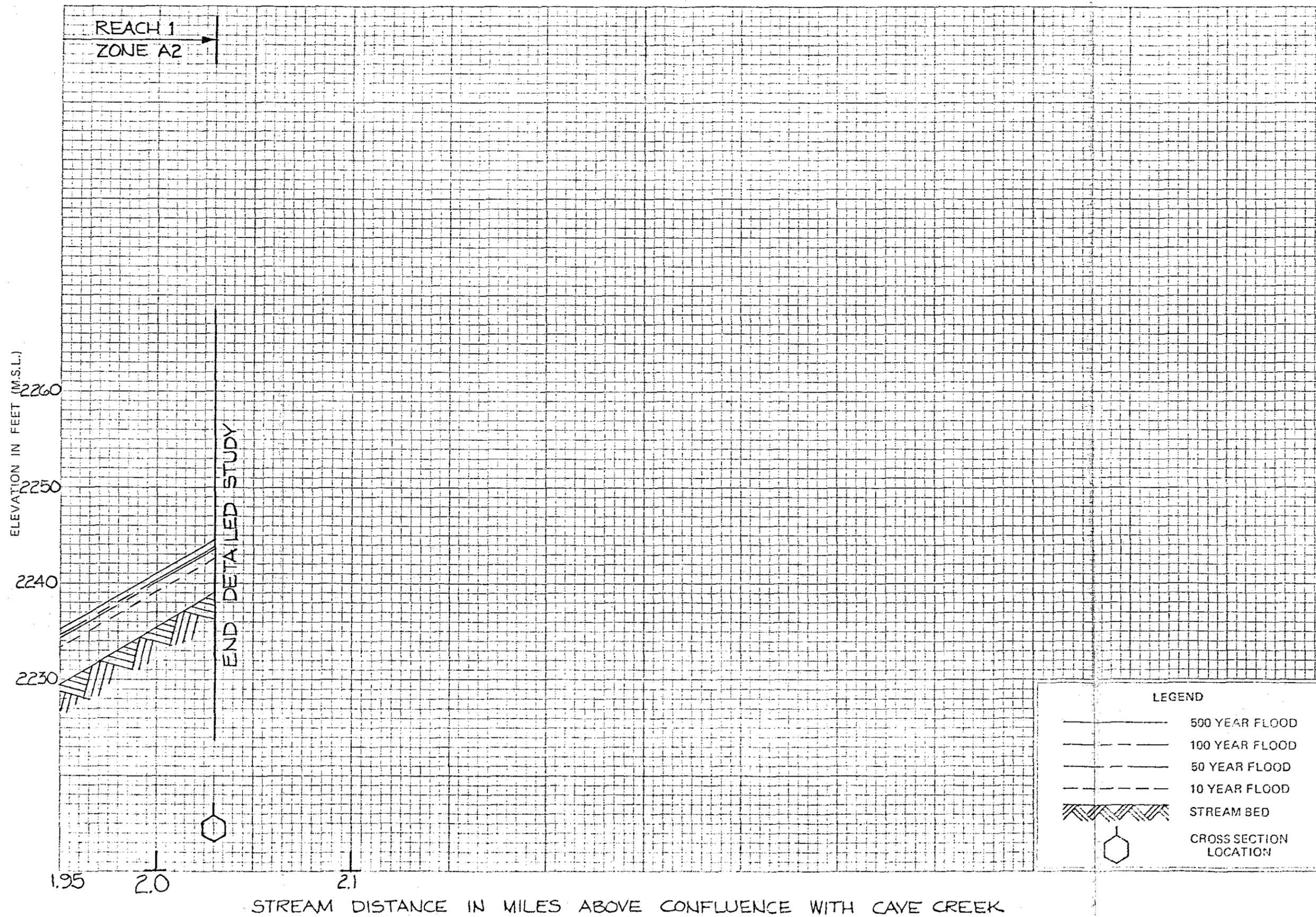
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

26P



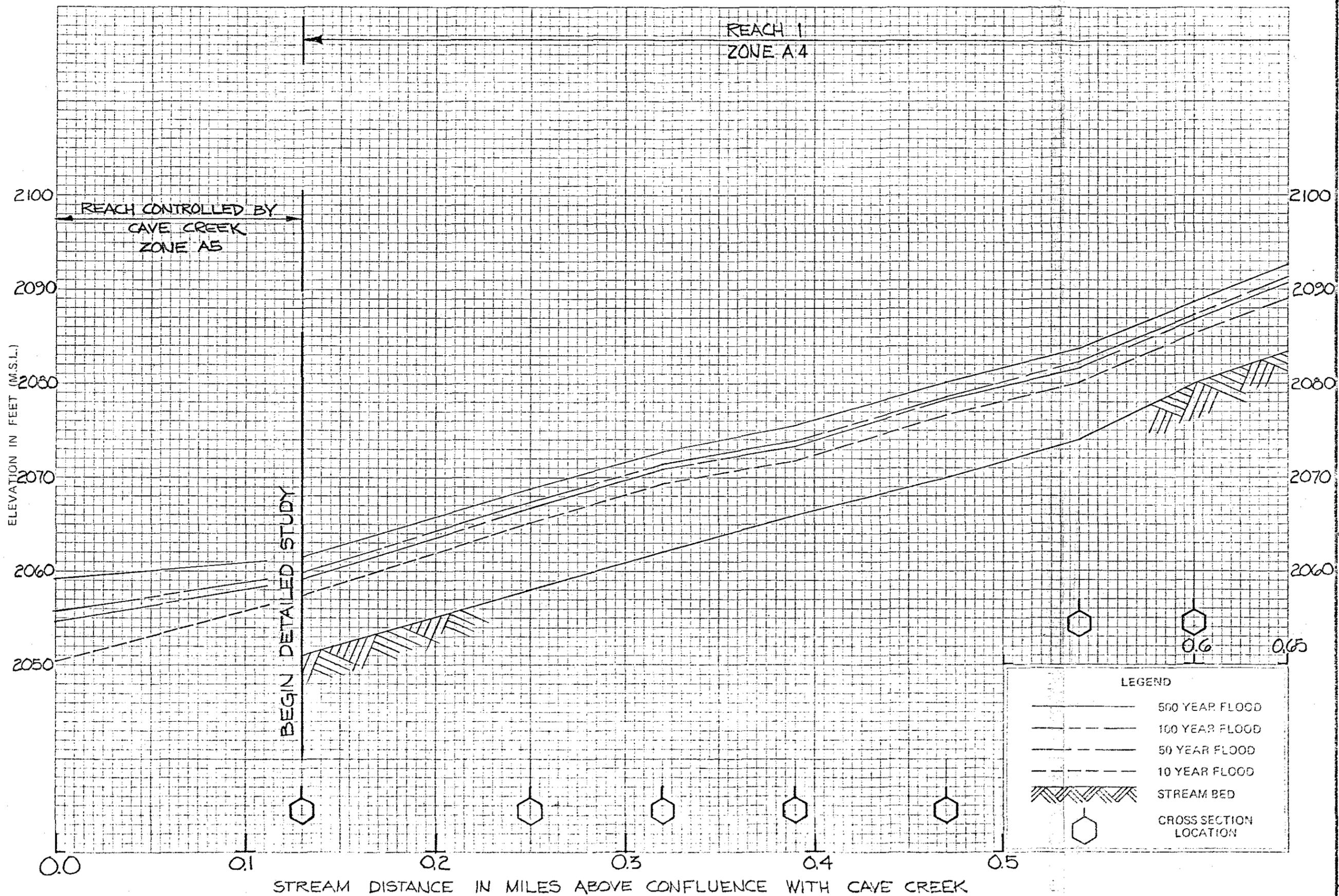
FLOOD PROFILES
OCOTILLO WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY



FLOOD PROFILES
 OCOTILLO WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY



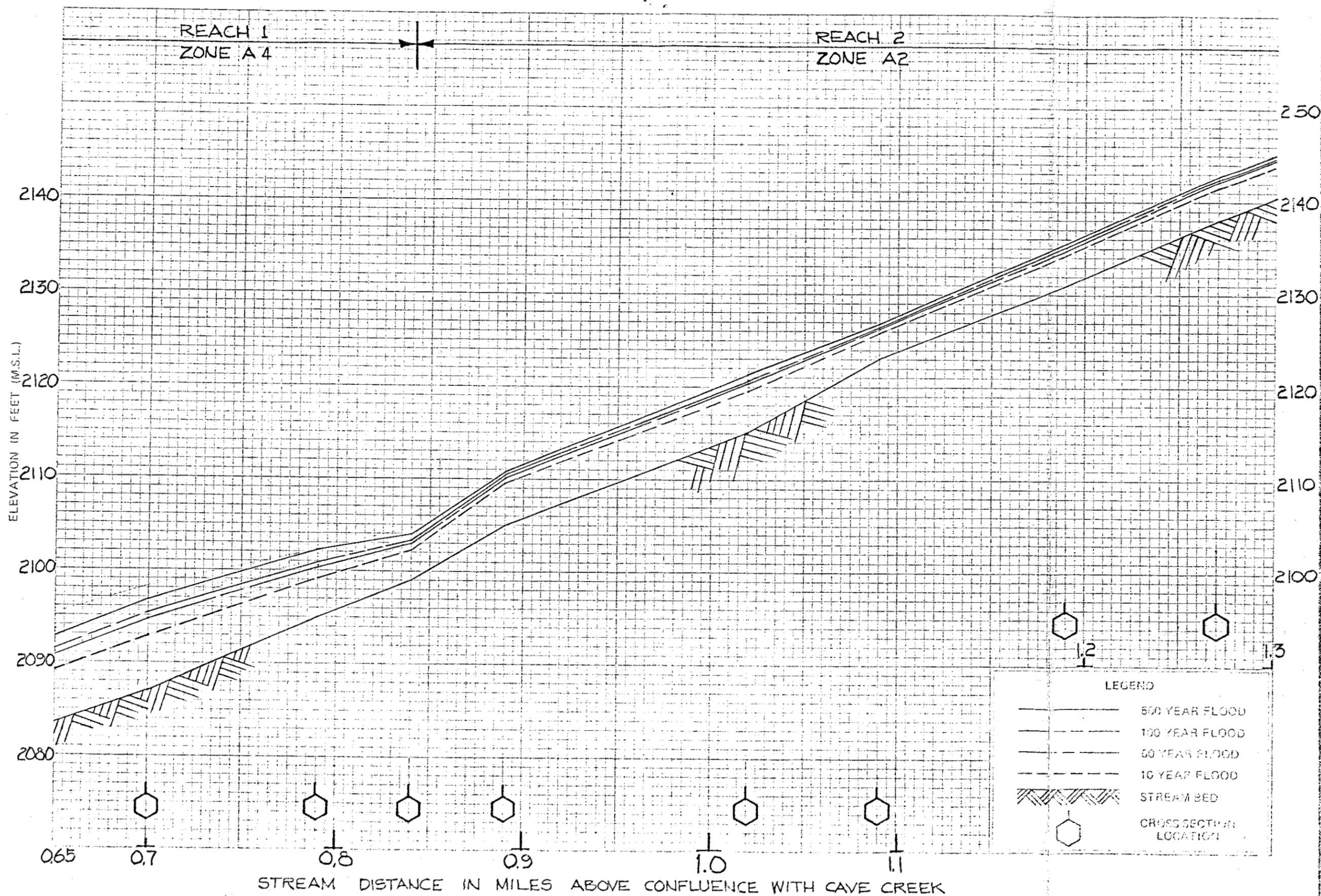
FLOOD PROFILES

WILLOW SPRINGS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

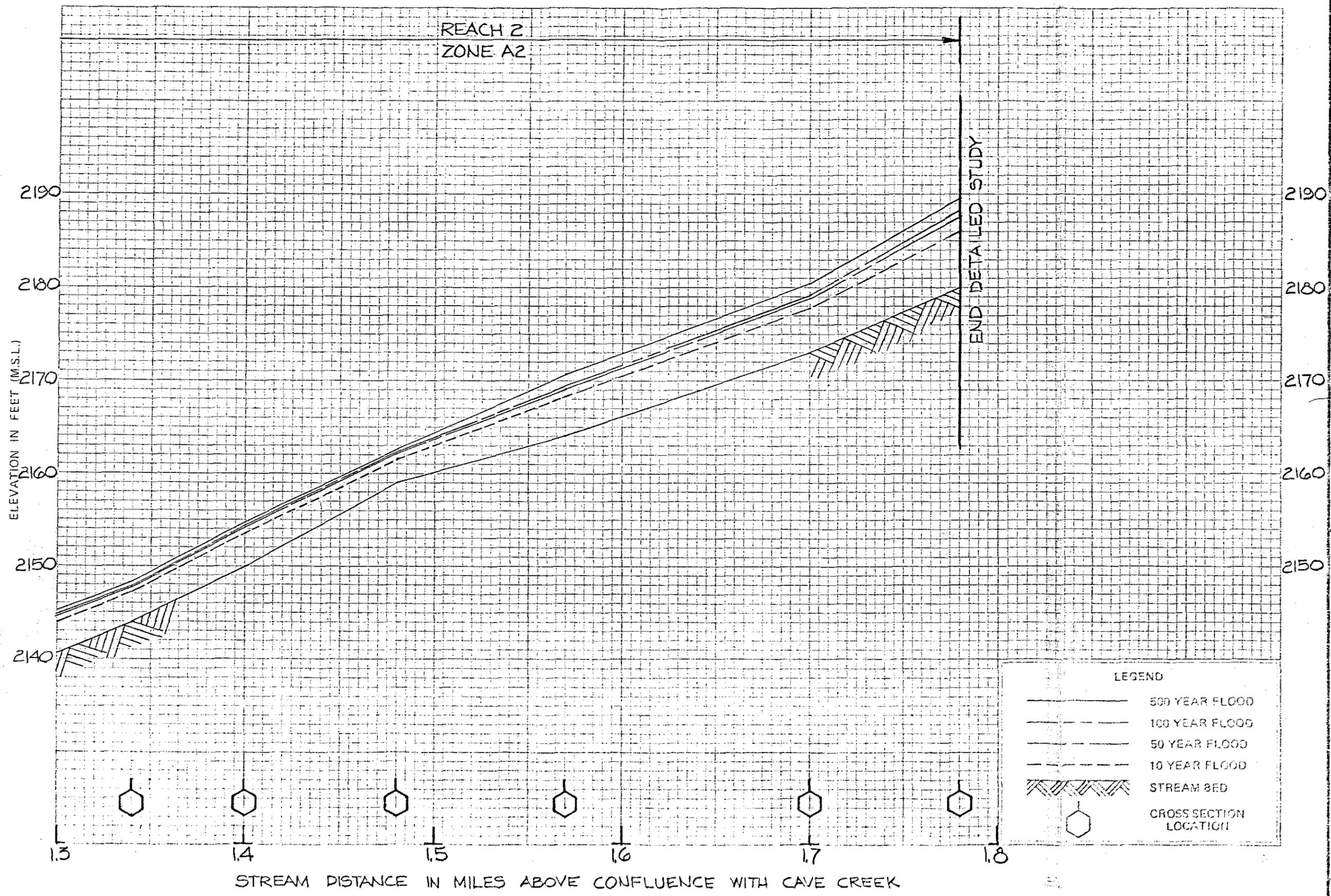
UNINCORPORATED
MARICOPA COUNTY

301'



FLOOD PROFILES
 WILLOW SPRINGS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 UNINCORPORATED
 MARICOPA COUNTY

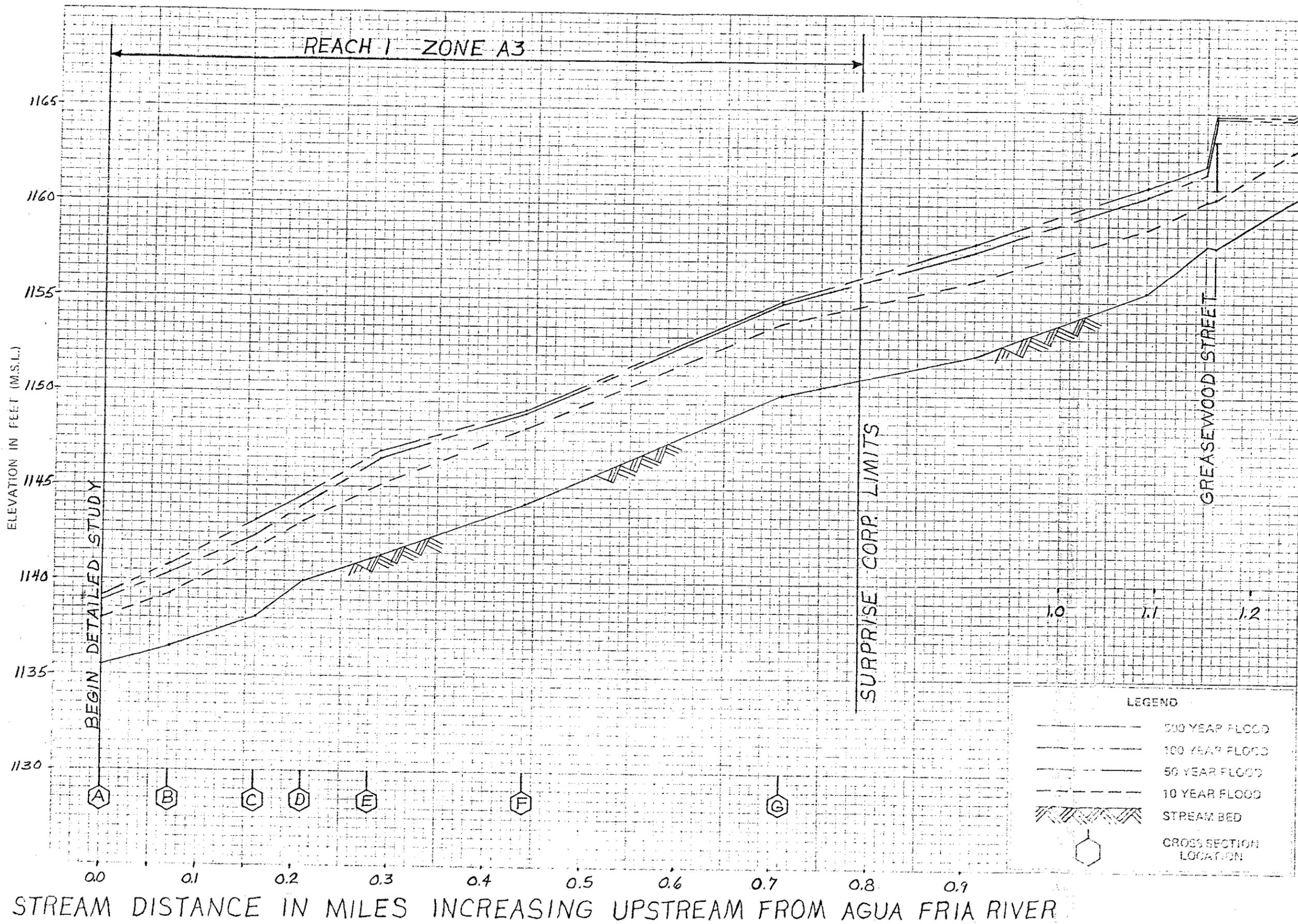


FLOOD PROFILES
WILLOW SPRINGS WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
UNINCORPORATED
MARICOPA COUNTY

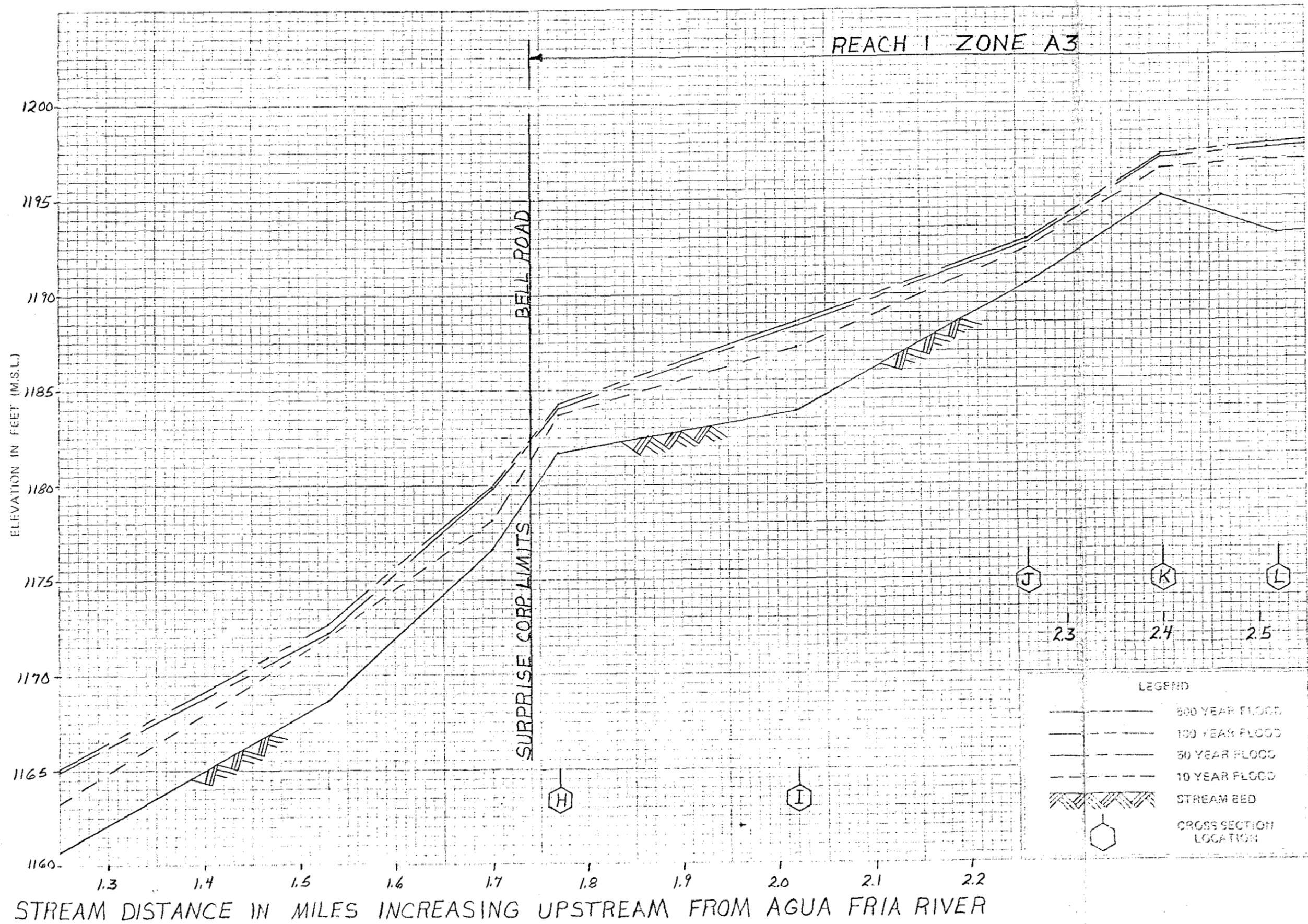
32P

EXHIBIT 1



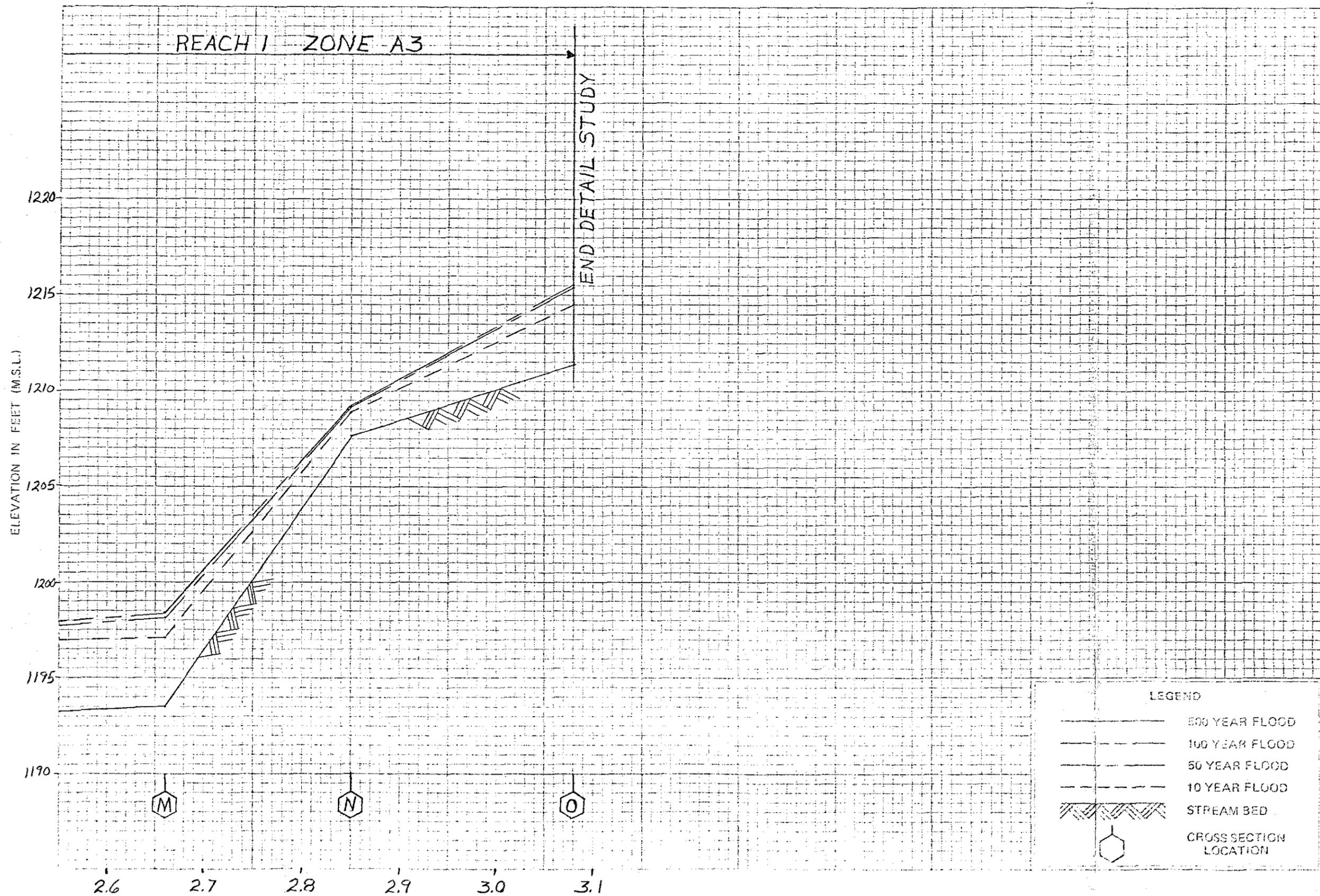
FLOOD PROFILES
LIZARD ACRES WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY
UNINCORPORATED AREA



FLOOD PROFILES
LIZARD ACRES WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Disaster Administration
MARICOPA COUNTY
UNINCORPORATED AREA

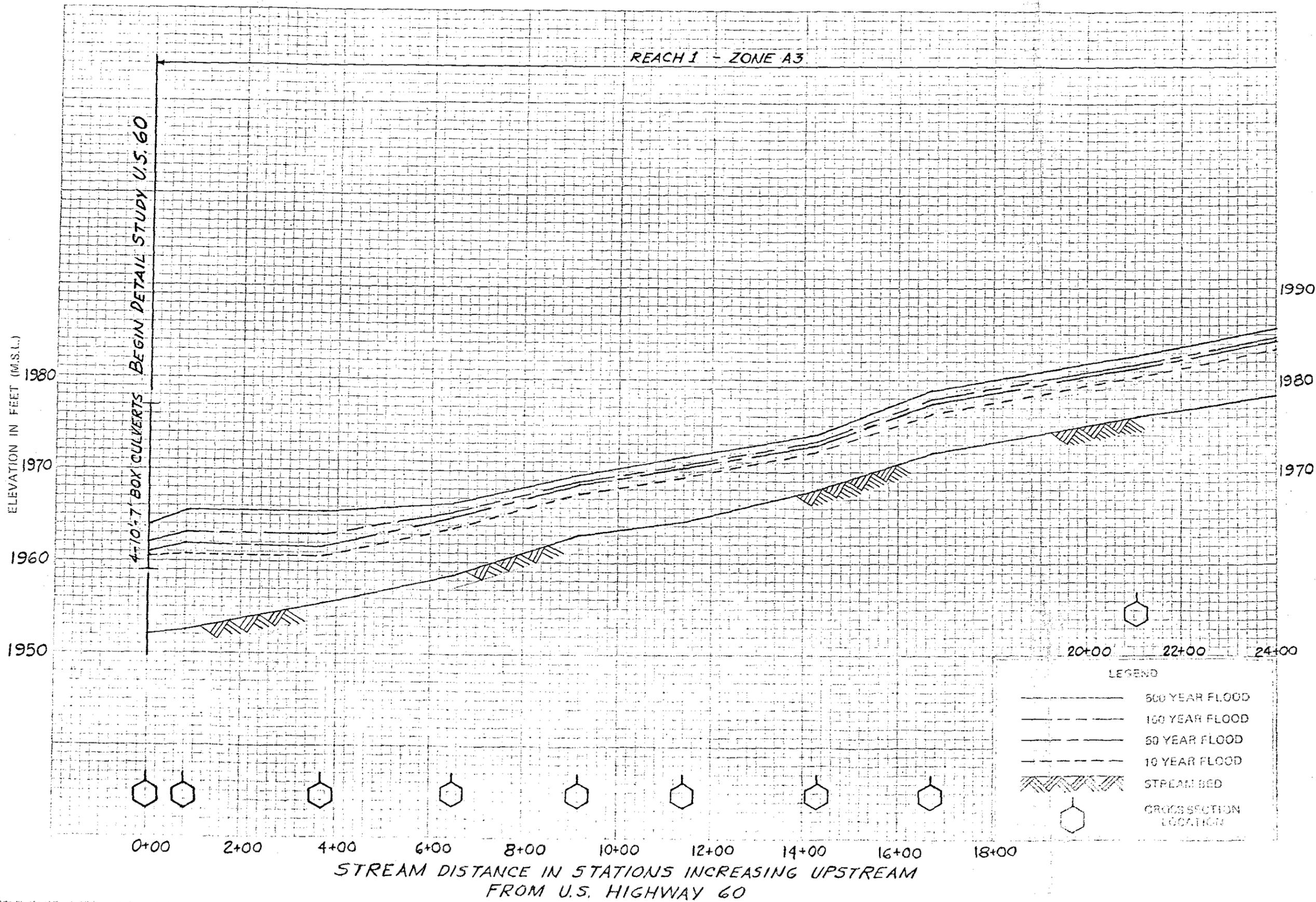


STREAM DISTANCE IN MILES INCREASING UPSTREAM FROM AGUA FRIA RIVER

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

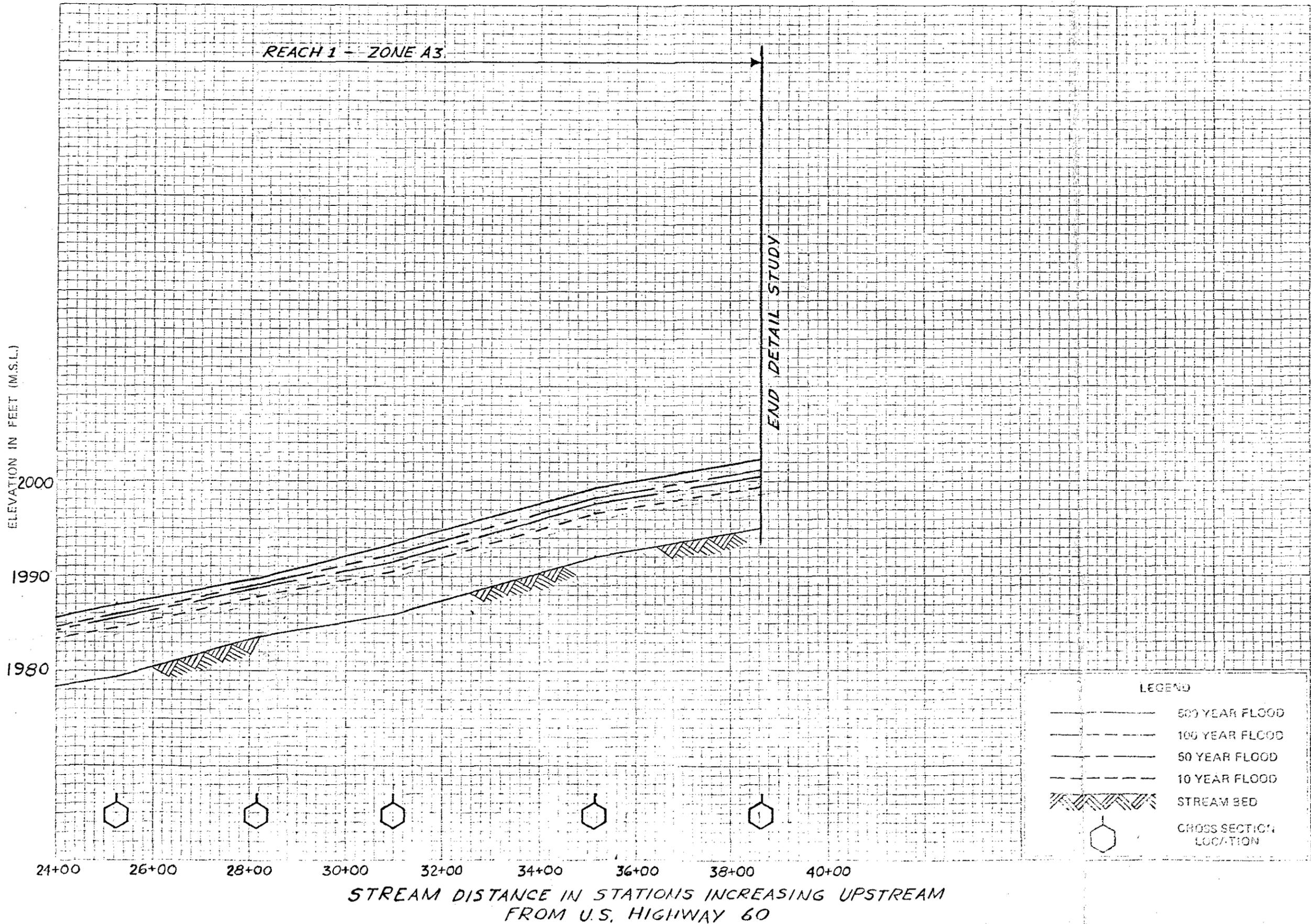
FLOOD PROFILES
LIZARD ACRES WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY
UNINCORPORATED AREA



FLOOD PROFILES
 LITTLE SAN DOMINGO WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY, AZ.
 UNINCORPORATED AREA

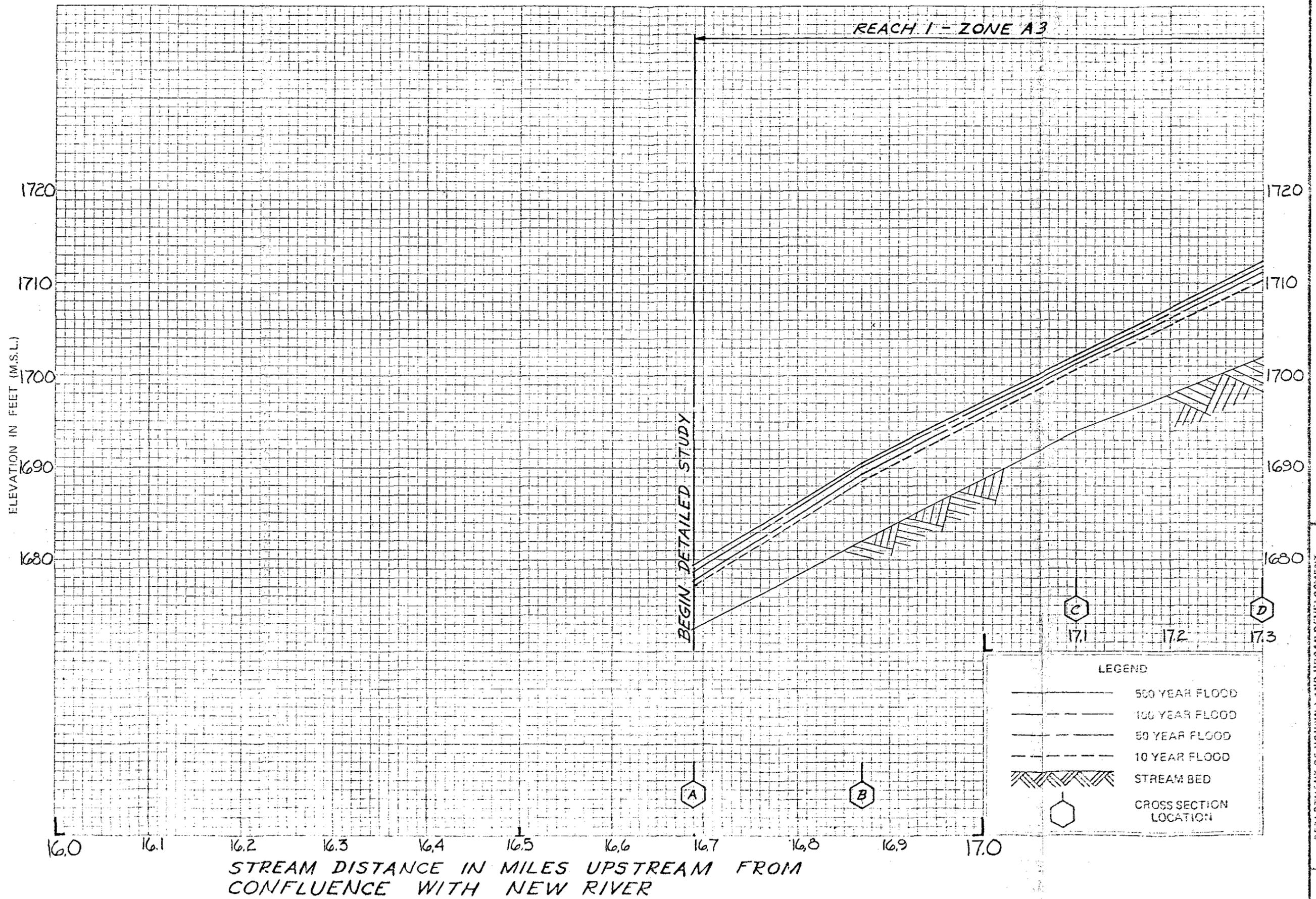


LEGEND

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

FLOOD PROFILES
 LITTLE SAN DOMINGO WASH

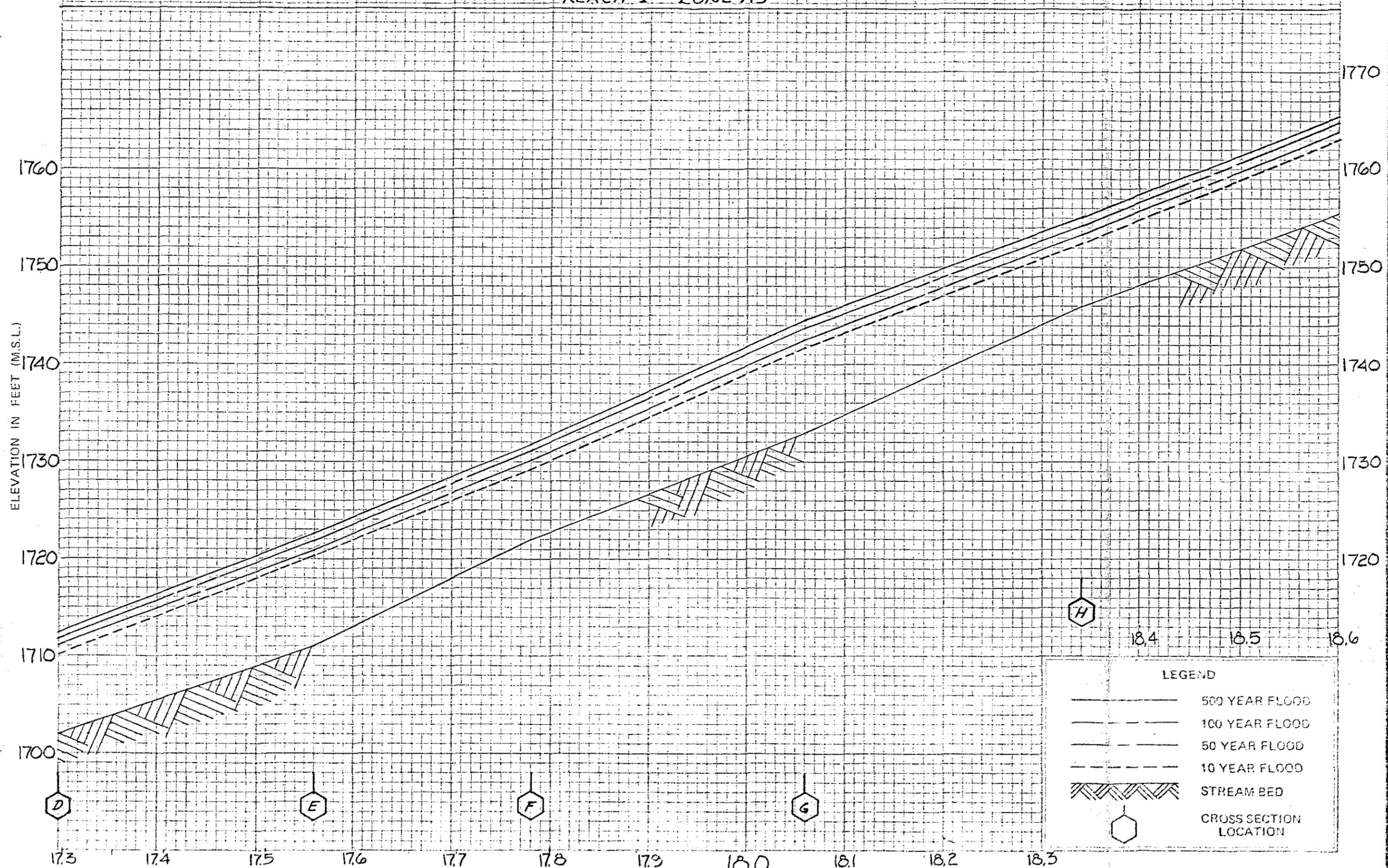
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY, AZ;
 UNINCORPORATED AREA



FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

REACH 1 - ZONE A3



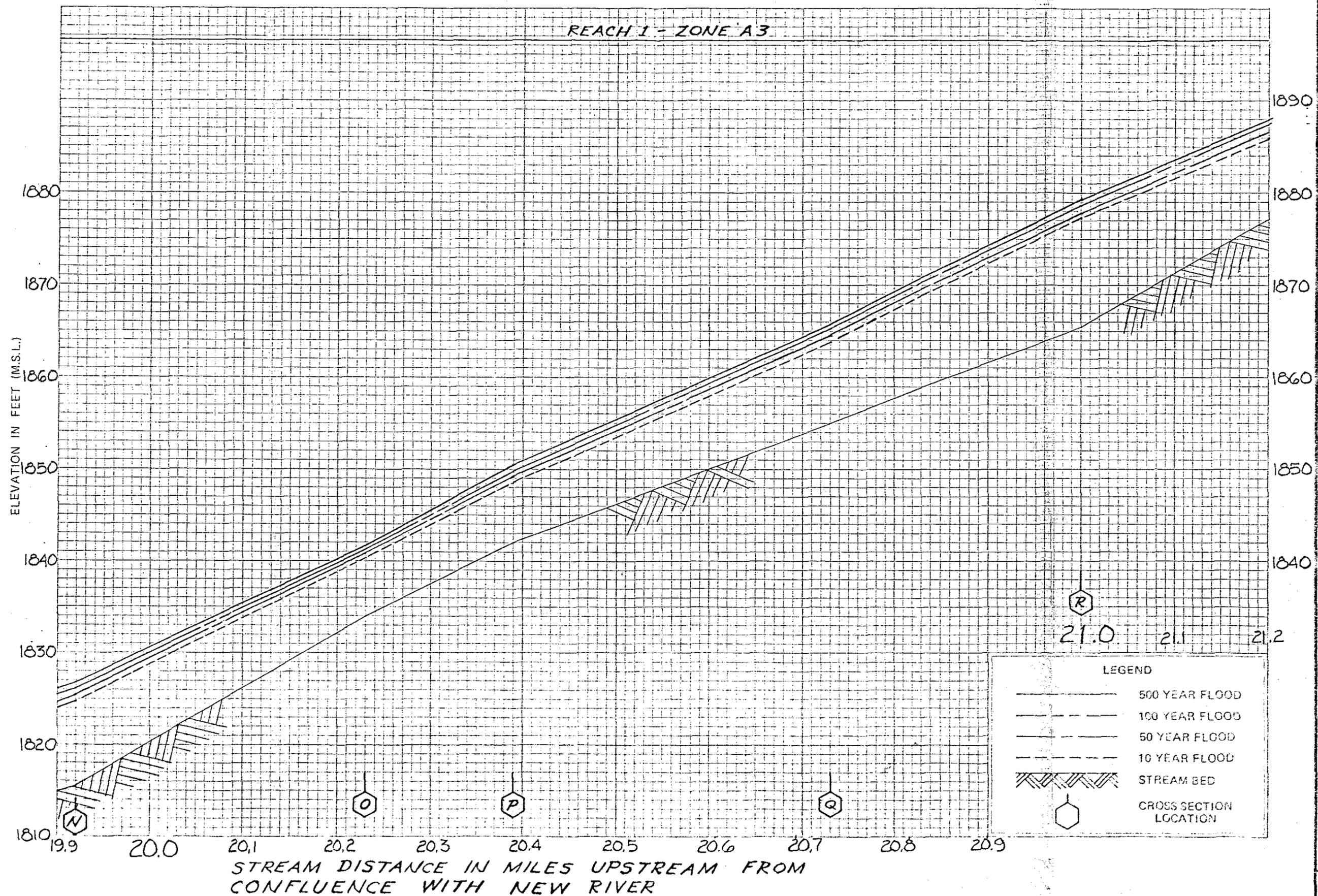
LEGEND

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

FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

REACH 1 - ZONE A3



LEGEND

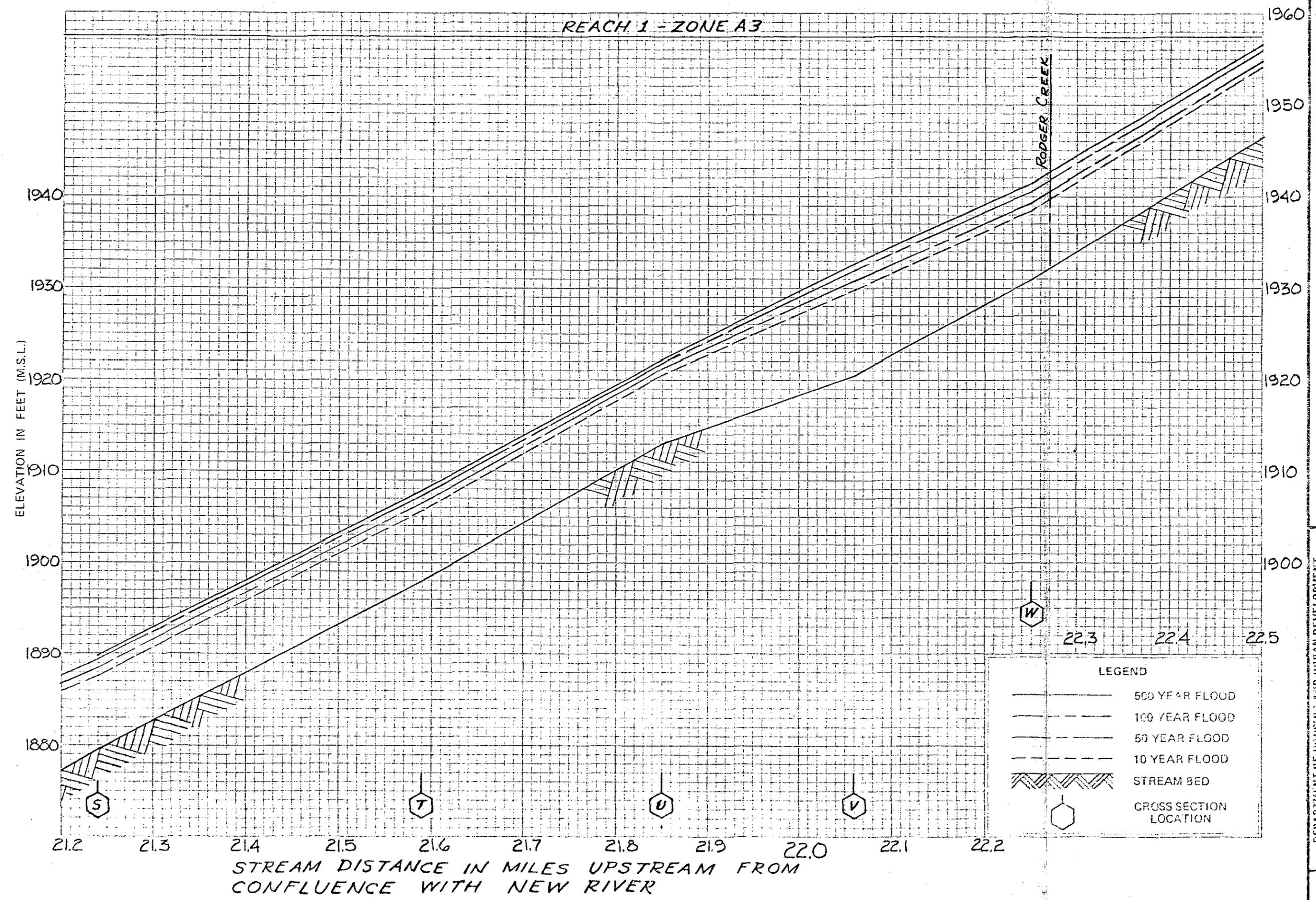
- 500 YEAR FLOOD
- - - 100 YEAR FLOOD
- · - · 50 YEAR FLOOD
- · · · 10 YEAR FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FLOOD PROFILES
 SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY, AZ.
 UNINCORPORATED AREA

41P

REACH 1 - ZONE A3



LEGEND

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

FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

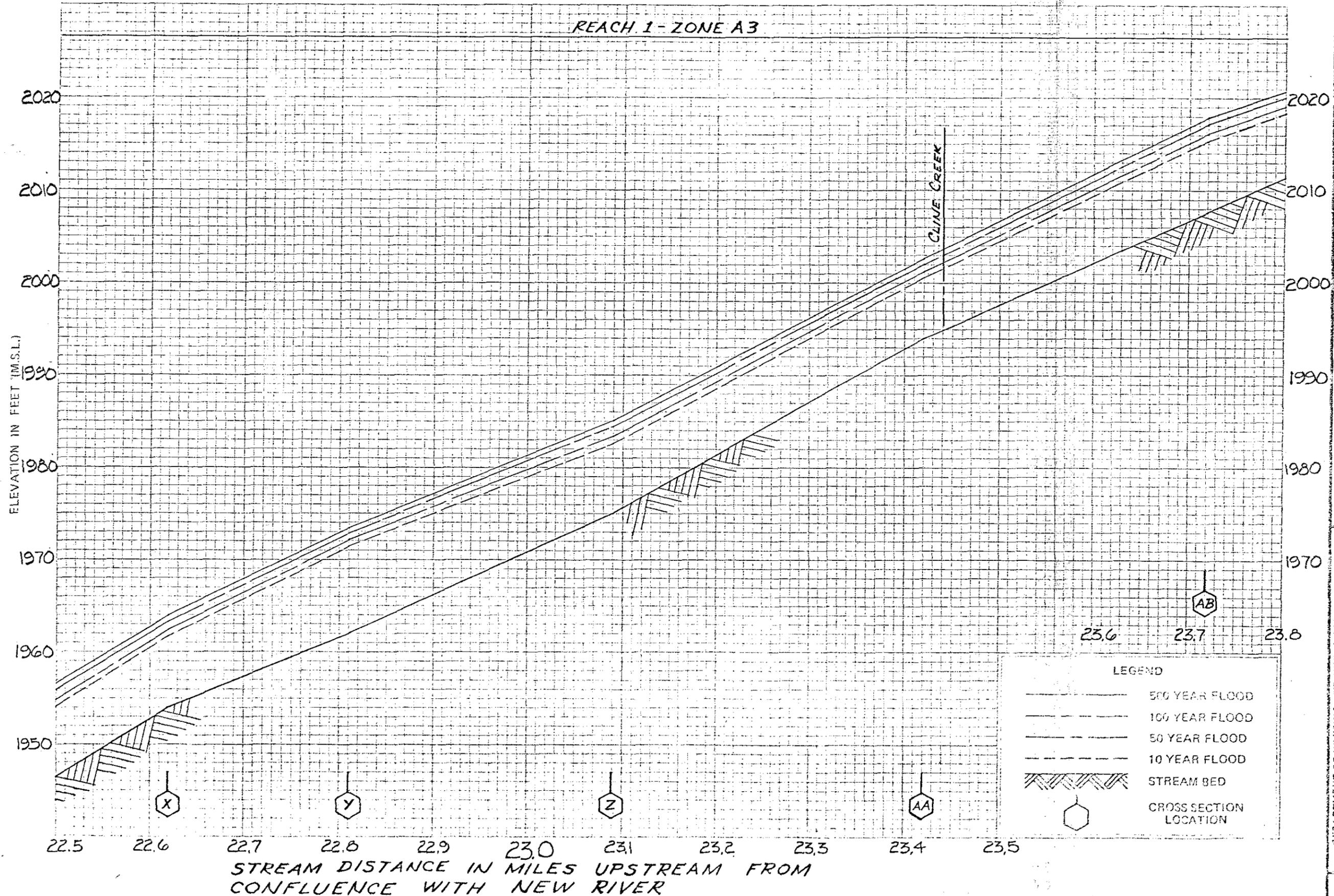
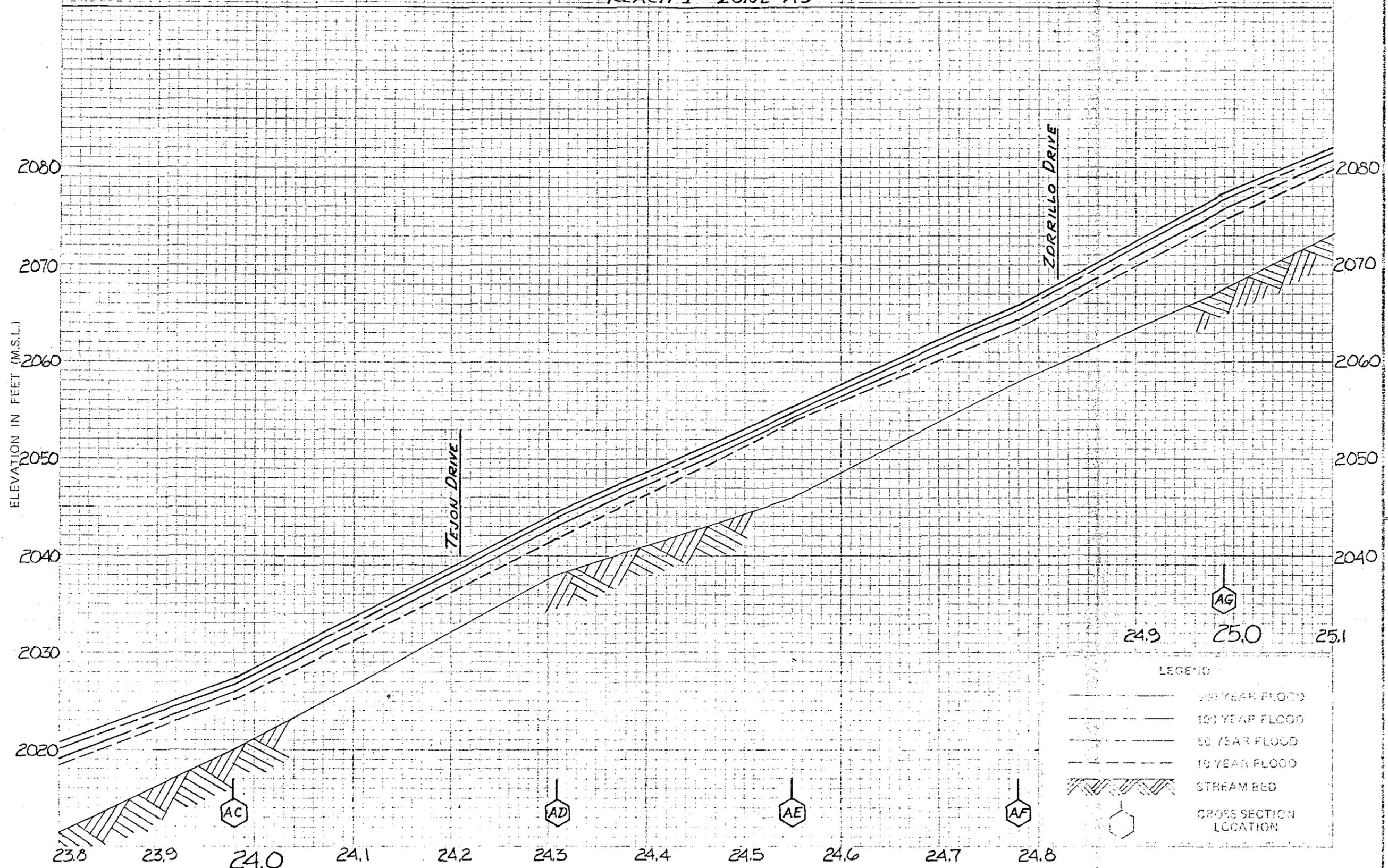


EXHIBIT 1

REACH 1 - ZONE A3



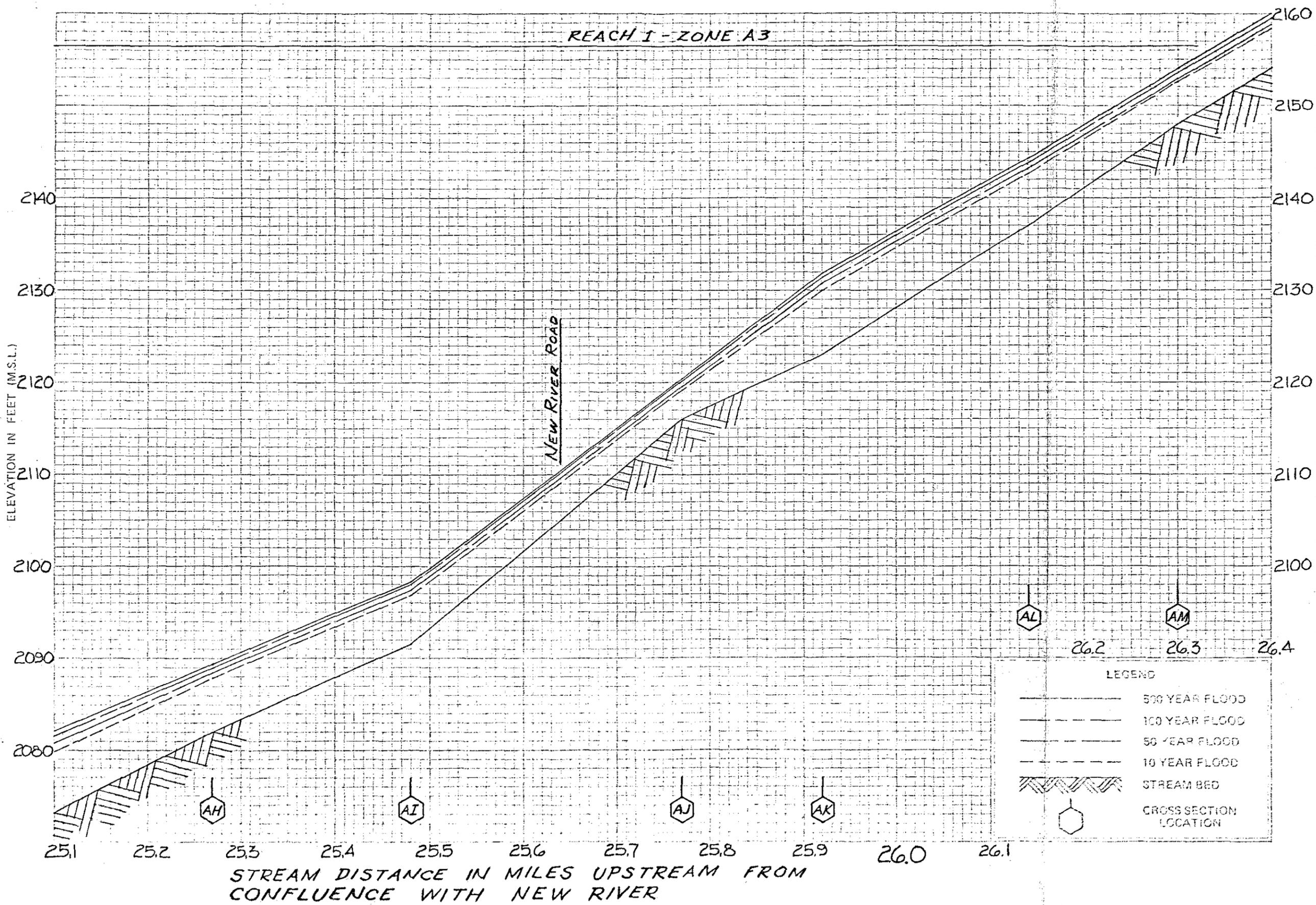
LEGEND

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

FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

STREAM DISTANCE IN MILES UPSTREAM FROM
CONFLUENCE WITH NEW RIVER

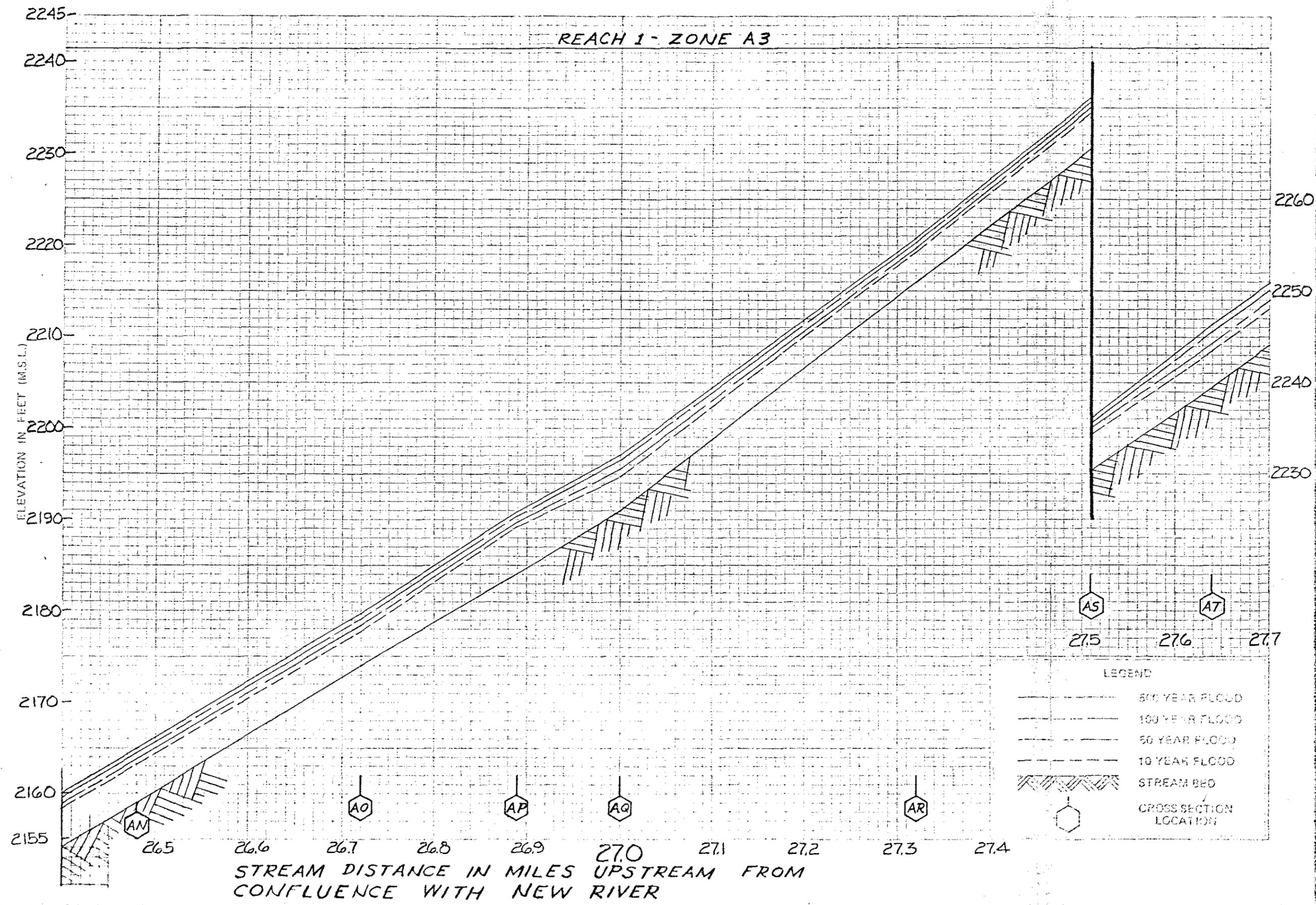


FLOOD PROFILES
 SKUNK CREEK
 MARICOPA COUNTY, AZ.
 UNINCORPORATED AREA

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration

LEGEND
 ————— 500 YEAR FLOOD
 - - - - - 100 YEAR FLOOD
 - · - · - 50 YEAR FLOOD
 - · - · - 10 YEAR FLOOD
 [Hatched Area] STREAM BED
 [Hexagon] CROSS SECTION LOCATION

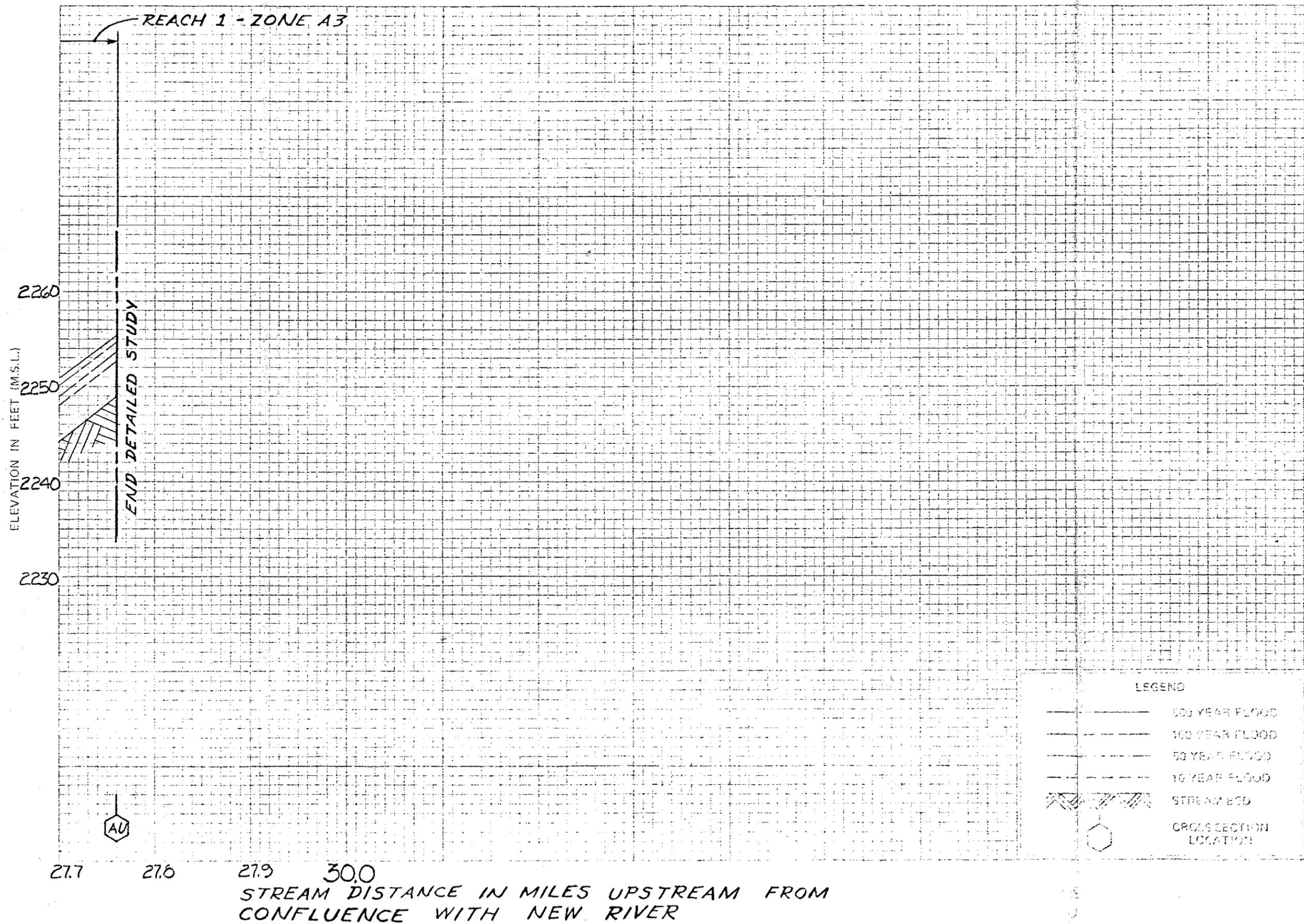
REACH 1 - ZONE A3



FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Housing Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA

46P

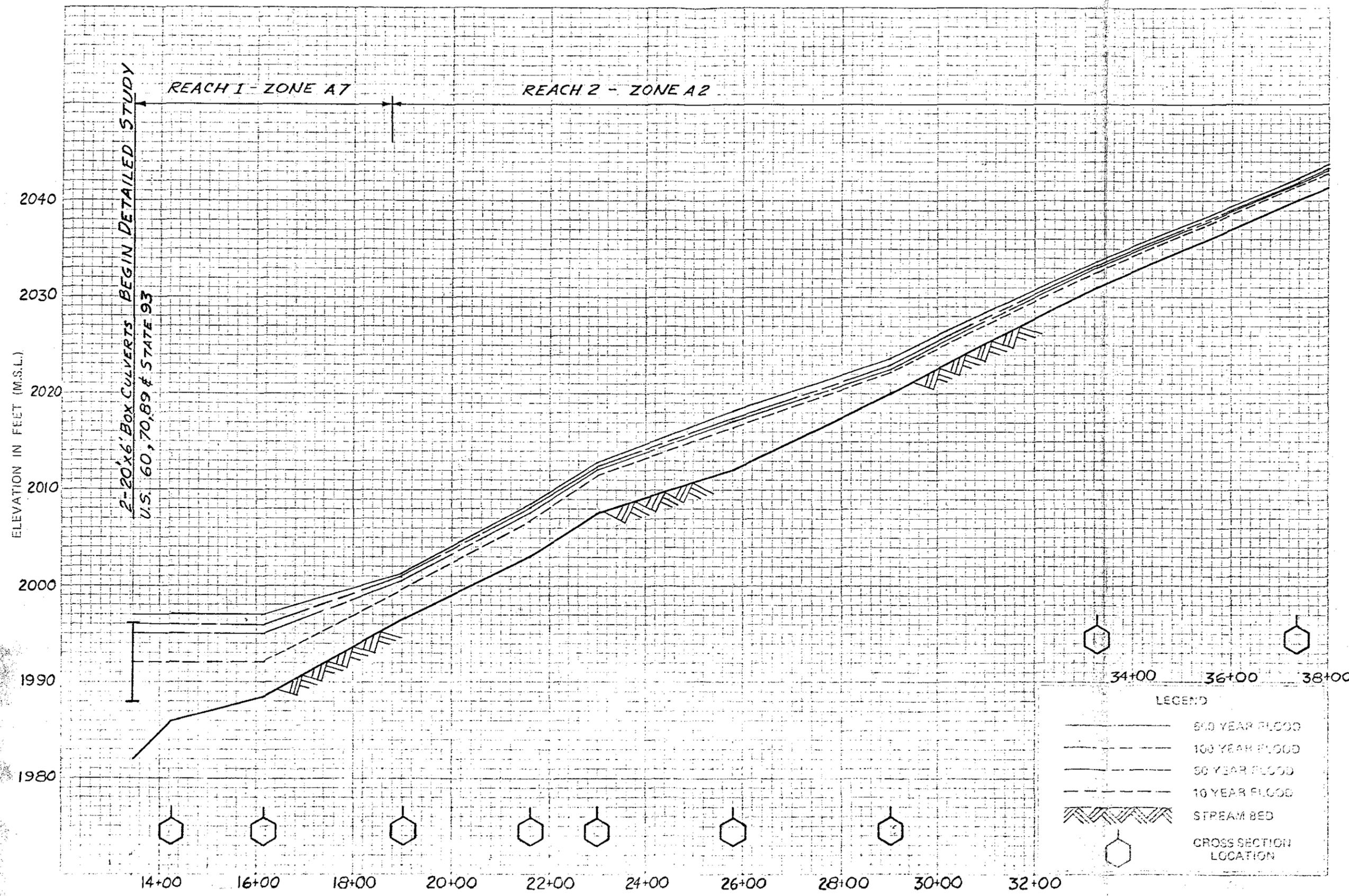


LEGEND

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

FLOOD PROFILES
SKUNK CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA



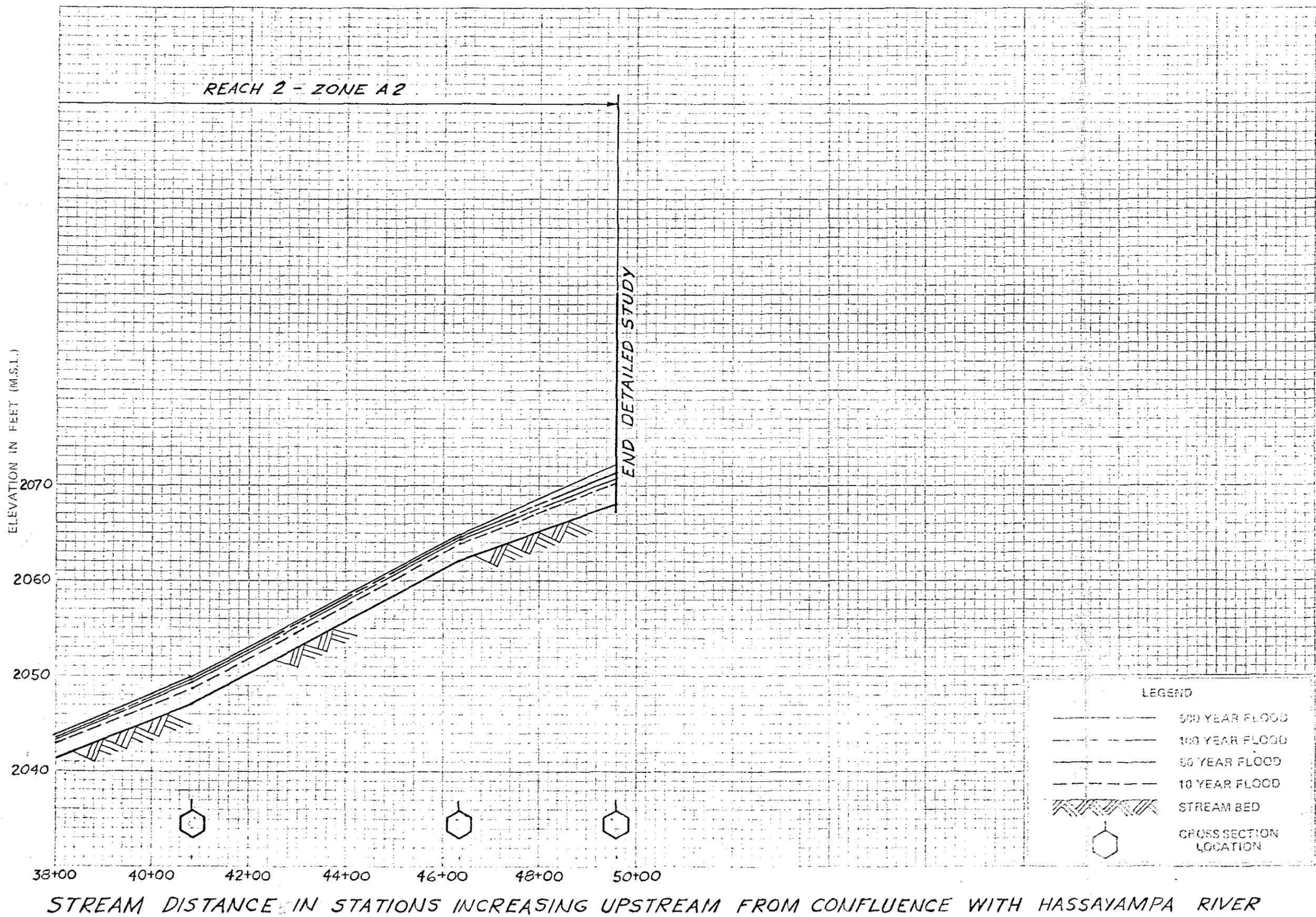
STREAM DISTANCE IN STATIONS INCREASING UPSTREAM FROM CONFLUENCE WITH HASSAYAMPA RIVER

LEGEND

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

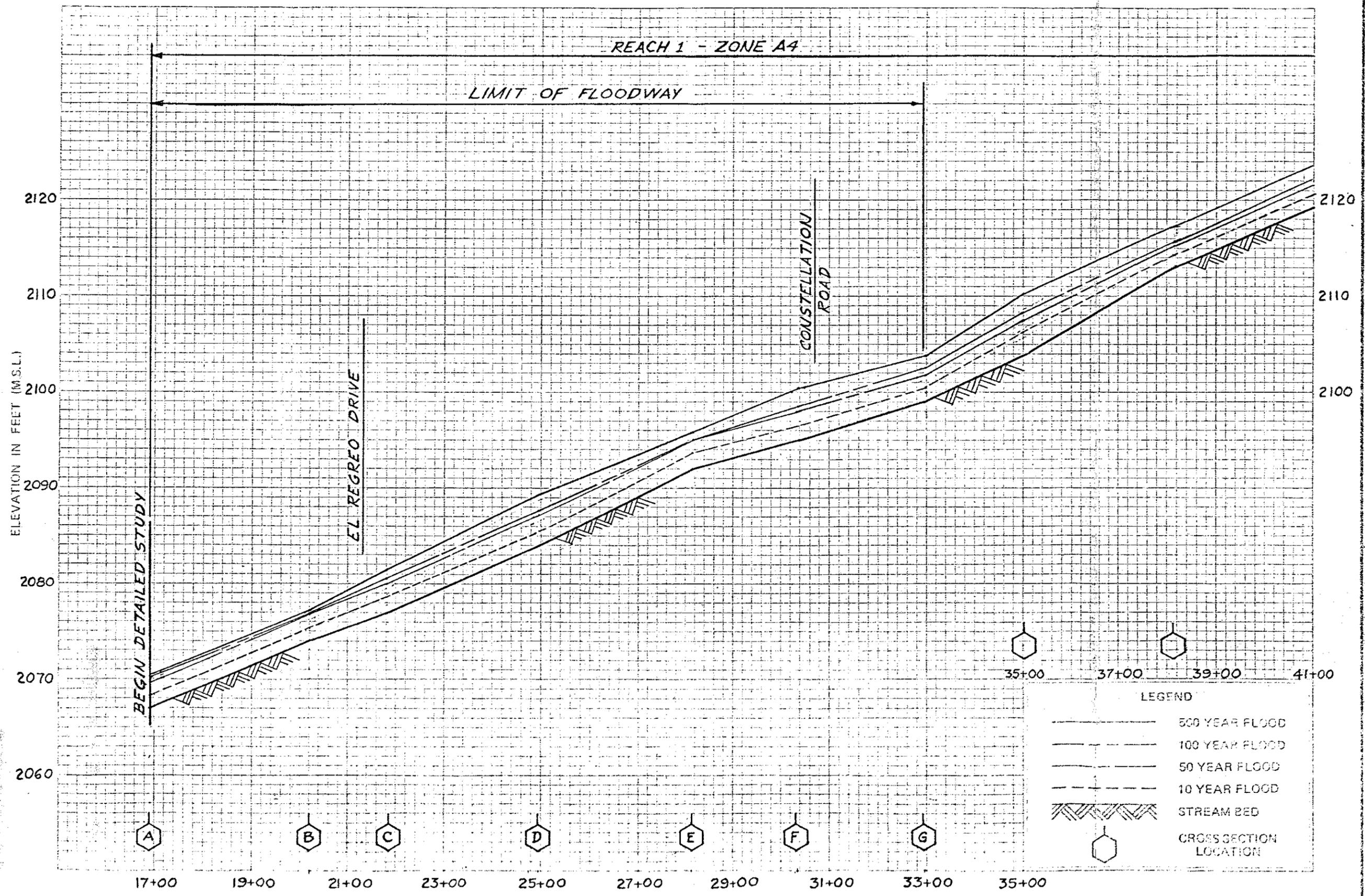
FLOOD PROFILES
MOCKINGBIRD WASH

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY AZ.
UNINCORPORATED AREA



FLOOD PROFILES
 MOCKINGBIRD WASH

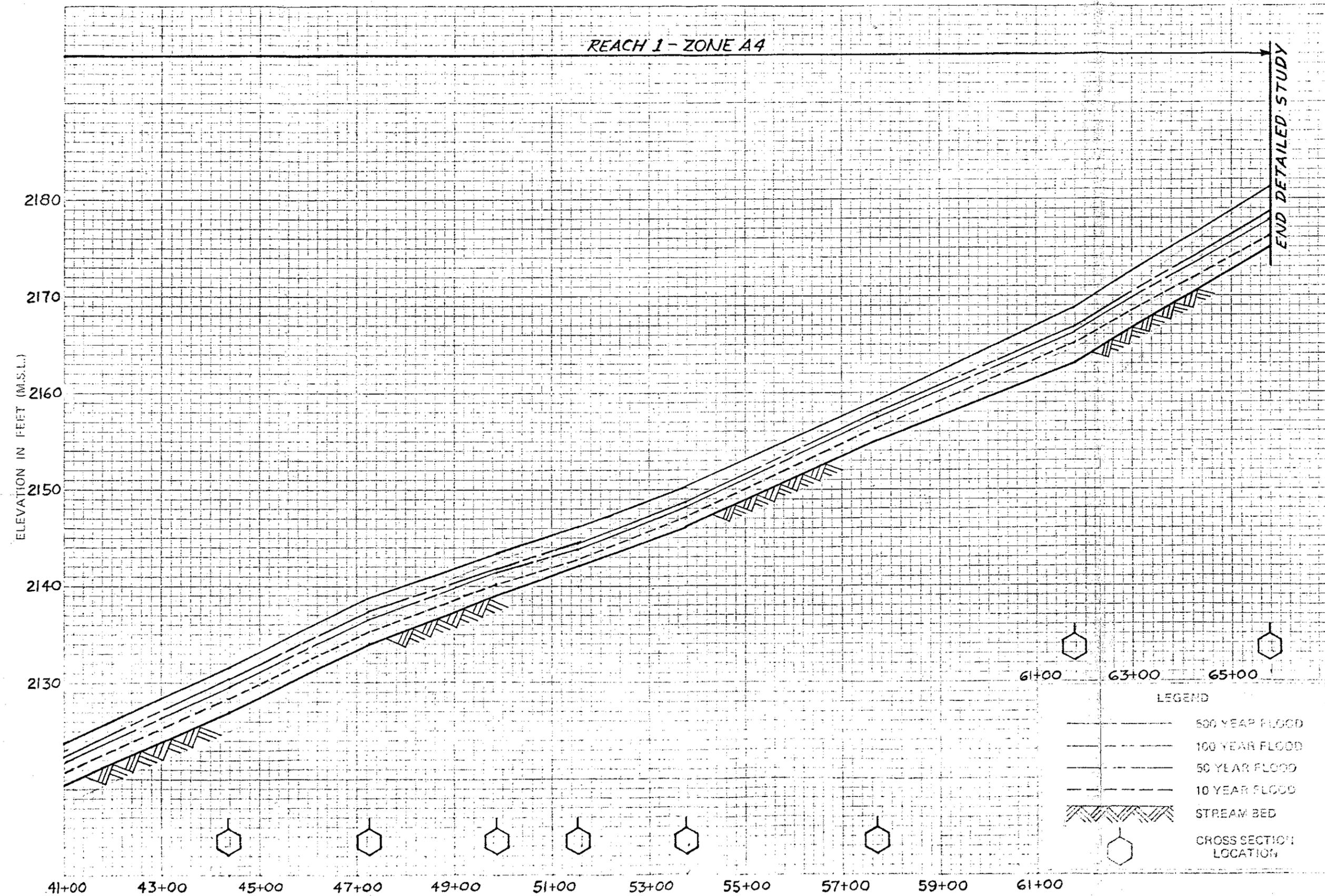
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY AZ.
 UNINCORPORATED AREA



STREAM DISTANCE IN STATIONS INCREASING UPSTREAM FROM CONFLUENCE WITH HASSAYAMPA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Flood Insurance Administration
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA
POWDER HOUSE WASH
FLOOD PROFILES

REACH 1 - ZONE A4



STREAM DISTANCE IN STATIONS INCREASING UPSTREAM FROM CONFLUENCE WITH HASSAYAMPA RIVER

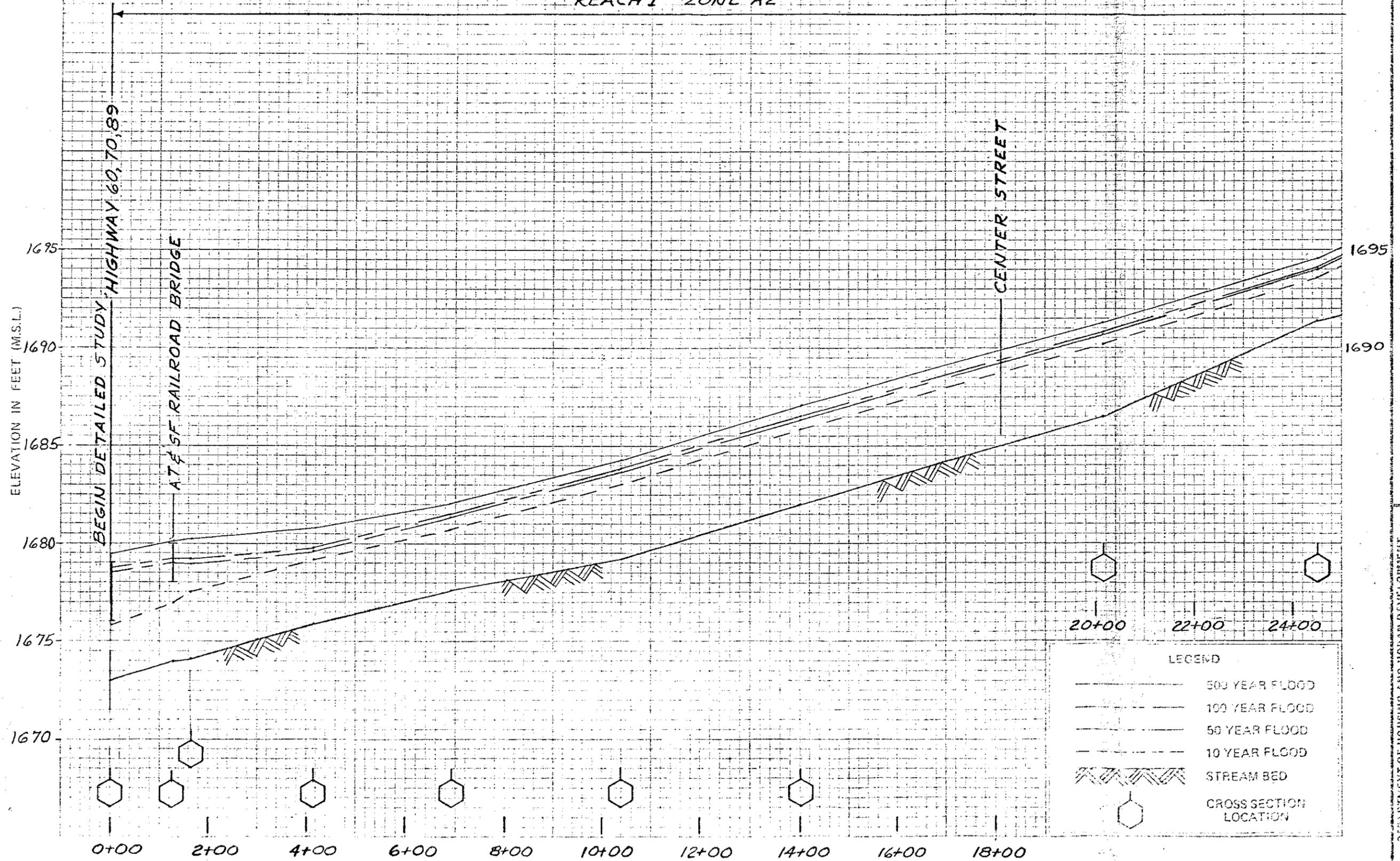
61+00 63+00 65+00

LEGEND

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

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 FEDERAL HOUSING ADMINISTRATION
MARICOPA COUNTY, AZ.
UNINCORPORATED AREA
POWDER HOUSE WASH
FLOOD PROFILES

REACH 1 ZONE A2



LEGEND

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

STREAM DISTANCE IN STATIONS - UPSTREAM FROM US. 60, 70, 89.

FLOOD PROFILES

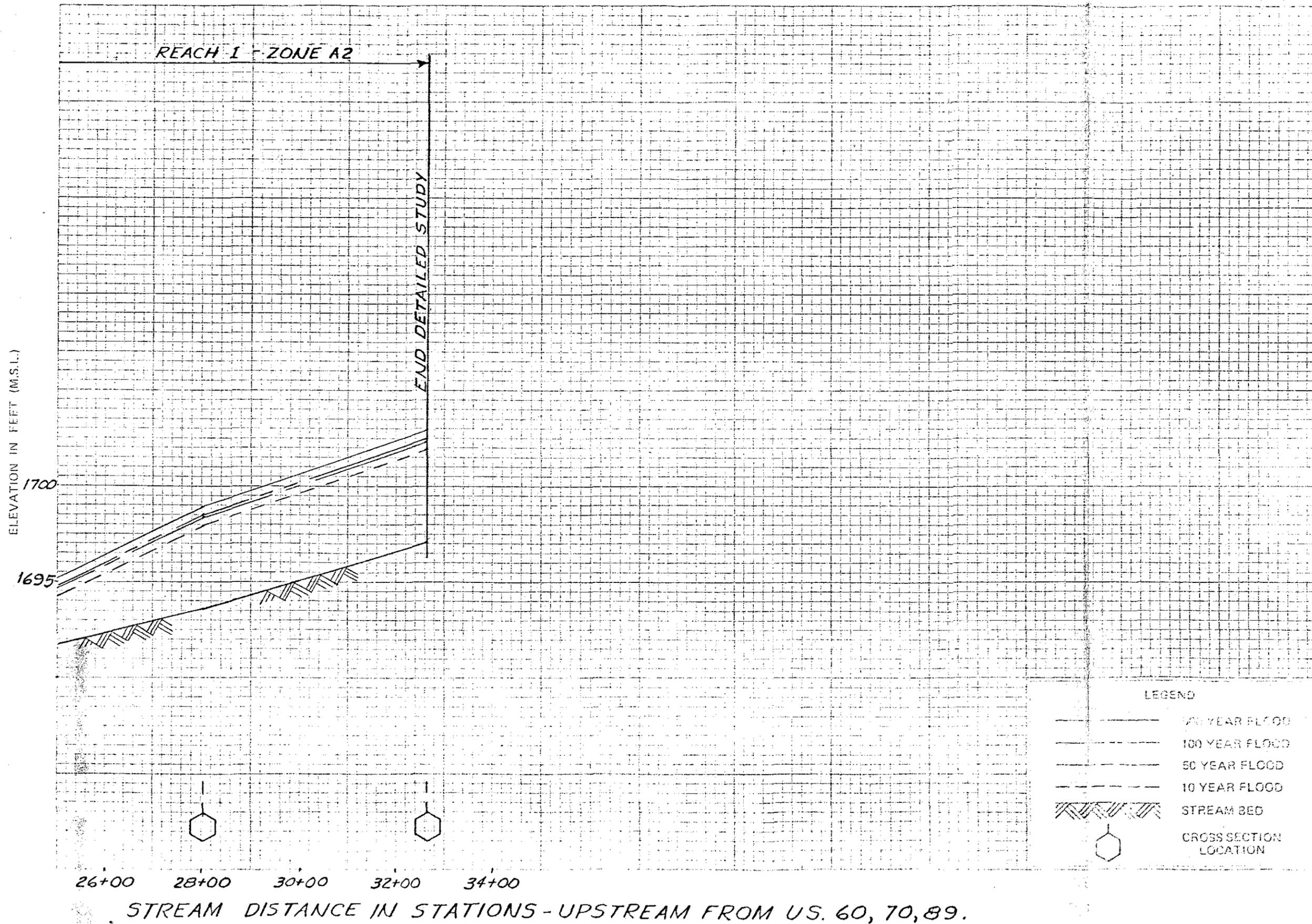
WITTMAN

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

MARICOPA COUNTY
UNINCORPORATED AREA

52P

EXHIBIT 1



LEGEND

	200 YEAR FLOOD
	100 YEAR FLOOD
	50 YEAR FLOOD
	10 YEAR FLOOD
	STREAM BED
	CROSS SECTION LOCATION

FLOOD PROFILES
WITTMAN

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA COUNTY
UNINCORPORATED AREA

53 P

EXHIBIT 1

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	2162.57	U.S.G.S. Brass Cap in concrete cylinder at SE Corner of Eagle Eye Road & Valley Road. Marked 0-25 1933			
RM-2	2161.43	U.S.G.S. "□" in concrete block headwall on West end of Conc. culvert, 0.97 mi. North along Eagle Eye Blvd. from Atchison Topeka and Santa Fe R.R.			
RM-3	2151.87	U.S.G.S. R.R. spike in South side of telephone pole 0.8 mi. West of Aquila R.R. Station, 78 feet east of trestle, 21.5 feet north of north rail, 13.5 feet north of mile post 23, 7 feet below tracks			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY
 UNINCORPORATED AREA
 AGUILA - GRASS WASH

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	1510.20	U.S.G.S. Brass Cap in concrete cylinder 0.4 miles west of Ellsworth Road 350 ft. South of U.S. Rts. 80-89 behind the Oasis Tavern, Marked Q-269			
RM-2	1575.69	Top pavement at centerline intersection of 96 th street and University Drive.			
RM-3	1471.11	Top pavement at centerline inter- section of Brown Road and Crismon Road			
RM-4	1571.27	Rim of handhole at centerline Crismon Road at Apache Trail			
RM-5	1632.98	Top pavement at centerline intersection of University Drive and Mountain Road			
RM-6	1582.93	Top pavement at centerline intersection of 108 th st. and Broadway Road			
RM-7	1507.33	Top pavement at centerline intersection of 96 th st. and Sun Land Drive.			
RM-8	1476.85	Top pavement at centerline inter- section of 88 th St. and Pueblo Dr.			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY
 UNINCORPORATED AREA
 APACHE JUNCTION

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-60	1215.56	TOP PAVEMENT AT CENTERLINE INTERSECTION OF 67 TH AVE. AND ACOMA DRIVE, WEST.			
RM-62	1226.05	TOP PAVEMENT AT CENTERLINE INTERSECTION OF 63 AVE. AND GREENWAY ROAD.			
RM-63	1208.0	TOP ROAD AT CENTERLINE INTERSECTION OF 71 ST AVE. AND COUNTY GABLES DRIVE, EAST			
RM-64	1208.47	CENTERLINE OF WOOD BRIDGE OVER ARIZONA CANAL AT CENTERLINE OF 75 TH AVE.			
RM-65	1221.17	TOP PAVEMENT AT CENTERLINE INTERSECTION OF 71 ST AVE. AND JUDY LYNN LANE.			
RM-66	1227.05	TOP PAVEMENT AT CENTERLINE INTERSECTION OF 67 TH AVE. AND SHERRI JEAN LANE, WEST.			
RM-68	1208.75	TOP PAVEMENT AT EAST END OF MEDIAN TO WEST ON BELL ROAD AND WEST SIDE OF 75 TH AVE.			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
MARICOPA COUNTY
 UNINCORPORATE AREA
 ARIZONA CANAL

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	1951.02	G.L.D. Brass Cap at $\frac{1}{4}$ Corner Sections 7-8, TSN, R4E. In fence corner at NW corner of intersection of 48 th Street and Westland Road. Brass Cap sets 1 foot above ground.	RM-9	2045.41	U.S.G.S. Brass Cap in concrete post projecting 0.5 feet above ground. 75 feet East of the junction of Cave Creek Road and New River Road. Marked 9-HRP 1963.
RM-2	2000.61	Rim of Hand Hole at centerline intersection of 52 nd Street and Seven Palms Drive.	RM-10	1955.51	Chiseled square in rock projecting 0.5 feet above ground, 1 mi West of the junction of Cave Creek Road and New River Road. 36 feet South of New River Road at Road to the North.
RM-3	2090.89	G.L.D. Brass Cap at $\frac{1}{4}$ Corner Sections 9-16, TSN, R4E. 1.2 feet above flowline of wash and 60 th Street North.	RM-11	1960.07	Chiseled square in rock projecting 0.5 feet above ground, 1.5 mi Westerly of the junction of Cave Creek Road and New River Road. 42 feet South of New River Road.
RM-4	2113.05	Top pavement at centerline intersection of 60 th Street and Road to the West, 0.25 mi. South of the N $\frac{1}{4}$ corner of Section 9, TSN, R4E.	RM-12	1923.60	U.S.G.S. Brass Cap in concrete post projecting 0.5 feet above ground. 2.3 mi. Westerly of the junction of Cave Creek Road and New River Road. 39 feet North of New River Road and 2.0 feet East of fence at North end of Cattle guard. Marked 8 HRP 1963.
RM-5	2038.93	Top pavement at centerline intersection of Cave Creek Road and Carefree Hwy.	RM-13	2127.89	Top pavement at centerline intersection of Cave Creek Road and Spur Cross Road.
RM-6	2178.13	Top pavement at centerline of Carefree Hwy. at cattle guard. Near the NE corner of Section 9, TSN, R4E.	RM-14	2132.16	Top concrete base of corner fence post on South side of Grapevine Road at Spur Cross Road, North.
RM-7	2260.09	M.C.H.D. Brass Cap at centerline intersection of Carefree Highway and Scottsdale Road.	RM-15	2164.75	Chiseled square in concrete base for flag pole in front of American Legion Post 34. On South side of Cave Creek Road 0.2 mi. West of School House Road.
RM-8	2348.964	Chiseled square in large boulder, 200 feet North of rock outcropping, approximately 90 feet North and 75 feet East of the intersection of Scottsdale Road and Meander Way.			

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-16	2186.35	Top of 3/8" Re-Bar at centerline intersection of Cave Creek Road and School House Road.			
RM-17	2175.38	Top pavement at centerline intersection of School House Road and Grapevine Road.			
RM-18	2373.54	Top pavement at centerline intersection of Sidewinder Road and Bloody Basin Road.			
RM-19	2389.00	Top pavement at centerline intersection of Cave Creek Road and Bloody Basin Road.			
RM-20	2375.04	Top square concrete base at NW corner of intersection of Sundance Trail and Tranquil Trail.			
RM-21	2344.24	Rim of Hand Hole at centerline intersection of Cave Creek Road and Scottsdale Road.			
RM-22	2285.77	Top pavement at centerline intersection of Lone Mountain Road and Echo Canyon Road.			
RM-23	2212.70	Rim of Hand Hole at centerline intersection of School House Road and Highland Road.			
RM-24	2143.00	Top pavement at centerline intersection of Spur Cross Road and Fleming Springs Road.			
RM-25	2146.97	Top of 3" Angle Iron at ground level, 2.9 feet south of Stop Sign at the SE corner of Cahava Road and Spur Cross Road.			

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM 1	1101.66	TOP OF PAVEMENT AT CENTER-LINE OF 71 ST AVE. IN LINE WITH BLOCK WALL ON NORTH SIDE OF CAMELBACK ROAD.	RM 7	1093.47	TOP PAVEMENT AT CENTER LINE OF BETHANY HOME ROAD AT 1/4 CORNER SECTIONS 11 & 14 T2N, R1E. IRRIGATION DITCH NORTH.
RM 2	1095.50	TOP OF PAVEMENT AT CENTER-LINE INTERSECTION OF CAMELBACK RD. AND 75 TH AVE.	RM 8	1103.00	TOP PAVEMENT AT CENTER LINE INTERSECTION OF 75 TH AVE. AND BETHANY HOME ROAD
RM 3	1085.24	TOP PAVEMENT AT CENTER LINE OF CAMELBACK RD. AT 1/4 COR. SECTIONS 14 & 23 T2N, R1E - IRRIGATION DITCH SOUTH.	RM 9	1100.14	TOP PAVEMENT AT CENTER LINE OF 75 TH AVE. AT 1/4 CORNER SECTIONS 13 & 14, T2N, R1E DIRT ROAD EAST
RM 4	1087.16	TOP PAVEMENT AT CENTER LINE INTERSECTION OF COLTER ST. AND 79 TH AVE.			
RM 5	1080.18	TOP PAVEMENT AT CENTER LINE OF 83 RD . AVE AT 1/4 CORNER SECTIONS 14 & 15 T2N, R1E. IRRIGATION DITCH EAST.			
RM 6	1084.21	TOP PAVEMENT AT CENTER LINE INTERSECTION OF GRAND CANAL BRIDGE AND 83 RD AVE.			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
MARICOPA CO. (UNINCORPORATED)
GRAND CANAL

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-10	1197.21	TOP PAVEMENT AT CENTERLINE INTERSECTION OF BELL RD. AND GREASWOOD ST.			
RM-11	1190.26	TOP PAVEMENT AT CENTERLINE INTERSECTION OF DYSART RD. AND BELL RD.			
RM-17	1165.84	TOP PAVEMENT AT CENTERLINE INTERSECTION OF GREENWAY RD. AND SURPRISE AVE. (DYSART)			
RM-18	1160.42	TOP PAVEMENT AT CENTERLINE INTERSECTION OF GREENWAY RD. AND GREASEWOOD ST.			

SEA LEVEL DATUM 1929

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
MARICOPA COUNTY
 UNINCORPORATED AREA
 (LIZARD ACRES WASH)

ELEVATION REFERENCE MARKS

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	1970.682	U.S.G.S. BRASS CAP IN 3 1/2" IRON PIPE 250 FEET NORTHWEST OF THE A.T. & S.F. R.R. STATION AT THE NORTHERLY CORNER OF A ROAD CROSSING, 60 FEET NORTHEAST OF THE CENTERLINE OF THE TRACK AND 30 FEET NORTHEAST OF THE CENTERLINE OF THE ROAD AT MORRISTOWN MARKED 1971 PHOENIX.			
RM-2	1955.902	U.S.G.S BRASS CAP IN CONCRETE POST 35 FEET NORTHWEST OF THE CENTERLINE OF THE A.T. & S.F. R.R. 700 FEET NORTHWEST OF MILE POST 150 AND A TRESTLE AND 0.6 MI NORTHWEST ALONG RR. FROM THE STATION AT MORRISTOWN MARKED H24 1933			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
MARICOPA COUNTY
UNINCORPORATED AREA
LITTLE SAN DOMINGO WASH

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION	REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	1682.71	AHD Brass Cap at Centerline of head-wall on East side of I-17 near North End of N. Bound on Ramp at Carefree Highway. Marked Sta. 1252.54.	RM-14	1922.78	Top rock painted yellow south of fork in Road. Road East and Northeast near the N ¹ / ₄ Corner Sec. 19, T6N, R3E.
RM-2	1721.40	GLO Brass Cap SE Cor Sec. 34, T6N, R2E	RM-15	1980.67	Centerline intersection near center of Sec. 18, T6N, R3E.
RM-3	1736.95	GLO Brass Cap S ¹ / ₄ Cor Sec. 35, T6N, R2E.	RM-16	1979.79	Centerline intersection near NE corner Sec. 17, T6N, R3E.
RM-4	1758.88	GLO Brass Cap E ¹ / ₄ Cor. Sec. 35, T6N, R2E.	RM-17	2103.76	Centerline Intersection near center of Sec. 7, T6N, R3E.
RM-5	1795.40	GLO Brass Cap W ¹ / ₄ Cor Sec 31, T6N, R3E.	RM-18	2151.43	Top Conc. base for west leg of Tower NO. 201-1
RM-6	1813.95	GLO Brass Cap NW Cor Sec. 31, T6N, R3E.	RM-19	2071.48	SW Corner Conc. Sidewalk at Entrance to Church on East Side of New River Road and Mano Road.
RM-7	1807.61	Top Rock painted yellow at SE Corner of Intersection 27 th Ave. and Irvine Road.	RM-20	2149.68	U.S.G.S. Brass Cap on North side of New River Road & West of dirt road Northeast. Marked 2HRP
RM-8	1817.44	GLO Brass Cap NW Cor Sec. 25, T6N, R2E.			
RM-9	1841.83	GLO Brass Cap N ¹ / ₄ Cor. Sec. 25, T6N, R2E.			
RM-10	1857.45	GLO Brass Cap NW Cor Sec 30, T6N, R3E.			
RM-11	1856.62	GLO Brass Cap N ¹ / ₄ Cor. Sec 30, T6N, R3E.			
RM-12	1890.67	Centerline 7 th Ave. and Road East near the E ¹ / ₄ Cor. Sec. 19, T6N, R3E.			
RM-13	1939.35	Centerline intersection 1/4 mile East of the NW Cor Sec. 20, T6N, R3E			

SEA LEVEL DATUM 1929

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY
 UNINCORPORATED AREA
 SKUNK CREEK

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION		REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	717.52	U.S.G.S. Brass Cap in concrete cylinder 1 mi. west of Theba along Southern Pacific R.R. 109 feet southwest of the approximate centerline of road crossings 63 feet southeast of RM-1. 62.6 feet southwest of RM-2, 90.6 feet south of centerline of U.S. RT 80, 57.4 feet north of north rail of R.R. & 18 feet east of a Witness Pt				
RM-2	746.47	U.S.G.S. Brass Cap set in south curb on west bound traffic lane; 0.7 feet north of South Guard rail 1 foot above roadway. Marked Theba No. 1 1940.				
RM-3	738.74	U.S.G.S. Brass Cap set in conc. wingwall SE corner of southern Pacific R.R. Bridge 1 mi. east of Theba, marked A-320				

SEA LEVEL DATUM 1929

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration

MARICOPA COUNTY
 UNINCORPORATED COUNTY
 THEBA - GILA BEND CANAL

ELEVATION REFERENCE MARKS

ELEVATION REFERENCE MARKS

REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION		REFERENCE MARK NUMBER	ELEVATION	DESCRIPTION
RM-1	1993.78	U.S.G.S. Standard Disk 2.4 miles southeast of Wickburg marked 'M 24 1933'				
RM-2	1989.28	Monel metal in centerline of headwall on south side of A.T. & S.F. R.R. 2.5 miles southeast of Wickburg USGS designation RV118.				

ELEVATION REFERENCE MARKS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
 MARICOPA COUNTY
 UNINCORPORATED AREAS
 MOCKINGBIRD WASH

SEA LEVEL DATUM 1929