FEDERAL EMERGENCY MANAGEMENT AGENCY

APPLICATION FOR LETTER OF MAP REVISION

FLYNN LANE WASH (EXTENSION)

Prepared by

DAVID EVANS AND ASSOCIATES, INC.
2929 East Camelback Road, Suite 240
Phoenix, Arizona 85016

Submitted by

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009

FLOOD CONTROL DISTRICT
RECEIVED
AUG 11 1997
SUENG | P & PM
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ENGR
REMARKS

Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case Nos.: 97-09-616P, 97-09-830P, and 97-09-831P

The Honorable Skip Rimsza
Mayor, City of Phoenix
200 West Washington Street
Phoenix, Arizona 85003

Community: City of Phoenix, Arizona
Community No.: 040051
Panel Affected: 04013C1670 E
Effective Date of
This Revision: AUG 07 1997

102-I-A-C

Dear Mayor Rimsza:

This responds to requests that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Maricopa County, Arizona and Incorporated Areas (the effective FIRM and FIS report for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated March 13, 1997, and two letters dated May 22, 1997, Mr. Hasan Mushtaq, P.E., Engineering Division, Flood Control District of Maricopa County, requested that FEMA revise the FIRM and FIS report to show the effects of channel improvements along Myrtle Avenue Wash from the Arizona Canal Diversion Channel (ACDC) to approximately 100 feet downstream of 19th Street (Case No. 97-09-616P), updated topography and construction of a 5-foot-diameter, reinforced-concrete pipe under Lincoln Drive along Flynn Lane Wash (Case No. 97-09-830P), and channel improvements along Dreamy Draw Wash East from the ACDC to approximately 900 feet upstream of Morten Avenue (Case No. 97-09-831P).

All data required to complete our review of these requests were submitted with letters from Mr. Mushtaq.

We have completed our review of the submitted data and the flood data shown on the effective FIRM and FIS report. We have revised the FIRM and FIS report to modify the elevations, floodplain and floodway boundary delineations, and zone designations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) along Myrtle Avenue Wash, Flynn Lane Wash, and Dreamy Draw Wash East. As a result of the modifications along Myrtle Avenue Wash, the channel shifted to the south; the base flood elevations (BFEs) increased in some areas and decreased in other areas; the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, increased in some areas and decreased in other areas; and the width of the regulatory floodway decreased. As a result of the modifications along Flynn Lane Wash, the BFEs increased in some areas and decreased in other areas, the SFHA width increased in some areas and decreased in other areas, and the floodway width decreased. The area along the right overbank (looking downstream) along Flynn Lane Wash from approximately 870 feet downstream to approximately 150 feet upstream of Lincoln Drive designated Zone AE, an area that would be inundated by the base flood with BFEs determined, was redesignated Zone AO (Depth 1), an area that would be inundated by the base flood with an average depth of 1 foot. As a result of the modifications along Dreamy Draw Wash East, the channel shifted to the east, the BFEs increased in some areas and decreased in other areas, the SFHA width increased in some areas and decreased in other areas, and the floodway width decreased. The

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modifications are shown on the enclosed annotated copy of FIRM Panel 04013C1670 E; Profile Panels 130P and 131P for Dreamy Draw Wash East, 140P for Flynn Lane Wash, and 235P and 236P for Myrtle Avenue Wash; and affected portions of the Summary of Discharges Table and Floodway Data Table. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel of the effective FIRM and the affected portions of the FIS report, both dated September 30, 1995.

The modifications are effective as of the date shown above. The map panel as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

The following table is a partial listing of existing and modified BFEs:

Location	Existing BFE (feet)*	Modified BFE (feet)*
Myrtle Avenue Wash:		
At 17th Street	None	1,255
Approximately 900 feet upstream of 17th Street	1,281	1,272
Flynn Lane Wash:		
Approximately 270 feet upstream of 21st Street	1,276	1,277
Approximately 300 feet upstream of Lincoln Drive	1,316	1,313
Right overbank (looking downstream), approximately 870 feet downstream of Lincoln Drive	1,283	#1
Right overbank (looking downstream), approximately 150 feet upstream of Lincoln Drive	1,313	#1
Dreamy Draw Wash East:		
At 16th Street	1,244	1,243
Approximately 150 feet upstream of Morten Avenue	1,272	1,273

*Referenced to the National Geodetic Vertical Datum, rounded to the nearest whole foot
#Depth in feet above ground

Public notification of the proposed modified BFEs will be given in *The Arizona Republic* on or about August 22 and August 29, 1997. A copy of this notification is enclosed. In addition, a notice of changes will be published in the *Federal Register*. Within 90 days of the second publication in *The Arizona Republic*, a citizen may request that FEMA reconsider the determination made by this LOMR. Any request for reconsideration must be based on scientific or technical data. All interested parties are on notice that, until the 90-day period elapses, the determination to modify the BFEs presented in this LOMR may itself be modified.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

The date for the next preliminary FIRM and FIS report for Maricopa County, Arizona and Incorporated Areas is fall 1997. This LOMR will not be included in the preliminary FIRM and FIS report; however, it will be incorporated before the FIRM and FIS report become effective.

The floodway is provided to your community as a tool to regulate floodplain development. Therefore, the floodway modifications described in this LOMR, while acceptable to FEMA, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a channel-modification project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel rests with your community.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications described in this LOMR. Our records show that your community has met this requirement.

A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Dorothy M. Lacey
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
The Presidio of San Francisco, Building 105
San Francisco, California 94129-1250
(415) 923-7177

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

Enclosures

cc: Mr. Raymond U. Acuña, P.E.
Floodplain Manager
City of Phoenix

Mr. Hasan Mushtaq, P.E.
Engineering Division
Flood Control District of Maricopa County

Ms. Teri S. Mintz, P.E.
Water Resources Engineer
David Evans and Associates, Inc.

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE CITY OF PHOENIX, MARICOPA COUNTY, ARIZONA, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On September 30, 1995, the Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the City of Phoenix, Maricopa County, Arizona, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Directorate has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified base flood elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

Hydraulic analyses were performed to incorporate channel improvements along Myrtle Avenue Wash, updated topography and construction of a 5-foot-diameter, reinforced-concrete pipe under Lincoln Drive along Flynn Lane Wash, and channel improvements along Dreamy Draw Wash East and have resulted in a revised delineation of the regulatory floodway and SFHA boundaries and revised BFEs for Myrtle Avenue Wash, Flynn Lane Wash, and Dreamy Draw Wash East. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Myrtle Avenue Wash:		
At 17th Street	None	1,255
Approximately 900 feet upstream of 17th Street	1,281	1,272
Flynn Lane Wash:		
Approximately 270 feet upstream of 21st Street	1,276	1,277
Approximately 300 feet upstream of Lincoln Drive	1,316	1,313
Right overbank (looking downstream), approximately 870 feet downstream of Lincoln Drive	1,283	#1
Right overbank (looking downstream), approximately 150 feet upstream of Lincoln Drive	1,313	#1
Dreamy Draw Wash East:		
At 16th Street	1,244	1,243
Approximately 150 feet upstream of Morten Avenue	1,272	1,273

*National Geodetic Vertical Datum, rounded to nearest whole foot
#Depth in feet above ground

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Directorate must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Directorate reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Directorate's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Skip Rimsza
Mayor, City of Phoenix
200 West Washington Street
Phoenix, AZ 85003

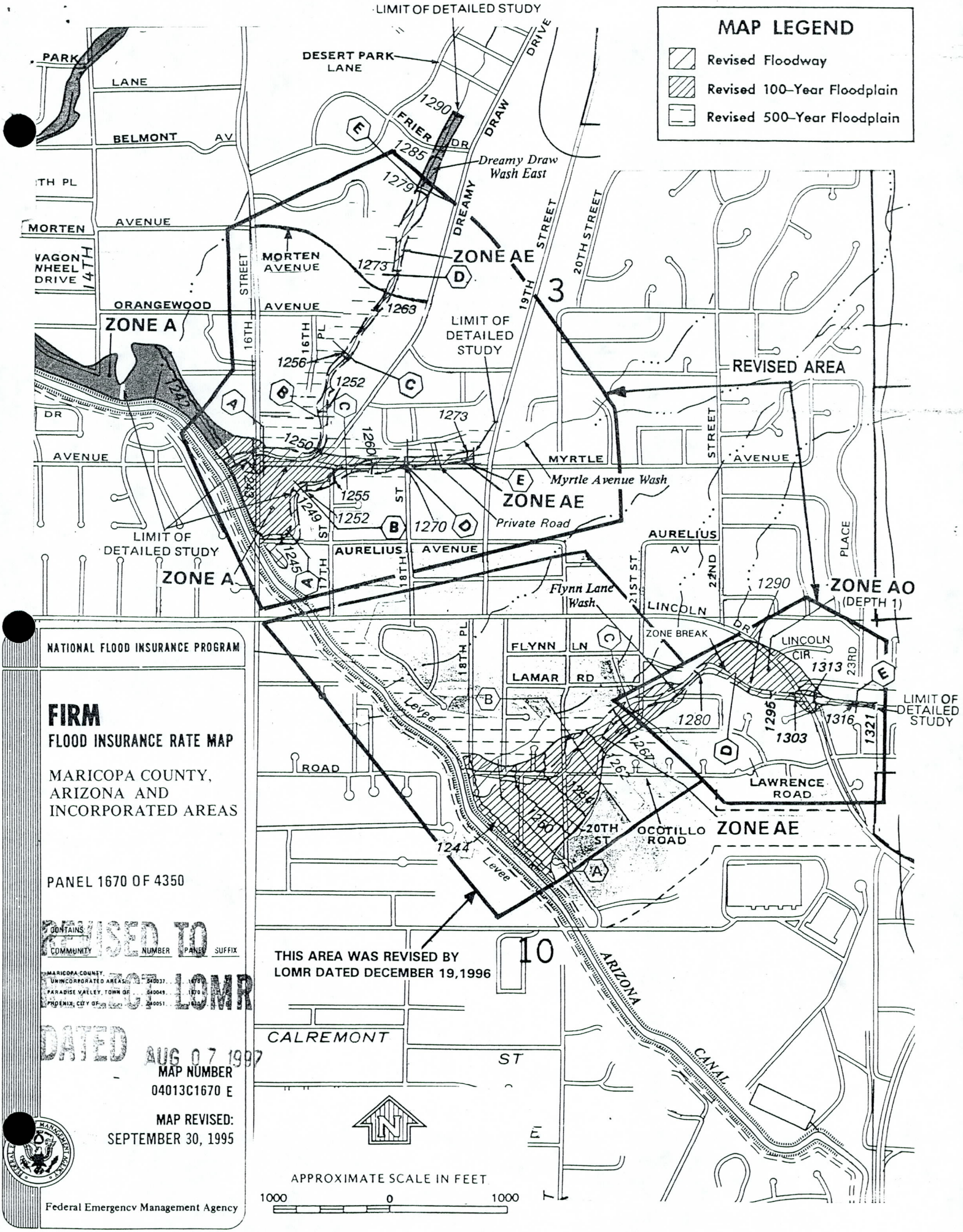

MAP LEGEND
Revised Floodway
Revised 100-Year Floodplain
Revised 500-Year Floodplain
LIMIT OF DETAILED STUDY
DESERT PARK LANE
PARK
LANE
BELMONT AV
TH PL
MORTEN AVENUE
WAGON WHEEL DRIVE
14TH
ORANGEWOOD AVENUE
ZONE A
16TH STREET
MORTEN AVENUE
FRIER DR
DRAW
DREAMY
Dreamy Draw Wash East
ZONE AE
19TH STREET
20TH STREET
3
LIMIT OF DETAILED STUDY
REVISED AREA
MYRTLE AVENUE
Myrtle Avenue Wash
ZONE AE
Private Road
AURELIUS AVENUE
AURELIUS AV
LIMIT OF DETAILED STUDY
ZONE A
Flynn Lane Wash
LINCOLN
ZONE AO
(DEPTH 1)
ZONE BREAK
LINCOLN CIR
FLYNN LN
LAMAR RD
Levee
LIMIT OF DETAILED STUDY
LAWRENCE ROAD
20TH ST
OCOTILLO ROAD
ZONE AE
Levee
THIS AREA WAS REVISED BY LOMR DATED DECEMBER 19,1996
10
ARIZONA CANAL
CALREMONT ST
APPROXIMATE SCALE IN FEET
1000 0 1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS
PANEL 1670 OF 4350
CONTAINS
COMMUNITY NUMBER PANEL SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS 040037 1670
PARADISE VALLEY, TOWN OF 040049 1670
PHOENIX, CITY OF 040051 1670
REVISED TO REFLECT LOMR DATED AUG 07 1997
MAP NUMBER
04013C1670 E
MAP REVISED:
SEPTEMBER 30, 1995
Federal Emergency Management Agency

Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Atchison, Topeka & Santa Fe Railway Channel					
At confluence with Agua Fria River	1.1	180	370	435	--[1]
At Olive and 75th Avenues	5.4	490	1,020	1,340	1,920
At Peoria and 83rd Avenues	2.7	280	560	730	1,060
At Hawkins Road	0.3	100	190	230	--[1]
Echo Canyon Wash					
At Mouth	5.1	2,000	4,600	6,600	18,000
200 feet east of 40th Street	4.3	1,900	4,200	5,900	14,000
At McDonald Drive	3.5	1,600	3,500	4,900	10,200
At Tatum Road	1.9	1,200	2,550	3,600	8,650
Southern Pacific Railroad					
At Apache Road	2.6	220	450	650	--[1]
At Miller Road	2.0	50	210	410	--[1]
At Ray Road	4.7	110	270	360	--[1]
At Railroad Spur	2.2	120	280	320	--[1]
1.0 mile north of Guadalupe Road	143.9	200	2,270	4,090	--[1]
0.25 mile south of Western Canal	131.8	130	2,160	3,950	--[1]
At Airport Entrance	2.2	120	280	320	--[1]
Southern Pacific Railroad Spur					
At Ray Road	2.5	--[1]	--[1]	790	--[1]
Apache Creek (Apache Junction Alluvial Fan)					
At U.S. Highway 80 and 108th Street	2.64	433	831	1,021	--[1]
Dreamy Draw Wash East					
At Mouth	0.38	---[1]	---[1]	1,530	---[1]
500 feet upstream of 16th Street	---[1]	300	750	1,000	1,700
Flynn Lane Wash					
At Flynn Lane and Lincoln Drive	0.63	400	800	1,100	2,300
At Ocotillo Road	0.98	700	1,300	1,700	3,300

REVISED DATA

[1]Not Computed

REVISED TO REFLECT LOMR DATED AUG 07 1997

Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Granite Reef Wash					
Pima Road	6.2	74	278	644	1,431
McDowell Road	7.2	580	950	1,240	2,660
Van Buren Street	7.5	720	1,158	1,417	3,150
Indian Bend Wash					
Scottsdale Road	44.26	3,400	11,000	16,000	35,000
Indian Bend Road	59.6	3,500	12,000	17,000	39,000
Indian School Road	100.0	4,000	14,000	20,000	43,000
Downstream limit of McKellips Lake, Just upstream of McKellips Road Bridge	107.0	4,000	14,000	20,000	42,000
At 32nd Street	2.77	1,000	1,400	2,400	5,500
At 36th Street	9.17	2,000	3,500	6,000	15,500
At Cactus Road	15.07	1,500	5,600	9,000	21,000
Myrtle Avenue Wash					
At Mouth	0.87	---[1]	---[1]	665	---[1]
Upstream of Myrtle Avenue	---[1]	600	1,000	1,300	2,800
Tenth Street Wash					
At Cheryl Drive	0.81	385	--[1]	1,440	3,650
At Hatcher Road	1.59	910	--[1]	3,400	8,600
At Alice Avenue	2.25	1,170	--[1]	4,390	11,110
At Griswold Road	2.69	1,265	--[1]	4,740	12,000
Wash B					
At a point 1,100 feet downstream of 124th Street	1.95	290	1,160	1,925	4,580
At a point 4,500 feet downstream of 124th Street	2.25	340	1,390	2,300	5,500
At a point 4,500 feet downstream of 124th Street	2.25	205	835	1,380	3,300
At a point 5,500 feet downstream of 124th Street	2.50	190	820	1,300	3,200

REVISED DATA

[1]Not Computed

REVISED TO REFLECT LOMR DATED AUG 07 1997

REVISED TO REFLECT LOMR DATED AUG 07 1997

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dreamy Draw Wash East								
A	0.07	60	163	9.4	1,244.2	1,244.2	1,244.8	0.6
B	0.22	26	157	6.4	1,251.9	1,251.9	1,252.6	0.7
C	0.33	33	137	7.3	1,256.2	1,256.2	1,256.4	0.2
D	0.50	25	213	4.7	1,272.6	1,272.6	1,272.6	0.0
E	0.65	59	211	4.7	1,279.8	1,279.8	1,280.8	1.0
Echo Canyon Wash								
A	0.27	157	1,035	6.4	1.256.2	1.256.2	1,257.1	0.9
B	0.37	170	615	10.7	1,263.4	1,263.4	1,264.0	0.6
C	0.56	73	618	9.5	1,270.4	1,270.4	1,271.4	1.0
D	0.74[4]	205	1,172	5.0	1,278.7	1,278.7	1,279.6	0.9
E	1.04	210	1,501	3.9	1,293.1	1,293.1	1,293.5	0.4
F	1.19	180	1,169	5.0	1,298.0	1,298.0	1,298.3	0.3
G	1.43	150	635	7.8	1,308.4	1,308.4	1,308.9	0.5
H	1.49	150	377	11.9	1,310.2	1,310.2	1,310.7	0.5
I	1.54	150	734	6.1	1,314.4	1,314.4	1,314.4	0.0
J	1.60	150	774	5.8	1,316.1	1,316.1	1,316.1	0.0
K	1.71	150	729	6.2	1,317.6	1,317.6	1,318.0	0.4
L	1.86	150	451	8.0	1,321.9	1,321.9	1,322.8	0.9
M	2.02	150	609	4.9	1,327.5	1,327.5	1,327.5	0.0
Flynn Lane Wash								
A	0.037	54	169	10.1	1,245.9	1,245.9	1,246.6	0.7
B	0.188	112	239	7.1	1,258.5	1,258.5	1,259.2	0.7
C	0.304	55	206	8.3	1,269.1	1,269.1	1,269.7	0.6
D	0.500	20	84	11.7	1,286.7	1,286.7	1,287.1	0.4
E	0.716	28	107	10.3	1,316.0	1,316.0	1,316.0	0.0

REVISED DATA

THESE DATA WERE REVISED BY LOMR DATED AUGUST 7,1996

THESE DATA WERE REVISED BY LOMR DATED DECEMBER 19,1996

REVISED DATA

[1]Miles Above Mouth [2]Combined Floodway for Dreamy Draw Wash East and Myrtle Avenue Wash
[3]Data Not Available
[4]Station 0.740 previously shown as station 0.710; subsequent cross sections require addition of 0.030 miles

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

FLOODWAY DATA

DREAMY DRAW WASH EAST - ECHO CANYON WASH - FLYNN LANE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Myrtle Avenue Wash								
A	005	45	85	7.8	1,246.5	1,246.5	1,246.7	0.2
B	013	60	93	7.1	1,249.1	1,249.1	1,249.2	0.1
C	021	70	155	8.4	1,256.6	1,256.6	1,257.2	0.6
D	032	32	118	11.0	1,270.5	1,270.5	1,270.6	0.1
E	043	40	184	7.1	1,272.8	1,272.8	1,273.4	0.6
Ocotillo Wash								
A	0.05[4]	98	449	12.1	2,039.2	2,039.2	2,039.2	0.0
B	0.13[4]	88	443	12.2	2,045.5	2,045.5	2,045.5	0.0
C	0.18[4]	104	452	12.0	2,049.1	2,049.1	2,049.1	0.0
D	0.23[4]	305	735	7.4	2,053.7	2,053.7	2,053.7	0.0
E	0.31[4]	204	596	9.1	2,064.6	2,064.6	2,064.6	0.0
F	0.39[4]	121	523	10.4	2,074.1	2,074.1	2,074.1	0.0
G	0.46[4]	89	460	11.8	2,080.4	2,080.4	2,080.4	0.0
H	0.55[4]	102	459	11.4	2,086.6	2,086.6	2,086.6	0.0
I	0.70[4]	87	426	12.3	2,099.6	2,099.6	2,099.6	0.0
J	0.78[4]	162	617	8.5	2,105.6	2,105.6	2,105.6	0.0
K	0.89[4]	187	542	9.6	2,114.2	2,114.2	2,114.2	0.0
L	0.92[4]	277	628	8.3	2,117.0	2,117.0	2,117.0	0.0
M	0.97[4]	454	806	6.2	2,123.2	2,123.2	2,123.2	0.0
N	1.14[4]	293	614	8.2	2,142.7	2,142.7	2,142.7	0.0
O	1.36[4]	390	679	7.4	2,165.4	2,165.4	2,165.4	0.0
P	1.47[4]	297	632	7.6	2,177.9	2,177.9	2,177.9	0.0
Q	1.56[4]	416	723	6.7	2,189.1	2,189.1	2,189.1	0.0
R	1.71[4]	188	515	9.4	2,207.0	2,207.0	2,207.0	0.0
S	1.83[4]	196	579	8.3	2,220.7	2,220.7	2,220.7	0.0
T	2.03[4]	186	528	8.8	2,243.7	2,243.7	2,243.7	0.0

REVISED DATA

[1]Miles Above Mouth
[2]Combined Floodway for Myrtle Avenue Wash and Dreamy Draw Wash East
[3]Data Not Available
[4]Miles Above Confluence With Cave Creek Wash

REVISED TO REFLECT LOMR EFFECTIVE AUG 07 1997

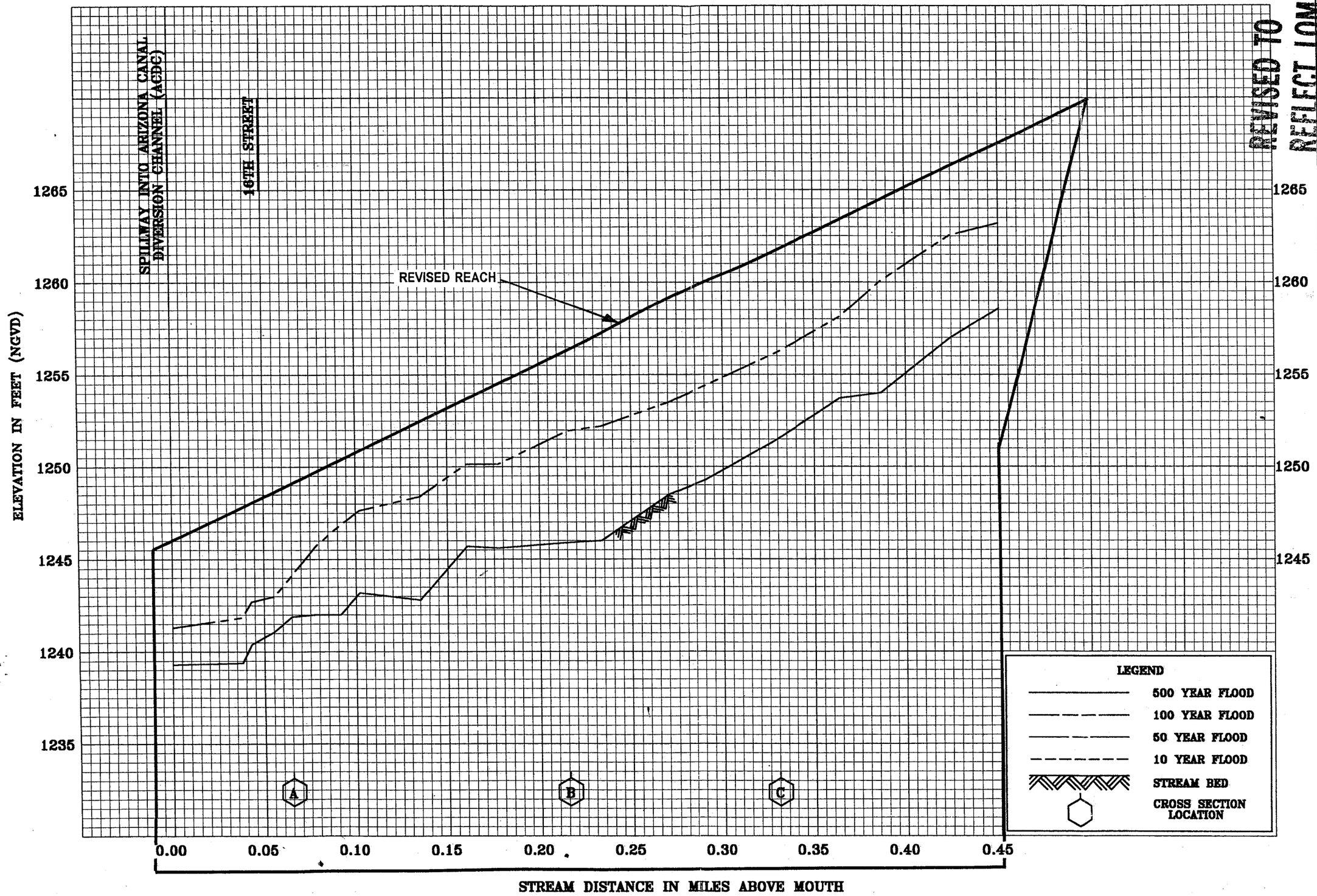
TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

FLOODWAY DATA

MYRTLE AVENUE WASH - OCOTILLO WASH



REVISED TO REFLECT LOMR DATED AUG 07 1997

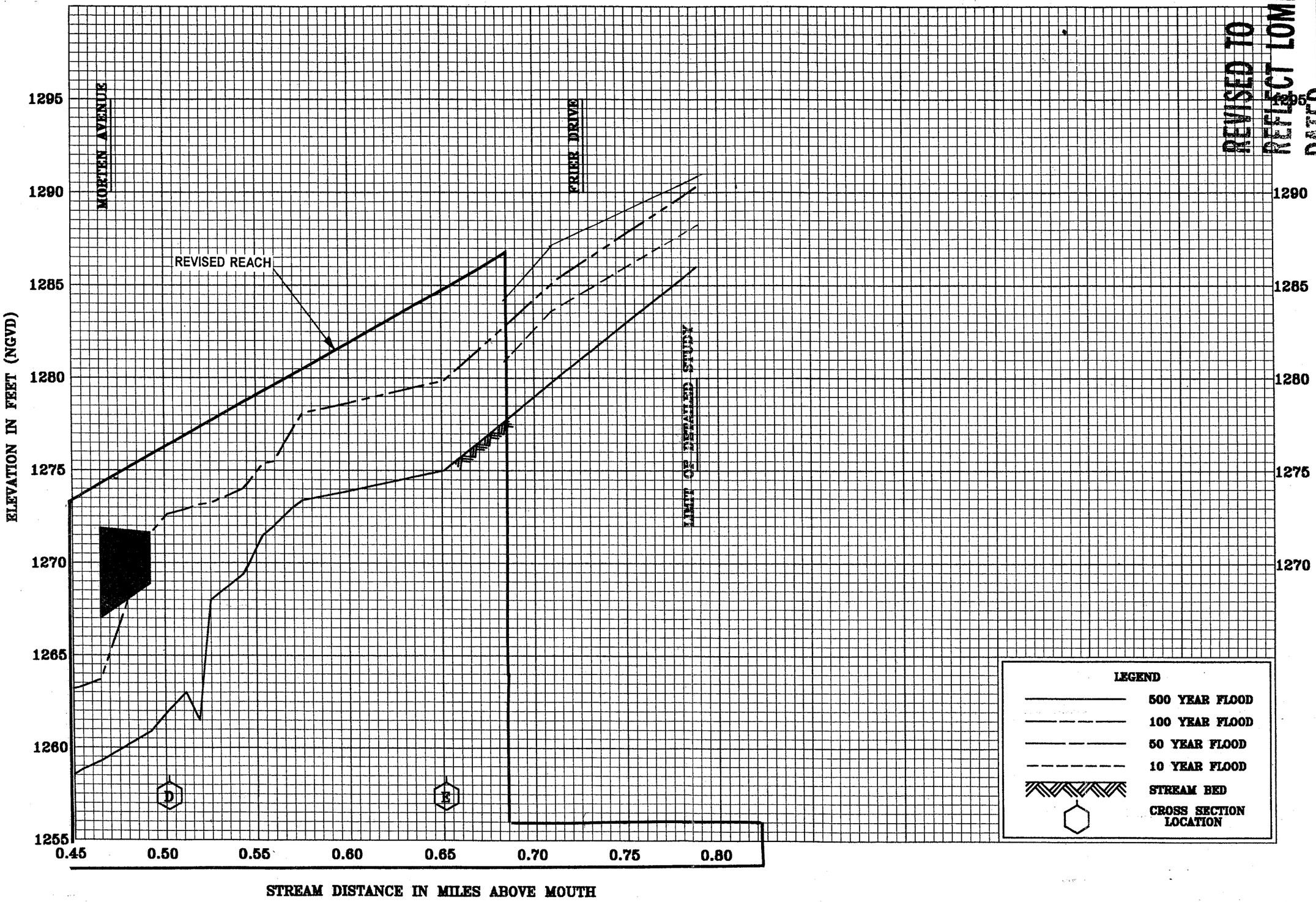
FLOOD PROFILES

DREAMY DRAW WASH EAST

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS



REVISED TO REFLECT LOMR DATED AUG 07 1997

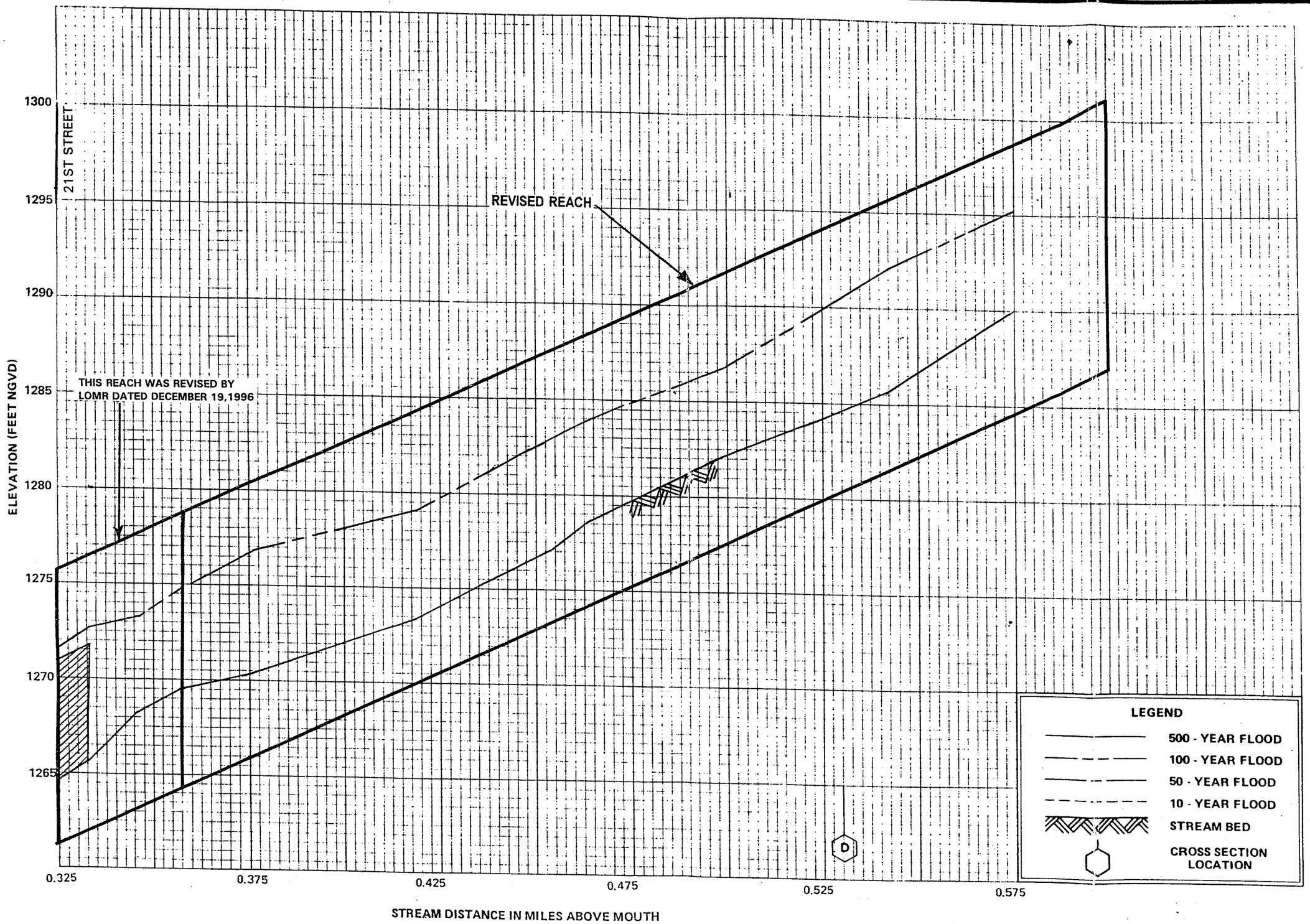
FLOOD PROFILES

DREAMY DRAW WASH EAST

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS



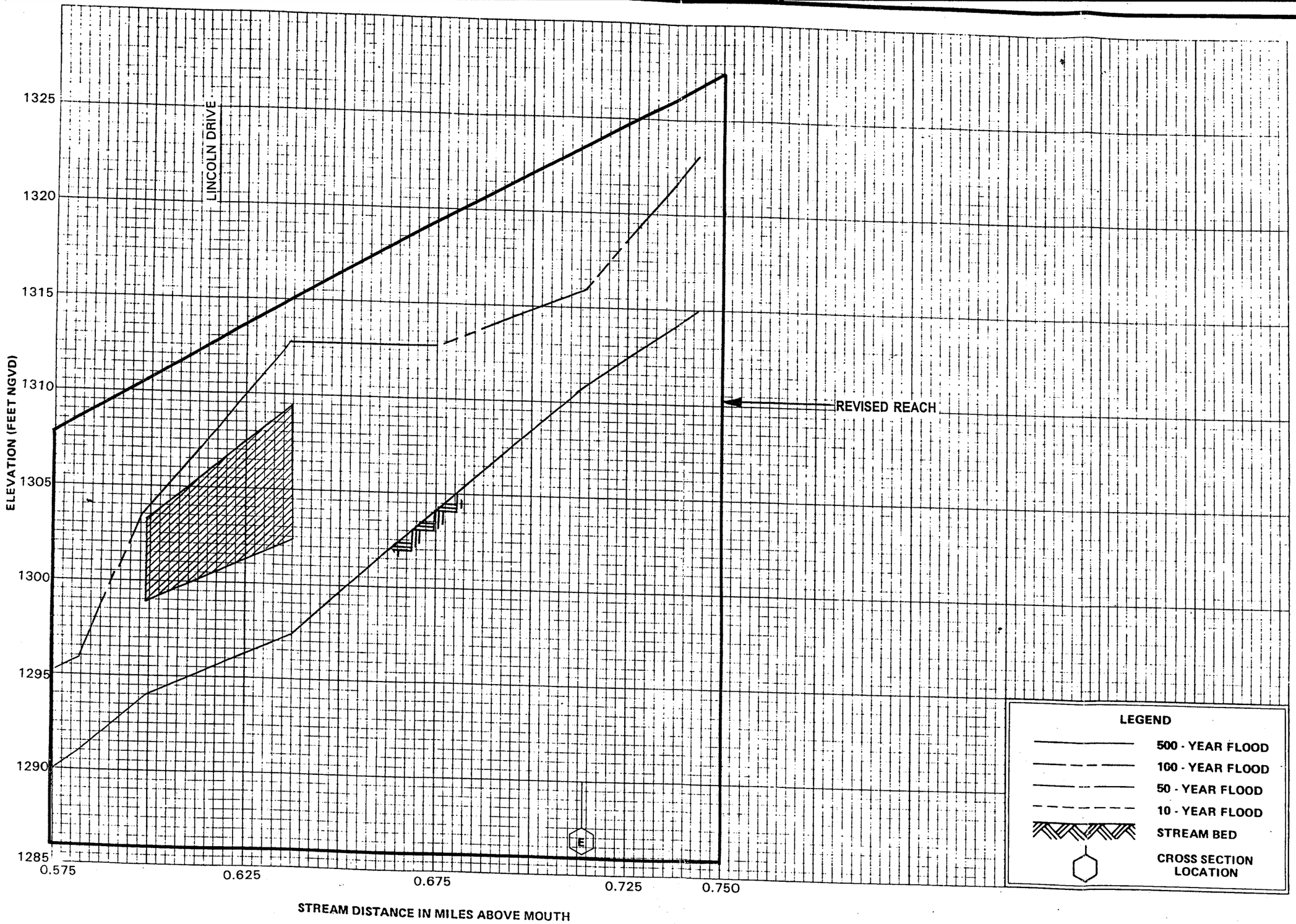
REVISED TO REFLECT LOMR DATED AUG 07 1997

FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



REVISED TO REFLECT LOMR DATED AUG 07 199

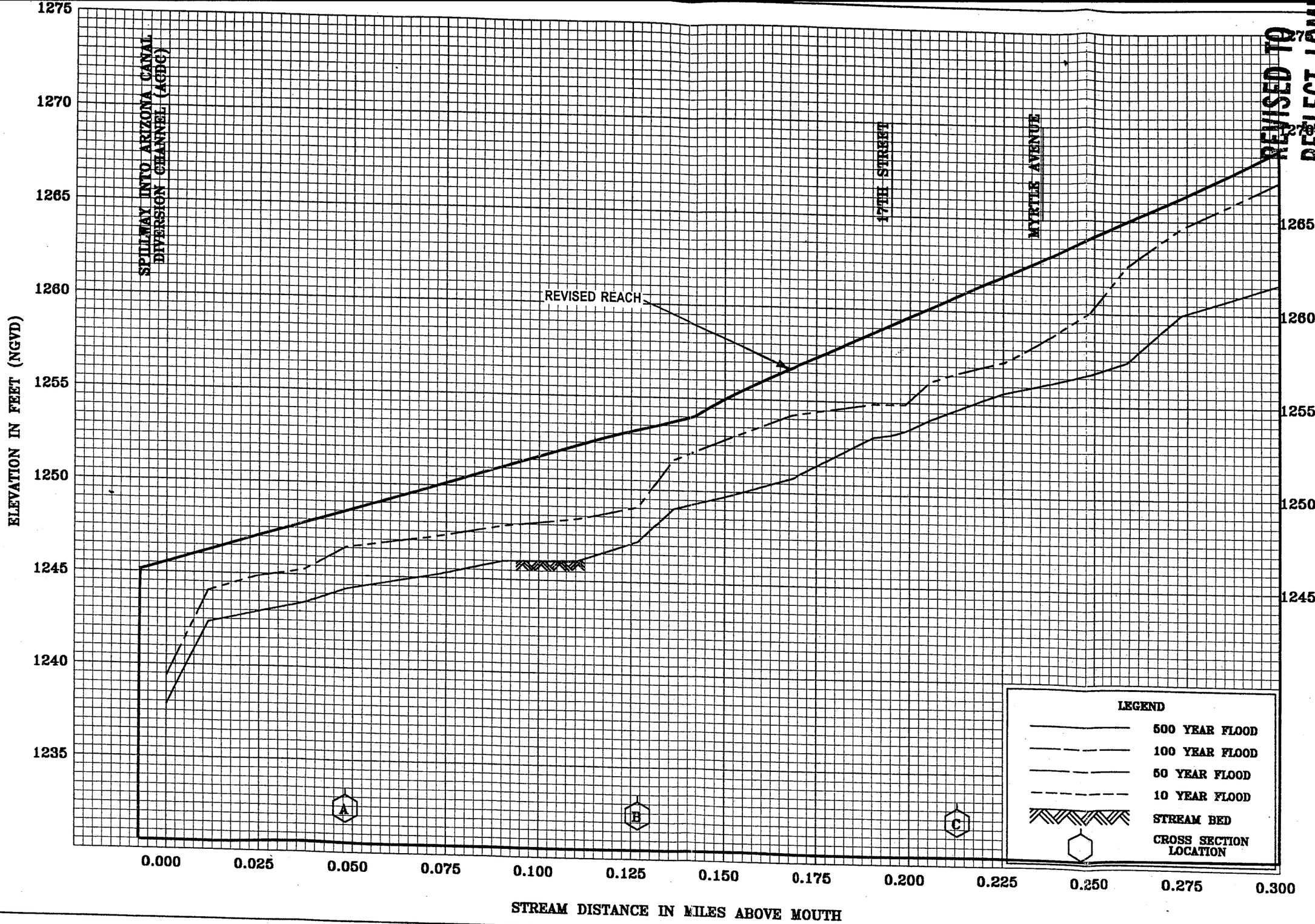
FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

140PA



REVISED TO REFLECT LOMR DATED AUG 07 19

FLOOD PROFILES

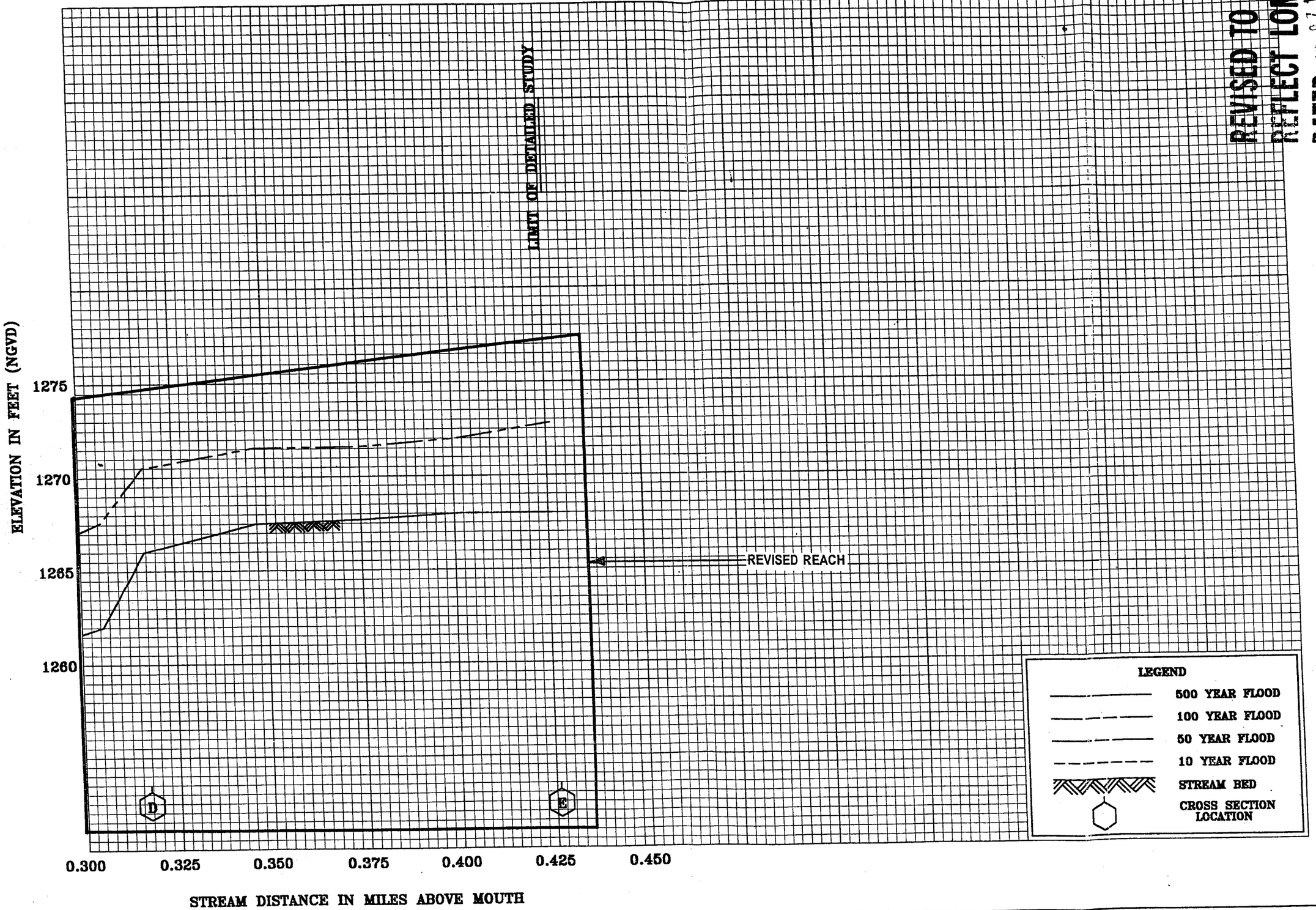
MYRTLE AVENUE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

235P



REVISED TO REFLECT LOMR DATED 1997

FLOOD PROFILES

MYRTLE AVENUE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

236P

Federal Emergency Management Agency

Washington, D.C. 20472

FLOOD CONTROL DISTRICT
RECEIVED
JUL 21 1997
CHENG | P & PM
HYDRO
MGT
FILE
ENGR

July 17, 1997

Mr. Hasan Mushtaq, P.E.
Engineering Division
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399

IN REPLY REFER TO:
Case No.: 97-09-830P
Community: City of Phoenix, Arizona
Community No.: 040051

316-ACK.FRQ

Dear Mr. Mushtaq:

This responds to your letter dated July 2, 1997, concerning a May 22, 1997, request that the Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Pertinent information about the request is listed below.

Flooding Source:	Flynn Lane Wash
FIRM Panel(s) Affected:	04013C1670 E

We have completed an inventory of the items that you submitted. We have received the data and the review and processing fee ($3,700) required to begin a detailed technical review of your request. If additional data are required, we will inform you within 30 days of the date of this letter.

Please direct all questions concerning your request to our Technical Evaluation Contractor at the following address:

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Attention: Mr. Edward Mifflin
(703) 317-6227

When you write us about your request, you must include the case number referenced above in your letter.

If you have any questions concerning FEMA policy, or the National Flood Insurance Program in general, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Mr. Raymond U. Acuña, P.E.
Floodplain Manager
City of Phoenix Street Transportation Department

Ms. Teri Mintz, P.E.
Water Resources Engineer
David Evans & Associates, Inc.

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009-6399
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5859

BOARD OF DIRECTORS
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Jan Brewer
Fulton Brock
Don Stapley
Mary Rose Garrido Wilcox

JUL 0 2 1997

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Attn : Mr. Edward Mifflin

Re : LOMR request for Flynn Lane Wash (Extension)
FIRM Map Panel 1670 E (12-19-1996)
When replying, please refer to :
FCD Contract No. FCD 94-51

Case No.: 97-09-830P
Community: City of Phoenix
Community No.: 040051
316-ACK.FRQ

Dear Mr. Mifflin :

This responds to your request dated June 6, 1997, for additional technical information on the submitted Letter of Map Revision (LOMR). Pertinent information about the request is listed below :

Identifier :	Flynn Lane Wash
Flooding Source :	Flynn Lane Wash
FIRM Panel Affected :	04013C1670 E (12-19-1996)

The following information is submitted in support of the LOMR request :

ITEM

1. In Exhibit 8 of the original submittal had incorrect cross section locations marked on the map. This resulted in incorrect values in the "Water Surface Elevation Check" table (Form 4, pg. 6 of 6). Exhibit 8 and Form 4, pg. 6 of 6 have been revised and attached with this submittal. A comparison of the water surface elevations do not indicate an increase in the effective base flood elevations (BFE).

Should additional information be required, please contact either Ms. Teri Mintz, P.E., Water Resources Engineer, David Evans and Associates, Inc., at (602)-956-9850 or Hasan Mushtaq, P.E., Project Manager, Engineering Division, Flood Control District of Maricopa County at (602)-506-1501.

Sincerely,

Hasan Mushtaq, P.E.
Engineering Division

ADDITIONAL INFORMATION SUBMITTED THROUGH THIS MEMO ARE REPLACED IN THE MAIN PACKAGE.

8/22/97

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009-6399
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5859

BOARD OF DIRECTORS
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JUL 0 2 1997

Michael Baker Jr., Inc.
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Attn : Mr. Edward Mifflin

Re : LOMR request for Flynn Lane Wash (Extension)
FIRM Map Panel 1670 E (12-19-1996)
When replying, please refer to :
FCD Contract No. FCD 94-51

Case No.: 97-09-830P
Community: City of Phoenix
Community No.: 040051
316-ACK.FRQ

Dear Mr. Mifflin :

This responds to your request dated June 6, 1997, for additional technical information on the submitted Letter of Map Revision (LOMR). Pertinent information about the request is listed below :

Identifier :	Flynn Lane Wash
Flooding Source :	Flynn Lane Wash
FIRM Panel Affected :	04013C1670 E (12-19-1996)

The following information is submitted in support of the LOMR request :

ITEM

1. In Exhibit 8 of the original submittal had incorrect cross section locations marked on the map. This resulted in incorrect values in the "Water Surface Elevation Check" table (Form 4, pg. 6 of 6). Exhibit 8 and Form 4, pg. 6 of 6 have been revised and attached with this submittal. A comparison of the water surface elevations do not indicate an increase in the effective base flood elevations (BFE).

Should additional information be required, please contact either Ms. Teri Mintz, P.E., Water Resources Engineer, David Evans and Associates, Inc., at (602)-956-9850 or Hasan Mushtaq, P.E., Project Manager, Engineering Division, Flood Control District of Maricopa County at (602)-506-1501.

Sincerely,

Hasan Mushtaq, P.E.
Engineering Division

Enclosures

Copy to : Terri Miller, State Coordinator, NFIP
Arizona Department of Water Resources
500 North 3rd Street, Phoenix, Arizona 85004

Ray Acuña, P.E., Floodplain Manager
City of Phoenix
200 West Washington Street, Phoenix, Arizona 85004

Teri Mintz, P.E., Water Resources Engineer
David Evans & Associates, Inc.
2929 East Camelback Road, Suite 240, Phoenix, Arizona 85016

Coord: HM PAC

Info: HM

Federal Emergency Management Agency

Washington, D.C. 20472

June 6, 1997

Mr. Hasan Mushtaq, P.E.
Engineering Division
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399

IN REPLY REFER TO:
Case No.: 97-09-830P
Community: City of Phoenix, Arizona
Community No.: 040051

316-ACK.FRQ

Dear Mr. Mushtaq:

This responds to your request dated May 22, 1997, that the Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas, which is the effective FIRM for your community. Pertinent information about the request is listed below.

Flooding Source:	Flynn Lane Wash
FIRM Panel(s) Affected:	04013C1670 E

To minimize the financial burden on the policyholders while maintaining the National Flood Insurance Program (NFIP) as self-sustaining, FEMA implemented a procedure to recover costs associated with reviewing and processing requests for modifications to published flood information and maps. Effective October 1, 1996, FEMA revised the fee schedule, establishing flat review and processing fees for most types of requests. A copy of the notice published in the *Federal Register* is enclosed for your information. The fee for your request is $3,700, and must be submitted before we can continue processing your request. Payment of this fee must be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or credit card payment. For identification purposes, the case number referenced above must be included on the check or money order. We will not perform a detailed technical review of your request until we receive this payment.

Payment must be forwarded to one of the addresses listed below.

Using U.S. Postal Service:
Federal Emergency Management Agency
Fee-Collection System Administrator
P.O. Box 3173
Merrifield, VA 22116-3173

Using overnight service:
Fee-Collection System Administrator
c/o Dewberry & Davis, METS Division
8401 Arlington Boulevard
Fairfax, VA 22031

We have completed an inventory of the items that you submitted. The item identified below is required before we can begin a detailed review of your request.

- Our review of the submitted HEC-2 hydraulic computer model indicates that the elevation of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) will increase over the effective base flood elevation (BFE) upstream of Cross Section 0.501. Please provide certification that no insurable structures will be affected by this increase in BFE.

If all required items are not submitted within 90 days of the date of this letter, we will treat any subsequent request as an original submittal, and it will be subject to all submittal/payment procedures.

Please direct all required items (except the required fee) and questions concerning your request to our Technical Evaluation Contractor at the following address:

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Attention: Mr. Edward Mifflin
(703) 317-6227

When you write us about your request, you must include the case number referenced above in your letter.

If you have any questions concerning FEMA policy, or the NFIP in general, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

Enclosure(s)

cc: Mr. Raymond U. Acuña, P.E.
Floodplain Manager
City of Phoenix Street Transportation Department

Ms. Teri Mintz, P.E.
Water Resources Engineer
David Evans & Associates, Inc.

FEDERAL EMERGENCY MANAGEMENT AGENCY ANNOUNCES CHANGES IN USER FEES FOR FLOOD MITIGATION PRODUCTS

On August 30, 1996, FEMA published an Interim Final Rule in the *Federal Register* that detailed how and why the Federal Emergency Management Agency (FEMA) changed the fee schedule for several of the products it provides to the public in support of the National Flood Insurance Program (NFIP). These changes, which became effective on October 1, 1996, were made (1) to simplify existing administrative procedures for individuals who request Letters of Map Change and Flood Insurance Study support information and archived data from FEMA and (2) to help maintain the NFIP as a self-supporting, nontaxpayer-funded program. On August 30, 1996, FEMA also published a notice in the *Federal Register* announcing the revised fee schedule for the following NFIP products:

- Conditional Letters of Map Amendment
- Conditional Letters of Map Revision Based on Fill
- Conditional Letters of Map Revision
- Letters of Map Revision Based on Fill
- Letters of Map Revision
- Physical Map Revisions
- Flood Insurance Study Support Information and Archived Data Products

FEMA recently determined it was appropriate to refine the criteria for assessing fees for map change requests and to revise the fee schedule itself before publishing a Final Rule and final fee schedule notice in the *Federal Register*. The most significant revision FEMA made is the restoration of fee exemptions for: (1) Map change requests based on federally sponsored flood-control projects where 50 percent or more of the project's costs are federally funded; and (2) Map change requests based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM. These and other revisions are documented in the Final Rule and the enclosed Notice. The Notice and Final Rule both were published in the *Federal Register* on February 6, 1997.

Individuals who do not have a subscription to the *Federal Register* may obtain this information through FEMA's World Wide Web site (http:/www.fema.gov/MIT/feesch.htm) or by calling the FEMA Fax-on-Demand, at (202) 646-3362, and requesting Document Number 20018. Hard copies of the Final Rule also may be obtained, free of charge, by contacting Ms. Imelda Edwards at the address shown below.

Federal Emergency Management Agency
Hazard Identification & Risk Assessment Division
500 C Street SW.
Washington, DC 20472
Telephone: (202) 646-3860
Facsimile: (202) 646-4596

FEDERAL EMERGENCY MANAGEMENT AGENCY

Fee Schedule for Processing Requests for Map Changes and for Flood Insurance Study Backup Data for Fiscal Year 1997

AGENCY: Federal Emergency Management Agency (FEMA).

ACTION: Notice.

SUMMARY: This notice contains the revised fee schedules for processing certain requests for changes to National Flood Insurance Program (NFIP) maps and for processing requests for Flood Insurance Study (FIS) backup data. The changes in the fee schedules will allow FEMA to reduce further the expenses to the NFIP by recovering more fully the costs associated with (1) processing conditional and final map change requests and (2) retrieving, reproducing, and distributing technical and administrative support data related to FIS analyses and mapping.

DATES: The revised fee schedules are effective for all requests dated October 1, 1996 or later.

FOR FURTHER INFORMATION CONTACT: Frederick H. Sharrocks, Jr., Chief, Hazard Identification Branch, 500 C Street SW., Washington, DC 20472, (202) 646–2756 or by facsimile at (202) 646–4596 (not toll-free calls).

SUPPLEMENTARY INFORMATION: This notice contains the revised fee schedules for processing certain requests for changes to NFIP maps and for processing requests for FIS backup data. The revised schedule for map changes is effective for all requests dated October 1, 1996, or later, in accordance with the final rule for changes to 44 CFR parts 65, 70, and 72 published elsewhere in this edition of the Federal Register, and supersedes the current fee schedule established on June 30, 1992.

The revised fee schedule for requests for FIS backup data also is effective for all requests dated October 1, 1996 or later, and supersedes the current fee schedule published in the Federal Register on June 30, 1992.

The basis for the fee schedule for requests for Conditional Letters of Map Amendment (CLOMAs), Conditional Letters of Map Revision Based on Fill (CLOMR–Fs), Conditional Letters of Map Revision (CLOMRs), Letters of Map Revision Based on Fill (LOMR–Fs), Letters of Map Revision (LOMRs), and Physical Map Revisions (PMRs) and for the fee schedule for requests for FIS backup data is provided in the separately published final rule.

A primary component of the fees is the prevailing private-sector rates charged to FEMA for labor and materials. Because these rates and the actual review and processing costs may vary from year to year, FEMA will evaluate the fees at the end of each fiscal year and publish revised fee schedules, when needed, as notices in the Federal Register.

Simplification of Fee Schedule for Conditional and Final Map Changes

The existing fee collection process is complex and its administration requires time-intensive efforts on the part of FEMA. It also increases the time required to provide the requesters with the product they require. The current system requires requesters to submit an initial fee that is not intended to cover the full review and processing costs or the cartographic production costs. Requesters subsequently receive invoices for the balances. The current system is complicated further by the pre-authorized spending limits placed on each product. When FEMA determines these limits will be exceeded, written authorization to proceed must be obtained before FEMA can proceed with its review. Processing of the request is delayed until the written authorization is received.

FEMA has streamlined the process by (1) charging flat user fees for most map change products and services; (2) requiring full payment of fees before work is begun on most map change requests; (3) consolidating similar products or services into a limited number of user fee categories; and (4) limiting the number of products for which requesters may receive exemptions from payment of fees. As a result, requesters know the cost of most products before FEMA begins work.

The initial fee for requests for LOMRs and CLOMRs based on structural measures on alluvial fans has been maintained because (1) such requests are rare, (2) the FEMA review for these requests is usually very complex, and (3) the costs involved in processing the requests can fluctuate significantly.

Fees for Conditional and Final Map Revisions Based on Structural Measures on Alluvial Fans

Based on a review of actual cost data for Fiscal Year 1995, FEMA established $5,000 as the initial fee for requests for LOMRs and CLOMRs based on structural measures on alluvial fans. FEMA will recover the remainder of the review and processing costs by invoicing the requester before issuing a determination letter, consistent with current practice. The prevailing private-sector labor rate charged to FEMA ($50 per hour) will be used to calculate the total reimbursable fees.

Fee Schedule for Requests for Conditional Letters of Map Amendment and Conditional and Final Letters of Map Revision Based on Fill

Based on a review of actual cost data for Fiscal Year 1995, FEMA established the following flat user fees, which are to be submitted by requesters with all requests dated October 1, 1996 or later:

- Request for single-lot/single-structure CLOMA, CLOMR–F, and LOMR–F, $400
- Request for multiple-lot/multiple-structure CLOMA, $700
- Request for multiple-lot/multiple-structure CLOMR–F and LOMR–F, $800
- Request for single-lot/single-structure LOMR–F based on as-built information (CLOMR–F previously issued by FEMA), $300
- Request for multiple-lot/multiple-structure LOMR–F based on as-built information (CLOMR–F previously issued by FEMA), $700

Fee Schedule for Requests for Map Revisions

Unless the request is otherwise exempted under 44 CFR 72.5, requesters must submit the flat user fees shown below with requests for LOMRs and PMRs dated October 1, 1996 or later that are not based on structural measures on alluvial fans. These fees are based on a review of actual cost data for Fiscal Year 1995.

- Request based on bridge, culvert, channel, or combination thereof, $3,700
- Request based on levee, berm, or other structural measure, $4,300
- Request based on as-built information submitted as followup to CLOMR, $2,300
- Request based solely on submission of more detailed data, $2,300

Fee Schedule for Requests for Conditional Map Revisions

Unless the request is otherwise exempted under 44 CFR 72.5, requesters must submit the flat user fees shown below with requests for CLOMRs dated October 1, 1996 or later that are not based on structural measures on alluvial fans. These fees are based on a review of actual cost data for Fiscal Year 1995.

- Request based on new hydrology, bridge, culvert, channel, or combination thereof, $3,100
- Request based on levee, berm, or other structural measure, $3,300

Fee Schedule for Requests for Flood Insurance Study Backup Data

Requesters must submit the user fees shown below with requests for FIS backup data dated October 1, 1996 or later. These fees are based on a review of actual cost data for Fiscal Year 1995. They are based on the complete recovery of FEMA's costs for retrieving, reproducing, and distributing the data, as well as a pro rata share of the costs for maintaining the data and operating the fee reimbursement system.

As under the previous fee schedule, all entities except FEMA's Study Contractors, FEMA's Technical Evaluation Contractors, and the Federal agencies involved in performing FISs (i.e., U.S. Army Corps of Engineers, U.S. Geological Survey, Natural Resources Conservation Service, and Tennessee Valley Authority) will be charged for requests for FIS backup data. The only other exception is that one copy of the FIS backup data will be provided to a community free of charge if the data are requested during the statutory 90-day appeal period for an initial or revised FIS for that community.

FEMA has established seven categories into which requests for FIS backup data are separated. These categories are:

(1) Category 1—Paper copies, microfiche, or diskettes of hydrologic and hydraulic backup data for current or previously effective FIS

(2) Category 2—Paper or mylar copies of topographic mapping developed during FIS process

(3) Category 3—Paper copies or microfiche of survey notes developed during FIS process

(4) Category 4—Paper copies of individual Letters of Map Change

(5) Category 5—Paper copies of preliminary map panels

(6) Category 6—Computer tapes of Digital Line Graph files

(7) Category 7—Computer diskettes and user's manuals for FEMA programs (e.g., Wave Height, Wave Runup, Alluvial Fan)

A non-refundable fee of $90, to cover the preliminary costs of research and retrieval, must be submitted to initiate requests for data under Categories 1, 2, and 3. The total costs of processing requests in Categories 1, 2, and 3 above will vary based on the complexity of the research involved in retrieving the data and the volume and medium of data to be reproduced and distributed. The initial fee will be applied against the total costs to process the request, and FEMA will invoice the requester for the balance before the data are provided. No data will be provided to a requester until all required fees have been paid.

No initial fee is required to initiate a request for data under Categories 4 through 7. Requesters will be notified by telephone about the availability of materials and the fees associated with requested data. As with requests for data under Categories 1, 2, and 3, no data will be provided to requesters until all required fees are paid.

The costs for processing requests under Categories 4 through 7 will not vary. Therefore, FEMA established flat user fees for these categories of requests. The flat user fees are shown below.

Request Under Category 4

First letter, $ 40

Each additional letter, $10

Request Under Category 5

First panel, $35

Each additional panel, $2

Request Under Category 6 (per county), $150

Request Under Category 7 (per copy), $25

Payment Submission Requirements

Fee payments must be made in advance of services being rendered. These payments shall be made in the form of a check or money order or by credit card payment. Checks and money orders must be made payable, in U.S. funds, to the National Flood Insurance Program. FEMA will provide receipts to requesters for their records or billing purposes.

The fees collected will be deposited to the National Flood Insurance Fund, which is the source of funding for providing these services.

Dated: January 28, 1997.

Richard W. Krimm,

Executive Associate Director, Mitigation Directorate.

[FR Doc. 97-2964 Filed 2-5-97; 8:45 am]

BILLING CODE 6718-04-P

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009-6399
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5859

BOARD OF DIRECTORS
Betsey Bayless
Jan Brewer
Fulton Brock
Don Stapley
Mary Rose Garrido Wilcox

MAY 22, 1997

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate
Federal Emergency Management Agency
500 C Street SW
Washington, D.C. 20472

Attn : Mr. John Magnotti

Re : LOMR request for Flynn Lane Wash (Extension)
FIRM Map Panel 1670 E (12-19-1996)
When replying, please refer to :
FCD Contract No. FCD 94-51

Dear Mr. Sharrocks :

This request is for a revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Pertinent information about the request is listed below :

Identifier :	Flynn Lane Wash
Flooding Source :	Flynn Lane Wash
FIRM Panel Affected :	04013C1670 E (12-19-1996)

This is a request for a LOMR for Flynn Lane Wash, which is located entirely within the City of Phoenix, Arizona. The wash flows in a south-westerly direction and discharges into the Arizona Canal Diversion Channel (ACDC), constructed by the U.S. Army Corps of Engineers as part of the Plan 6, Greater Phoenix Area Including New River flood mitigation program. This restudy, an extension of a previously approved LOMR, dated December 19, 1996, was undertaken by David Evans and Associates, Inc., on behalf of the Flood Control District of Maricopa County.

The following information is submitted in support of the LOMR request :

1. A payment of $3,700 in the form of a check is included.
2. Copy of the approved LOMR, dated December 19, 1996 (Exhibit 1).
3. FEMA application form (Revision Requestor and Community Official Form, Exhibit 2).
4. A notarized copy of the public notice (Exhibit 3).
5. A complete set of LOMR application forms (Exhibit 4).
6. Revised profile plot showing the match point locations (Exhibit 5).
7. Revised Floodplain/floodway boundary annotated on the FIRM panel 1670 E (1"=1000', Exhibit 6).

8. Photographs of the Flynn Lane Wash from the upstream limit of detailed study to cross section 0.379 (approximately 2800' upstream of ACDC) of the existing floodplain delineation (Exhibit 7).
9. Flood insurance study work maps including previous approximate delineation of Myrtle Avenue Wash (1"=100' scale, Exhibit 8).
10. Cross-section location Map for Flynn Lane Wash (1"=20' scale, Exhibit 9).
11. Available topographic mapping (1"=400') of Flynn Lane Wash and vicinity (sheet 75 of 111, Exhibit 10).
12. Hard copy input/output of the duplicate effective and the revised HEC-2 model (Exhibit 11).
13. Three 3-1/2" diskettes with the duplicate effective and the revised HEC-2 model, and other necessary information (Exhibit 12).

Following items are also discussed in relation to the LOMR application.

<u>ITEM</u>

1. Starting Water Surface Elevation for the HEC-2 model was established based on the existing floodplain delineation study.

2. A portion of the floodplain, north of Flynn Lane Wash, is proposed to be delineated as Zone AO as shown in Exhibit 9. The detailed hydraulic analysis is included in Exhibit 13.

Should additional information be required, please contact either Ms. Teri Mintz, P.E., Water Resources Engineer, David Evans and Associates, Inc., at (602)-956-9850 or Hasan Mushtaq, P.E., Project Manager, Engineering Division, Flood Control District of Maricopa County at (602)-506-1501.

Sincerely,

Hasan Mushtaq, P.E.
Engineering Division

Enclosures

Copy to : Terri Miller, State Coordinator, NFIP
Arizona Department of Water Resources
500 North 3rd Street, Phoenix, Arizona 85004

Ray Acuña, P.E., Floodplain Manager
City of Phoenix
200 West Washington Street, Phoenix, Arizona 85004

Teri Mintz, P.E., Water Resources Engineer
David Evans & Associates, Inc.
2929 East Camelback Road, Suite 240, Phoenix, Arizona 85016

Coord : ~~DAC~~ ~~EAR~~ ~~RGN~~ ~~SLS~~ 5/21 ~~HM~~ 5/22

Info : HM

FEDERAL EMERGENCY MANAGEMENT AGENCY

APPLICATION FOR LETTER OF MAP REVISION

FLYNN LANE WASH (EXTENSION)

Prepared by

DAVID EVANS AND ASSOCIATES, INC.
2929 East Camelback Road, Suite 240
Phoenix, Arizona 85016

Submitted by

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009

EXHIBIT 1

Federal Emergency Management Agency

Washington, D.C. 20472

DEC 27 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 96-09-1042P

The Honorable Skip Rimsza
Mayor, City of Phoenix
200 West Washington Street
Phoenix, Arizona 85003-1611

Community: City of Phoenix, Arizona
Community No.: 040051
Panel Affected: 04013C1670 E
Effective Date of
This Revision: DEC 19 1996

102-I-A-C

Dear Mayor Rimsza:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for your community in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated August 9, 1996, Mr. Hasan Mushtaq, P.E., Project Manager, Engineering Division, Flood Control District of Maricopa County, requested that FEMA revise the FIRM and FIS report to show the effects of the construction of Ocotillo Road and Squaw Peak Parkway, the construction of spillways into the Arizona Canal Diversion Channel (ACDC), and updated topography along Flynn Lane Wash from the ACDC to approximately 2,800 feet upstream of the ACDC.

All data required to complete our review of this request were submitted with letters from Mr. Mushtaq. Because this Letter of Map Revision (LOMR) shows the effects of a publicly sponsored flood-control project that reduces flooding to existing development, fees were not assessed for the review.

We have completed our review of the submitted data and the flood data shown on the effective FIRM and FIS report. We have revised the FIRM and FIS report to modify the elevations and floodplain and floodway boundary delineations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) along Flynn Lane Wash. As a result of the modifications, the base flood elevations (BFEs) for Flynn Lane Wash increased, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, increased in some areas and decreased in other areas; and the width of the regulatory floodway increased in some areas and decreased in other areas. The modifications are shown on the enclosed annotated copy of FIRM Panel 04013C1670 E; Profile Panels 139P and 140P; and affected portions of the Floodway Data Table. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM dated September 30, 1995 and the affected portions of the FIS report dated September 30, 1995.

A LOMR was issued on August 7, 1996, for Echo Canyon Wash. Modifications resulting from this LOMR are shown on the enclosed Floodway Data Table.

The modifications are effective as of the date of this letter. The map panel as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

The following table is a partial listing of existing and modified BFEs:

Location	Existing BFE (feet)*	Modified BFE (feet)*
Approximately 50 feet upstream of the ACDC	1,242	1,244
Approximately 400 feet upstream of the ACDC	1,247	1,250
Approximately 1,900 feet upstream of the ACDC	1,274	1,275

*Referenced to the National Geodetic Vertical Datum, rounded to the nearest whole foot

Public notification of the proposed modified BFEs will be given in *The Arizona Republic* on or about January 24, 1997 and January 31, 1997. A copy of this notification is enclosed. In addition, a notice of changes will be published in the *Federal Register*. Within 90 days of the second publication in *The Arizona Republic*, a citizen may request that FEMA reconsider the determination made by this LOMR. Any request for reconsideration must be based on scientific or technical data. All interested parties are on notice that, until the 90-day period elapses, the determination to modify the BFEs presented in this LOMR may itself be modified.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

The floodway is provided to your community as a tool to regulate floodplain development. Therefore, the floodway modifications described in this LOMR, while acceptable to FEMA, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations

apply and the modifications described in this LOMR. Our records show that your community has met this requirement.

A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Dorothy M. Lacey
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
The Presidio of San Francisco, Building 105
San Francisco, California 94129-1250
(415) 923-7177

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

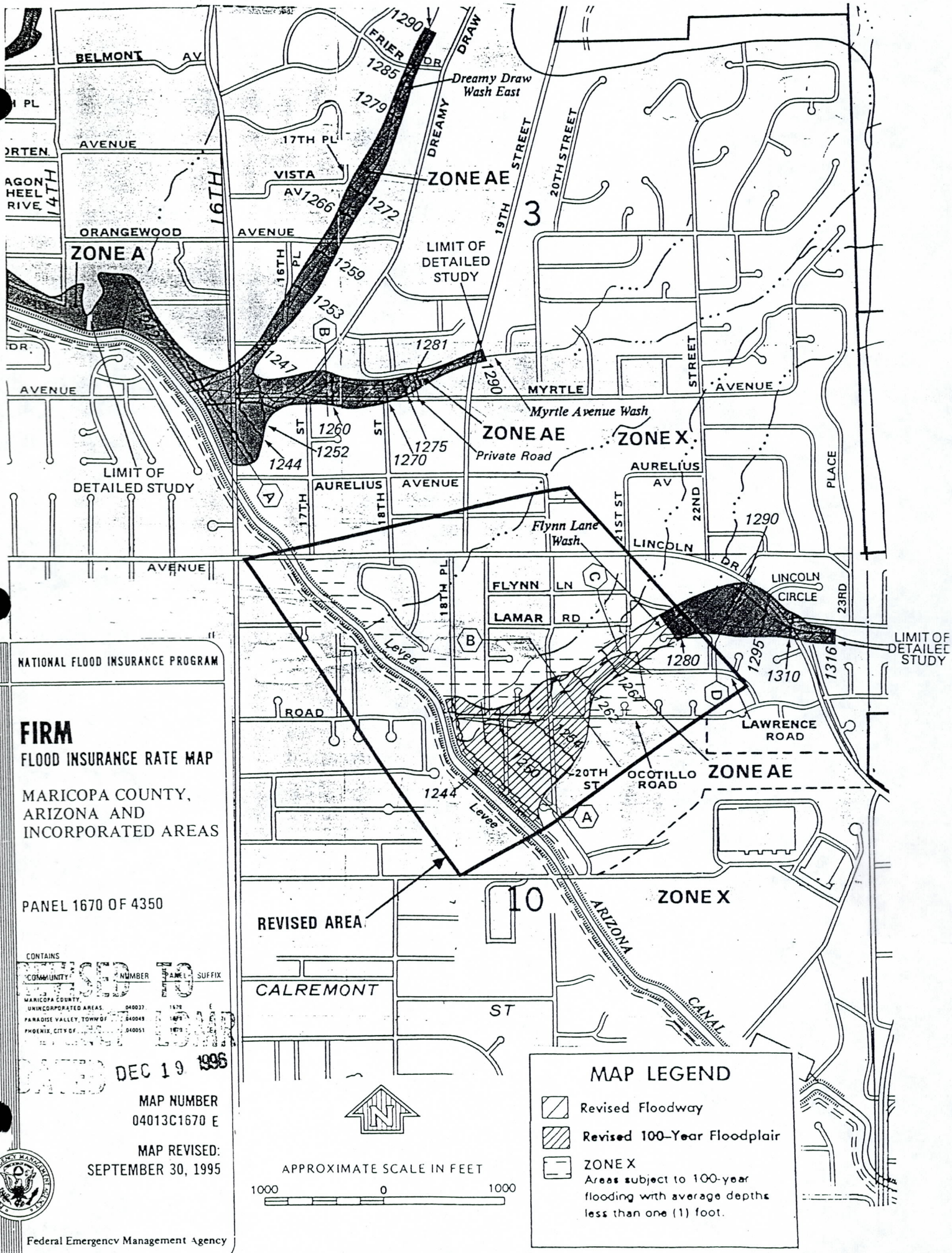
Sincerely,

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

Enclosures

cc: Mr. Hasan Mushtaq, P.E.
Project Manager
Engineering Division
Flood Control District of
Maricopa County

Mr. Raymond U. Acuña
Floodplain Manager
City of Phoenix Street
Transportation Department


NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS
PANEL 1670 OF 4350
CONTAINS
COMMUNITY NUMBER PANEL SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS 040037 1670 E
PARADISE VALLEY, TOWN OF 040049 1670 E
PHOENIX, CITY OF 040051 1670 E
EFFECTIVE DATE DEC 19 1996
MAP NUMBER
04013C1670 E
MAP REVISED:
SEPTEMBER 30, 1995
Federal Emergency Management Agency
Dreamy Draw Wash East
ZONE AE
ZONE A
LIMIT OF DETAILED STUDY
Myrtle Avenue Wash
ZONE X
Private Road
Flynn Lane Wash
Levee
REVISED AREA
ZONE X
APPROXIMATE SCALE IN FEET
1000 0 1000
MAP LEGEND
Revised Floodway
Revised 100-Year Floodplain
ZONE X
Areas subject to 100-year flooding with average depths less than one (1) foot.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dreamy Draw Wash East								
A	0.04	250[2]	--[3]	--[3]	1,242.0	1,242.0	1,242.9	0.9
Echo Canyon Wash								
A	0.27	157	1,035	6.4	1.256.2	1.256.2	1,257.1	0.9
B	0.37	170	615	10.7	1,263.4	1,263.4	1,264.0	0.6
C	0.56	73	618	9.5	1,270.4	1,270.4	1,271.4	1.0
D	0.74[4]	205	1,172	5.0	1,278.7	1,278.7	1,279.6	0.9
E	1.04	210	1,501	3.9	1,293.1	1,293.1	1,293.5	0.4
F	1.19	180	1,169	5.0	1,298.0	1,298.0	1,298.3	0.3
G	1.43	150	635	7.8	1,308.4	1,308.4	1,308.9	0.5
H	1.49	150	377	11.9	1,310.2	1,310.2	1,310.7	0.5
I	1.54	150	734	6.1	1,314.4	1,314.4	1,314.4	0.0
J	1.60	150	774	5.8	1,316.1	1,316.1	1,316.1	0.0
K	1.71	150	729	6.2	1,317.6	1,317.6	1,318.0	0.4
L	1.86	150	451	8.0	1,321.9	1,321.9	1,322.8	0.9
M	2.02	150	609	4.9	1,327.5	1,327.5	1,327.5	0.0
Flynn Lane Wash								
A	0.037	54	169	10.1	1,245.9	1,245.9	1,246.6	0.7
B	0.188	112	239	7.1	1,258.5	1,258.5	1,259.2	0.7
C	0.304	55	206	8.3	1,269.1	1,269.1	1,269.7	0.6
D	0.530	400	--[3]	--[3]	1,290.1	1,290.1	1,291.1	1.0

THESE DATA WERE REVISED BY LOMR DATED AUGUST 7,1996

REVISED TO REFLECT LOMR DATED DEC 19 1996

REVISED DATA

[1]Miles Above Mouth
[2]Combined Floodway for Dreamy Draw Wash East and Myrtle Avenue Wash
[3]Data Not Available
[4]Station 0.740 previously shown as station 0.710; subsequent cross sections require addition of 0.030 miles

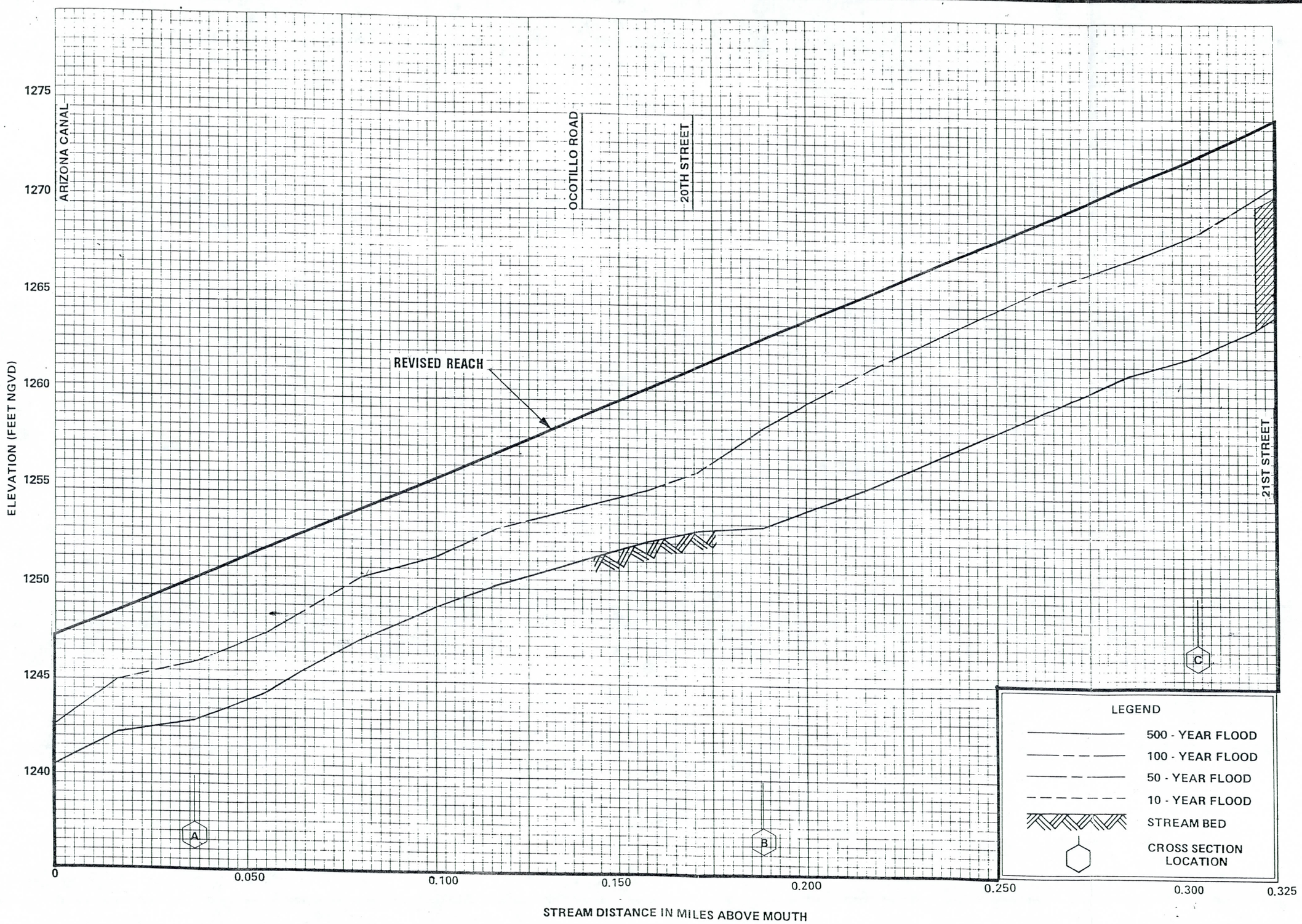
TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

FLOODWAY DATA

DREAMY DRAW WASH EAST - ECHO CANYON WASH - FLYNN LANE WASH



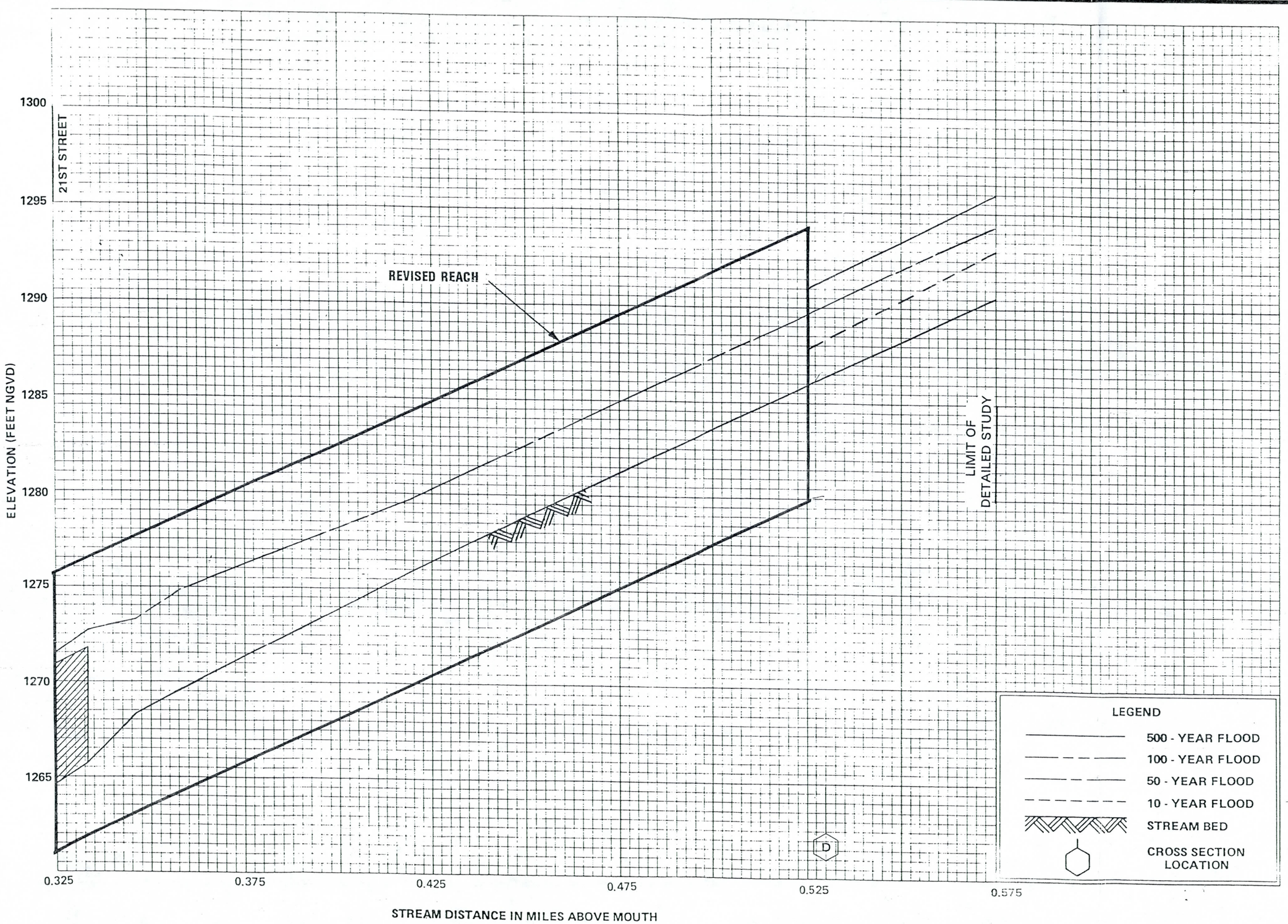
RAISED TO DEFICT LOMR
DATED DEC 19 1996

FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



REVISED TO
REFLECT LOMR
DATE DEC 19 1986

FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE CITY OF PHOENIX, MARICOPA COUNTY, ARIZONA, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On September 30, 1995, the Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the City of Phoenix, Arizona through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Directorate has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified base flood elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

A hydraulic analysis was performed to incorporate the construction of Ocotillo Road and Squaw Peak Parkway, the construction of spillways into the Arizona Canal Diversion Channel (ACDC), and updated topography and has resulted in a revised delineation of the regulatory floodway, an increase and decrease in SFHA, and higher BFEs for Flynn Lane Wash from the ACDC to approximately 2,800 feet upstream of ACDC. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Approximately 50 feet upstream of the ACDC	1,242	1,244
Approximately 400 feet upstream of the ACDC	1,247	1,250
Approximately 1,900 feet upstream of the ACDC	1,274	1,275

*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Directorate must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Directorate reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Directorate's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Skip Rimsza
Mayor, City of Phoenix
200 West Washington Street
Phoenix, Arizona 85003-1611

EXHIBIT 2

ATTENTION

The following forms are a digital version of the Application/Certification forms developed by the Federal Emergency Management Agency for requesting revisions to the National Flood Insurance Program maps. The format contained on following forms matches that of FEMA Form 81-89 Series, dated October 1994; with OMB Burden Number 3067-0148, which expires July 31, 1997.

Since the forms have been reviewed and approved by the Office of Management and Budget the digital version must not be altered in any manner.

After completing the form please copy to a 3.5" or 5.25" diskette. The diskette should be included with your request along with a hardcopy of the completed forms. Please note that there are places for signatures on the hardcopy of this page and all the forms.

I certify that the attached forms have not been altered in any manner.

Peri S. Mustz P.E.
Signature

2/20/97
Date

FEDERAL EMERGENCY MANAGEMENT AGENCY
MITIGATION DIRECTORATE

ATTENTION

The following forms are a digital version of the Application/Certification forms developed by the Federal Emergency Management Agency for requesting revisions to the National Flood Insurance Program maps. The format contained on following forms matches that of FEMA Form 81-89 Series, dated October 1994; with OMB Burden Number 3067-0148, which expires July 31, 1997.

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Signature

2/20/97
Date

FEDERAL EMERGENCY MANAGEMENT AGENCY
MITIGATION DIRECTORATE

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)
   - X Physical change
     - X Existing
     - __ Proposed
   - __ Improved methodology
   - __ Improved data
   - __ Floodway revision
   - __ Other
     - Explain
2. Flooding Source: Flynn Lane Wash
3. Project Name/Identifier: Flynn Lane Wash
4. FEMA zone designations affected: AE
   (example: A, AH, AO, A1-A30, A99, AE, V, V1-30, VE, B, C, D, X)
5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX:480301 480287	Katy, City Harris County	Harris, Fort Bend, Harris	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
040051	Phoenix, City	Maricopa	AZ	04013C	1670E	12/19/96

6. The area of revision encompasses the following types of flooding, structures, and associated disciplines: *(check all that apply)*

Types of Flooding	Structures	Disciplines*
X Riverine	__ Channelization	X Water Resources
__ Coastal	__ Levee/Floodwall	__ Hydrology
__ Alluvial Fan	__ Bridge/Culvert	X Hydraulics
__ Shallow Flooding *(e.g. Zones AO and AH)*	__ Dam	__ Sediment Transport
__ Lakes	__ Coastal	__ Interior Drainage
	__ Fill	__ Structural
Affected by wind/wave action	__ Pump Station	__ Geotechnical
__ Yes	__ None	__ Land Surveying
__ No	__ Channel Relocation	__ Other (*describe*)
	__ Excavation	
__ Other (describe)	__ Other (describe)	

***Attach completed "Certification by Registered Professional Engineer and/or Land Surveyor" Form for each discipline checked. (Form 2)**

2. FLOODWAY INFORMATION

7. Does the affected flooding source have a floodway designated on the effective FIRM or FBFM? X Yes __ No
8. Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM? X Yes __ No
   If yes, give reason:

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

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1. OVERVIEW

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   - X Physical change
     - X Existing
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   - __ Improved methodology
   - __ Improved data
   - __ Floodway revision
   - __ Other
     - Explain
2. Flooding Source: Flynn Lane Wash
3. Project Name/Identifier: Flynn Lane Wash
4. FEMA zone designations affected: AE
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040051	Phoenix, City	Maricopa	AZ	04013C	1670E	12/19/96

6. The area of revision encompasses the following types of flooding, structures, and associated disciplines: *(check all that apply)*

Types of Flooding	Structures	Disciplines*
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__ Alluvial Fan	__ Bridge/Culvert	X Hydraulics
__ Shallow Flooding *(e.g. Zones AO and AH)*	__ Dam	__ Sediment Transport
__ Lakes	__ Coastal	__ Interior Drainage
	__ Fill	__ Structural
	__ Pump Station	__ Geotechnical
Affected by wind/wave action	__ None	__ Land Surveying
__ Yes	__ Channel Relocation	__ Other (*describe*)
__ No	__ Excavation	
	__ Other (describe)	
__ Other (describe)		

***Attach completed "Certification by Registered Professional Engineer and/or Land Surveyor" Form for each discipline checked. (Form 2)**

2. FLOODWAY INFORMATION

7. Does the affected flooding source have a floodway designated on the effective FIRM or FBFM? X Yes __ No
8. Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM? X Yes __ No
   If yes, give reason:

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

9. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?__ Yes X No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

3. PROPOSED ENCROACHMENTS

10. With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other develop-ment in the floodway? __ Yes X No

1B. If yes, does the development cause the 100-year water-surface elevation to increase at any location by more than 0.000 feet? __ Yes __ No

11. Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other develop-ment in the 100-year floodplain? __ Yes __ No

2B. If yes, does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the 100-year water-surface elevation to increase at any location by more than one foot (*or other surcharge limit if community or state has adopted more stringent criteria)?* __ Yes __ No

If the answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

4. REVISION REQUESTOR ACKNOWLEDGMENT

12. Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, and 72, I believe that the proposed revision X is ____ is not in compliance with the requirements of the aforementioned NFIP Regulations.

5. COMMUNITY OFFICIAL ACKNOWLEDGMENT

13. Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? X Yes __ No

14. Does this revision request have the endorsement of the community? X Yes __ No

If no to either of the above questions, please explain:

Please note that community acknowledgment and/or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

6. OPERATION AND MAINTENANCE

15. Does the physical change involve a flood control structure (e.g., levees, floodwalls, channelization, basins, dams)? __ Yes X No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by _____ (entity) _____ with a maximum interval of three months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by _____ (entity) to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, ___ has __ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for __ performing __ overseeing compliance with the maintenance and operation plans of the_____
(Name)
flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

7. REQUESTED RESPONSE FROM FEMA

16. After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guide for Community Officials," dated January 1990, this request is for a:

___a. CLOMR — A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision *(LOMR or PMR)*, or proposed hydrology changes *(see 44 CFR Ch. I, Parts 60, 65, and 72).*

_X_b. LOMR — A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. *(See 44 CFR Ch. I Parts 60 and 65.)*

___c. PMR — A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. *(See 44 CFR Ch. I, Parts 60 and 65.)*

___d. Other: — Describe:

8. FORMS INCLUDED

17. Form 2 entitled, "Certification by Registered Professional Engineer and/or Land Surveyor" must be submitted.

The following forms should be included with this request if (check the included forms):

• Hydrologic analysis for flooding source differs from that used to develop FIRM	__ Hydrologic Analysis Form (Form 3)
• Hydraulic analysis for riverine flooding differs from that used to develop FIRM	_X_ Riverine Hydraulic Analysis Form (Form 4)
• The request is based on updated topographic information or a revised floodplain or floodway delineation is requested	_X_ Riverine/Coastal Mapping Form (Form 5)
• The request involves any type of channel modification	__ Channelization Form (Form 6)
• The request involves new bridge or culvert or revised analysis of an existing bridge or culvert	_X_ Bridge/Culvert Form (Form 7)
• The request involves a new revised levee/floodwall system	__ Levee/Floodwall System Analysis Form (Form 8)
• The request involves analysis of coastal flooding	__ Coastal Analysis Form (Form 9)
• The request involves coastal structures credited as providing protection from the 100-year flood	__ Coastal Structures (Form 10)
• The request involves an existing, proposed, or modified dam	__ Dam Form (Form 11)
• The request involves structures credited as providing protection from the 100-year flood on an alluvial fan	__ Alluvial Fan Flooding Form (Form 12)

9. INITIAL REVIEW FEE

18. The minimum initial review fee for the appropriate request category has been included. X Yes __ No
Initial fee amount: $ 3700.00

or

19. This request is for a project that is for public benefit and is primarily intended for flood loss reduction to insurable structures in identified flood hazard areas which were in existence prior to the commencement of construction of the flood control project. __ Yes X No

or

20. This request is to correct map errors, to include the effects of natural changes within the areas of special flood hazards, or solely to provide more detailed data. __ Yes __ No

Note: I understand that my signature indicates that all information submitted in support of this request is correct.

Signature of Revision Requestor

STANLEY L. SMITH JR., P.E.
DEPUTY CHIEF ENGINEER

Printed Name and Title of Revision Requestor

Flood Control District of Maricopa County
Company Name

602-506-1501
Telephone No.

5-21-97
Date

Note: Signature indicates that the community understands, from the revision requestor, the impacts of the revision on flooding conditions in the community.

Signature of Community Official

Raymond U. Acuña, Floodplain Mgr.
Printed Name and Title of Community Official

City of Phoenix
Community Name

May 22, 97
Date

Does this request impact any other communities: __ Yes X No

If yes, attach letters from all affected jurisdictions acknowledging revision request and approving changes to floodway, if applicable.

Note: Although a photograph of physical changes is not required, it may be helpful for FEMA's review.

EXHIBIT 3

FLOOD CONTROL DISTRICT
RECEIVED
SEP 1 2 1996

	CH ENG		P & PM
	DEP		HYDRO
	ADMIN		LMGT
	FINANCE		FILE
	C & O		
	ENGR		

REMARKS

ANNOUNCEMENT OF FLOOD HAZARD STUDY

The City of Phoenix, under authority of the National Flood Insurance Act of 1968 (P.L. 90-448), as amended, and the Flood Disaster Protection Act of 1973 (P.L. 93-234), is authorizing a re-study of the Flynn Lane Wash Area, east of the Arizona Canal Diversion Channel (ACDC). The re-study is being funded by the Flood Control District of Maricopa County and performed by David Evans and Associates, Inc.

The purpose of this re-study is to re-delineate the floodplain/floodway, considering the effects of the Spillway at the ACDC and the construction of the Ocotillo Road improvements. These flood elevations will be used by the City of Phoenix to carry out floodplain management responsibilities and by the Federal Emergency Management Agency (FEMA) to determine flood insurance rates under the National Flood Insurance Program (NFIP).

This announcement is intended to notify the community of revisions to the floodplain/floodway boundaries of the Flynn Lane Wash. Any interested person, who may have any relevant facts and technical data concerning local flood hazards, is requested to provide such information to the City of Phoenix. These should be directed to Mr. Raymond U. Acuna, P.E., Floodplain Manager, 200 West Washington Street, 5th Floor, Phoenix, Arizona 85003; telephone (602) 262-4960, fax (602) 262-7322.

Published: September 5, 1996

AFFIDAVIT OF PUBLICATION

ARIZONA **BUSINESS** GAZETTE

PO BOX 194
Phoenix, Arizona 85001-0194
(602) 271-7300

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

TOM BIANCO, being first duly sworn, upon oath deposes and says: That he is the legal advertising manager of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates indicated.

9/ 5/1996

Sworn to before me this
5th day of
September A.D. 1996

OFFICIAL SEAL
MARY LEE BOOHER
Notary Public - State of Arizona
MARICOPA COUNTY
My Comm. Expires March 17, 1999

Notary Public

EXHIBIT 4

David Evans & Ass
Was contracted
FC DofMC to Revis
upper reach of FL
from 21st into A
LOMR appr. 1996

Introduction

David Evans and Associates was contracted by the Flood Control District of Mar
County (FCDMC) to analyze the uppermost reach of Flynn Lane Wash and revis
Flood Insurance Rate Map (FIRM) as necessary. A LOMR was submitted and approved in December 1996 for the lower reach, from approximately 21st Street to its outfall into the Arizona Canal Diversion Channel ACDC. This new analysis has been performed to reflect more detailed topography that was made available as part of the construction of the ACDC.

Area Studied

Detailed hydraulic analysis was performed along the wash from approximately 200 feet upstream of the 21st Street crossing to approximately 200 feet upstream of the roadway crossing at Lincoln Drive. Field survey was utilized in constructing the HEC-2 model and the aerial topographic maps used in the design and construction of the ACDC were used to supplement the required ground information (GR cards). The field survey data is shown on Exhibit 9.

Hydraulic Analysis

A duplicate effective model was prepared using the data available from the previous LOMR which is now part of Federal Emergency Management Agency (FEMA) records. A revised model was prepared using the current, more detailed topography which extends from cross section 0.379 to cross section 0.745. The data from the effective model was utilized from cross section 0 through 0.358.

The Manning roughness coefficients utilized in the new analysis 0.016 for the roadway, 0.05 to 0.08 for the channel, and 0.08 to 0.12 for the overbanks.

Boundary Conditions

The starting water surface elevations for the HEC-2 model were established based on the duplicate effective model. Due to better topographic information, 12 cross sections were modeled in the new analysis as compared to 2 cross sections in the duplicate effective model.

21st

Results

A revised flood profile is included in the submittal package which shows that the profile ties in vertically at the downstream location with the duplicate effective profile at cross section 0.358'. The horizontal tie-in is at approximately cross section 0.358 as shown on Exhibit 8.

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A split flow analysis was performed at the Lincoln Drive culvert crossing to determine the flow spilling onto Lincoln Drive. As can be seen by the topography, the split flow will not directly reenter the wash. Instead the flows are conveyed northwest within the roadway.

The duplicate effective model shows the flow enters Flynn Lane wash at cross section .420. The topography reveals a tributary ditch between the revised HEC-2 cross sections .466 and .458. However, field visits show that the ditch has been replaced with a five foot diameter culvert. Additional survey data was performed that reveals the inverts and lengths of the culvert. A Manning's analysis results in a maximum capacity of the culvert of 224 cfs. A cursory delineation of the contributing watershed shows that approximately 33% of the 440 cfs concentrates at the culvert. This discharge (approximately 150 cfs) seems consistent with the design of the culvert. The watershed map for this drainage area is shown on Figure 1 in Exhibit 13.

The delineation also shows that approximately 33% of the 440 cfs concentrates upstream of the cul-de-sac, just east of the 5' culvert. This 150 cfs combines with the 51 cfs from the split flow analysis resulting from the revised hydraulic model (HEC-2) and is conveyed northwest on Lincoln Drive. Without having detailed field survey, it can't be determined if the flow is diverted southwest in the cul-de-sac or continues west on Lincoln Drive. Two cross sections (1 and 2) were analyzed using a Manning's analysis with the combined flow of 200 cfs. The results show that the flow depths are 0.87' and 1.22', respectively, thereby preventing the area from being removed from the floodplain. However, without performing detailed hydrology and hydraulic analyses, exact water surface elevations can't be established. A flood hazard Zone AO was chosen based on its definition: *areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet*. An average depth of 1 foot resulted from the hydraulic analysis; therefore, this depth should show on the revised floodplain map.

Figure 1, photos of the area in this discussion, the capacity analysis of the culvert, the survey information for the culvert, and the hydraulic analyses of the two cross sections are located in Exhibit 13.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER** **AND/OR LAND SURVEYOR FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 0.23 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2

2. I am licensed with an expertise in: Water Resources
   [example: water resources (*hydrology, hydraulics, sediment transport, interior drainage*)* structural, geotechnical, land surveying.]

3. I have 6 years experience in the expertise listed above.

4. I have X prepared __ reviewed the attached supporting data and analyses related to my expertise.

5. I X have __ have not visited and physically viewed the project.

6. In my opinion, the following analyses and/or designs, is/are being certified:
   Revised floodplain due to more detailed topography.

7. Based upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. __ Viewed all phases of actual construction.
   b. __ Compared plans and specifications with as-built survey information.
   c. __ Examined plans and specifications and compared with completed projects.
   d. X Other: Performed topographic survey as part of floodplain delineation process.

8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Teri S. Mintz

Title: Water Resources Engineer

Registration No.: 30013 Expiration Date: 03/31/99

State: Arizona

Type of License: Civil Engineer

Teri S Mintz
Signature

2/20/97
Date

Registered Professional Engineer (Civil)
CERTIFICATE NO.
30013
TERI S.
MINTZ
Date Signed 2/20/97
ARIZONA, U.S.A.

Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Phoenix

Flooding Source: Flynn Lane Wash
(One form for each flooding source)

Project Name/Identifier: Flynn Lane Wash

1. REACH TO BE REVISED

Downstream Limit: 0.287

Upstream Limit: 0.62

2. EFFECTIVE FIS

__ Not studied

__ Studied by approximate methods

Downstream limit of study:
Upstream limit of study:

__ Studied by detailed methods

Downstream limit of study:
Upstream limit of study:

X Floodway delineated

Downstream limit of Floodway: 0
Upstream limit of Floodway: 0.62

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM? (*Check all that apply*)

__ Not studied in FIS

__ Improved hydrologic data/analysis. Explain:

__ Improved hydraulic analysis. Explain:

X Flood control structure. Explain: A LOMR was recently submitted and approved by FEMA for the lower portion of Flynn Lane Wash due to the construction of the Arizona Canal Diversion Channel (ACDC) and spillways into the facility. The community chose to analyze the Wash upstream of the previous LOMR study to determine if, due to more detailed topography, additional area could be removed from the floodplain or floodway.

__ Other. Explain:

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

For areas which have detailed flooding:
Full input and output listings along with files on diskette (*if available*) for each of the models listed below (items 1, 2, 3, 4, and 5) and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g., duplicate effective model to corrected effective model*). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

For areas which do not have detailed flooding:
Only the 100-year flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 below must be submitted.

	Natural	Floodway
1. Duplicate Effective Model Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (*10-, 50-, 100-, and 500-year multi-profile runs and the floodway run*) must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.	X	X
2. Corrected Effective Model The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.	–	–
3. Existing or Pre-Project Conditions Model The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.	–	–
4. Revised or Post-Project Conditions Model The existing or pre-project conditions model (*or duplicate effective or corrected effective model, as appropriate*) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.	X	X
5. Other: Please attach a sheet describing all other models submitted.	–	–

6. Hydraulic Analyses (only if hydraulic models are not developed)
Please attach all calculations for the existing or pre-project conditions and the revised or post-project conditions.
Proceed to Form 5 "Riverine/Coastal Mapping Form."

4. MODEL PARAMETERS (from model used to revise 100-year water-surface elevation)

1. Discharges:	Upstream Limit	Downstream Limit
10-year.....		
50-year.....		
100-year.....	1100	1700
500-year.....		
Attach diagram showing changes in 100-year discharge		

2. Explain how the starting water-surface elevations were determined:

The starting water surface elevations were the same used in the duplicate effective model. The revised model analyzes changes upstream of cross section 0.358.

3. Give range of friction loss coefficients (Manning's "n") Channel.....015 - .08.....
Overbanks.....015 - .12.....

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised
.466	.05	.07
.599	.05	.015
.639	.05	.08

Explain:

Roadway crossing (.015) and denser vegetation than what FIS reflects.

4. Describe how the cross section geometry data were determined (*e.g., field survey, topographic map, taken from previous study*) and list cross sections that were added.

Topographic maps and detailed field survey data.

5. Were natural channel banks selected as the location of the left and right channel banks in this model?

X Yes __ No If no, explain why not:

4. MODEL PARAMETERS (Cont'd)

6. Explain how reach lengths for channel and overbanks were determined:

Measured from survey and topographic drawings (channel and overbanks are well defined).

5. RESULTS (from model used to revise 100-year water-surface elevations)

1. Do the results indicate:	
a. Water-surface elevations higher than end points of cross sections?	X Yes __ No
b. Supercritical depth?.....	X Yes __ No
c. Critical depth?	X Yes __ No
d. Other unique situations.....	__ Yes X No
If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.	
2. What is the maximum change in energy gradient between cross sections?:.....	8.29'
Specify location.....	Between .584 & .599
3. What is the distance between the cross sections in 2 above?:.....	84 feet
4. What is the maximum distance between cross sections?.....	230 feet
Specify location.....	.501 & .544
5. Floodway determination	
a. What is the maximum surcharge allowed by the community or State?.....	1 foot
b. What is the maximum surcharge for the revised conditions?.....	0.82 foot
Specify location.....	.544
c. What is the maximum velocity?.....	11.37 fps
Specify location	.599
d. Are there any negative surcharge values at any cross section?	X Yes __ No
If yes, the floodway may need to be widened. If it is not widened, please explain and indicate the maximum negative surcharge.	

Explain:

Negligible negative surcharge values of 0.01' result at cross sections 0.639 and 0.745.

5. RESULTS (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ..... __ Yes X No

   If Yes, explain:

7. Do 100-year water-surface elevations increase at any location? ..... X Yes __ No

   If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases. *(For example: State if the increase is due to fill placed within the floodway fringe or placed within the currently adopted floodway limits.)*

Increases of 0.03 to 0.08 feet occur at cross sections 0.32, and 0.333 even though no changes were made to the HEC-2 data until cross section 0.379. This must be an abnormality of the program, though insignificant.

Please attach a completed comparison table entitled: Water-Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model (*10-, 50-, 100-, and 500-year*), downstream of the project at cross section 0.287 within 0 feet *(vertical)* and upstream of the project at cross section N/A within N/A feet *(vertical)*. The revised model extends approximately 200 feet upstream of the upstream limit for the duplicate effective model.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section 0.287 within .01 feet *(vertical)* and upstream of the project at cross section N/A within N/A feet *(vertical)*. The revised model extends approximately 200 feet upstream of the upstream limit for the duplicate effective model.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studies (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine/Coastal Mapping Form

FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER-SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODING SOURCE	PROJECT NAME/IDENTIFIER
Phoenix	Flynn Lane Wash	Flynn Lane Wash

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
.320				1270.97	1271.26	+.29							1271.05	1271.26	+.21
.333				1272.67	1272.74	+.07							1272.70	1272.74	+.04
.347				1273.36	1273.36	0							1273.35	1273.36	+.01
.358				1274.95	1274.96	-.01							1274.95	1274.96	+.01
.379													1276.87	1276.91	+.04
.420				1279.83	1280.30	+.47							1279.17	1279.17	0
.456													1282.97	1283.01	+.04
.466													1284.01	1284.14	+.13
.501													1286.75	1287.18	+.43
.530				1289.63	1289.64	+.01									
.544													1292.06	1292.88	+.82
.580				1295.08	1295.08	0									
.59**				1299.05	1299.05	0									

COMMENTS:

**Cross sections for duplicate effective model placed in table according to location along wash, not numerically

[1]100-year (natural) water-surface elevation [2]Encroachment (floodway) Water-Surface Elevation [3]Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER-SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODING SOURCE	PROJECT NAME/IDENTIFIER
Phoenix	Flynn Lane Wash	Flynn Lane Wash

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
.584													1295.81	1295.95	+.14
.599													1303.66	1304.02	+.36
.620				1311.95	1311.95	0									
.639													1312.72	1312.71	-.01*
.677													1312.74	1312.74	0
0.70				1316***											
.716													1315.99	1315.99	0
.745													1323.03	1323.04	-.01*

COMMENTS:

* Negative surcharge is negligible
**** Based on FIRM

[1]100-year (natural) water-surface elevation [2]Encroachment (floodway) Water-Surface Elevation [3]Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE/COASTAL MAPPING FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Phoenix

Flooding Source: Flynn Lane Wash

Project Name/Identifier: Flynn Lane Wash

1. MAPPING CHANGES

1. A topographic work map of suitable scale, contour interval, and planimetric definition must be submitted showing (*indicate N/A when not applicable*):

		Included		
A.	Revised approximate 100-year floodplain boundaries (Zone A)	__ Yes	__ No	X N/A
B.	Revised detailed 100- and 500-year floodplain boundaries	X Yes	__ No	__ N/A
C.	Revised 100-year floodway boundaries	X Yes	__ No	__ N/A
D.	Location and alignment of all cross sections used in the revised hydraulic model with stationing control indicated	X Yes	__ No	__ N/A
E.	Stream alignments, road and dam alignments	X Yes	__ No	__ N/A
F.	Current community boundaries	__ Yes	__ No	X N/A
G.	Effective 100- and 500-year floodplain and 100-year floodway boundaries from the FIRM/FBFM reduced or enlarged to the scale of the topographic work map	X Yes	__ No	__ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	X Yes	__ No	__ N/A
I.	The requestor's property boundaries and community easements	__ Yes	__ No	X N/A
J.	The signed certification of a registered professional engineer	X Yes	__ No	__ N/A
K.	Location and description of reference marks	X Yes	__ No	__ N/A
L.	Vertical datum (example: NGVD, NAVD, etc.)	X Yes	__ No	__ N/A
M.	Coastal zone designations tie into adjacent areas not being revised	__ Yes	__ No	X N/A
N.	Location and alignment of all coastal transects used to revise the coastal analyses	__ Yes	__ No	X N/A

If any of the items above are marked no or N/A, please explain: Revision is entirely within City of Phoenix, not in coastal zone.

2. What is the source and date of the updated topographic information (*example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.*)? Field survey based on horizontal and vertical control which is the reference marker (BCHH) at 16th St. & Glendale Ave. Elevation 1229.69 (NGVD 1929). Survey performed by Morrison/Maierle, CSSA, Inc. January 1997.

3. What is the scale and contour interval of the following work maps?

a.	Effective FIS	1' = 400'	scale	2 foot Contour interval
b.	Revision Request	1' = 100'	scale	2 foot Contour interval

NOTE: Revised topographic information must be of equal or greater detail.

4. Attach an annotated FIRM and FBFM at the scale of the effective FIRM and FBFM showing the revised 100-year and 500-year floodplains and the 100-year floodway boundaries and how they tie into those shown on the effective FIRM and FBFM downstream and upstream of the revision or adjacent to the area of revision for coastal studies.

Attach additional pages if needed.

1. MAPPING CHANGES (Cont'd)

5. Flood Boundaries and 100-year water surface elevations:

   Has the 100-year floodplain been shifted or increased or the 100-year water surface elevation increased at any location on property other than the requestor's or community's? __ Yes _X_ No

   If yes, please give the location of shift or increase and an explanation for the increase.

   a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? ..... __ Yes __ No

      If yes, please attach letters from these property owners stating they have no objections to the revised flood boundaries if a LOMR is being requested.

   b. What is the number of insurable structures that will be impacted by this shift or increase? _____

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM: ..... __ Yes _X_ No

   If yes, explain:

7. If a V-zone has been designated, has it been delineated to extend landward to the heel of the primary frontal dune? __ Yes __ No

   If no, explain:

8. Manual or digital map submission:

   _X_ Manual

   _X_ Digital

   Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance of submission as possible.

2. EARTH FILL PLACEMENT

1. The fill is: __ Existing __ Proposed NO FILLED PLACE

2. Has fill been/will be placed in the regulatory floodway? ..... __ Yes __ No

   If yes, please attach completed Riverine Hydraulic Analysis Form.

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ..... __ Yes __ No

   If yes, then complete A, B, C, and D below.

   A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ..... __ Yes __ No

      If yes, justify steeper slopes:

   B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.*)
      ..... __ Yes __ No

      If no, describe erosion protection provided:

   C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? __ Yes __ No

   D. Can structures conceivably be constructed on the fill at any time in the future? __ Yes __ No

      If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

4. Has fill been/will be placed in a V-zone? __ Yes __ No

   If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? __ Yes __ No

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1997	FEMA USE ONLY

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Community Name: Phoenix

Flooding Source: Flynn Lane Wash

Project Name/Identifier: Flynn Lane Wash

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Lincoln Avenue/Glendale Road
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Between cross section .599 and .639.
3. This revision reflects *(check one of the following):*

   __ New bridge/culvert not modeled in the FIS

   __ Modified bridge/culvert previously modeled in the FIS

   X New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

   More detailed topography.

2. BACKGROUND

Provide the following information about the structure:

1. Dimension, material, and shape (e.g., two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3-foot diameter circular piers; 40-foot wide ogee shape spillway)

   One 5' diameter reinforced concrete pipe with headwalls.

2. Entrance geometry of culvert/type of bridge opening (e.g, 30° - 75° wing walls with square top edge, sloping embankments, and vertical abutments)

   30° - 75° wing walls with square top edge

3. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HEC-2 with special culvert routine.

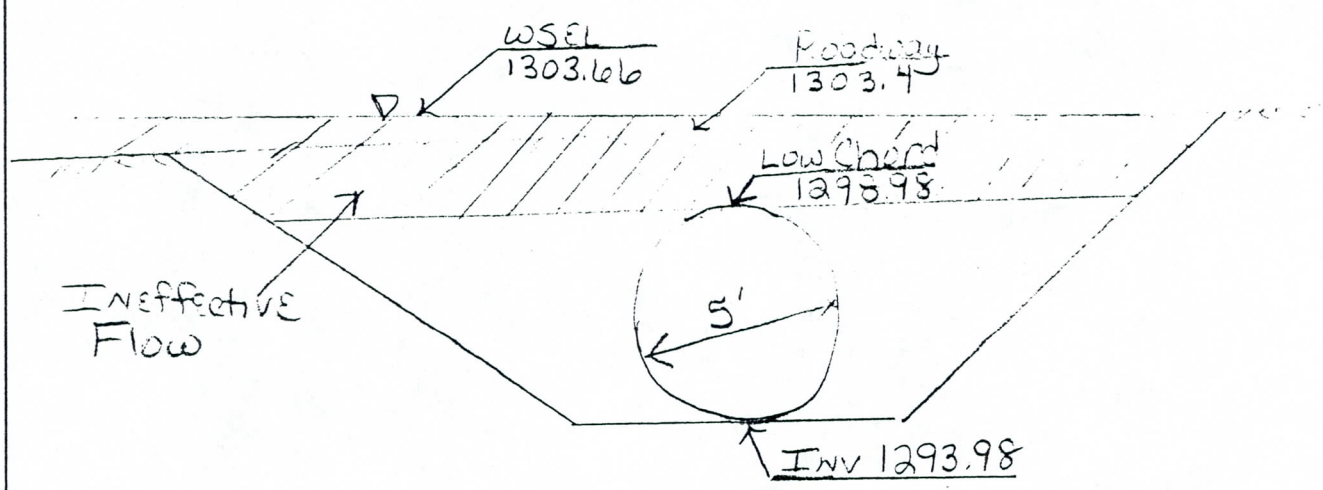
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A
***One form per new/revised bridge/culvert**

3. ANALYSIS

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.

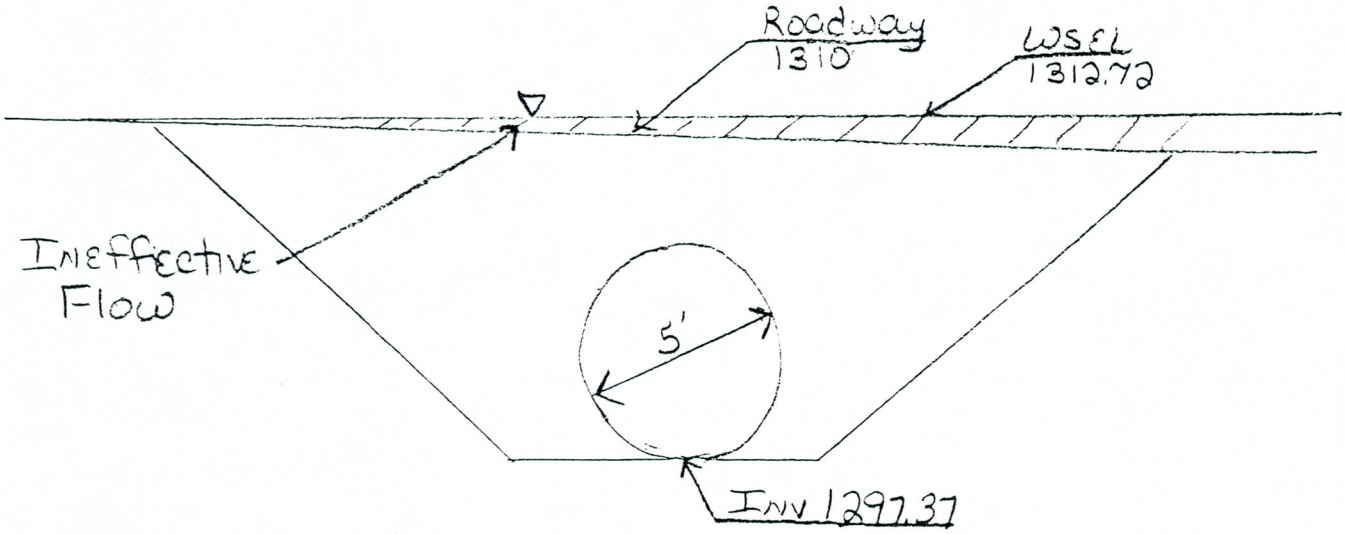
Cross Section 0.599



Looking Upstream

Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

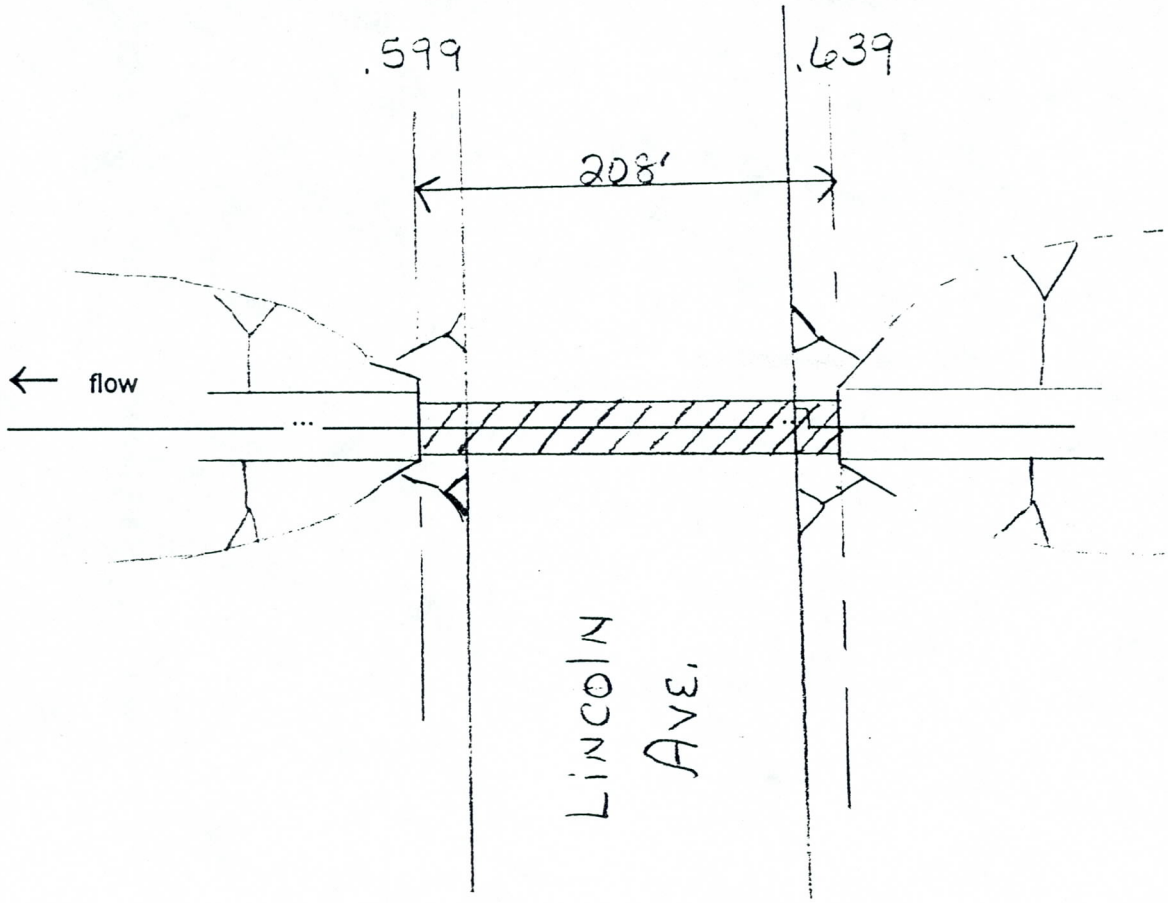
Cross Section 0.639



Looking Downstream

3. ANALYSIS (Cont'd)

Sketch the plan view of the structure(s). Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure(s).



Attach plans of the structure(s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	208 feet
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	19.6 ft^2
Total culvert/bridge area (ft^2)	19.6 ft^2

3. ANALYSIS (Cont'd)

Elevations Above Which Flow is Effective for Overbanks		
	Left Overbank	Right Overbank
Upstream face	1310.10	1310.07
Downstream face	1298.9	1298.9
Minimum Top of Road Elevation		
	Left Overbank	Right Overbank
Upstream face	1310.1	1310.07
Downstream face	1293.9	1293.9
100-Year Elevations		
	Water-Surface Elevations	Energy Gradient Elevations
Upstream face	1312.72	1312.78
Downstream face	1303.66	1305.01

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure(s) (cfs)		300	807	1107
The maximum depth of flow over the roadway/railroad (ft.)				2.72
Weir length (ft.)				180

Top Widths	Total Floodplain Width	Floodway Width
Upstream face	180.23	90.31
Downstream face	59.33	12.11
Top Widths	Total Effective Flow Width	Effective and Ineffective Flow
Upstream face	217	217
Downstream face	100	100

3. ANALYSIS (Cont'd)

Loss Coefficients Entrance loss coefficient	.5
Manning's "n" value assigned to the structure(s)	.015
Friction loss coefficient through structure(s)	N/A
Other loss coefficients (e.g., bend manhole, etc.)	N/A
Total loss coefficient	N/A
Weir coefficient	2.6
Pier coefficient	N/A
Contraction loss coefficient	.6
Expansion loss coefficient	.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water-surface elevations? ..... __ Yes X No

   B. Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water-surface elevations and/or conveyance capacity through the bridge/culvert? ..... __ Yes X No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment *(bed material)* load?
   _____ cfs *(attach gradation curve)*

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition:

   B. Will sediment accumulate anywhere through the bridge/culvert? ..... __ Yes __ No

   If yes, explain the impact on the conveyance capacity through the bridge/culvert?

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment

(floodway run) Ran HEC-2 using encroachment method #4. If surcharge was positive, method #1 was used setting left and right encroachment stations at those specified in method #4.

5. FLOODWAY ANALYSIS (Cont'd)

Comments *(explain any unusual situations):*

Attach analysis.

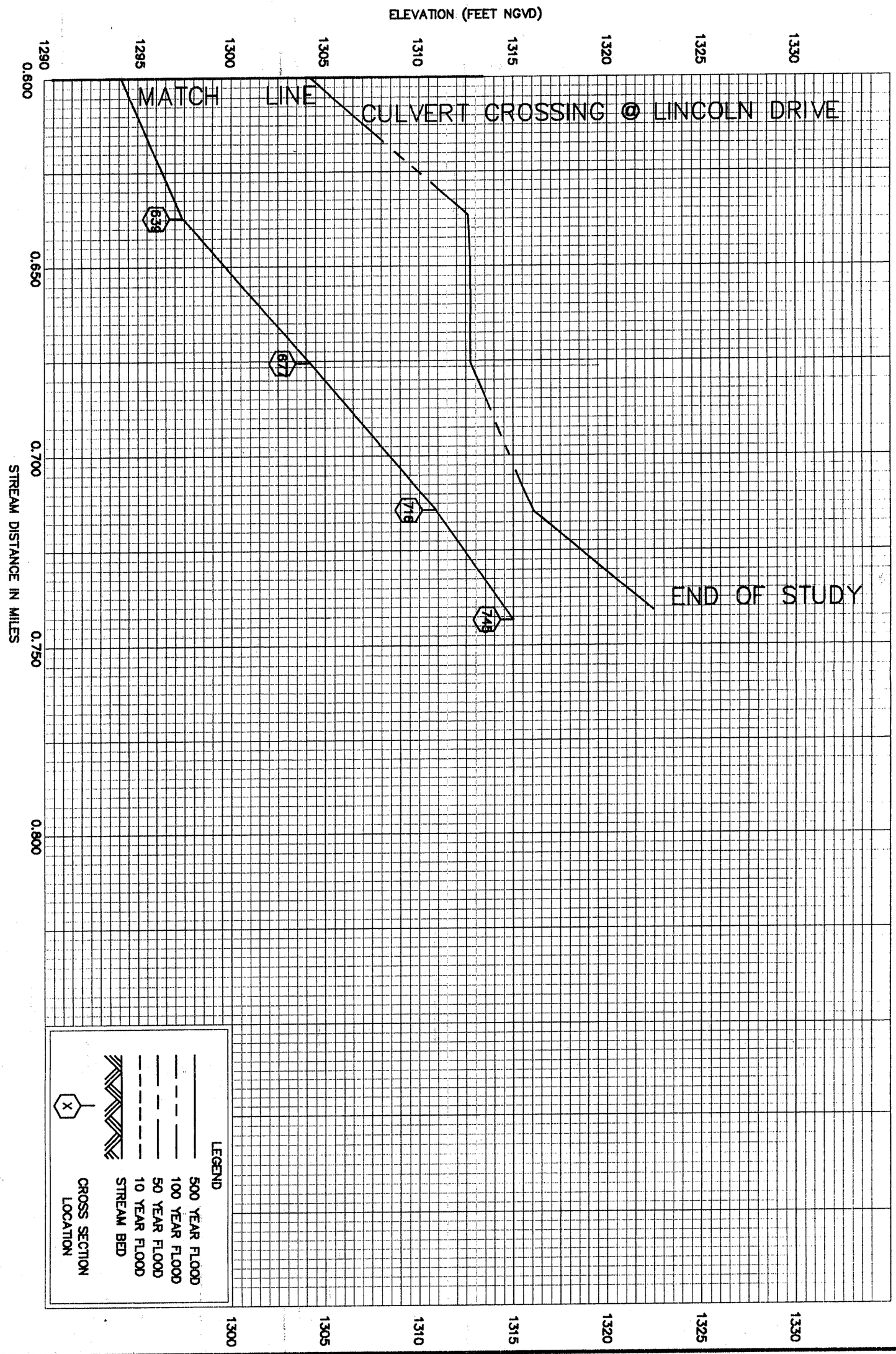
Explanations

Form 4, Section 5, Part 1a
The 100-year water surface elevation is higher than at the end points at cross sections 0.599 and 0.639. A split flow analysis was performed at this location to determine the discharge that leaves the main wash.

Form 4, Section 5, Part 1b and 1c
Critical depth is assumed at several locations along the wash. A subcritical analysis was performed for Flynn Lane Wash which is a conservative approach to the revision of a floodplain boundary.

Form 7, Section 3
As-builts for the culverts at Lincoln Drive could not be obtained. However, survey data was obtained and is included in the LOMR submittal which shows the inverts and roadway elevations. Refer to the survey drawing for cross sections .599 and .639.

EXHIBIT 5

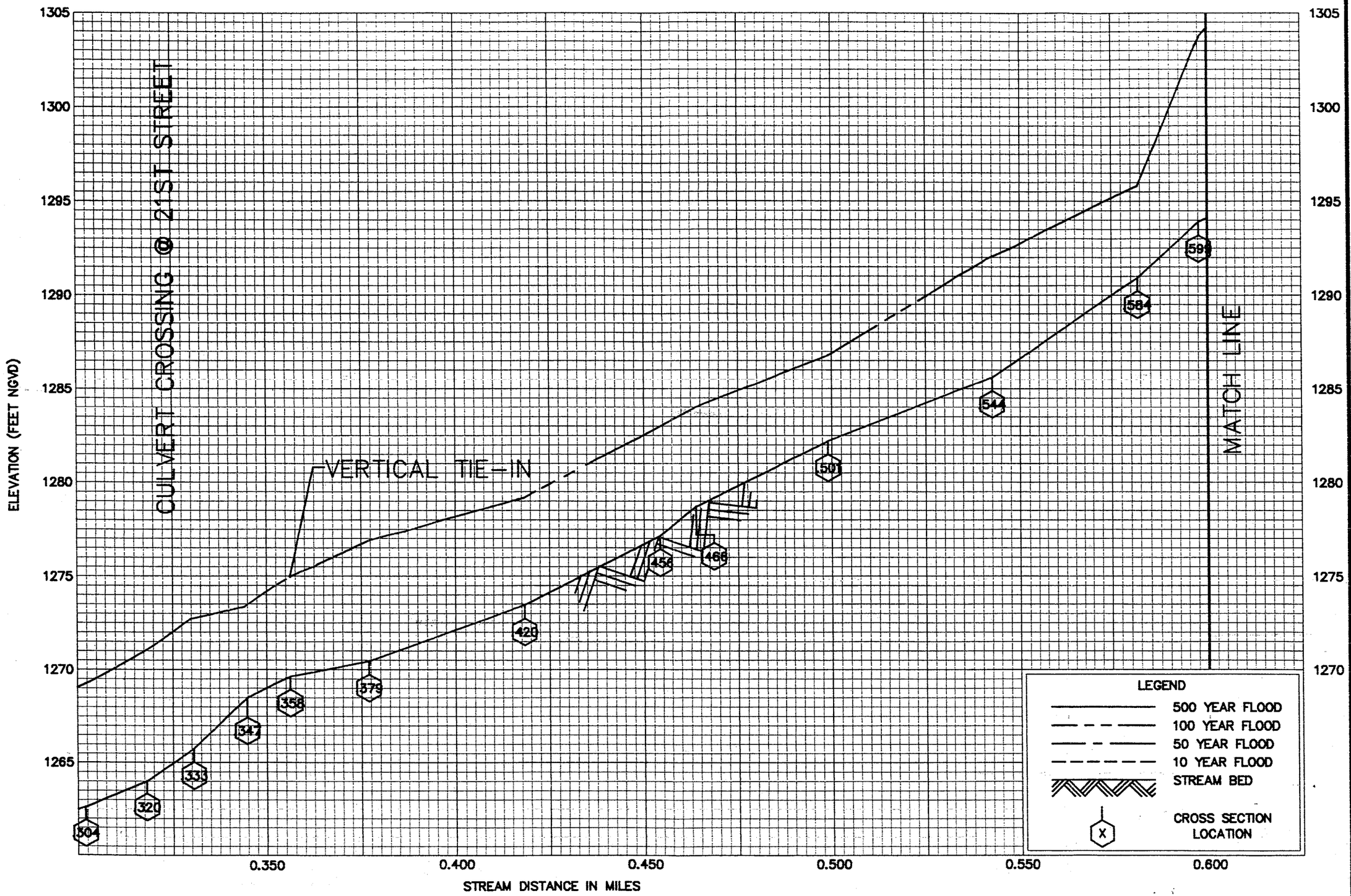


FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

FLOOD PROFILES

FLYNN LANE WASH



FLOOD PROFILES

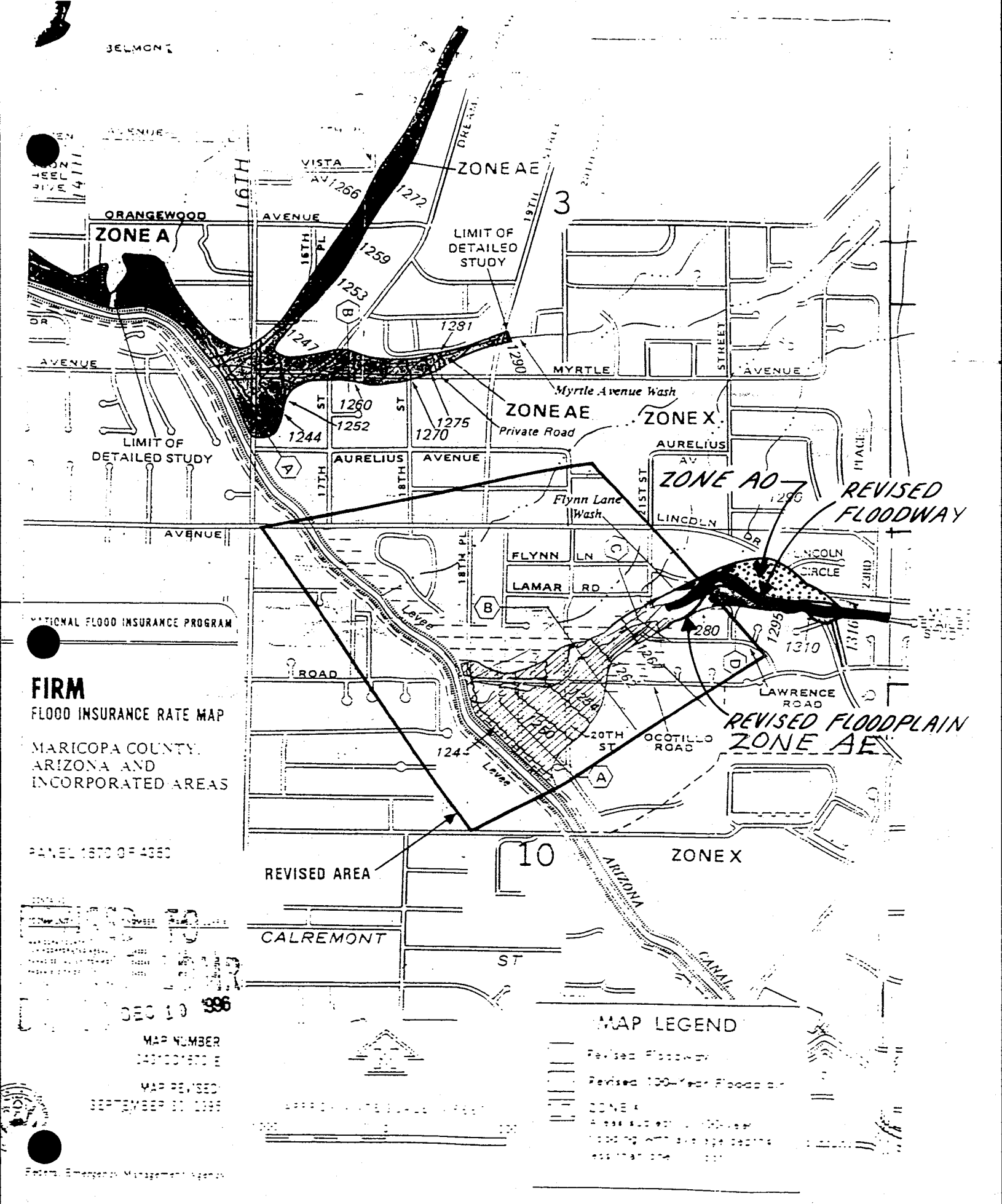
FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

MARI0022 PH014 02/20/97 13:02:18 TSM S:\CAD\MARI0022\MA22PR01

EXHIBIT 6


FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS
NATIONAL FLOOD INSURANCE PROGRAM
ZONE A
ZONE AE
ZONE X
ZONE AO
REVISED FLOODWAY
REVISED FLOODPLAIN
ZONE AE
REVISED AREA
LIMIT OF DETAILED STUDY
ORANGEWOOD AVENUE
VISTA AV
16TH ST
16TH PL
17TH ST
18TH ST
18TH PL
19TH ST
21ST ST
MYRTLE AVENUE
STREET
Myrtle Avenue Wash
Private Road
AURELIUS AVENUE
AURELIUS AV
Flynn Lane Wash
LINCOLN DR
LINCOLN CIRCLE
FLYNN LN
LAMAR RD
Levee
LAWRENCE ROAD
20TH ST
OCOTILLO ROAD
ARIZONA CANAL
CALREMONT ST
MAP LEGEND
MAP NUMBER
MAP REVISED
SEPTEMBER 30, 1995
DEC 10 1996

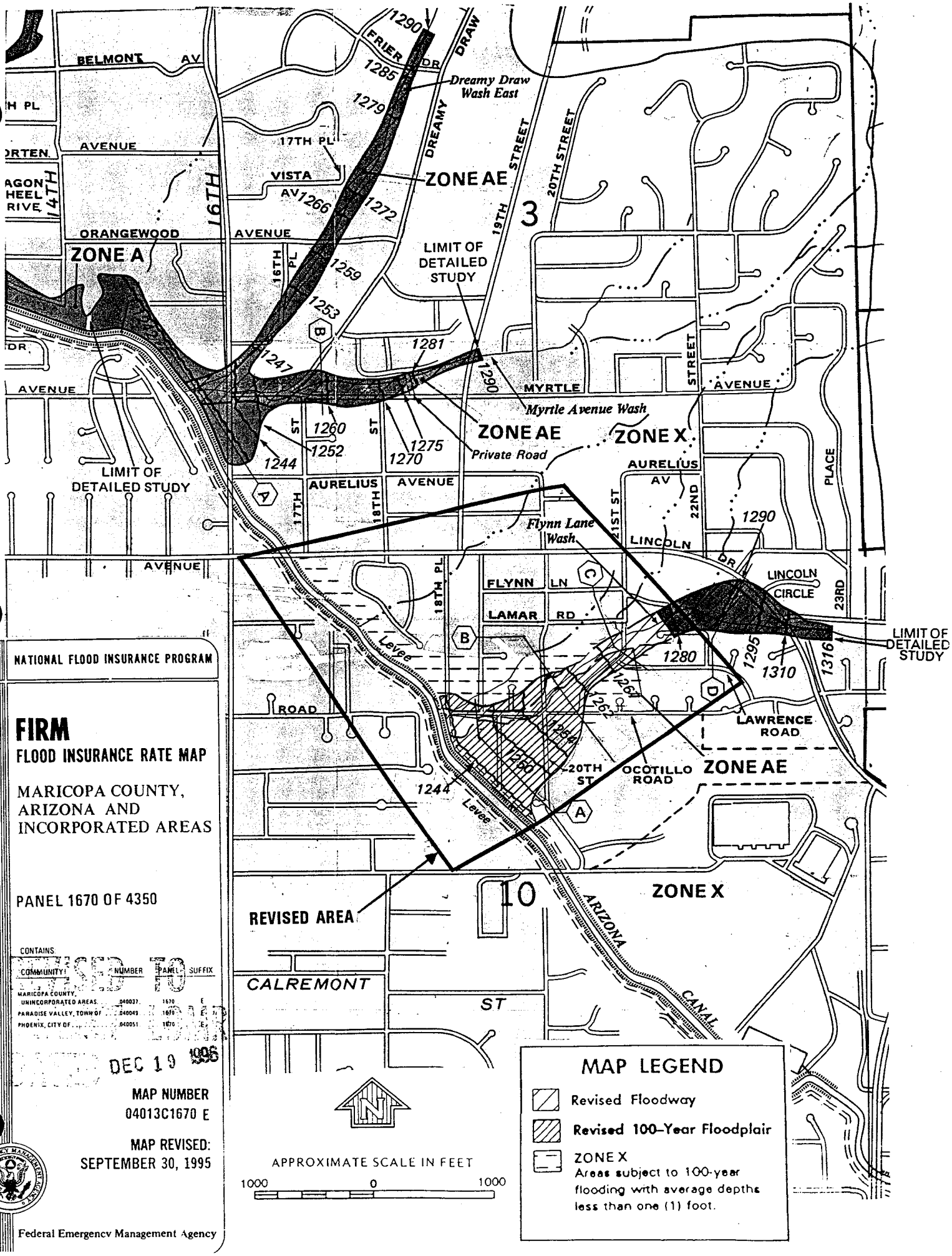
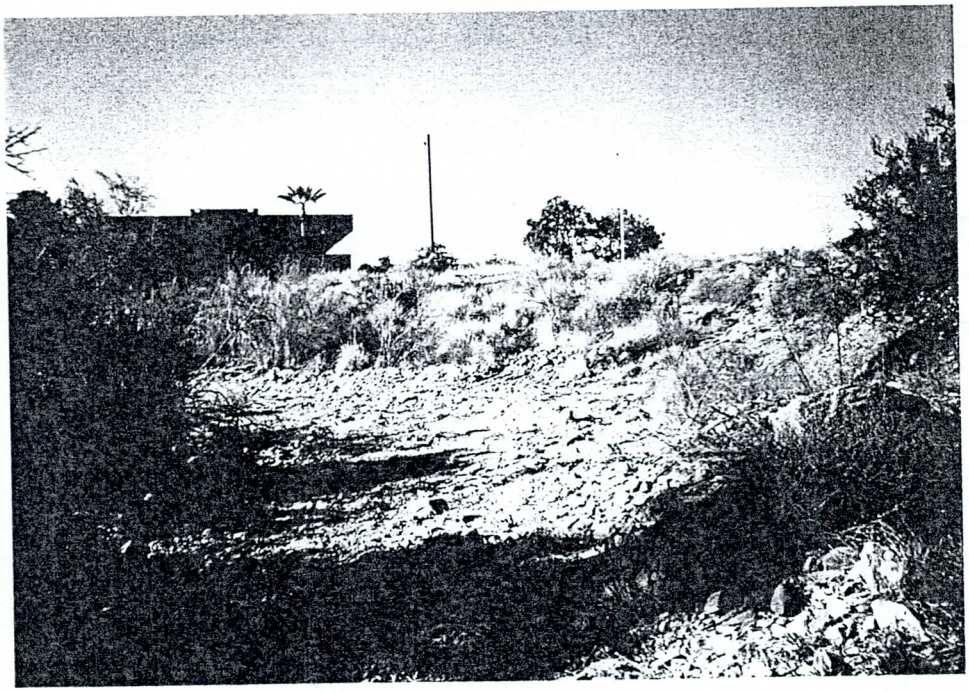

NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS
PANEL 1670 OF 4350
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS 040037 1670 E
PARADISE VALLEY, TOWN OF 040049 1670 E
PHOENIX, CITY OF 040051 1670 E
REVISED TO
DEC 19 1996
MAP NUMBER
04013C1670 E
MAP REVISED:
SEPTEMBER 30, 1995
Federal Emergency Management Agency
Dreamy Draw Wash East
ZONE AE
ZONE A
LIMIT OF DETAILED STUDY
Myrtle Avenue Wash
ZONE X
Private Road
Flynn Lane Wash
Levee
REVISED AREA
ARIZONA CANAL
CALREMONT ST
LAWRENCE ROAD
OCOTILLO ROAD
20TH ST
BELMONT AV
ORANGEWOOD AVENUE
VISTA AV
17TH PL
FRIER DR
DREAMY DRAW
19TH STREET
20TH STREET
16TH ST
14TH
MYRTLE AVENUE
AURELIUS AVENUE
AURELIUS AV
LINCOLN DR
LINCOLN CIRCLE
FLYNN LN
LAMAR RD
21ST ST
22ND
23RD
PLACE
18TH PL
17TH
18TH
3
10
1290
1285
1279
1266
1272
1259
1253
1247
1281
1260
1252
1244
1275
1270
1280
1295
1310
1316
1267
1262
1254
1250
MAP LEGEND
Revised Floodway
Revised 100-Year Floodplain
ZONE X
Areas subject to 100-year flooding with average depths less than one (1) foot.
APPROXIMATE SCALE IN FEET
1000 0 1000

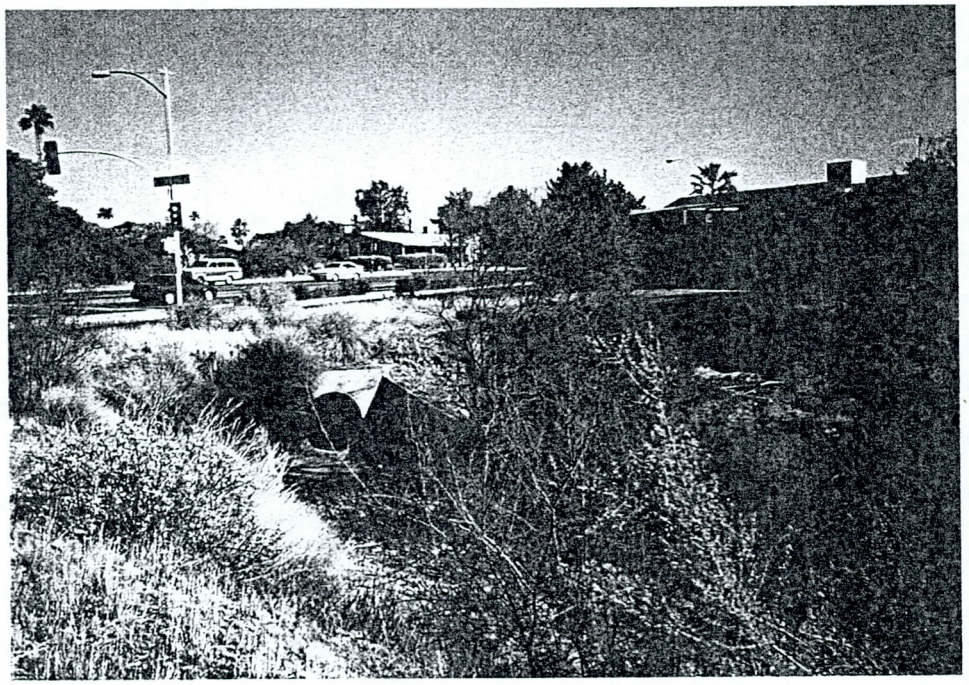
EXHIBIT 7

FLYNN LANE WASH
APPROXIMATELY CROSS SECTION 0.379
LOOKING EAST

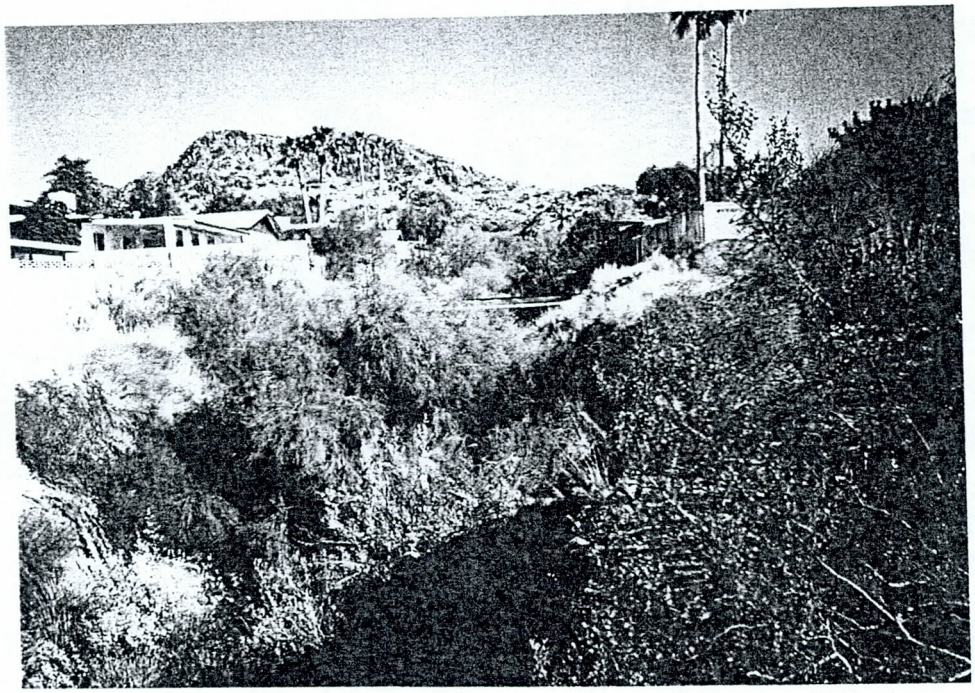


FLYNN LANE WASH
APPROXIMATELY CROSS SECTION 0.456
LOOKING WEST

FLYNN LANE WASH
APPROXIMATELY CROSS SECTION 0.466
LOOKING EAST AT CULVERT THAT REPLACED MINOR WASH

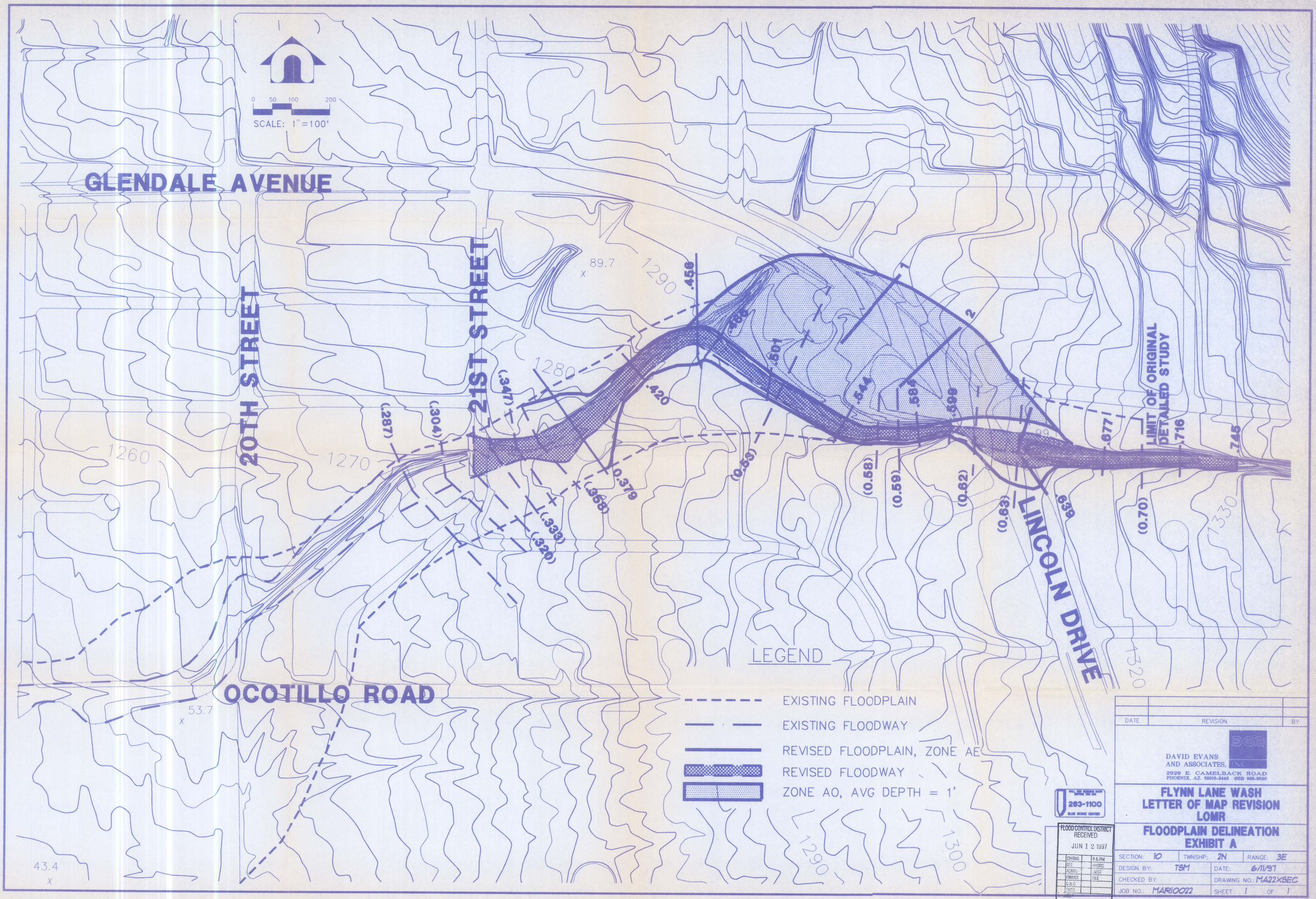


FLYNN LANE WASH
OUTLET UNDER LINCOLN DRIVE
LOOKING EAST



FLYNN LANE WASH
APPROXIMATELY CROSS SECTION 0.716
LOOKING EAST

EXHIBIT 8


SCALE: 1" = 100'
0 50 100 200
GLENDALE AVENUE
20TH STREET
21ST STREET
OCOTILLO ROAD
LINCOLN DRIVE
LIMIT OF ORIGINAL DETAILED STUDY
LEGEND
EXISTING FLOODPLAIN
EXISTING FLOODWAY
REVISED FLOODPLAIN, ZONE AE
REVISED FLOODWAY
ZONE AO, AVG DEPTH = 1'
1260
1270
1280
1290
1300
1320
1330
89.7
53.7
43.4
.456
.501
.544
.598
.677
.716
.745
.420
.379
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(.368)
(.333)
(.320)
(.287)
(.304)
(0.53)
(0.58)
(0.59)
(0.62)
(0.63)
(0.70)
.639
1
2
263-1100
BLUE STAKE CENTER
FLOOD CONTROL DISTRICT
RECEIVED
JUN 12 1997
CH ENG
DEP
ADMIN
FINANCE
G.A.O.
PROJ
PMM
P & PM
HYDRO
LMST
FILE
DATE
REVISION
BY
DAVID EVANS AND ASSOCIATES, INC
2929 E. CAMELBACK ROAD
PHOENIX, AZ 85016-4446 (602) 995-5500
FLYNN LANE WASH
LETTER OF MAP REVISION
LOMR
FLOODPLAIN DELINEATION
EXHIBIT A
SECTION: 10
TWNSHP: 2N
RANGE: 3E
DESIGN BY: TSM
DATE: 6/11/97
CHECKED BY:
DRAWING NO.: MA22X8EC
JOB NO.: MARI0022
SHEET 1 OF 1
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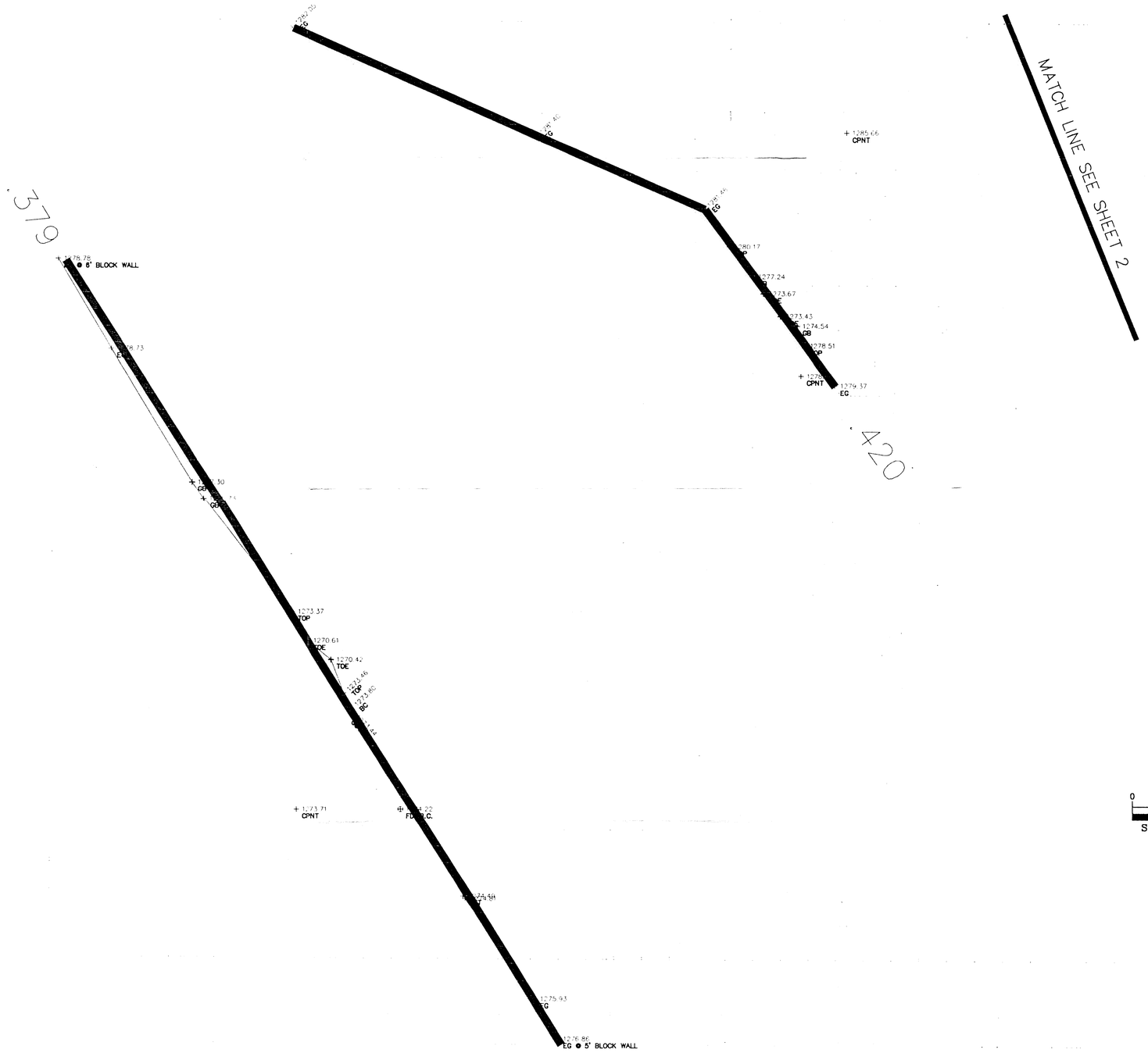
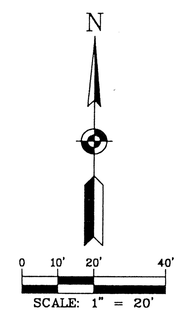
EXHIBIT 9





FLYNN LANE WASH
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT B

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DESIGN BY: TSM	DATE: 4/18/97	
CHECKED BY:	DRAWING NO.: MA22SVY1	
JOB NO.: MAR10022	SHEET 1 OF 4	

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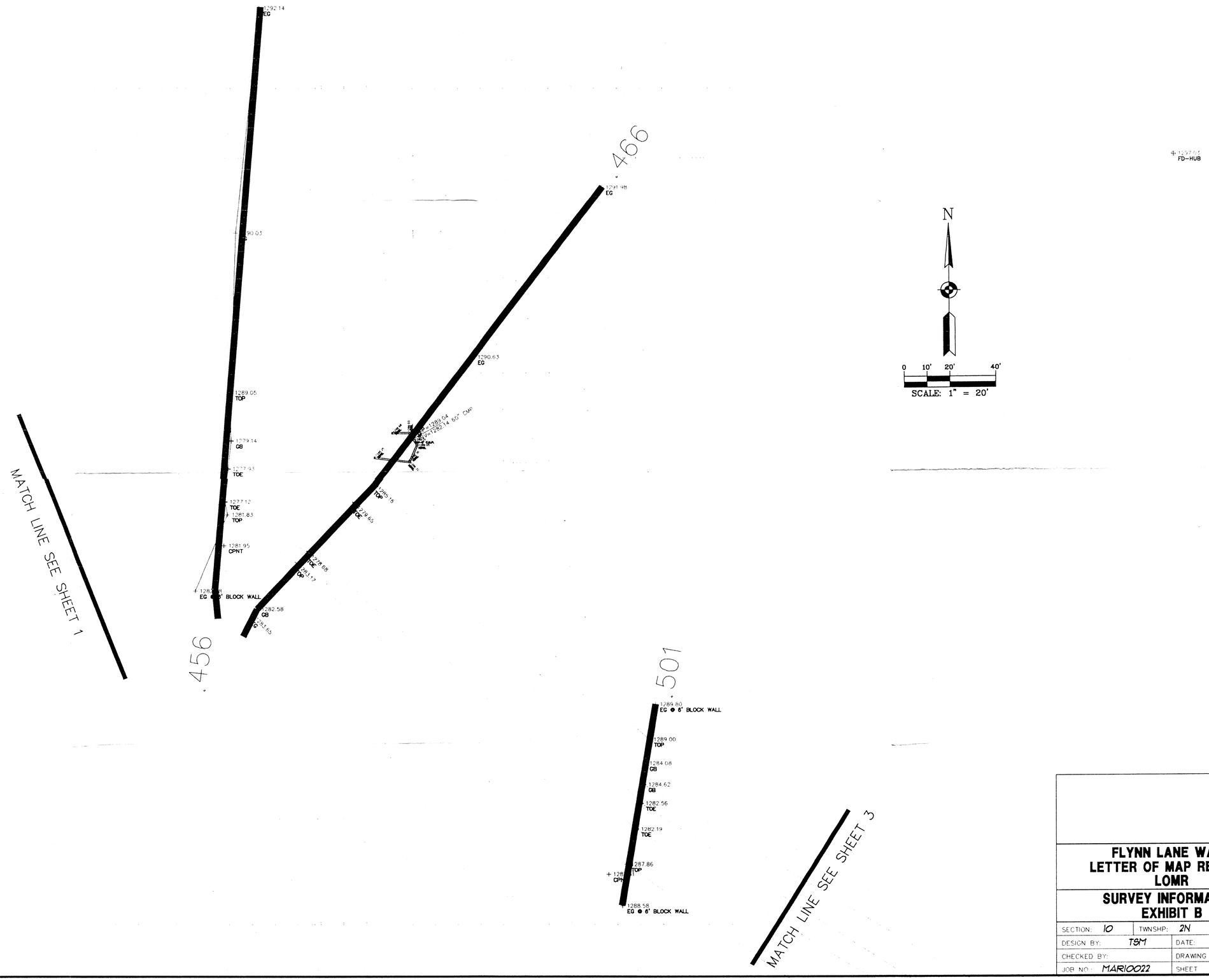

FLYNN LANE WASH
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT B

SECTION: 10	TWNSHP: 2N	RANGE: 3E
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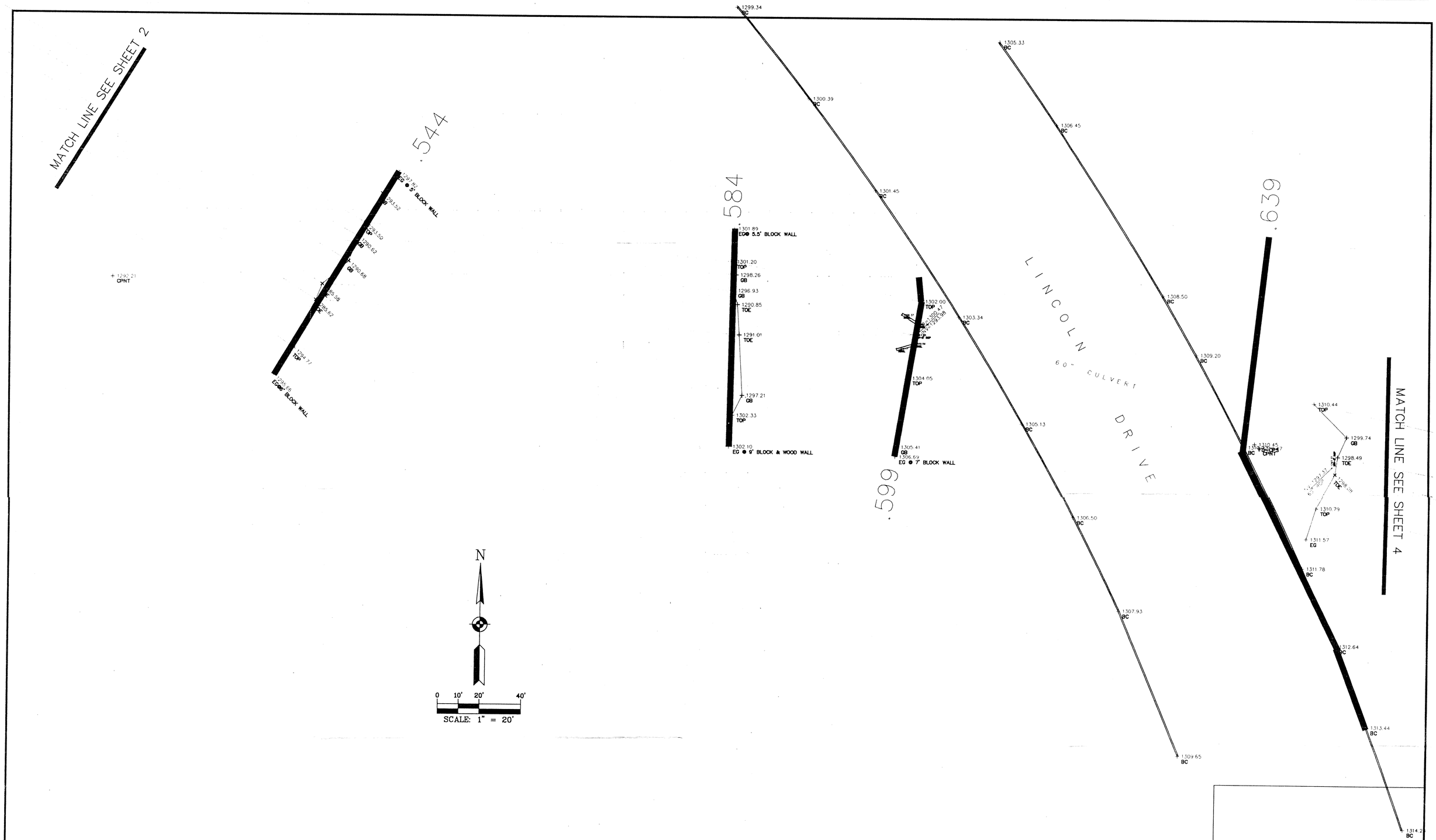

FLYNN LANE WASH
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT B

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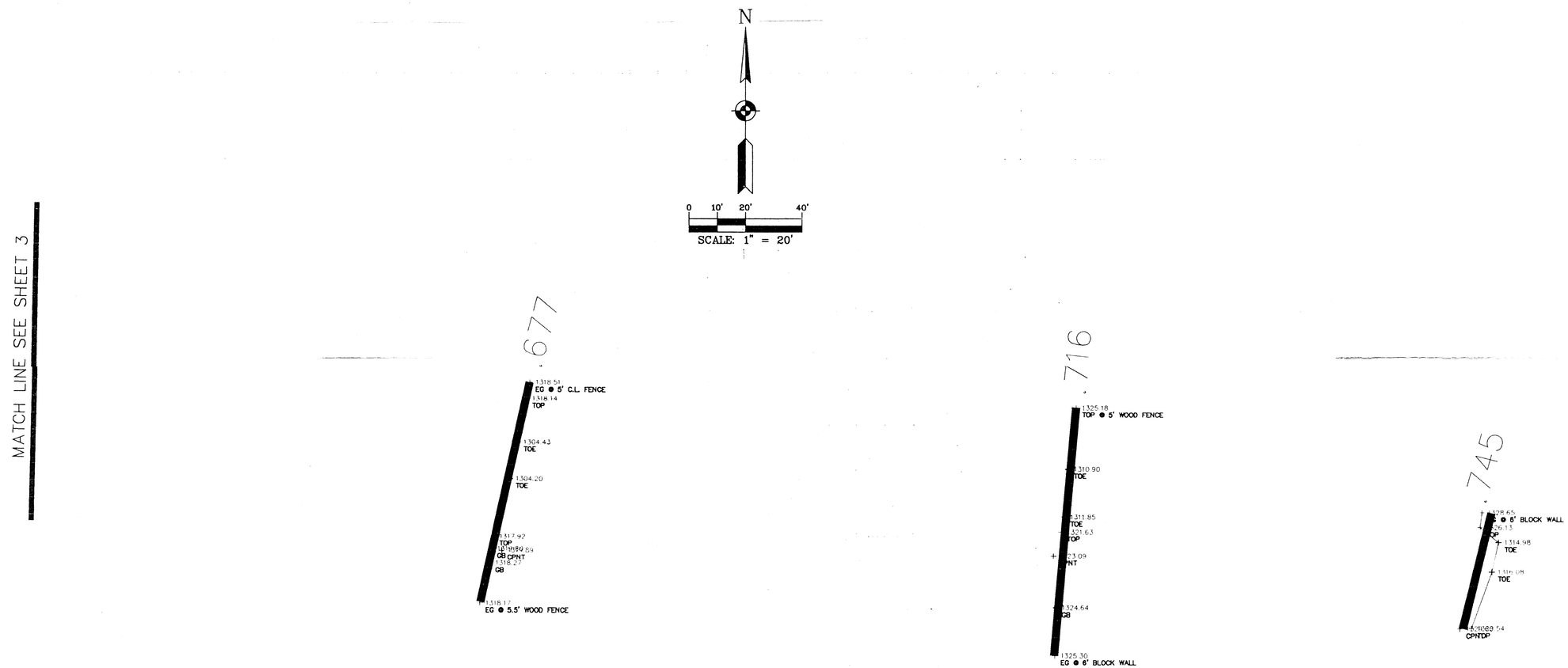

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FLYNN LANE WASH
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT B

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DESIGN BY: TSM	DATE: 4/18/97	
CHECKED BY:	DRAWING NO.: MA22SVY4	
JOB NO.: MAR10022	SHEET 4 OF 4	

SEC. 10 T. 2 N. R. 3 E.

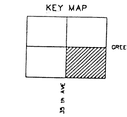
REGISTERED LAND SURVEYOR
16559
DANIEL L. KAMINSKI
ARIZONA, U.S.A.

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

PHOTOGRAMMETRIC SURVEY CERTIFICATION

I, Daniel L. Kaminski, of KAMINSKI-HUBBARD Engineering, Inc., Arizona Registered Land Surveyor #16559, Certify That The Survey Control Used To Complete Photogrammetric Maps For This Project Is Correct And Accurate Within Contract Specifications.

KEY MAP



INDEX

	11	12	7	8	9	10	11	12	7	8
	14	13	18	17	16	15	14	13	18	17
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20
DUNLAP AVE.	26	25	30	29	28	27	26	25	30	29
	35	36	31	32	33	34	35	36	31	32
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5
BETHANY HOME RD.	11	12	7	8	9		11	12	7	8
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17
	35th AVE.	27th AVE.	19th AVE.	7th ST.	16th ST.	24th ST.	32nd ST.	40th ST.	48th ST.	56th ST.

GREENWAY RD.
THUNDERBIRD RD.
CACTUS RD.
SHEA BLVD.
DOUBLE TREE RANCH RD.
NORTHERN AVE.
INDIAN BEND RD.
MC DONALD DR.
CHAPARRAL RD.

DATE FLOWN : 11-15-1990

NORTH

0 200' 400' 800'

FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY

ARIZONA CANAL DIVERSION CHANNEL
AREA DRAINAGE MASTER STUDY
PHASE 1

DRN:	DATE:	SCALE: 1" = 400' HORIZ.	JOB NO.	SHEET
DES:	DATE:	1" = ___ VERT.	0146	75 OF 111
CHD:	DATE:			

KENNEY AERIAL MAPPING INC.

EXHIBIT 10

EXHIBIT 11

HEC2 S/N: 1363000967 HMVersion: 6.52 Data File: MA22FEMA.HC2

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    19FEB97    TIME   13:25:29 *
*******************************************
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***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX   XXXXX
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X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION   :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
```

```
============================
H A E S T A D   M E T H O D S
============================
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS RUN EXECUTED 19FEB97 13:25:29

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
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```
T1          FLYNN LANE WASH FLOODPLAIN DELINEATION     FILE:MA22FEMA.HC2
T2          STATIONING IS LEFT TO RIGHT, LOOKING D/S. PREPARED 1/20/97
T3      FLYNN LANE WASH          DUPLICATE EFFECTIVE MODEL 100 YR STORM EVENT

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     -1        2         0         0         0         0                         1240.7

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                           -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    1.0      34.00     27.00     28.00     31.00     32.00     33.00      150       200

QT       2      1700      1700
ET                         9.1                                                      1515.14   1648.50
NC    .013      .013      .013       .1        .3
            ENTRANCE INTO ARIZONA CANAL DIVERSION CHANNEL (ACDC)
X1       0        10    1593.5    1648.5         0         0         0
GR  1240.4       400    1240.3       882    1239.3       892    1239.3       918    1240.3       928
GR  1240.1    1593.5    1239.1    1603.5    1239.1    1638.5    1240.1    1648.5      1242      1680

ET                         9.1                                                       900      1149
NC      .1        .1      .016
X1    .016        20      1080      1124       140       160       150
GR    1245       120      1244       200    1243.5       300    1243.4       550      1244       700
GR  1244.5       800    1244.5      1000      1244      1065   1243.65      1077   1243.46      1080
GR  1243.9      1084   1242.82    1084.5   1242.12      1100   1242.27    1104.5   1243.05    1119.5
GR  1243.5      1120   1244.77      1124   1244.84      1134      1246      1250      1250      1500

ET                         9.1                                                      2078.50   2132.50
X1    .037        21    2078.5    2132.5       110       115       115
GR    1246      1200      1244      1330      1245      1460      1244      1550      1245      1700
GR  1245.5      1800    1245.5      1900      1245      2000    1244.5      2070    1244.1    2078.5
GR  1244.0    2083.5    1243.5      2084    1242.8      2100    1242.9      2103    1243.5      2118
GR  1243.8    2118.5    1243.9    2122.5    1244.4    2132.5      1246      2160      1248      2290
GR    1250      2400

ET                         9.1                                                      1080.0    1132.0
            19TH STREET & OCOTILLO
```



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X1    .055        21      1080      1132       125        95        95
GR  1247.5       320      1246       460    1246.5       580    1245.5       700      1246       720
GR    1246       820      1247       900    1246.5       970    1246.5      1050      1246      1080
GR  1245.7      1080    1245.1    1084.5    1244.4      1100    1244.6      1102    1245.4    1117.5
GR  1245.7      1118    1245.8      1122    1246.4      1132      1248      1140      1248      1200
GR    1250      1365

ET                         9.1                                                      1035.24      1150
X1    .080        22    1083.5      1118       200       137       130
GR  1250.5     470.0    1250.0     500.0    1248.0     600.0    1249.8     675.0    1250.0     750.0
GR  1248.5     840.0    1249.0     900.0    1249.0    1050.0    1248.5    1075.0    1248.7    1078.5
GR  1248.6    1083.5    1248.1      1084    1247.3      1100    1247.5      1102    1248.4    1117.5
GR  1248.7      1118    1248.8      1122    1249.2      1129    1249.8      1140    1250.0    1148.5
GR  1252.0      1360    1254.0      1450

ET                         9.1                                                      1070.50   1150.00
X1    .100        20    1070.5      1150       100       100       105
GR    1252       500      1251       600      1250       680      1249       720      1250       770
GR    1252       850      1250       930      1250      1000      1252      1050    1251.6    1070.5
GR  1250.4    1083.5    1249.8      1084    1249.0      1100    1249.1      1102    1250.0      1118
GR  1250.3    1118.5    1250.4    1122.5      1251      1150      1252      1380      1254      1470
```

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ET                          9.1                                                                 1076.50     1130.30
X1     .116         16     1076.5     1130.3        90        80        80
GR     1254        600       1252        630      1251       750      1251       800       1252        870
GR   1253.6       1000       1253       1050    1252.2    1076.5    1250.2    1081.5     1250.5       1082
GR   1250.2       1100     1250.2     1115.8    1250.5    1120.3    1252.3    1130.3       1253       1200
GR     1254       1400

ET                          9.1                                                                 1006.75     1140.14
NC       .1         .1       .035
X1     .158         14       1000    1140.14       160       310       220
GR   1255.5        710       1254        820      1254       900      1256      1000     1254.5     1036.9
GR   1253.9     1057.2    1253.65     1083.3   1253.01    1092.8    1252.6      1100     1252.8    1103.44
GR   1253.6    1119.64    1254.12    1140.14      1256      1320      1258      1440
            Dip crossing at 20th Street

ET                          9.1                                                                 1025.0      1198.0
NC     .016       .016       .016
X1     .171         15       1061     1158.5        50        60        68
GR   1256.5        680       1255        760      1256       820      1257       940       1256       1000
GR   1256.8       1061    1254.39       1078   1253.78      1085   1253.12      1100     1253.9       1143
GR   1254.4     1143.5    1254.55     1148.5   1255.61    1158.5      1256      1200       1258       1300

ET                          9.1                                                                 1033.1      1145.0
NC       .09       .12        .05
X1     .188         15     1063.1       1115       140        25        90
GR     1259        760       1258        790      1258       840      1260       860       1260       1000
GR   1258.2     1063.1    1257.34     1072.5   1258.5    1085.1   1253.67    1093.7     1253.4       1100
GR   1253.9     1104.7    1257.25       1115    1256.8      1223      1258      1300       1260       1390
```



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ET                          9.1                                                                 1030        1134
X1     .217         14     1059.5     1134.7       160       150       150
GR     1264        750       1262        770      1262       900    1261.5       950       1262        990
GR   1262.4       1020    1260.6     1059.5   1260.19    1072.5   1259.95    1083.7    1255.99      1095.9
GR   1255.5       1100    1255.5       1103   1261.48    1122.6   1263.82    1134.7

ET                          9.1                                                                 1020.8      1153.72
X1     .262         17     1056.8       1123       220       260       240
GR     1269        600       1268        760      1266       900      1264       920     1263.8        930
GR     1264        970     1264.8       1010    1264.6    1056.8    1264.4    1066.2     1264.3     1087.2
GR   1259.8     1095.7    1259.59       1100    1260.3    1108.3    1266.4    1119.8     1266.7       1123
GR     1268       1140       1270       1190

ET                          9.1                                                                 1057.60     1118.29
X1     .287         14     1057.6     1130.1       120       130       130
GR     1272        660       1270        750      1268       850      1266       900       1266        950
GR   1267.5        980     1267.4     1057.6   1266.77    1061.4   1266.55    1084.3     1261.6     1093.7
GR   1261.8       1100     1262.4       1108   1268.88    1118.8   1269.60    1130.1

ET                          9.1                                                                 1064.30     1119.07
X1     .304         15     1064.3     1122.3        80       100        90
GR     1272        760       1270        900      1268       920     1267.5       950       1268        970
GR     1269       1030       1268       1055    1267.5    1064.3     1267.1    1070.4    1267.56     1086.6
GR   1263.1     1092.7    1262.6       1100    1263.6    1103.8    1271.08    1122.3    1271.95     1125.4

ET                          9.1                                                                 1061.80     1112.39
NC                                       .6        .8
QT       2       1540       1540
X1     .320         11     1061.8     1137.7        50        90        85
X3       10                                                                  1270.87    1272.32
GR     1272        870       1270        980      1270      1050    1269.6     1061.8     1270.8     1086.8
GR   1264.3     1090.8    1264.49     1095.8   1264.45    1104.2    1264.0     1107.7     1272.3     1112.7
GR   1273.0     1137.7

ET                          9.1                                                                 1057.30     1141.46
            2-6' diameter culverts at 21st Street
NC     .016       .016       .016
SC    2.013         .5       2.6                    6                   64       1.3    1265.73     1264.47
X1     .333         12     1087.3     1112.7       64        64        64
X2                                2                1271.15
X3       10                                                                  1271.95    1274.01
BT      -12        900       1273                980      1272                 1050       1271
BT               1062.3    1271.15               1087.3    1271.95               1092.3    1272.61
BT               1095.8    1272.88               1104.2    1272.73               1107.7    1273.05
BT               1112.7    1274.01               1137.7    1275.0                 1200      1276.0
GR     1273        900       1272        980      1271      1050    1271.15     1062.3    1271.95     1087.3
GR   1266.6     1092.3    1265.76     1095.8   1265.71    1104.2    1266.01    1107.7    1274.01     1112.7
GR   1275.0     1137.7     1276.0       1200
```



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ET                          9.1                                                                 1072.00     1128.34
NC       .09       .12        .05
X1     .347         10       1082     1125.5        50        70        75
GR     1276        930       1276       1030      1274      1070    1271.9    1076.5     1271.7       1082
GR   1268.9       1091    1268.45       1100   1269.33    1112.5    1275.6    1125.5     1275.8       1131

ET                          9.1                                                                 1029.50     1173.85
NC                                       .1        .3
X1     .358         12     1084.5       1123        60        50        60
GR     1276        960       1274       1070    1273.7    1080.5    1273.3    1084.5     1269.7       1091
GR   1269.6       1100    1269.95       1108    1269.9      1110    1275.4      1123     1275.7       1125
GR     1276       1190       1278       1240

ET                         10.4
X1     0.42         10        200        260       330       330       330
GR   1287.0          0     1284.0        143    1282.0       200    1276.0       220     1276.0        240
GR   1277.0        260     1278.0        362    1280.0       518    1282.0       685     1283.0        812

QT       2       1100       1100
X1     0.53         13        327        400       525       600       550
GR   1296.0        100     1295.0        218    1290.0       327    1286.4       353     1286.4        375
GR   1293.0        400     1293.5        424    1292.0       455    1294.0       490     1294.0        565
GR   1292.0        690     1291.0        728    1292.5       752

NC     0.12          0          0          0         0
X1     0.58          7        243        342       250       300       280
GR   1300.0          0     1300.0        128    1301.0       168    1300.0       243     1291.0        260
GR   1291.0        288     1308.0        342

NC        0          0          0         .6        .8
X1     0.59         10        430        510        52        48        50
GR   1303.0        200     1302.0        300    1300.0       430    1294.8       453     1292.8      453.8
GR   1292.0      455.8     1292.8      457.8    1294.8     458.5    1306.0       510     1307.0        564

SB        0       1.69       2.80          0       5.5         0      23.7         0     1301.0      1292.0
X1     0.62         11        470        545       210       210       210
X2        0          0          1          0         0         0         0         0          0          0
BT       11        200     1310.0     1300.0       376    1312.0    1300.0       427     1313.0     1300.0
BT      470     1312.0     1300.0       485    1312.0    1303.8     485.8    1312.0     1305.8      487.8
BT   1312.5     1306.5      489.8     1313.0    1305.8     490.5    1313.0    1303.8       545     1313.0
BT   1300.0        730     1314.0     1300.0
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GR   1310.0        200     1312.0        376      1313.0        427      1312.0        470      1303.8        485
GR   1301.8      485.8     1301.0      487.8      1301.8      489.8      1303.8      490.5      1313.0        545
GR   1314.0        730
```



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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=    0.100 CEHV=    0.300
*SECNO 0.000
3280 CROSS SECTION      0.00 EXTENDED      0.30 FEET

     0.000      1.60   1240.70   1240.62   1240.70   1240.84      0.14      0.00      0.00   1240.10
    1700.0    1327.8     367.2       5.0     555.8      78.0       3.0       0.0       0.0   1240.10
      0.00      2.39      4.71      1.67     0.013     0.013     0.013     0.000   1239.10    400.00
  0.001067        0.        0.        0.         0         8         0      0.00   1258.45   1658.45


*SECNO 0.016
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.016      2.87   1244.99   1244.99      0.00   1245.52      0.53      0.24      0.12   1243.46
    1700.0     883.9     815.5       0.7     981.2      97.0       3.0       2.8       3.7   1244.77
      0.01      0.90      8.41      0.22     0.100     0.016     0.100     0.000   1242.12    120.70
  0.002956      140.      150.      160.         0        17         0      0.00   1028.42   1149.12


*SECNO 0.037
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.037      3.06   1245.86   1245.86      0.00   1246.45      0.59      0.29      0.02   1244.10
    1700.0     666.6    1022.8      10.6     863.4     128.6      18.3       5.4       6.2   1244.40
      0.02      0.77      7.96      0.58     0.100     0.016     0.100     0.000   1242.80   1209.19
  0.002327      110.      115.      115.         0         8         0      0.00    948.38   2157.57


*SECNO 0.055
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.055      3.08   1247.48   1247.48      0.00   1248.07      0.59      0.27      0.00   1246.00
    1700.0     736.4     962.1       1.5     856.3     117.9       2.9       8.2       8.7   1246.40
      0.02      0.86      8.16      0.50     0.100     0.016     0.100     0.000   1244.40    321.69
  0.002627      125.       95.       95.         0         5         0      0.00    815.72   1137.41
```



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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.080
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.080      3.20   1250.50   1250.50      0.00   1251.17      0.67      0.43      0.02   1248.60
    1700.0     813.9     852.5      33.5     823.0      92.5      46.6      12.4      12.1   1248.70
      0.03      0.99      9.22      0.72     0.100     0.016     0.100     0.000   1247.30    470.16
  0.002681      200.      130.      137.         0         8         0      0.00    730.93   1201.09


*SECNO 0.100

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.100      2.60   1251.60   1251.60      0.00   1252.23      0.63      0.38      0.00   1251.60
    1700.0     733.8     946.3      20.0     541.1     112.1      41.3      14.4      13.7   1251.00
      0.04      1.36      8.44      0.48     0.100     0.016     0.100     0.000   1249.00    540.06
  0.005269      100.      105.      100.         0        14         0      0.00    685.22   1287.85


*SECNO 0.116

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.116      2.94   1253.14   1253.14      0.00   1253.96      0.82      0.29      0.06   1252.20
    1700.0     493.8    1190.3      15.9     495.4     137.6      35.9      15.7      15.0   1252.30
      0.04      1.00      8.65      0.44     0.100     0.016     0.100     0.000   1250.20    612.93
  0.002520       90.       80.       80.         0         8         0      0.00    538.52   1227.54


*SECNO 0.158

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.158      2.69   1255.29   1255.29      0.00   1255.85      0.55      1.07      0.03   1256.00
    1700.0     378.1    1234.6      87.3     206.9     178.5      66.0      18.2      17.3   1254.12
      0.05      1.83      6.92      1.32     0.100     0.035     0.100     0.000   1252.60    725.08
  0.016140      160.      220.      310.         0        11         0      0.00    474.76   1252.49
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.171

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.171      3.16   1256.28   1256.28      0.00   1256.83      0.54      0.24      0.00   1256.80
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   1700.0     283.7    1368.6      47.7     101.2     211.9      21.8      18.7      17.8   1255.61
     0.05      2.80      6.46      2.18     0.016     0.016     0.016     0.000   1253.12    691.57
 0.001643       50.       68.       60.         0         8         0      0.00    350.48   1214.15

*SECNO 0.188

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.188      5.14   1258.54   1258.54      0.00   1259.21      0.67      0.34      0.04   1258.20
   1700.0      56.9    1008.0     635.1      35.1     121.4     258.7      19.4      18.5   1257.25
     0.06      1.62      8.30      2.46     0.090     0.050     0.120     0.000   1253.40    773.70
 0.026388      140.       90.       25.         0        14         0      0.00    345.14   1324.46

*SECNO 0.217

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

     0.217      6.25   1261.75   1261.63      0.00   1262.93      1.18      3.57      0.15   1260.60
   1700.0      27.6    1672.4       0.0      20.1     190.0       0.0      20.4      19.4   1263.82
     0.06      1.37      8.80      0.00     0.090     0.050     0.000     0.000   1255.50    925.01
 0.021452      160.      150.      150.         3        14         0      0.00    134.71   1124.00

*SECNO 0.262

3301 HV CHANGED MORE THAN HVINS
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

     0.262      6.37   1265.96   1265.46      0.00   1266.37      0.41      3.36      0.08   1264.60
   1700.0     560.3    1139.7       0.0     243.3     187.7       0.0      22.2      20.3   1266.70
     0.07      2.30      6.07      0.00     0.090     0.050     0.000     0.000   1259.59    900.42
 0.010088      220.      240.      260.         4        10         0      0.00    218.55   1118.97

*SECNO 0.287
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.287      5.10   1267.70   1267.70      0.00   1268.42      0.72      1.68      0.09   1267.40
   1700.0     418.5    1281.5       0.0     168.9     166.2       0.0      23.2      21.0   1269.60
     0.08      2.48      7.71      0.00     0.090     0.050     0.000     0.000   1261.60    857.51
 0.018074      120.      130.      130.         0        10         0      0.00    259.32   1116.83

*SECNO 0.304
     0.304      6.54   1269.14   1269.10      0.00   1269.99      0.85      1.54      0.04   1267.50
   1700.0     314.7    1385.3       0.0     142.7     170.4       0.0      23.9      21.4   1271.08
     0.08      2.21      8.13      0.00     0.090     0.050     0.000     0.000   1262.60    908.64
 0.016925       80.       90.      100.         2         8         0      0.00    208.85   1117.49

CCHV=    0.600 CEHV=    0.800
*SECNO 0.320
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1270.87 ELREA=      1272.32

     0.320      6.97   1270.97   1270.97      0.00   1271.88      0.92      1.45      0.05   1269.60
   1540.0     228.1    1311.9       0.0     107.1     158.5       0.0      24.3      21.7   1273.00
     0.09      2.13      8.28      0.00     0.090     0.050     0.000     0.000   1264.00    926.83
 0.020182       50.       85.       90.         0         8         0      0.00    185.06   1111.90
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
    2          0.013      0.50       2.60       0.00       6.00       0.00       64.00      1          3          1265.73    1264.47

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1293.32..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1290.36 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.333

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =   1273.36
SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV        VCH      ACULV      ELTRD     WEIRLN
  1293.32    1290.36      1.48       931.       599.      7.954       56.5    1271.15       209.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1271.95 ELREA=      1274.01

     0.333      6.96   1272.67   1272.60      0.00   1273.40      0.73      0.17      1.31   1271.95
   1540.0     461.4    1078.6       0.0     147.2     135.6       0.0      24.7      21.9   1274.01
     0.09      3.13      7.95      0.00     0.016     0.016     0.000     0.000   1265.71    926.52
 0.001011       64.       64.       64.        20         5         0      0.00    185.34   1111.86

*SECNO 0.347

3301 HV CHANGED MORE THAN HVINS
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.347      4.91   1273.36   1273.36      0.00   1275.06      1.70      0.20      0.77   1271.70
    1540.0      35.6    1504.4       0.0      11.8     142.2       0.0      25.1      22.1   1275.60
      0.09      3.01     10.58      0.00     0.090     0.050     0.000     0.000   1268.45   1072.00
  0.023521       50.       75.       70.         0        19         0      0.00     48.85   1120.85

CCHV=    0.100 CEHV=    0.300
*SECNO 0.358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.358      5.35   1274.95   1274.95      0.00   1276.33      1.37      1.21      0.03   1273.30
    1540.0      76.4    1463.6       0.0      42.4     151.8       0.0      25.3      22.2   1275.40
      0.09      1.80      9.64      0.00     0.090     0.050     0.000     0.000   1269.60   1017.56
  0.017413       60.       60.       50.         0         8         0      0.00    104.38   1121.94
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 0.420

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.49

     0.420      3.83   1279.83   1279.09      0.00   1280.15      0.32      3.72      0.11   1282.00
    1540.0       0.0     947.2     592.8       0.0     167.5     367.6      28.1      23.7   1277.00
      0.12      0.00      5.66      1.61     0.000     0.050     0.120     0.000   1276.00    207.24
  0.007874      330.      330.      330.         4        11         0      0.00    297.27    504.52

*SECNO 0.530

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.530      3.23   1289.63   1289.63      0.00   1290.77      1.14      6.86      0.24   1290.00
    1100.0       0.0    1100.0       0.0       0.0     128.6       0.0      32.5      26.1   1293.00
      0.13      0.00      8.55      0.00     0.000     0.050     0.000     0.000   1286.40    329.66
  0.028793      525.      550.      600.         0        15         0      0.00     57.58    387.24

*SECNO 0.580

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.53

     0.580      4.08   1295.08   1294.27      0.00   1295.85      0.77      5.04      0.04   1300.00
    1100.0       0.0    1100.0       0.0       0.0     156.5       0.0      33.4      26.4   1308.00
      0.14      0.00      7.03      0.00     0.000     0.050     0.000     0.000   1291.00    252.29
  0.012326      250.      280.      300.         4         5         0      0.00     48.67    300.96

CCHV=    0.600 CEHV=    0.800
*SECNO 0.590

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.590      7.05   1299.05   1299.05      0.00   1300.45      1.40      0.93      0.50   1300.00
    1100.0       0.0    1100.0       0.0       0.0     116.1       0.0      33.6      26.5   1306.00
      0.15      0.00      9.48      0.00     0.000     0.050     0.000     0.000   1292.00    434.19
  0.031235       52.       50.       48.         0        17         0      0.00     43.86    478.05
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.69       2.80       0.00       5.50       0.00      23.70       0.00    1301.00    1292.00

*SECNO 0.620

3265 DIVIDED FLOW

3280 CROSS SECTION      0.62 EXTENDED      1.95 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.23

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA   TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                   AREA
  1355.58   1309.77       0.00       572.       529.       24.       30.     1306.50    1310.00       202.

     0.620      10.95   1311.95       0.00       0.00   1312.10      0.15      11.65       0.00   1312.00
    1100.0      84.8    1015.2       0.0      167.7     313.6       0.0       35.0      27.2    1313.00
      0.17      0.51      3.24      0.00     0.120     0.050     0.000     0.000    1301.00     200.00
  0.001748       210.      210.      210.         2         0         9      0.00    240.48     538.79

PROFILE FOR STREAM  FLYNN LANE WASH

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION  1239.     1249.     1259.     1269.     1279.     1289.     1299.     1309.     1319.     1329.
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```
SECNO   CUMDIS

 0.00     0.  ILE       .         .         .         .         .         .         .         .         .         .
         20.  ILE       .         .         .         .         .         .         .         .         .         .
         40.  .ILE      .         .         .         .         .         .         .         .         .         .
         60.  .ILWE     .         .         .         .         .         .         .         .         .         .
         80.  . ILE     .         .         .         .         .         .         .         .         .         .
        100.  . ILWE    .         .         .         .         .         .         .         .         .         .
        120.  . I LE    .         .         .         .         .         .         .         .         .         .
        140.  .  ILRE   .         .         .         .         .         .         .         .         .         .
 0.02   160.  .  IL E   .         .         .         .         .         .         .         .         .         .
        180.  .  IL WE  .         .         .         .         .         .         .         .         .         .
        200.  .  I LWE  .         .         .         .         .         .         .         .         .         .
        220.  .  I LWE  .         .         .         .         .         .         .         .         .         .
        240.  .  I LWE  .         .         .         .         .         .         .         .         .         .
        260.  .   IL E  .         .         .         .         .         .         .         .         .         .
 0.04   280.  .   IL E  .         .         .         .         .         .         .         .         .         .
        300.  .   ILRWE .         .         .         .         .         .         .         .         .         .
        320.  .   I LWE .         .         .         .         .         .         .         .         .         .
        340.  .    ILRE .         .         .         .         .         .         .         .         .         .
 0.05   360.  .    I LWE.         .         .         .         .         .         .         .         .         .
        380.  .     ILRE.         .         .         .         .         .         .         .         .         .
        400.  .     I LWE         .         .         .         .         .         .         .         .         .
        420.  .      IL E         .         .         .         .         .         .         .         .         .
        440.  .      I LWE        .         .         .         .         .         .         .         .         .
        460.  .       IL.E        .         .         .         .         .         .         .         .         .
        480.  .       IL.WE       .         .         .         .         .         .         .         .         .
 0.08   500.  .       I LWE       .         .         .         .         .         .         .         .         .
        520.  .        IL E       .         .         .         .         .         .         .         .         .
        540.  .        IRLE       .         .         .         .         .         .         .         .         .
        560.  .        I.LWE      .         .         .         .         .         .         .         .         .
        580.  .        I.RWE      .         .         .         .         .         .         .         .         .
 0.10   600.  .         I RE      .         .         .         .         .         .         .         .         .
        620.  .         I RWE     .         .         .         .         .         .         .         .         .
        640.  .         .I WE     .         .         .         .         .         .         .         .         .
        660.  .         .I LE     .         .         .         .         .         .         .         .         .
 0.12   680.  .         .I LWE    .         .         .         .         .         .         .         .         .
        700.  .         .I LWE    .         .         .         .         .         .         .         .         .
        720.  .         . I WE    .         .         .         .         .         .         .         .         .
        740.  .         . I LE    .         .         .         .         .         .         .         .         .
        760.  .         . I LWE   .         .         .         .         .         .         .         .         .
        780.  .         . I RWE   .         .         .         .         .         .         .         .         .
        800.  .         . I RWE   .         .         .         .         .         .         .         .         .
        820.  .         .  IRWE   .         .         .         .         .         .         .         .         .
        840.  .         .  I RE   .         .         .         .         .         .         .         .         .
        860.  .         .  I RE   .         .         .         .         .         .         .         .         .
        880.  .         .  I RWE  .         .         .         .         .         .         .         .         .
 0.16   900.  .         .   IRWE  .         .         .         .         .         .         .         .         .
        920.  .         .   IRWE  .         .         .         .         .         .         .         .         .
        940.  .         .   I RE  .         .         .         .         .         .         .         .         .
        960.  .         .   I RWE .         .         .         .         .         .         .         .         .
 0.17   980.  .         .   I  WE .         .         .         .         .         .         .         .         .
       1000.  .         .   I  RE .         .         .         .         .         .         .         .         .
       1020.  .         .   I  RWE.         .         .         .         .         .         .         .         .
       1040.  .         .   I   RE.         .         .         .         .         .         .         .         .
 0.19  1060.  .         .   I   RWE         .         .         .         .         .         .         .         .
       1080.  .         .    I   LWE        .         .         .         .         .         .         .         .
       1100.  .         .    I    WE        .         .         .         .         .         .         .         .
       1120.  .         .    I    LWE       .         .         .         .         .         .         .         .
       1140.  .         .    I    LWE       .         .         .         .         .         .         .         .
       1160.  .         .     I   .LWE      .         .         .         .         .         .         .         .
       1180.  .         .     I   .LWEM     .         .         .         .         .         .         .         .
       1200.  .         .     I   .LW E     .         .         .         .         .         .         .         .
 0.22  1220.  .         .     I   . LWER    .         .         .         .         .         .         .         .
       1240.  .         .      I  . LWER    .         .         .         .         .         .         .         .
       1260.  .         .      I  . LWERM   .         .         .         .         .         .         .         .
       1280.  .         .      I  .  CWEM   .         .         .         .         .         .         .         .
       1300.  .         .       I .  LWER   .         .         .         .         .         .         .         .
       1320.  .         .       I .  LWERM  .         .         .         .         .         .         .         .
       1340.  .         .       I .   CWEM  .         .         .         .         .         .         .         .
       1360.  .         .        I.   LWE M .         .         .         .         .         .         .         .
       1380.  .         .        I.   LWERM .         .         .         .         .         .         .         .
       1400.  .         .        I.    CER M.         .         .         .         .         .         .         .
       1420.  .         .         I    LWE M.         .         .         .         .         .         .         .
       1440.  .         .         I    LCE M.         .         .         .         .         .         .         .
 0.26  1460.  .         .         I     CER M         .         .         .         .         .         .         .
       1480.  .         .         .I    LWE M         .         .         .         .         .         .         .
       1500.  .         .         .I    LWE M         .         .         .         .         .         .         .
       1520.  .         .         .I     CERM         .         .         .         .         .         .         .
       1540.  .         .         . I    LWEM         .         .         .         .         .         .         .
       1560.  .         .         . I     WER         .         .         .         .         .         .         .
 0.29  1580.  .         .         .  I    LE.R        .         .         .         .         .         .         .
       1600.  .         .         .  I    LWER        .         .         .         .         .         .         .
       1620.  .         .         .  I    LWERM       .         .         .         .         .         .         .
       1640.  .         .         .  I    L ERM       .         .         .         .         .         .         .
       1660.  .         .         .  I    L WERM      .         .         .         .         .         .         .
 0.30  1680.  .         .         .   I   L WERM      .         .         .         .         .         .         .
       1700.  .         .         .   I    LWERM      .         .         .         .         .         .         .
       1720.  .         .         .   I    L.WER      .         .         .         .         .         .         .
       1740.  .         .         .   I     LWER      .         .         .         .         .         .         .
 0.32  1760.  .         .         .    I    .LWER     .         .         .         .         .         .         .
       1780.  .         .         .    I    .LWER     .         .         .         .         .         .         .
       1800.  .         .         .     I   . LWER     .         .         .         .         .         .         .
 0.33  1820.  .         .         .      I  .  LER     .         .         .         .         .         .         .
       1840.  .         .         .      I  .  LWE     .         .         .         .         .         .         .
       1860.  .         .         .       I .  LWER    .         .         .         .         .         .         .
       1880.  .         .         .        I.  LW E    .         .         .         .         .         .         .
 0.35  1900.  .         .         .        I.  LW ER   .         .         .         .         .         .         .
       1920.  .         .         .         I  L WEM   .         .         .         .         .         .         .
       1940.  .         .         .         I   LWRE   .         .         .         .         .         .         .
 0.36  1960.  .         .         .         .I  L WE   .         .         .         .         .         .         .
       1980.  .         .         .         .I   LWE   .         .         .         .         .         .         .
       2000.  .         .         .         .I   LW E  .         .         .         .         .         .         .
       2020.  .         .         .         . I   LWE  .         .         .         .         .         .         .
       2040.  .         .         .         . I   LWEM.         .         .         .         .         .         .
       2060.  .         .         .         . I    WEM.         .         .         .         .         .         .
       2080.  .         .         .         .  I   CWE.         .         .         .         .         .         .
       2100.  .         .         .         .  I   RWEM         .         .         .         .         .         .
       2120.  .         .         .         .   I  RWEM         .         .         .         .         .         .
       2140.  .         .         .         .   I  RCE.M        .         .         .         .         .         .
       2160.  .         .         .         .   I  RCWEM        .         .         .         .         .         .
       2180.  .         .         .         .    I R WE M       .         .         .         .         .         .
       2200.  .         .         .         .    I R WELM       .         .         .         .         .         .
       2220.  .         .         .         .     I RCELM       .         .         .         .         .         .
       2240.  .         .         .         .     I RCE LM      .         .         .         .         .         .
       2260.  .         .         .         .     I R WELM      .         .         .         .         .         .
 0.42  2280.  .         .         .         .      IR CE LM     .         .         .         .         .         .
       2300.  .         .         .         .      IR CE LM     .         .         .         .         .         .
       2320.  .         .         .         .       IR.WEL M    .         .         .         .         .         .
       2340.  .         .         .         .       I RCE LM    .         .         .         .         .         .
       2360.  .         .         .         .       I R WELM    .         .         .         .         .         .
       2380.  .         .         .         .        I.RCEL M   .         .         .         .         .         .
       2400.  .         .         .         .        I.RCE LM   .         .         .         .         .         .
       2420.  .         .         .         .         I RWELM   .         .         .         .         .         .
       2440.  .         .         .         .         I  CEL M  .         .         .         .         .         .
       2460.  .         .         .         .         I  CWELM  .         .         .         .         .         .
       2480.  .         .         .         .         .I  WELM  .         .         .         .         .         .
       2500.  .         .         .         .         .I  CEL M .         .         .         .         .         .
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          2520.  .         .         .         .        .I   WE M .         .         .         .         .         .
          2540.  .         .         .         .        . I  WELM .         .         .         .         .         .
          2560.  .         .         .         .        . I  CEL M.         .         .         .         .         .
          2580.  .         .         .         .        .  I  WE M.         .         .         .         .         .
          2600.  .         .         .         .        .  I  WELM.         .         .         .         .         .
          2620.  .         .         .         .        .  I   WE M         .         .         .         .         .
          2640.  .         .         .         .        .   I  WE M         .         .         .         .         .
          2660.  .         .         .         .        .   I  CERM         .         .         .         .         .
          2680.  .         .         .         .        .   I   WERM        .         .         .         .         .
          2700.  .         .         .         .        .    I  WERM        .         .         .         .         .
          2720.  .         .         .         .        .    I  CWERM       .         .         .         .         .
          2740.  .         .         .         .        .     I  WERM       .         .         .         .         .
          2760.  .         .         .         .        .     I  WE R       .         .         .         .         .
          2780.  .         .         .         .        .     I   WERM      .         .         .         .         .
          2800.  .         .         .         .        .      I  WE R      .         .         .         .         .
          2820.  .         .         .         .        .      I  WE MR     .         .         .         .         .
     0.53 2840.  .         .         .         .        .      I  .WEMR     .         .         .         .         .
          2860.  .         .         .         .        .       I .WE MR    .         .         .         .         .
          2880.  .         .         .         .        .       I .WE M R   .         .         .         .         .
          2900.  .         .         .         .        .       I . WE M R  .         .         .         .         .
          2920.  .         .         .         .        .        I. WEL M R .         .         .         .         .
          2940.  .         .         .         .        .        I. WEL M  R.         .         .         .         .
          2960.  .         .         .         .        .        I.  WEL M  R         .         .         .         .
          2980.  .         .         .         .        .         I  WE LM  .R        .         .         .         .
          3000.  .         .         .         .        .         I  CWE LM . R       .         .         .         .
          3020.  .         .         .         .        .         I   WE LM .   R     .         .         .         .
          3040.  .         .         .         .        .         .I  WE  LM.    R    .         .         .         .
          3060.  .         .         .         .        .         .I  CWE  L.     R   .         .         .         .
          3080.  .         .         .         .        .         .I   WE  LM      R  .         .         .         .
          3100.  .         .         .         .        .         . I  CE   L       R .         .         .         .
     0.58 3120.  .         .         .         .        .         . I  CWE  .L       R.         .         .         .
          3140.  .         .         .         .        .         . I    CWE.LM      R .         .         .         .
     0.59 3160.  .         .         .         .        .         .  I      WE  M  R  .         .         .         .
          3180.  C         .         .         .        .         .   I     .WE  M  R .         .         .         .
          3200.  C         .         .         .        .         .    I    . WLEM  R .         .         .         .
          3220.  C         .         .         .        .         .    I    .   WEM  R.         .         .         .
          3240.  C         .         .         .        .         .     I   .    WEM  R         .         .         .
          3260.  C         .         .         .        .         .      I  .     WE  R         .         .         .
          3280.  C         .         .         .        .         .       I .     WE .R        .         .         .
          3300.  C         .         .         .        .         .        I.        E. R       .         .         .
          3320.  C         .         .         .        .         .         I        ME R       .         .         .
          3340.  C         .         .         .        .         .         .I        ME R      .         .         .
          3360.  C         .         .         .        .         .         .I        .ME R     .         .         .
     0.62 3380.  C         .         .         .        .         .         . I       .M ER     .         .         .
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T1          FLYNN LANE WASH 100 YEAR PROFILE WITH 1' ENCROACHMENT
T3      100 YR PROF W/ 1' ENCROA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0                                     1241.7

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2


CCHV=    0.100 CEHV=    0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=     1515.1    1648.5  TYPE=      1  TARGET=      133.360
     0.000      2.60   1241.70      0.00   1240.70   1242.41      0.71      0.00      0.00   1240.10
    1700.0     707.0     993.0       0.0     124.5     133.0       0.0       0.0       0.0 100000.00
      0.00      5.68      7.47      0.00     0.013     0.013     0.000     0.000   1239.10   1515.14
  0.001369        0.        0.        0.         0         0         0      0.00    133.36   1648.50


*SECNO 0.016
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      900.0    1149.0  TYPE=      1  TARGET=      249.000
     0.016      3.92   1246.04   1246.04   1244.99   1247.19      1.15      0.26      0.13   1243.46
    1700.0     307.7    1369.8      22.5     304.5     143.2      29.2       1.2       0.6   1244.77
      0.01      1.01      9.57      0.77     0.100     0.016     0.100     0.000   1242.12    900.00
  0.002277      140.      150.      160.        20        14         0      0.00    249.00   1149.00


*SECNO 0.037
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     2078.5    2132.5  TYPE=      1  TARGET=       54.000
     0.037      3.81   1246.61   1246.61   1245.86   1248.18      1.57      0.29      0.13   1244.10
    1700.0       0.0    1700.0       0.0       0.0     169.0       0.0       2.1       1.0 100000.00
      0.01      0.00     10.06      0.00     0.000     0.016     0.000     0.000   1242.80   2078.50
  0.002887      110.      115.      115.        20         8         0      0.00     54.00   2132.50


*SECNO 0.055
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1080.0    1132.0  TYPE=      1  TARGET=       52.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


     0.055      4.01   1248.41   1248.41   1247.48   1250.04      1.63      0.28      0.02   1246.00
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    1700.0       0.0    1700.0       0.0       0.0     166.2       0.0       2.4       1.1 100000.00
      0.01      0.00     10.23      0.00     0.000     0.016     0.000     0.000   1244.40   1080.00
  0.002907      125.       95.       95.        20         8         0      0.00     52.00   1132.00


*SECNO 0.080
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1035.2    1150.0  TYPE=      1  TARGET=      114.760
     0.080      4.25   1251.55   1251.55   1250.50   1253.16      1.61      0.36      0.00   1248.60
    1700.0     187.6    1428.4      84.0     132.2     128.6      67.8       3.3       1.4   1248.70
      0.01      1.42     11.10      1.24     0.100     0.016     0.100     0.000   1247.30   1035.24
  0.002505      200.      130.      137.        20         8         0      0.00    114.76   1150.00


*SECNO 0.100
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1070.5    1150.0  TYPE=      1  TARGET=       79.500
     0.100      3.59   1252.59   1252.59   1251.60   1253.82      1.23      0.29      0.04   1251.60
    1700.0       0.0    1700.0       0.0       0.0     190.9       0.0       3.9       1.7 100000.00
      0.02      0.00      8.90      0.00     0.000     0.016     0.000     0.000   1249.00   1070.50
  0.003005      100.      105.      100.        20        15         0      0.00     79.50   1150.00


*SECNO 0.116
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1076.5    1130.3  TYPE=      1  TARGET=       53.800
     0.116      3.52   1253.72   1253.72   1253.14   1255.29      1.58      0.23      0.10   1252.20
    1700.0       0.0    1700.0       0.0       0.0     168.7       0.0       4.2       1.8 100000.00
      0.02      0.00     10.08      0.00     0.000     0.016     0.000     0.000   1250.20   1076.50
  0.002793       90.       80.       80.        20         8         0      0.00     53.80   1130.30
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.158

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.44


3470 ENCROACHMENT STATIONS=     1006.8    1140.1  TYPE=      1  TARGET=      133.390
     0.158      3.12   1255.72   1255.67   1255.29   1256.55      0.82      1.18      0.08 100000.00
    1700.0       0.0    1700.0       0.0       0.0     233.8       0.0       5.2       2.3 100000.00
      0.03      0.00      7.27      0.00     0.000     0.035     0.000     0.000   1252.60   1006.75
  0.014115      160.      220.      310.        14        15         0      0.00    133.39   1140.14


*SECNO 0.171
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1025.0    1198.0  TYPE=      1  TARGET=      173.000
     0.171      3.18   1256.30   1256.30   1256.28   1257.19      0.90      0.32      0.02   1256.80
    1700.0       0.0    1644.4      55.6       0.0     213.2      19.8       5.6       2.5   1255.61
      0.03      0.00      7.71      2.81     0.000     0.016     0.016     0.000   1253.12   1064.55
  0.002329       50.       68.       60.        20         5         0      0.00    133.45   1198.00


*SECNO 0.188
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1033.1    1145.0  TYPE=      1  TARGET=      111.900
     0.188      5.85   1259.25   1259.25   1258.54   1260.46      1.21      0.46      0.09   1258.20
    1700.0      34.4    1483.0     182.6      18.7     158.1      61.9       6.0       2.7   1257.25
      0.03      1.84      9.38      2.95     0.090     0.050     0.120     0.000   1253.40   1033.10
  0.023679      140.       90.       25.        20        14         0      0.00    111.90   1145.00


*SECNO 0.217

3470 ENCROACHMENT STATIONS=     1030.0    1134.0  TYPE=      1  TARGET=      104.000
     0.217      6.75   1262.25      0.00   1261.75   1263.08      0.83      2.58      0.04   1260.60
    1700.0      52.1    1647.9       0.0      28.5     222.1       0.0       6.9       3.0 100000.00
      0.04      1.83      7.42      0.00     0.090     0.050     0.000     0.000   1255.50   1030.00
  0.013030      160.      150.      150.         2         0         0      0.00     96.52   1126.52
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.262

3470 ENCROACHMENT STATIONS=     1020.8    1153.7  TYPE=      1  TARGET=      132.920
     0.262      6.32   1265.91      0.00   1265.96   1266.97      1.06      3.83      0.07   1264.60
    1700.0     119.3    1580.7       0.0      44.9     185.6       0.0       8.2       3.6   1266.70
      0.05      2.66      8.52      0.00     0.090     0.050     0.000     0.000   1259.59   1020.80
  0.020138      220.      240.      260.         2         0         0      0.00     98.10   1118.90


*SECNO 0.287

3470 ENCROACHMENT STATIONS=     1057.6    1118.3  TYPE=      1  TARGET=       60.690
     0.287      6.70   1268.30      0.00   1267.70   1269.40      1.10      2.42      0.01   1267.40
    1700.0       0.0    1700.0       0.0       0.0     202.1       0.0       8.8       3.8 100000.00
      0.05      0.00      8.41      0.00     0.000     0.050     0.000     0.000   1261.60   1057.60
  0.017312      120.      130.      130.         2         0         0      0.00     60.23   1117.83


*SECNO 0.304
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3470 ENCROACHMENT STATIONS=     1064.3    1119.1  TYPE=      1  TARGET=       54.770
     0.304      7.19   1269.79      0.00   1269.14   1270.85      1.06      1.44      0.00   1267.50
    1700.0       0.0    1700.0       0.0       0.0     205.7       0.0       9.2       3.9 100000.00
      0.06      0.00      8.26      0.00     0.000     0.050     0.000     0.000   1262.60   1064.30
  0.014925       80.       90.      100.         2         0         0      0.00     54.77   1119.07


CCHV=    0.600 CEHV=    0.800
*SECNO 0.320

3470 ENCROACHMENT STATIONS=     1061.8    1112.4  TYPE=      1  TARGET=       50.590

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1270.87 ELREA=      1272.32

     0.320      7.26   1271.26      0.00   1270.97   1272.49      1.23      1.50      0.14   1269.60
    1540.0       0.0    1540.0       0.0       0.0     173.0       0.0       9.6       4.0 100000.00
      0.06      0.00      8.90      0.00     0.000     0.050     0.000     0.000   1264.00   1061.80
  0.021716       50.       85.       90.         2         0         0      0.00     50.27   1112.07
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     2          0.013      0.50       2.60       0.00       6.00       0.00      64.00      1          3       1265.73    1264.47

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1293.32..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1290.65 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.333

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =   1273.38
SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV     ELTRD     WEIRLN
   1293.32    1290.65      0.90       949.       600.    10.074       56.5   1271.15       209.


3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS=     1057.3    1141.5  TYPE=      1  TARGET=       84.160

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1271.95 ELREA=      1274.01

     0.333      7.03   1272.74      0.00   1272.67   1274.18      1.44      0.00      0.00   1271.95
    1540.0     157.5    1382.5       0.0      37.7     137.2       0.0       9.9       4.1   1274.01
      0.06      4.18     10.07      0.00     0.016     0.016     0.000     0.000   1265.71   1057.30
  0.001602       64.       64.       64.        20         0         0      0.00     54.60   1111.90


*SECNO 0.347
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1072.0    1128.3  TYPE=      1  TARGET=       56.340
     0.347      4.91   1273.36   1273.36   1273.36   1275.06      1.69      0.30      0.20   1271.70
    1540.0      35.8    1504.2       0.0      11.9     142.5       0.0      10.1       4.2   1275.60
      0.06      3.01     10.56      0.00     0.090     0.050     0.000     0.000   1268.45   1072.00
  0.023378       50.       75.       70.         2        19         0      0.00     48.86   1120.86


CCHV=    0.100 CEHV=    0.300
*SECNO 0.358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1029.5    1173.8  TYPE=      1  TARGET=      144.350
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


     0.358      5.36   1274.96   1274.96   1274.95   1276.32      1.36      1.20      0.03   1273.30
    1540.0      79.3    1460.7       0.0      41.2     151.9       0.0      10.4       4.3   1275.40
      0.06      1.92      9.61      0.00     0.090     0.050     0.000     0.000   1269.60   1029.50
  0.017316       60.       60.       50.         2         8         0      0.00     92.45   1121.95


*SECNO 0.420
 2800 NAT Q1=      173.55  WSELK=    1279.83  ENC Q1=      173.55  WSEL=    1280.83  RATIO=   0.0000
 NAT Q1=      312.  RATIOS LOB, CH, ROB=   0.0000  0.5243  0.4757  WSEL=    1280.83

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      200.0     269.3  TYPE=      4  TARGET=        0.444
     0.420      4.30   1280.30      0.00   1279.83   1281.16      0.86      4.79      0.05   1282.00
    1540.0       0.0    1465.0      75.0       0.0     192.5      30.3      12.0       4.9   1277.00
      0.08      0.00      7.61      2.48     0.000     0.050     0.120     0.000   1276.00    205.68
  0.012323      330.      330.      330.         4         0         0      0.00     63.63    269.32


*SECNO 0.530
 2800 NAT Q1=       64.83  WSELK=    1289.63  ENC Q1=      115.91  WSEL=    1290.63  RATIO=  -0.7880
 NAT Q1=      116.  RATIOS LOB, CH, ROB=   0.0029  0.9971  0.0000  WSEL=    1290.63
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      327.0     400.0  TYPE=      4  TARGET=        0.003
     0.530      3.24   1289.64   1289.64   1289.63   1290.77      1.13      9.26      0.08   1290.00
    1100.0       0.0    1100.0       0.0       0.0     128.8       0.0      14.2       5.6   1293.00
      0.09      0.00      8.54      0.00     0.000     0.050     0.000     0.000   1286.40    329.63
  0.028668      525.      550.      600.         8        15         0      0.00     57.62    387.26


*SECNO 0.580
 2800 NAT Q1=       99.08  WSELK=    1295.08  ENC Q1=      148.29  WSEL=    1296.08  RATIO=  -0.4967
 NAT Q1=      148.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=    1296.08
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52

3470 ENCROACHMENT STATIONS=      243.0     342.0  TYPE=      4  TARGET=        0.000
     0.580      4.08   1295.08      0.00   1295.08   1295.85      0.77      5.04      0.04   1300.00
    1100.0       0.0    1100.0       0.0       0.0     156.3       0.0      15.1       6.0   1308.00
      0.10      0.00      7.04      0.00     0.000     0.050     0.000     0.000   1291.00    252.30
  0.012354      250.      280.      300.         4         0         0      0.00     48.66    300.96


   Run Date:  19FEB97    Run Time: 13:25:29    HMVersion: 6.52    Data File:   MA22FEMA.HC2                          Page   19

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


CCHV=    0.600 CEHV=    0.800
*SECNO 0.590
 2800 NAT Q1=       62.24  WSELK=    1299.05  ENC Q1=      99.16  WSEL=    1300.05  RATIO=  -0.5932
 NAT Q1=       99.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=    1300.05

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      430.0     510.0  TYPE=      4  TARGET=        0.000
     0.590      7.05   1299.05   1299.05   1299.05   1300.45      1.39      0.93      0.50   1300.00
    1100.0       0.0    1100.0       0.0       0.0     116.1       0.0      15.3       6.0   1306.00
      0.11      0.00      9.48      0.00     0.000     0.050     0.000     0.000   1292.00    434.19
  0.031212       52.       50.       48.        20        17         0      0.00     43.87    478.06


SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.69       2.80       0.00       5.50       0.00      23.70      0.00    1301.00    1292.00

*SECNO 0.620
 2800 NAT Q1=      263.10  WSELK=    1311.95  ENC Q1=     324.81  WSEL=    1312.95  RATIO=  -0.2346
 NAT Q1=     394.  RATIOS LOB, CH, ROB=   0.1750  0.8250  0.0000  WSEL=    1312.95
 WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE
3280 CROSS SECTION       0.62 EXTENDED       1.95 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.90

3470 ENCROACHMENT STATIONS=      470.0     545.0  TYPE=      4  TARGET=        0.175
     0.620     10.95   1311.95      0.00   1311.95   1312.14      0.19      1.09      0.72   1312.00
    1100.0       0.0    1100.0       0.0       0.0     313.6       0.0      16.3       6.3   1313.00
      0.12      0.00      3.51      0.00     0.000     0.050     0.000     0.000   1301.00    470.09
  0.002051      210.      210.      210.         0         0         9      0.00     68.71    538.80


PROFILE FOR STREAM  100 YR PROF W/ 1' ENCROA


PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


ELEVATION  1239.     1249.     1259.     1269.     1279.     1289.     1299.     1309.     1319.     1329.
    SECNO   CUMDIS

     0.00      0.  IL E      .         .         .         .         .         .         .         .         R
              20.  IL WE     .         .         .         .         .         .         .         .         R
              40.  CIL WE    .         .         .         .         .         .         .         .         R
              60.  CIL WEM   .         .         .         .         .         .         .         .         R
              80.  C IL WEM  .         .         .         .         .         .         .         .         R
             100.  C IL WE M .         .         .         .         .         .         .         .         R
             120.  C I L WE M.         .         .         .         .         .         .         .         R
             140.  C  IL  WE M         .         .         .         .         .         .         .         R
     0.02    160.  .  IL RWE .M        .         .         .         .         .         .         .         .
             180.  .  IL  WE .M        .         .         .         .         .         .         .         R
             200.  .  I L WE .M        .         .         .         .         .         .         .         R
             220.  .  I L W E.M        .         .         .         .         .         .         .         R
             240.  .  I L W E.M        .         .         .         .         .         .         .         R
             260.  .   IL W E.M        .         .         .         .         .         .         .         R
     0.04    280.  .   IL  WE.M        .         .         .         .         .         .         .         R
             300.  .   IL  WE.M        .         .         .         .         .         .         .         R
             320.  .   I L W EM        .         .         .         .         .         .         .         R
             340.  .    IL  WEM        .         .         .         .         .         .         .         R
     0.05    360.  .    I L W.E        .         .         .         .         .         .         .         R
             380.  .     IL  WEM       .         .         .         .         .         .         .         R
             400.  .     I L W E       .         .         .         .         .         .         .         R
             420.  .      IL .WEM      .         .         .         .         .         .         .         R
             440.  .      I L.W E      .         .         .         .         .         .         .         R
             460.  .       IL. WEM     .         .         .         .         .         .         .         R
             480.  .       IL. W EM    .         .         .         .         .         .         .         R
     0.08    500.  .       I L W EM    .         .         .         .         .         .         .         .
             520.  .        IL  WEM    .         .         .         .         .         .         .         R
             540.  .        I.L WEM    .         .         .         .         .         .         .         R
             560.  .        I.L WEM    .         .         .         .         .         .         .         R
             580.  .        I. LW E    .         .         .         .         .         .         .         R
     0.10    600.  .         I  W E    .         .         .         .         .         .         .         R
             620.  .         I  LWE    .         .         .         .         .         .         .         R
             640.  .         .I LWE    .         .         .         .         .         .         .         R
             660.  .         .I LWME   .         .         .         .         .         .         .         R
     0.12    680.  .         .I L WE   .         .         .         .         .         .         .         R
             700.  .         .I   WE   .         .         .         .         .         .         .         L
             720.  .         . I  WE   .         .         .         .         .         .         .         L
             740.  .         . I  WME  .         .         .         .         .         .         .         L
             760.  .         . I  WME  .         .         .         .         .         .         .         L
             780.  .         . I   WE  .         .         .         .         .         .         .         L
             800.  .         . I   WE  .         .         .         .         .         .         .         L
             820.  .         .  I  WE  .         .         .         .         .         .         .         L
             840.  .         .  I  WEM .         .         .         .         .         .         .         L
             860.  .         .  I  WEM .         .         .         .         .         .         .         L
             880.  .         .  I  WE M.         .         .         .         .         .         .         L
     0.16    900.  .         .   I  E M.         .         .         .         .         .         .         L
             920.  .         .   I  WEM.         .         .         .         .         .         .         L
             940.  .         .   I  WEM.         .         .         .         .         .         .         L
             960.  .         .   I  WEM.         .         .         .         .         .         .         L
     0.17    980.  .         .   I  WEM.         .         .         .         .         .         .         .
            1000.  .         .   I  RWE.         .         .         .         .         .         .         .
            1020.  .         .   I  RLWE         .         .         .         .         .         .         .
            1040.  .         .   I   RWE         .         .         .         .         .         .         .
     0.19   1060.  .         .   I   RLWE        .         .         .         .         .         .         .
            1080.  C         .    I   L.WE       .         .         .         .         .         .         R
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      1100.  C          .    I    LWE       .         .         .         .         .         .         .         R
      1120.  C          .    I    LWE       .         .         .         .         .         .         .         R
      1140.  C          .    I    L WE      .         .         .         .         .         .         .         R
      1160.  C          .     I   .LWE      .         .         .         .         .         .         .         R
      1180.  C          .     I   .L EM     .         .         .         .         .         .         .         R
      1200.  C          .     I   .L WE     .         .         .         .         .         .         .         R
0.22  1220.  C          .     I   . LWEM    .         .         .         .         .         .         .         R
      1240.  C          .      I  . LWEM    .         .         .         .         .         .         .         R
      1260.  C          .      I  . L WEM   .         .         .         .         .         .         .         R
      1280.  C          .      I  .  LWEM   .         .         .         .         .         .         .         R
      1300.  C          .       I .  LWE M  .         .         .         .         .         .         .         R
      1320.  C          .       I .  L WEM  .         .         .         .         .         .         .         R
      1340.  C          .       I .   LWE M .         .         .         .         .         .         .         R
      1360.  C          .        I.   LWE M .         .         .         .         .         .         .         R
      1380.  C          .        I.   L WE M.         .         .         .         .         .         .         R
      1400.  C          .        I.    LWE M.         .         .         .         .         .         .         R
      1420.  C          .         I    LWE  M         .         .         .         .         .         .         R
      1440.  C          .         I    L WE M         .         .         .         .         .         .         R
0.26  1460.  C          .         I     LWE .M        .         .         .         .         .         .         .
      1480.  C          .         .I    LWE .M        .         .         .         .         .         .         R
      1500.  C          .         .I    L WE.M        .         .         .         .         .         .         R
      1520.  C          .         .I     LWE.M        .         .         .         .         .         .         R
      1540.  C          .         . I    LWE.M        .         .         .         .         .         .         R
      1560.  C          .         . I     LWEM        .         .         .         .         .         .         R
0.29  1580.  C          .         .  I    LWEM        .         .         .         .         .         .         R
      1600.  C          .         .  I    L WE        .         .         .         .         .         .         R
      1620.  C          .         .  I    L WEM       .         .         .         .         .         .         R
      1640.  C          .         .  I    L WEM       .         .         .         .         .         .         R
      1660.  C          .         .  I    L .WEM      .         .         .         .         .         .         R
0.30  1680.  C          .         .   I   L .WEM      .         .         .         .         .         .         R
      1700.  C          .         .   I    L.WEM      .         .         .         .         .         .         R
      1720.  C          .         .   I    L.W E      .         .         .         .         .         .         R
      1740.  C          .         .   I     L WEM     .         .         .         .         .         .         R
0.32  1760.  C          .         .    I    .LWEM     .         .         .         .         .         .         R
      1780.  C          .         .    I    .L WEM    .         .         .         .         .         .         R
      1800.  C          .         .     I   . LWE M   .         .         .         .         .         .         R
0.33  1820.  C          .         .      I  .  LWE M  .         .         .         .         .         .         .
      1840.  C          .         .      I  .  LWE M  .         .         .         .         .         .         .
      1860.  C          .         .       I .  LW EM  .         .         .         .         .         .         .
      1880.  C          .         .        I.  LW EM  .         .         .         .         .         .         .
0.35  1900.  .          .         .        I.  LW ER  .         .         .         .         .         .         .
      1920.  .          .         .         I  L WEM  .         .         .         .         .         .         .
      1940.  .          .         .         I   LWREM .         .         .         .         .         .         .
0.36  1960.  .          .         .         .I  L WE M.         .         .         .         .         .         .
      1980.  C          .         .         .I   LW EM.         .         .         .         .         .         .
      2000.  C          .         .         .I   LRWE M         .         .         .         .         .         .
      2020.  C          .         .         . I   LWE M         .         .         .         .         .         .
      2040.  C          .         .         . I   LWE M         .         .         .         .         .         .
      2060.  C          .         .         . I    W EM         .         .         .         .         .         .
      2080.  C          .         .         .  I   LWE.M        .         .         .         .         .         .
      2100.  C          .         .         .  I   RWE.M        .         .         .         .         .         .
      2120.  C          .         .         .   I  RW EM        .         .         .         .         .         .
      2140.  C          .         .         .   I  R WE M       .         .         .         .         .         .
      2160.  C          .         .         .   I  R WE M       .         .         .         .         .         .
      2180.  C          .         .         .    I R WE M       .         .         .         .         .         .
      2200.  C          .         .         .    I R  WE M      .         .         .         .         .         .
      2220.  C          .         .         .     I R WE M      .         .         .         .         .         .
      2240.  C          .         .         .     I R WELM      .         .         .         .         .         .
      2260.  C          .         .         .     I R .WEM      .         .         .         .         .         .
0.42  2280.  C          .         .         .      IR .WELM     .         .         .         .         .         .
      2300.  C          .         .         .      IR . ELM     .         .         .         .         .         .
      2320.  C          .         .         .       IR. WE M    .         .         .         .         .         .
      2340.  C          .         .         .       I R WELM    .         .         .         .         .         .
      2360.  C          .         .         .       I R  ELM    .         .         .         .         .         .
      2380.  C          .         .         .        I.R WE M   .         .         .         .         .         .
      2400.  C          .         .         .        I.R WELM   .         .         .         .         .         .
      2420.  C          .         .         .         I R WEM   .         .         .         .         .         .
      2440.  C          .         .         .         I  RWE M  .         .         .         .         .         .
      2460.  C          .         .         .         I  RWELM  .         .         .         .         .         .
      2480.  C          .         .         .         .I  RWEM  .         .         .         .         .         .
      2500.  C          .         .         .         .I  RWE M .         .         .         .         .         .
      2520.  C          .         .         .         .I   WE M .         .         .         .         .         .
      2540.  C          .         .         .         . I  RWEM .         .         .         .         .         .
      2560.  C          .         .         .         . I   WE M.         .         .         .         .         .
      2580.  C          .         .         .         .  I  WE M.         .         .         .         .         .
      2600.  C          .         .         .         .  I   WEM.         .         .         .         .         .
      2620.  C          .         .         .         .  I   WE M         .         .         .         .         .
      2640.  C          .         .         .         .   I  WE M         .         .         .         .         .
      2660.  C          .         .         .         .   I   WEM         .         .         .         .         .
      2680.  C          .         .         .         .   I   WERM        .         .         .         .         .
      2700.  C          .         .         .         .    I  WERM        .         .         .         .         .
      2720.  C          .         .         .         .    I   WERM       .         .         .         .         .
      2740.  C          .         .         .         .     I  WERM       .         .         .         .         .
      2760.  C          .         .         .         .     I  WE R       .         .         .         .         .
      2780.  C          .         .         .         .     I   WERM      .         .         .         .         .
      2800.  C          .         .         .         .      I  WE R      .         .         .         .         .
      2820.  .          .         .      C  .         .      I  WE MR      .         .         .         .         .
0.53  2840.  .          .         .         .         .      I  .WEMR      .         .         .         .         .
      2860.  C          .         .         .         .       I .WE MR     .         .         .         .         .
      2880.  C          .         .         .         .       I .WE M R    .         .         .         .         .
      2900.  C          .         .         .         .       I . WE M R   .         .         .         .         .
      2920.  C          .         .         .         .        I. WEL M R .         .         .         .         .
      2940.  C          .         .         .         .        I. WEL M  R.         .         .         .         .
      2960.  C          .         .         .         .        I.  WEL M  R         .         .         .         .
      2980.  C          .         .         .         .         I  WE LM  .R        .         .         .         .
      3000.  C          .         .         .         .         I   WE LM . R       .         .         .         .
      3020.  C          .         .         .         .         I   WE LM .   R     .         .         .         .
      3040.  C          .         .         .         .         .I  WE  LM.    R    .         .         .         .
      3060.  C          .         .         .         .         .I   WE  L.     R   .         .         .         .
      3080.  C          .         .         .         .         .I   WE  LM      R  .         .         .         .
      3100.  C          .         .         .         .         . I   E   L       R .         .         .         .
0.58  3120.  C          .         .         .         .         . I   WE  .L       R.         .         .         .
      3140.  C          .         .         .         .         . I     WE.LM     R .         .         .         .
0.59  3160.  .          .         .         .         .         .  I      WE  M  R  .         .         .         .
      3180.  C          .         .         .         .         .   I     .WE  M  R .         .         .         .
      3200.  C          .         .         .         .         .    I    . WLEM  R .         .         .         .
      3220.  C          .         .         .         .         .    I    .   WEM  R.         .         .         .
      3240.  C          .         .         .         .         .     I   .    WEM  R         .         .         .
      3260.  C          .         .         .         .         .      I  .     WE  R         .         .         .
      3280.  C          .         .         .         .         .       I .      WE .R        .         .         .
      3300.  C          .         .         .         .         .        I.        E. R       .         .         .
      3320.  C          .         .         .         .         .         I        ME R       .         .         .
      3340.  C          .         .         .         .         .         .I        ME R      .         .         .
      3360.  C          .         .         .         .         .         .I        .ME R     .         .         .
0.62  3380.  C          .         .         .         .         .         . I       .M ER     .         .         .
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THIS RUN EXECUTED 19FEB97   13:25:31

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HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLYNN LANE WASH

SUMMARY PRINTOUT

	CWSEL	.01K	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
	1240.700	520.36	0.00	0.00	0.00	0.00	0.00
	1241.700	459.49	1515.14	1648.50	100000.00	100000.00	0.00
*	1244.991	312.68	0.00	0.00	0.00	0.00	20.13
*	1246.041	356.30	900.00	1149.00	100000.00	100000.00	20.13
*	1245.859	352.43	0.00	0.00	0.00	0.00	5.91
*	1246.607	316.41	2078.50	2132.50	100000.00	100000.00	5.91
*	1247.482	331.66	0.00	0.00	0.00	0.00	16.84
*	1248.411	315.29	1080.00	1132.00	100000.00	100000.00	16.84
*	1250.497	328.32	0.00	0.00	0.00	0.00	22.31
*	1251.545	339.65	1035.24	1150.00	100000.00	100000.00	22.31
*	1251.599	234.19	0.00	0.00	0.00	0.00	16.19
*	1252.591	310.13	1070.50	1150.00	100000.00	100000.00	16.19
*	1253.138	338.68	0.00	0.00	0.00	0.00	15.00
*	1253.716	321.65	1076.50	1130.30	100000.00	100000.00	15.00
*	1255.294	133.81	0.00	0.00	0.00	0.00	10.91
*	1255.725	143.09	1006.75	1140.14	100000.00	100000.00	10.91
*	1256.283	419.40	0.00	0.00	0.00	0.00	7.65
*	1256.296	352.26	1025.00	1198.00	100000.00	100000.00	7.65
*	1258.543	104.65	0.00	0.00	0.00	0.00	3.11
*	1259.250	110.48	1033.10	1145.00	100000.00	100000.00	3.11
	1261.750	116.07	0.00	0.00	0.00	0.00	14.00
	1262.246	148.93	1030.00	1134.00	100000.00	100000.00	14.00

	CWSEL	.01K	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
*	1265.959	169.26	0.00	0.00	0.00	0.00	17.04
	1265.915	119.79	1020.80	1153.72	100000.00	100000.00	17.04
*	1267.699	126.45	0.00	0.00	0.00	0.00	15.46
	1268.302	129.20	1057.60	1118.29	100000.00	100000.00	15.46
	1269.144	130.67	0.00	0.00	0.00	0.00	11.11
	1269.788	139.15	1064.30	1119.07	100000.00	100000.00	11.11
*	1270.967	108.40	0.00	0.00	0.00	0.00	16.47
	1271.257	104.50	1061.80	1112.39	100000.00	100000.00	16.47
*	1272.668	484.22	0.00	0.00	0.00	0.00	26.72
*	1272.735	384.77	1057.30	1141.46	100000.00	100000.00	26.72
*	1273.355	100.41	0.00	0.00	0.00	0.00	36.53
*	1273.362	100.72	1072.00	1128.34	100000.00	100000.00	36.53
*	1274.953	116.70	0.00	0.00	0.00	0.00	19.17
*	1274.956	117.03	1029.50	1173.85	100000.00	100000.00	19.17
*	1279.827	173.55	0.00	0.00	0.00	0.00	19.39
	1280.297	138.73	200.00	269.32	100000.00	100000.00	19.39
*	1289.632	64.83	0.00	0.00	0.00	0.00	18.91
*	1289.635	64.97	327.00	400.00	100000.00	100000.00	18.91
*	1295.082	99.08	0.00	0.00	0.00	0.00	16.43
*	1295.078	98.97	243.00	342.00	100000.00	100000.00	16.43
*	1299.052	62.24	0.00	0.00	0.00	0.00	20.00
*	1299.053	62.26	430.00	510.00	100000.00	100000.00	20.00
*	1311.952	263.10	0.00	0.00	0.00	0.00	42.86
*	1311.953	242.87	470.00	545.00	100000.00	100000.00	42.86

FLYNN LANE WASH

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	0.000	0.00	0.00	0.00	1239.10	1700.00	1240.70	1240.62	1240.84	10.67	4.71	636.75	520.36
	0.000	0.00	0.00	0.00	1239.10	1700.00	1241.70	0.00	1242.41	13.69	7.47	257.45	459.49
*	0.016	150.00	0.00	0.00	1242.12	1700.00	1244.99	1244.99	1245.52	29.56	8.41	1081.22	312.68
*	0.016	150.00	0.00	0.00	1242.12	1700.00	1246.04	1246.04	1247.19	22.77	9.57	476.95	356.30
*	0.037	115.00	0.00	0.00	1242.80	1700.00	1245.86	1245.86	1246.45	23.27	7.96	1010.27	352.43
*	0.037	115.00	0.00	0.00	1242.80	1700.00	1246.61	1246.61	1248.18	28.87	10.06	169.00	316.41
*	0.055	95.00	0.00	0.00	1244.40	1700.00	1247.48	1247.48	1248.07	26.27	8.16	977.07	331.66
*	0.055	95.00	0.00	0.00	1244.40	1700.00	1248.41	1248.41	1250.04	29.07	10.23	166.17	315.29
*	0.080	130.00	0.00	0.00	1247.30	1700.00	1250.50	1250.50	1251.17	26.81	9.22	962.08	328.32
*	0.080	130.00	0.00	0.00	1247.30	1700.00	1251.55	1251.55	1253.16	25.05	11.10	328.66	339.65
*	0.100	105.00	0.00	0.00	1249.00	1700.00	1251.60	1251.60	1252.23	52.69	8.44	694.49	234.19
*	0.100	105.00	0.00	0.00	1249.00	1700.00	1252.59	1252.59	1253.82	30.05	8.90	190.93	310.13
*	0.116	80.00	0.00	0.00	1250.20	1700.00	1253.14	1253.14	1253.96	25.20	8.65	668.86	338.68
*	0.116	80.00	0.00	0.00	1250.20	1700.00	1253.72	1253.72	1255.29	27.93	10.08	168.72	321.65
*	0.158	220.00	0.00	0.00	1252.60	1700.00	1255.29	1255.29	1255.85	161.40	6.92	451.28	133.81
*	0.158	220.00	0.00	0.00	1252.60	1700.00	1255.72	1255.67	1256.55	141.15	7.27	233.80	143.09
*	0.171	68.00	0.00	0.00	1253.12	1700.00	1256.28	1256.28	1256.83	16.43	6.46	334.90	419.40
*	0.171	68.00	0.00	0.00	1253.12	1700.00	1256.30	1256.30	1257.19	23.29	7.71	232.93	352.26
*	0.188	90.00	0.00	0.00	1253.40	1700.00	1258.54	1258.54	1259.21	263.88	8.30	415.22	104.65
*	0.188	90.00	0.00	0.00	1253.40	1700.00	1259.25	1259.25	1260.46	236.79	9.38	238.66	110.48
	0.217	150.00	0.00	0.00	1255.50	1700.00	1261.75	1261.63	1262.93	214.52	8.80	210.12	116.07

	0.217	150.00	0.00	0.00	1255.50	1700.00	1262.25	0.00	1263.08	130.30	7.42	250.55	148.93
*	0.262	240.00	0.00	0.00	1259.59	1700.00	1265.96	1265.46	1266.37	100.88	6.07	431.07	169.26
	0.262	240.00	0.00	0.00	1259.59	1700.00	1265.91	0.00	1266.97	201.38	8.52	230.46	119.79
*	0.287	130.00	0.00	0.00	1261.60	1700.00	1267.70	1267.70	1268.42	180.74	7.71	335.12	126.45
	0.287	130.00	0.00	0.00	1261.60	1700.00	1268.30	0.00	1269.40	173.12	8.41	202.11	129.20
	0.304	90.00	0.00	0.00	1262.60	1700.00	1269.14	1269.10	1269.99	169.25	8.13	313.10	130.67
	0.304	90.00	0.00	0.00	1262.60	1700.00	1269.79	0.00	1270.85	149.25	8.26	205.69	139.15
*	0.320	85.00	0.00	0.00	1264.00	1540.00	1270.97	1270.97	1271.88	201.82	8.28	265.61	108.40
	0.320	85.00	0.00	0.00	1264.00	1540.00	1271.26	0.00	1272.49	217.16	8.90	173.02	104.50
*	0.333	64.00	1271.15	0.00	1265.71	1540.00	1272.67	1272.60	1273.40	10.11	7.95	282.83	484.22
*	0.333	64.00	1271.15	0.00	1265.71	1540.00	1272.74	0.00	1274.18	16.02	10.07	174.95	384.77

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	0.347	75.00	0.00	0.00	1268.45	1540.00	1273.36	1273.36	1275.06	235.21	10.58	154.06	100.41
*	0.347	75.00	0.00	0.00	1268.45	1540.00	1273.36	1273.36	1275.06	233.78	10.56	154.40	100.72
*	0.358	60.00	0.00	0.00	1269.60	1540.00	1274.95	1274.95	1276.33	174.13	9.64	194.23	116.70
*	0.358	60.00	0.00	0.00	1269.60	1540.00	1274.96	1274.96	1276.32	173.16	9.61	193.14	117.03
*	0.420	330.00	0.00	0.00	1276.00	1540.00	1279.83	1279.09	1280.15	78.74	5.66	535.07	173.55
	0.420	330.00	0.00	0.00	1276.00	1540.00	1280.30	0.00	1281.16	123.23	7.61	222.81	138.73
*	0.530	550.00	0.00	0.00	1286.40	1100.00	1289.63	1289.63	1290.77	287.93	8.55	128.61	64.83
*	0.530	550.00	0.00	0.00	1286.40	1100.00	1289.64	1289.64	1290.77	286.68	8.54	128.81	64.97
*	0.580	280.00	0.00	0.00	1291.00	1100.00	1295.08	1294.27	1295.85	123.26	7.03	156.47	99.08
*	0.580	280.00	0.00	0.00	1291.00	1100.00	1295.08	0.00	1295.85	123.54	7.04	156.34	98.97
*	0.590	50.00	0.00	0.00	1292.00	1100.00	1299.05	1299.05	1300.45	312.35	9.48	116.05	62.24
*	0.590	50.00	0.00	0.00	1292.00	1100.00	1299.05	1299.05	1300.45	312.12	9.48	116.08	62.26
*	0.620	210.00	1310.00	1306.50	1301.00	1100.00	1311.95	0.00	1312.10	17.48	3.24	481.21	263.10
*	0.620	210.00	999999.00	0.00	1301.00	1100.00	1311.95	0.00	1312.14	20.51	3.51	313.60	242.87

FLYNN LANE WASH

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	0.000	1700.00	1240.70	0.00	0.00	0.00	1258.45	0.00
	0.000	1700.00	1241.70	1.00	0.00	1.00	133.36	0.00
*	0.016	1700.00	1244.99	0.00	4.29	0.00	1028.42	150.00
*	0.016	1700.00	1246.04	1.05	4.34	1.05	249.00	150.00
*	0.037	1700.00	1245.86	0.00	0.87	0.00	948.38	115.00
*	0.037	1700.00	1246.61	0.75	0.57	0.75	54.00	115.00
*	0.055	1700.00	1247.48	0.00	1.62	0.00	815.72	95.00
*	0.055	1700.00	1248.41	0.93	1.80	0.93	52.00	95.00
*	0.080	1700.00	1250.50	0.00	3.02	0.00	730.93	130.00
*	0.080	1700.00	1251.55	1.05	3.13	1.05	114.76	130.00
*	0.100	1700.00	1251.60	0.00	1.10	0.00	685.22	105.00
*	0.100	1700.00	1252.59	0.99	1.05	0.99	79.50	105.00
*	0.116	1700.00	1253.14	0.00	1.54	0.00	538.52	80.00
*	0.116	1700.00	1253.72	0.58	1.12	0.58	53.80	80.00
*	0.158	1700.00	1255.29	0.00	2.16	0.00	474.76	220.00
*	0.158	1700.00	1255.72	0.43	2.01	0.43	133.39	220.00
*	0.171	1700.00	1256.28	0.00	0.99	0.00	350.48	68.00
*	0.171	1700.00	1256.30	0.01	0.57	0.01	133.45	68.00
*	0.188	1700.00	1258.54	0.00	2.26	0.00	345.14	90.00
*	0.188	1700.00	1259.25	0.71	2.95	0.71	111.90	90.00
	0.217	1700.00	1261.75	0.00	3.21	0.00	134.71	150.00
	0.217	1700.00	1262.25	0.50	3.00	0.50	96.52	150.00
*	0.262	1700.00	1265.96	0.00	4.21	0.00	218.55	240.00
	0.262	1700.00	1265.91	-0.04	3.67	-0.04	98.10	240.00
*	0.287	1700.00	1267.70	0.00	1.74	0.00	259.32	130.00
	0.287	1700.00	1268.30	0.60	2.39	0.60	60.23	130.00
	0.304	1700.00	1269.14	0.00	1.44	0.00	208.85	90.00
	0.304	1700.00	1269.79	0.64	1.49	0.64	54.77	90.00
*	0.320	1540.00	1270.97	0.00	1.82	0.00	185.06	85.00
	0.320	1540.00	1271.26	0.29	1.47	0.29	50.27	85.00
*	0.333	1540.00	1272.67	0.00	1.70	0.00	185.34	64.00
*	0.333	1540.00	1272.74	0.07	1.48	0.07	54.60	64.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	0.347	1540.00	1273.36	0.00	0.69	0.00	48.85	75.00
*	0.347	1540.00	1273.36	0.01	0.63	0.01	48.86	75.00
*	0.358	1540.00	1274.95	0.00	1.60	0.00	104.38	60.00
*	0.358	1540.00	1274.96	0.00	1.59	0.00	92.45	60.00
*	0.420	1540.00	1279.83	0.00	4.87	0.00	297.27	330.00
	0.420	1540.00	1280.30	0.47	5.34	0.47	63.63	330.00
*	0.530	1100.00	1289.63	0.00	9.80	0.00	57.58	550.00
*	0.530	1100.00	1289.64	0.00	9.34	0.00	57.62	550.00
*	0.580	1100.00	1295.08	0.00	5.45	0.00	48.67	280.00
*	0.580	1100.00	1295.08	0.00	5.44	0.00	48.66	280.00
*	0.590	1100.00	1299.05	0.00	3.97	0.00	43.86	50.00
*	0.590	1100.00	1299.05	0.00	3.97	0.00	43.87	50.00
*	0.620	1100.00	1311.95	0.00	12.90	0.00	240.48	210.00

```
*      0.620   1100.00   1311.95      0.00     12.90      0.00     68.71    210.00
```


SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      0.016  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.016  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.016  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.016  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.016  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.037  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.037  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.037  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.037  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.037  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.055  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.055  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.055  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.055  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.055  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.080  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.080  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.080  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.080  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.100  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.100  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.100  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.100  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.100  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.116  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.116  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.116  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.116  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.116  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.158  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.158  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      0.158  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.171  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.171  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.171  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.171  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.171  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.188  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.188  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.188  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.188  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.188  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
```



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WARNING SECNO=      0.262  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.287  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.287  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      0.320  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.320  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      0.333  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.333  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=      0.333  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      0.333  PROFILE=  2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=      0.333  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.347  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.347  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.347  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.347  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      0.358  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.358  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.358  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.358  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.420  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.530  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.530  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.530  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.530  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.580  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.580  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.590  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.590  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.590  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.590  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.590  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=      0.620  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.620  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```


FLOODWAY DATA, FLYNN LANE WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
0.000	133.	257.	6.6	1241.7	1240.7	1.0
0.016	249.	477.	3.6	1246.0	1245.0	1.0
0.037	54.	169.	10.1	1246.6	1245.9	0.7

0.055	52.	166.	10.2	1248.4	1247.5	0.9
0.080	115.	329.	5.2	1251.5	1250.5	1.0
0.100	79.	191.	8.9	1252.6	1251.6	1.0
0.116	54.	169.	10.1	1253.7	1253.1	0.6
0.158	133.	234.	7.3	1255.7	1255.3	0.4
0.171	133.	233.	7.3	1256.3	1256.3	0.0
0.188	112.	239.	7.1	1259.2	1258.5	0.7
0.217	97.	251.	6.8	1262.2	1261.7	0.5
0.262	98.	230.	7.4	1266.0	1266.0	0.0
0.287	60.	202.	8.4	1268.3	1267.7	0.6
0.304	55.	206.	8.3	1269.7	1269.1	0.6
0.320	50.	173.	8.9	1271.3	1271.0	0.3
0.333	55.	175.	8.8	1272.8	1272.7	0.1
0.347	49.	154.	10.0	1273.4	1273.4	0.0
0.358	92.	193.	8.0	1275.0	1275.0	0.0
0.420	64.	223.	6.9	1280.3	1279.8	0.5
0.530	58.	129.	8.5	1289.6	1289.6	0.0
0.580	49.	156.	7.0	1295.1	1295.1	0.0
0.590	44.	116.	9.5	1299.1	1299.1	0.0
0.620	69.	314.	3.5	1312.0	1312.0	0.0

HEC2 S/N: 1363000967 HMVersion: 6.52 Data File: MA22REV.HC2

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    19FEB97    TIME   14:16:39 *
*******************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION   :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
```

```
============================
H A E S T A D   M E T H O D S
============================
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

Run Date: 19FEB97 Run Time: 14:16:39 HMVersion: 6.52 Data File: MA22REV.HC2 Page 1

THIS RUN EXECUTED 19FEB97 14:16:39

```
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
```

```
SPLIT FLOW BEING PERFORMED

SF.         WEIR FLOW FROM FLYNN LANE WASH AT LINCOLN DRIVE

JC          WATER SURFACE IS TO DETERMINE WEIR FLOW
JP

TW          WEIR FLOW FROM RIGHT BANK
WS     7    .599    .639    .456     2.6
WC     0  1303.5      22    1304      60    1306      95    1308     155    1310
WC   205    1312     217  1312.5
```

Run Date: 19FEB97 Run Time: 14:16:39 HMVersion: 6.52 Data File: MA22REV.HC2 Page 2

```
T1          FLYNN LANE WASH FLOODPLAIN DELINEATION     FILE:MA22REV.HC2
T2          STATIONING IS LEFT TO RIGHT, LOOKING D/S PREPARED 1/20/97
T3      FLYNN LANE WASH          REVISED OR POST-DEVELOPED MODEL 100 YR MODEL

J1  ICHECK     INQ       NINV      IDIR      STRT     METRIC    HVINS      Q         WSEL      FQ

      -1         2         0         0         0         0                          1240.7

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH      FN       ALLDC     IBW       CHNIM     ITRACE

      1                                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1        53        54         4         8        26        27        28
     31        32        33       200

QT        2      1700      1700
ET                          9.1                                                      1515.14   1648.50
NC     .013      .013      .013        .1        .3
            ENTRANCE INTO ARIZONA CANAL DIVERSION CHANNEL (ACDC)
X1        0        10    1593.5    1648.5         0         0         0
GR   1240.4       400    1240.3       882    1239.3       892    1239.3       918    1240.3       928
GR   1240.1    1593.5    1239.1    1603.5    1239.1    1638.5    1240.1    1648.5      1242      1680

ET                          9.1                                                        900      1149
NC       .1        .1      .016
X1     .016        20      1080      1124       140       160       150
GR     1245       120      1244       200    1243.5       300    1243.4       550      1244       700
GR   1244.5       800    1244.5      1000      1244      1065    1243.65      1077   1243.46      1080
GR   1243.9      1084    1242.82    1084.5   1242.12      1100    1242.27    1104.5   1243.05    1119.5
GR   1243.5      1120    1244.77      1124   1244.84      1134      1246      1250      1250      1500

ET                          9.1                                                    2078.50   2132.50
X1     .037        21    2078.5    2132.5       110       115       115
GR     1246      1200      1244      1330      1245      1460      1244      1550      1245      1700
GR   1245.5      1800    1245.5      1900      1245      2000    1244.5      2070    1244.1    2078.5
GR   1244.0    2083.5    1243.5      2084    1242.8      2100    1242.9      2103    1243.5      2118
GR   1243.8    2118.5    1243.9    2122.5    1244.4    2132.5      1246      2160      1248      2290
GR     1250      2400

ET                          9.1                                                    1080.0    1132.0
            19TH STREET & OCOTILLO
X1     .055        21      1080      1132       125        95        95
GR   1247.5       320      1246       460    1246.5       580    1245.5       700      1246       720
GR     1246       820      1247       900    1246.5       970    1246.5      1050      1246      1080
GR   1245.7      1080    1245.1    1084.5    1244.4      1100    1244.6      1102    1245.4    1117.5
GR   1245.7      1118    1245.8      1122    1246.4      1132      1248      1140      1248      1200
GR     1250      1365
```

Run Date: 19FEB97 Run Time: 14:16:39 HMVersion: 6.52 Data File: MA22REV.HC2 Page 3

```
ET                          9.1                                                     1035.24      1150
X1     .080         22     1083.5      1118        200        137        130
GR   1250.5      470.0     1250.0     500.0     1248.0      600.0     1249.8      675.0     1250.0     750.0
GR   1248.5      840.0     1249.0     900.0     1249.0     1050.0     1248.5     1075.0     1248.7    1078.5
GR   1248.6     1083.5     1248.1      1084     1247.3       1100     1247.5       1102     1248.4    1117.5
GR   1248.7       1118     1248.8      1122     1249.2       1129     1249.8       1140     1250.0    1148.5
GR   1252.0       1360     1254.0      1450

ET                          9.1                                                     1070.50    1150.00
X1     .100         20     1070.5      1150        100        100        105
GR     1252        500       1251       600       1250        680       1249        720       1250       770
GR     1252        850       1250       930       1250       1000       1252       1050     1251.6    1070.5
GR   1250.4     1083.5     1249.8      1084     1249.0       1100     1249.1       1102     1250.0      1118
GR   1250.3     1118.5     1250.4    1122.5       1251       1150       1252       1380       1254      1470

ET                          9.1                                                     1076.50    1130.30
X1     .116         16     1076.5    1130.3         90         80         80
GR     1254        600       1252       630       1251        750       1251        800       1252       870
GR   1253.6       1000       1253      1050     1252.2     1076.5     1250.2     1081.5     1250.5      1082
GR   1250.2       1100     1250.2    1115.8     1250.5     1120.3     1252.3     1130.3       1253      1200
GR     1254       1400

ET                          9.1                                                     1006.75    1140.14
NC       .1         .1       .035
X1     .158         14       1000   1140.14        160        310        220
GR   1255.5        710       1254       820       1254        900       1256       1000     1254.5    1036.9
GR   1253.9     1057.2    1253.65    1083.3    1253.01     1092.8     1252.6       1100     1252.8   1103.44
GR   1253.6    1119.64    1254.12   1140.14       1256       1320       1258       1440
            Dip crossing at 20th Street

ET                          9.1                                                      1025.0     1198.0
NC     .016       .016       .016
X1     .171         15       1061    1158.5         50         60         68
GR   1256.5        680       1255       760       1256        820       1257        940       1256      1000
GR   1256.8       1061    1254.39      1078    1253.78       1085    1253.12       1100     1253.9      1143
GR   1254.4     1143.5    1254.55    1148.5    1255.61     1158.5       1256       1200       1258      1300

ET                          9.1                                                      1033.1     1145.0
NC      .09        .12        .05
X1     .188         15     1063.1      1115        140         25         90
GR     1259        760       1258       790       1258        840       1260        860       1260      1000
GR   1258.2     1063.1    1257.34    1072.5    1258.5     1085.1    1253.67     1093.7     1253.4      1100
GR   1253.9     1104.7    1257.25      1115    1256.8       1223       1258       1300       1260      1390

ET                          9.1                                                       1030       1134
X1     .217         14     1059.5    1134.7        160        150        150
GR     1264        750       1262       770       1262        900     1261.5        950       1262       990
GR   1262.4       1020     1260.6    1059.5    1260.19     1072.5    1259.95     1083.7    1255.99    1095.9
GR   1255.5       1100     1255.5      1103    1261.48     1122.6    1263.82     1134.7
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                    Page    4


ET                          9.1                                                      1020.8    1153.72
X1     .262         17     1056.8      1123        220        260        240
GR     1269        600       1268       760       1266        900       1264        920     1263.8       930
GR     1264        970     1264.8      1010     1264.6     1056.8     1264.4     1066.2     1264.3    1087.2
GR   1259.8     1095.7    1259.59      1100     1260.3     1108.3     1266.4     1119.8     1266.7      1123
GR     1268       1140       1270      1190

ET                          9.1                                                     1057.60    1118.29
X1     .287         14     1057.6    1130.1        120        130        130
GR     1272        660       1270       750       1268        850       1266        900       1266       950
GR   1267.5        980     1267.4    1057.6    1266.77     1061.4    1266.55     1084.3     1261.6    1093.7
GR   1261.8       1100     1262.4      1108    1268.88     1118.8    1269.60     1130.1

ET                          9.1                                                     1064.30    1119.07
X1     .304         15     1064.3    1122.3         80        100         90
GR     1272        760       1270       900       1268        920     1267.5        950       1268       970
GR     1269       1030       1268      1055     1267.5     1064.3     1267.1     1070.4    1267.56    1086.6
GR   1263.1     1092.7    1262.6      1100     1263.6     1103.8    1271.08     1122.3    1271.95    1125.4

ET                          9.1                                                     1061.80    1112.39
NC                                       .6         .8
QT       2       1540       1540
X1     .320         11     1061.8    1137.7         50         90         85
X3       10                                                                     1270.87    1272.32
GR     1272        870       1270       980       1270       1050     1269.6     1061.8     1270.8    1086.8
GR   1264.3     1090.8    1264.49    1095.8    1264.45     1104.2     1264.0     1107.7     1272.3    1112.7
GR   1273.0     1137.7

ET                          9.1                                                     1057.30    1141.46
            2-6' diameter culverts at 21st Street
NC     .016       .016       .016
SC    2.013         .5       2.6                    6                   64        1.3    1265.73    1264.47
X1     .333         12     1087.3    1112.7        64         64         64
X2                                 2               1271.15
X3       10                                                                     1271.95    1274.01
BT      -12        900       1273                  980       1272                 1050       1271
BT             1062.3    1271.15                 1087.3    1271.95               1092.3    1272.61
BT             1095.8    1272.88                 1104.2    1272.73               1107.7    1273.05
BT             1112.7    1274.01                 1137.7     1275.0                 1200     1276.0
GR     1273        900       1272       980       1271       1050    1271.15     1062.3    1271.95    1087.3
GR   1266.6     1092.3    1265.76    1095.8    1265.71     1104.2    1266.01     1107.7    1274.01    1112.7
GR   1275.0     1137.7     1276.0      1200

ET                          9.1                                                     1072.00    1128.34
NC      .09        .12        .05
X1     .347         10       1082    1125.5         50         70         75
GR     1276        930       1276      1030       1274       1070     1271.9     1076.5     1271.7      1082
GR   1268.9       1091     1268.45      1100    1269.33     1112.5     1275.6     1125.5     1275.8      1131
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                    Page    5


ET                          9.1                                                     1029.50    1173.85
NC                                       .1         .3
X1     .358         12     1084.5      1123         60         50         60
GR     1276        960       1274      1070     1273.7     1080.5     1273.3     1084.5     1269.7      1091
GR   1269.6       1100     1269.95     1108     1269.9       1110     1275.4       1123     1275.7      1125
GR     1276       1190       1278      1240

ET                          9.1                                                     1042.72     1117.0
X1   0.379         14       1082      1117        115        105        110
GR   1276.9        934     1275.93       950    1274.81        995    1273.44       1074    1273.80      1075
GR   1273.5       1082     1270.42      1095    1270.50       1100    1270.61       1105    1273.37      1117
GR   1275.7       1169     1277.30      1177    1278.73       1234    1278.28       1272

ET                          9.1                                                     1071.00    1131.21
X1   0.420         11       1081      1126        220        215        218
GR   1279.4       1063     1278.51      1081    1274.54       1089    1273.43       1095    1273.55      1100
GR   1273.7       1105     1277.24      1113    1280.17       1126    1281.46       1142    1281.40      1209
GR   1282.0       1305

ET                          9.1                                                     1081.00    1128.81
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NC     0.09       0.10
X1    0.456         10       1081       1142        176        215        190
GR   1284.0       1010     1282.4       1050    1281.83       1081    1277.12       1092    1277.52       1100
GR   1277.9       1108     1279.1       1120    1289.05       1142    1290.03       1214    1292.14       1315
            FLOW REDUCED TO 1100 CFS UPSTREAM OF JUNCTION.

QT        2       1100       1100
ET                            9.1                                                            1078.00     1124.70
NC                0.10       0.07
X1    0.466         12       1078       1127         34         75         51
GR   1284.1       1040     1283.6       1048    1282.58       1051    1283.17       1078    1278.68       1085
GR   1279.1       1100     1279.6       1115    1285.16       1127       1289       1141    1289.04       1155
GR   1290.6       1200     1292.0       1294

ET                            9.1                                                            1095.08     1115.19
X1    0.501          9       1078       1134        188        165        185
GR   1288.6       1060    1287.86       1078    1282.19       1094    1282.38       1100    1282.56       1106
GR   1284.6       1114    1284.08       1123    1289.00       1134    1289.80       1150

ET                            9.1                                                            1084.75     1129.95
X1    0.544         10       1070       1141        210        234        230
GR   1295.7       1054    1294.77       1070    1285.62       1096    1285.60       1100    1285.58       1104
GR   1290.7       1120    1290.62       1133    1293.50       1141    1293.52       1157    1297.82       1171

ET                            9.1                                                            1080.97     1100.89
X1    0.584         10       1054       1128        220        180        207
GR   1302.1       1039    1302.33       1054    1297.21       1063    1291.01       1093    1290.93       1100
GR   1290.9       1107    1296.93       1114    1298.26       1122    1301.20       1128    1301.89       1145
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                        Page    6


ET                            9.1                                                            1099.08     1111.19
NC    0.015      0.015      0.015         .6         .8
X1    0.599         11       1097       1103         80         87         84
X3       10                                                                     1298.9      1298.9
GR   1306.7       1040    1305.41       1045    1304.05       1079    1300.56       1094     1293.9       1097
GR   1293.9       1100     1293.9       1103    1300.35       1105     1300.5       1105     1302.0       1117
GR   1303.5       1140

NC     0.08       0.08       0.08
            5' DIAMETER CULVERT AT LINCOLN DRIVE
ET                            9.1                                                            1050.30     1140.61
SC    1.015         .5        2.6                    5                    208        1.3    1297.37     1293.98
X1    0.639         14       1097       1103        210        217        208
X2        0          0          2                 1309.40
X3       10                                                                   1310.10      1310.07
BT      -14        949    1313.44                   990    1312.64                 1031       1311.8
BT                1060     1311.5                  1076     1311.4                 1095      1310.22
BT                1097     1310.1                  1100     1310.0                 1103      1310.07
BT                1104     1310.0                  1114     1309.7                 1122         1310
BT                1140       1312                  1166     1312.6
GR   1313.4        949    1312.64        990     1311.8       1031     1311.4       1060     1310.79       1076
GR   1298.1       1095    1297.37       1097    1297.37       1100    1297.37       1103     1297.37       1104
GR   1299.7       1114       1310       1122       1312       1140     1312.6       1166

NC                                        .1         .3
ET                            9.1                                                            1080.86     1116.75
X1    0.677          9       1073       1123        212        201        203
GR   1318.2       1048    1318.27       1063    1319.80       1068    1317.92       1073     1304.20       1094
GR   1304.3       1100    1304.43       1107    1318.14       1123    1318.51       1129

ET                            9.1                                                            1087.89     1115.82
X1    0.716          7       1085       1130        203        200        205
GR   1325.3       1041    1324.64       1058    1321.63       1085    1311.85       1090     1311.38       1100
GR   1310.9       1108    1325.18       1130

ET                            9.1                                                            1083.63     1108.59
X1    0.745          6       1074       1110        149        150        153
GR   1329.5       1074    1316.08       1094    1315.53       1100    1314.98       1105     1326.20       1110
GR   1328.7       1115
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                        Page    7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL      OLOSS   L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB        ACH       AROB        VOL        TWA   R-BANK ELEV
    TIME       VLOB       VCH        VROB        XNL       XNCH        XNR        WTN      ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL        IDC      ICONT      CORAR     TOPWID      ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     0.100 CEHV=     0.300
*SECNO 0.000
3280 CROSS SECTION       0.00 EXTENDED       0.30 FEET

     0.000       1.60   1240.70   1240.62   1240.70   1240.84      0.14      0.00      0.00   1240.10
    1700.0     1327.8     367.2       5.0     555.8      78.0       3.0       0.0       0.0   1240.10
      0.00       2.39      4.71      1.67     0.013     0.013     0.013     0.000   1239.10    400.00
  0.001067         0.        0.        0.         0         8         0      0.00   1258.45   1658.45


*SECNO 0.016
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.016       2.87   1244.99   1244.99      0.00   1245.52      0.53      0.24      0.12   1243.46
    1700.0      883.9     815.5       0.7     981.2      97.0       3.0       2.8       3.7   1244.77
      0.01       0.90      8.41      0.22     0.100     0.016     0.100     0.000   1242.12    120.70
  0.002956       140.      150.      160.         0        17         0      0.00   1028.42   1149.12


*SECNO 0.037
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.037       3.06   1245.86   1245.86      0.00   1246.45      0.59      0.29      0.02   1244.10
    1700.0      666.6    1022.8      10.6     863.4     128.6      18.3       5.4       6.2   1244.40
      0.02       0.77      7.96      0.58     0.100     0.016     0.100     0.000   1242.80   1209.19
  0.002327       110.      115.      115.         0         8         0      0.00    948.38   2157.57


*SECNO 0.055
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.055       3.08   1247.48   1247.48      0.00   1248.07      0.59      0.27      0.00   1246.00
    1700.0      736.4     962.1       1.5     856.3     117.9       2.9       8.2       8.7   1246.40
      0.02       0.86      8.16      0.50     0.100     0.016     0.100     0.000   1244.40    321.69
  0.002627       125.       95.       95.         0         5         0      0.00    815.72   1137.41

   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                        Page    8

    SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL      OLOSS   L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB        ACH       AROB        VOL        TWA   R-BANK ELEV
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    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 0.080
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.080      3.20   1250.50   1250.50      0.00   1251.17      0.67      0.43      0.02   1248.60
    1700.0     813.9     852.5      33.5     823.0      92.5      46.6      12.4      12.1   1248.70
      0.03      0.99      9.22      0.72     0.100     0.016     0.100     0.000   1247.30    470.16
  0.002681      200.      130.      137.         0         8         0      0.00    730.93   1201.09

*SECNO 0.100

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.100      2.60   1251.60   1251.60      0.00   1252.23      0.63      0.38      0.00   1251.60
    1700.0     733.8     946.3      20.0     541.1     112.1      41.3      14.4      13.7   1251.00
      0.04      1.36      8.44      0.48     0.100     0.016     0.100     0.000   1249.00    540.06
  0.005269      100.      105.      100.         0        14         0      0.00    685.22   1287.85

*SECNO 0.116

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.116      2.94   1253.14   1253.14      0.00   1253.96      0.82      0.29      0.06   1252.20
    1700.0     493.8    1190.3      15.9     495.4     137.6      35.9      15.7      15.0   1252.30
      0.04      1.00      8.65      0.44     0.100     0.016     0.100     0.000   1250.20    612.93
  0.002520       90.       80.       80.         0         8         0      0.00    538.52   1227.54

*SECNO 0.158

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.158      2.69   1255.29   1255.29      0.00   1255.85      0.55      1.07      0.03   1256.00
    1700.0     378.1    1234.6      87.3     206.9     178.5      66.0      18.2      17.3   1254.12
      0.05      1.83      6.92      1.32     0.100     0.035     0.100     0.000   1252.60    725.08
  0.016140      160.      220.      310.         0        11         0      0.00    474.76   1252.49
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 0.171

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.171      3.16   1256.28   1256.28      0.00   1256.83      0.54      0.24      0.00   1256.80
    1700.0     283.7    1368.6      47.7     101.2     211.9      21.8      18.7      17.8   1255.61
      0.05      2.80      6.46      2.18     0.016     0.016     0.016     0.000   1253.12    691.57
  0.001643       50.       68.       60.         0         8         0      0.00    350.48   1214.15

*SECNO 0.188

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.188      5.14   1258.54   1258.54      0.00   1259.21      0.67      0.34      0.04   1258.20
    1700.0      56.9    1008.0     635.1      35.1     121.4     258.7      19.4      18.5   1257.25
      0.06      1.62      8.30      2.46     0.090     0.050     0.120     0.000   1253.40    773.70
  0.026388      140.       90.       25.         0        14         0      0.00    345.14   1324.46

*SECNO 0.217

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

     0.217      6.25   1261.75   1261.63      0.00   1262.93      1.18      3.57      0.15   1260.60
    1700.0      27.6    1672.4       0.0      20.1     190.0       0.0      20.4      19.4   1263.82
      0.06      1.37      8.80      0.00     0.090     0.050     0.000     0.000   1255.50    925.01
  0.021452      160.      150.      150.         2        14         0      0.00    134.71   1124.00

*SECNO 0.262

3301 HV CHANGED MORE THAN HVINS
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

     0.262      6.36   1265.95   1265.46      0.00   1266.36      0.41      3.35      0.08   1264.60
    1700.0     560.7    1139.3       0.0     243.7     187.9       0.0      22.2      20.3   1266.70
      0.07      2.30      6.06      0.00     0.090     0.050     0.000     0.000   1259.59    900.39
  0.010053      220.      240.      260.         2        10         0      0.00    218.58   1118.97

*SECNO 0.287
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.287      6.10   1267.70   1267.70      0.00   1268.42      0.72      1.68      0.09   1267.40
    1700.0     418.1    1281.9       0.0     168.6     166.1       0.0      23.3      21.0   1269.60
      0.08      2.48      7.72      0.00     0.090     0.050     0.000     0.000   1261.60    857.55
  0.018119      120.      130.      130.         0        10         0      0.00    259.28   1116.83

*SECNO 0.304
     0.304      6.54   1269.14   1269.10      0.00   1269.98      0.84      1.52      0.04   1267.50
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   1700.0     318.2    1381.8       0.0     144.6     171.0       0.0      23.9      21.4   1271.08
     0.08      2.20      8.08      0.00     0.090     0.050     0.000     0.000   1262.60    908.52
 0.016645       80.       90.      100.         1         8         0      0.00    209.00   1117.52


CCHV=    0.600 CEHV=    0.800
*SECNO 0.320
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1270.87 ELREA=      1272.32

    0.320      7.05   1271.05   1271.05      0.00   1271.88      0.83      1.36      0.01   1269.60
   1540.0     250.0    1290.0       0.0     118.9     162.8       0.0      24.4      21.7   1273.00
     0.09      2.10      7.93      0.00     0.090     0.050     0.000     0.000   1264.00    922.13
 0.017895       50.       85.       90.         0        14         0      0.00    189.82   1111.95
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
    2          0.013      0.50       2.60       0.00       6.00       0.00       64.00      1          3          1265.73    1264.47

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1293.32..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1290.44 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.333

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =   1273.37
SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV        VCH      ACULV     ELTRD     WEIRLN
  1293.32    1290.44      1.49       939.       599.      7.821       56.5   1271.15       209.


3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1271.95 ELREA=      1274.01

    0.333      6.99   1272.70   1272.70      0.00   1273.40      0.70      0.16      1.33   1271.95
   1540.0     473.5    1066.5       0.0     152.2     136.4       0.0      24.8      21.9   1274.01
     0.09      3.11      7.82      0.00     0.016     0.016     0.000     0.000   1265.71    924.08
 0.000972       64.       64.       64.        20         6         0      0.00    187.80   1111.88


*SECNO 0.347

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    0.347      4.90   1273.35   1273.35      0.00   1275.06      1.70      0.19      0.80   1271.70
   1540.0      35.5    1504.5       0.0      11.8     142.2       0.0      25.1      22.1   1275.60
     0.09      3.01      10.58     0.00     0.090     0.050     0.000     0.000   1268.45   1072.00
 0.023538       50.       75.       70.         0        19         0      0.00     48.84   1120.84


CCHV=    0.100 CEHV=    0.300
*SECNO 0.358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    0.358      5.35   1274.95   1274.95      0.00   1276.33      1.37      1.21      0.03   1273.30
   1540.0      76.4    1463.6       0.0      42.4     151.8       0.0      25.4      22.2   1275.40
     0.09      1.80      9.64      0.00     0.090     0.050     0.000     0.000   1269.60   1017.56
 0.017413       60.       60.       50.         0         8         0      0.00    104.38   1121.94
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.379

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.46

    0.379      6.45   1276.87   1275.38      0.00   1277.09      0.22      0.65      0.12   1273.50
   1540.0     506.2     891.0     142.8     316.2     185.7     124.3      26.4      22.7   1273.37
     0.10      1.60      4.80      1.15     0.090     0.050     0.120     0.000   1270.42    934.64
 0.002888      115.      110.      105.         2        11         0      0.00    240.17   1174.81


*SECNO 0.420

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    0.420      5.74   1279.17   1279.17      0.00   1280.87      1.70      1.39      0.44   1278.51
   1540.0       5.5    1534.5       0.0       4.5     146.4       0.0      28.4      23.4   1280.17
     0.11      1.22      10.48     0.00     0.090     0.050     0.000     0.000   1273.43   1067.57
 0.023956      220.      218.      215.         0        11         0      0.00     54.01   1121.58


*SECNO 0.456

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

    0.456      5.85   1282.97   1281.96      0.00   1283.85      0.88      2.89      0.08   1281.83
   1540.0      43.2    1496.8       0.0      30.4     195.8       0.0      29.2      23.7   1289.05
     0.12      1.42      7.64      0.00     0.090     0.050     0.000     0.000   1277.12   1035.82
 0.010557      176.      190.      215.         2        11         0      0.00     92.73   1128.55
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*SECNO 0.466
     0.466      5.33   1284.01   1282.26      0.00   1284.42      0.40      0.52      0.05   1283.17
    1053.2      60.9     992.4       0.0      35.2     189.9       0.0      29.4      23.8   1285.16
      0.12      1.73      5.23      0.00     0.090     0.070     0.000     0.000   1278.68   1041.24
  0.009920       34.       51.       75.         2        14         0      0.00     83.30   1124.54
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 0.501

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.54

     0.501      4.56   1286.75   1286.29      0.00   1287.67      0.92      3.10      0.16   1287.86
    1053.2       0.0    1053.2       0.0       0.0     136.6       0.0      30.2      24.1   1289.00
      0.12      0.00      7.71      0.00     0.000     0.070     0.000     0.000   1282.19   1081.15
  0.034030      188.      185.      165.         2        15         0      0.00     47.81   1128.96

*SECNO 0.544

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.55

     0.544      6.48   1292.06   1290.37      0.00   1292.51      0.46      4.80      0.05   1294.77
    1053.2       0.0    1053.2       0.0       0.0     194.2       0.0      31.1      24.3   1293.50
      0.14      0.00      5.42      0.00     0.000     0.070     0.000     0.000   1285.58   1077.71
  0.014076      210.      230.      234.         4        11         0      0.00     59.28   1136.99

*SECNO 0.584

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.69

     0.584      4.91   1295.81   1295.12      0.00   1296.72      0.91      4.07      0.14   1302.33
    1053.2       0.0    1053.2       0.0       0.0     137.8       0.0      31.9      24.6   1301.20
      0.14      0.00      7.64      0.00     0.000     0.070     0.000     0.000   1290.90   1069.78
  0.029345      220.      207.      180.         3        14         0      0.00     42.92   1112.70

CCHV=    0.600 CEHV=    0.800
*SECNO 0.599
3280 CROSS SECTION      0.60 EXTENDED      0.16 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     0.599      9.76   1303.66   1303.66      0.00   1305.01      1.35      0.16      0.36   1293.90
    1053.2     159.6     666.1     227.6      40.0      58.6      63.0      32.1      24.7   1293.90
      0.15      3.99     11.37      3.61     0.015     0.015     0.015     0.000   1293.90   1080.67
  0.000631       80.       84.       87.         0        21         0      0.00     59.33   1140.00
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1        0.015      0.50      2.60      0.00      5.00      0.00    208.00      1         3       1297.37   1293.98

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1391.99..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1415.97 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.639

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =   1312.78
3280 CROSS SECTION      0.64 EXTENDED      0.12 FEET

3301 HV CHANGED MORE THAN HVINS

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV    ELTRD    WEIRLN
   1391.99   1415.97      7.76      807.      300.     2.678      19.6  1309.70      183.

     0.639      15.35   1312.72      0.00      0.00   1312.78      0.06      7.76      0.00   1297.37
    1100.0      358.5     246.6     494.9     266.2      92.1     261.9      34.0      25.3   1297.37
      0.18       1.35      2.68      1.89     0.080     0.080     0.080     0.000   1297.37    985.77
  0.000545       210.      208.      217.         2         0         0      0.00    180.23   1166.00

CCHV=    0.100 CEHV=    0.300
*SECNO 0.677

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.24

     0.677      8.54   1312.74   1309.34      0.00   1313.18      0.44      0.29      0.12   1317.92
    1100.0       0.0    1100.0       0.0       0.0     205.9       0.0      36.0      25.8   1318.14
      0.19      0.00      5.34      0.00     0.000     0.080     0.000     0.000   1304.20   1080.92
  0.009747      212.      203.      201.         3        17         0      0.00     35.79   1116.71

*SECNO 0.716

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.40

     0.716      5.09   1315.99   1315.78      0.00   1317.63      1.64      4.09      0.36   1321.63
    1100.0       0.0    1100.0       0.0       0.0     106.9       0.0      36.7      25.9   1325.18
      0.19      0.00     10.29      0.00     0.000     0.080     0.000     0.000   1310.90   1087.88
  0.061514      203.      205.      200.         3        11         0      0.00     27.96   1115.84
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 0.745

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.42

0.745	8.05	1323.03	1321.32	0.00	1324.10	1.07	6.41	0.06	1329.50
1100.0	0.0	1100.0	0.0	0.0	132.7	0.0	37.2	26.0	1326.20
0.20	0.00	8.29	0.00	0.000	0.080	0.000	0.000	1314.98	1083.64
0.030338	149.	153.	150.	4	11	0	0.00	24.95	1108.59

TW WEIR FLOW FROM RIGHT BANK

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
46.76	51.07	8.81	46.76	51.07	8.81	21	1303.662	1312.718	0.599	0.639

PROFILE FOR STREAM FLYNN LANE WASH

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

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ELEVATION  1239.     1249.     1259.     1269.     1279.     1289.     1299.     1309.     1319.     1329.
    SECNO   CUMDIS
     0.00      0.  ILE       .         .         .         .         .         .         .         .         .
              20.  ILE       .         .         .         .         .         .         .         .         .
              40.  .ILE      .         .         .         .         .         .         .         .         .
              60.  .ILWE     .         .         .         .         .         .         .         .         .
              80.  . ILE     .         .         .         .         .         .         .         .         .
             100.  . ILWE    .         .         .         .         .         .         .         .         .
             120.  . I LE    .         .         .         .         .         .         .         .         .
             140.  .  ILRE   .         .         .         .         .         .         .         .         .
     0.02    160.  .  IL E   .         .         .         .         .         .         .         .         .
             180.  .  IL WE  .         .         .         .         .         .         .         .         .
             200.  .  I LWE  .         .         .         .         .         .         .         .         .
             220.  .  I LWE  .         .         .         .         .         .         .         .         .
             240.  .  I LWE  .         .         .         .         .         .         .         .         .
             260.  .   IL E  .         .         .         .         .         .         .         .         .
     0.04    280.  .   IL E  .         .         .         .         .         .         .         .         .
             300.  .   ILRWE .         .         .         .         .         .         .         .         .
             320.  .   I LWE .         .         .         .         .         .         .         .         .
             340.  .    ILRE .         .         .         .         .         .         .         .         .
     0.05    360.  .    I LWE.         .         .         .         .         .         .         .         .
             380.  .     ILRE.         .         .         .         .         .         .         .         .
             400.  .     I LWE         .         .         .         .         .         .         .         .
             420.  .      IL E         .         .         .         .         .         .         .         .
             440.  .      I LWE        .         .         .         .         .         .         .         .
             460.  .       IL.E        .         .         .         .         .         .         .         .
             480.  .       IL.WE       .         .         .         .         .         .         .         .
     0.08    500.  .       I LWE       .         .         .         .         .         .         .         .
             520.  .        IL E       .         .         .         .         .         .         .         .
             540.  .        IRLE       .         .         .         .         .         .         .         .
             560.  .        I.LWE      .         .         .         .         .         .         .         .
             580.  .        I.RWE      .         .         .         .         .         .         .         .
     0.10    600.  .         I RE      .         .         .         .         .         .         .         .
             620.  .         I RWE     .         .         .         .         .         .         .         .
             640.  .         .I WE     .         .         .         .         .         .         .         .
             660.  .         .I LE     .         .         .         .         .         .         .         .
     0.12    680.  .         .I LWE    .         .         .         .         .         .         .         .
             700.  .         .I LWE    .         .         .         .         .         .         .         .
             720.  .         . I WE    .         .         .         .         .         .         .         .
             740.  .         . I LE    .         .         .         .         .         .         .         .
             760.  .         . I LWE   .         .         .         .         .         .         .         .
             780.  .         . I RWE   .         .         .         .         .         .         .         .
             800.  .         . I RWE   .         .         .         .         .         .         .         .
             820.  .         .  IRWE   .         .         .         .         .         .         .         .
             840.  .         .  I RE   .         .         .         .         .         .         .         .
             860.  .         .  I RE   .         .         .         .         .         .         .         .
             880.  .         .  I RWE  .         .         .         .         .         .         .         .
     0.16    900.  .         .   IRWE  .         .         .         .         .         .         .         .
             920.  .         .   IRWE  .         .         .         .         .         .         .         .
             940.  .         .   I RE  .         .         .         .         .         .         .         .
             960.  .         .   I RWE .         .         .         .         .         .         .         .
     0.17    980.  .         .   I  WE .         .         .         .         .         .         .         .
            1000.  .         .   I  RE .         .         .         .         .         .         .         .
            1020.  .         .   I  RWE.         .         .         .         .         .         .         .
            1040.  .         .   I   RE.         .         .         .         .         .         .         .
     0.19   1060.  .         .   I   RWE         .         .         .         .         .         .         .
            1080.  .         .    I   LWE        .         .         .         .         .         .         .
            1100.  .         .    I    WE        .         .         .         .         .         .         .
            1120.  .         .    I    LWE       .         .         .         .         .         .         .
            1140.  .         .    I    LWE       .         .         .         .         .         .         .
            1160.  .         .     I   .LWE      .         .         .         .         .         .         .
            1180.  .         .     I   .LWEM     .         .         .         .         .         .         .
            1200.  .         .     I   .LW E     .         .         .         .         .         .         .
     0.22   1220.  .         .     I   . LWER    .         .         .         .         .         .         .
            1240.  .         .      I  . LWER    .         .         .         .         .         .         .
            1260.  .         .      I  . LWERM   .         .         .         .         .         .         .
            1280.  .         .      I  . CWEM    .         .         .         .         .         .         .
            1300.  .         .       I . LWER    .         .         .         .         .         .         .
            1320.  .         .       I . LWERM   .         .         .         .         .         .         .
            1340.  .         .       I .  CWEM   .         .         .         .         .         .         .
            1360.  .         .        I.  LWE M  .         .         .         .         .         .         .
            1380.  .         .        I.  LWERM  .         .         .         .         .         .         .
            1400.  .         .        I.   CER M.         .         .         .         .         .         .
            1420.  .         .         I   LWE M.         .         .         .         .         .         .
            1440.  .         .         I   LCE M.         .         .         .         .         .         .
     0.26   1460.  .         .         I    CER M         .         .         .         .         .         .
            1480.  .         .        .I    LWE M        .         .         .         .         .         .
            1500.  .         .        .I    LWE M        .         .         .         .         .         .
            1520.  .         .        .I     CERM        .         .         .         .         .         .
            1540.  .         .        . I    LWEM        .         .         .         .         .         .
            1560.  .         .        . I     WER        .         .         .         .         .         .
     0.29   1580.  .         .        .  I    LE.R       .         .         .         .         .         .
            1600.  .         .        .  I    LWER       .         .         .         .         .         .
            1620.  .         .        .  I    LWERM      .         .         .         .         .         .
            1640.  .         .        .  I    L ERM      .         .         .         .         .         .
            1660.  .         .        .  I    L WERM     .         .         .         .         .         .
     0.30   1680.  .         .        .   I   L WERM     .         .         .         .         .         .
            1700.  .         .        .   I    LWERM     .         .         .         .         .         .
            1720.  .         .        .   I    L.WER     .         .         .         .         .         .
            1740.  .         .        .   I     LWER     .         .         .         .         .         .
     0.32   1760.  .         .        .    I    .LWER    .         .         .         .         .         .
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      1780.  .         .         .    I    .LWER     .         .         .         .         .         .         .
      1800.  .         .         .     I   . LWER    .         .         .         .         .         .         .
0.33  1820.  .         .         .      I  .  LER    .         .         .         .         .         .         .
      1840.  .         .         .      I  .  LWE    .         .         .         .         .         .         .
      1860.  .         .         .       I .  LWER   .         .         .         .         .         .         .
      1880.  .         .         .        I.  LW E   .         .         .         .         .         .         .
0.35  1900.  .         .         .        I.  LW ER  .         .         .         .         .         .         .
      1920.  .         .         .         I  L WEM  .         .         .         .         .         .         .
      1940.  .         .         .         I   LWRE  .         .         .         .         .         .         .
0.36  1960.  .         .         .         .I  L WE  .         .         .         .         .         .         .
      1980.  .         .         .         .I  L WE  .         .         .         .         .         .         .
      2000.  .         .         .         .I  L CWE .         .         .         .         .         .         .
      2020.  .         .         .         .I  LRCWE .         .         .         .         .         .         .
      2040.  .         .         .         .I  LRCWE .         .         .         .         .         .         .
0.38  2060.  .         .         .         .I  L C E .         .         .         .         .         .         .
      2080.  .         .         .         . I  L CE .         .         .         .         .         .         .
      2100.  .         .         .         . I  LRCWE.         .         .         .         .         .         .
      2120.  .         .         .         . I   LCWE.         .         .         .         .         .         .
      2140.  .         .         .         . I   LRCE.         .         .         .         .         .         .
      2160.  .         .         .         .  I   LCWE         .         .         .         .         .         .
      2180.  .         .         .         .  I   LCWE         .         .         .         .         .         .
      2200.  .         .         .         .  I    LWE         .         .         .         .         .         .
      2220.  .         .         .         .   I   LWME        .         .         .         .         .         .
      2240.  .         .         .         .   I    CWE        .         .         .         .         .         .
      2260.  .         .         .         .   I    LWE        .         .         .         .         .         .
0.42  2280.  .         .         .         .   I    LWRE       .         .         .         .         .         .
      2300.  .         .         .         .    I    WME       .         .         .         .         .         .
      2320.  .         .         .         .    I    LWER      .         .         .         .         .         .
      2340.  .         .         .         .    I    LWMER     .         .         .         .         .         .
      2360.  .         .         .         .     I   .CWE R    .         .         .         .         .         .
      2380.  .         .         .         .     I   .LWE  R   .         .         .         .         .         .
      2400.  .         .         .         .      I  . WME  R  .         .         .         .         .         .
      2420.  .         .         .         .      I  . CWE   R .         .         .         .         .         .
      2440.  .         .         .         .      I  . CWE    R.         .         .         .         .         .
      2460.  .         .         .         .       I .  CWE   R.         .         .         .         .         .
0.46  2480.  .         .         .         .       I .  CWE    R         .         .         .         .         .
      2500.  .         .         .         .        I.  CWE  R .         .         .         .         .         .
0.47  2520.  .         .         .         .         I  CLER   .         .         .         .         .         .
      2540.  .         .         .         .         I   CWE   .         .         .         .         .         .
      2560.  .         .         .         .         I   CLER  .         .         .         .         .         .
      2580.  .         .         .         .         .I  C ER  .         .         .         .         .         .
      2600.  .         .         .         .         .I   CWER .         .         .         .         .         .
      2620.  .         .         .         .         .I   CWER .         .         .         .         .         .
      2640.  .         .         .         .         . I   CEMR.         .         .         .         .         .
      2660.  .         .         .         .         . I   CWER.         .         .         .         .         .
      2680.  .         .         .         .         .  I   WER.         .         .         .         .         .
      2700.  .         .         .         .         .  I   CELR         .         .         .         .         .
0.50  2720.  .         .         .         .         .  I   CWER         .         .         .         .         .
      2740.  .         .         .         .         .  I    WER         .         .         .         .         .
      2760.  .         .         .         .         .   I   CELR        .         .         .         .         .
      2780.  .         .         .         .         .   I   CWEL        .         .         .         .         .
      2800.  .         .         .         .         .   I    WELM       .         .         .         .         .
      2820.  .         .         .         .         .    I   CWELM      .         .         .         .         .
      2840.  .         .         .         .         .    I   CWELM      .         .         .         .         .
      2860.  .         .         .         .         .    I    CWELM     .         .         .         .         .
      2880.  .         .         .         .         .    I    CWERL     .         .         .         .         .
      2900.  .         .         .         .         .     I   C ERLM    .         .         .         .         .
      2920.  .         .         .         .         .     I   .CWERLM   .         .         .         .         .
0.54  2940.  .         .         .         .         .     I   .C ER LM  .         .         .         .         .
      2960.  .         .         .         .         .      I  . CWERLM  .         .         .         .         .
      2980.  .         .         .         .         .       I . C E RLM .         .         .         .         .
      3000.  .         .         .         .         .       I .  CWE RL .         .         .         .         .
      3020.  .         .         .         .         .        I.  CWE R L.         .         .         .         .
      3040.  .         .         .         .         .        I.   CE  RLM         .         .         .         .
      3060.  .         .         .         .         .         I   CWE  RL         .         .         .         .
      3080.  .         .         .         .         .         I   CWE   RL        .         .         .         .
      3100.  .         .         .         .         .         .I   CWE  RML       .         .         .         .
      3120.  .         .         .         .         .         .I   CWE  .RL       .         .         .         .
0.58  3140.  .         .         .         .         .         . I   CWE . RL      .         .         .         .
      3160.  .         .         .         .         .         .  I    CWEL M      .         .         .         .
      3180.  .         .         .         .         .         .  I     LW E M     .         .         .         .
      3200.  .         .         .         .         .         .   I  L  . W E     .         .         .         .
      3220.  .         .         .         .         .         .    I    .   W E   .         .         .         .
0.60  3240.  .         .         .         .         .         .    I    .   MWE   .         .         .         .
      3260.  C         .         .         .         .         .    I    .    W E  .         .         .         .
      3280.  C         .         .         .         .         .    I    .     WE  .         .         .         .
      3300.  C         .         .         .         .         .     I   .      WE .         .         .         .
      3320.  C         .         .         .         .         .     I   .       WE.         .         .         .
      3340.  C         .         .         .         .         .     I   .        WE         .         .         .
      3360.  C         .         .         .         .         .      I  .         E         .         .         .
      3380.  C         .         .         .         .         .      I  .         .E        .         .         .
      3400.  C         .         .         .         .         .      I  .         .ME       .         .         .
      3420.  C         .         .         .         .         .       I .         . WE      .         .         .
0.64  3440.  C         .         .         .         .         .       I .         .   E     .         .         .
      3460.  C         .         .         .         .         .        IL         .   E     .         .         .
      3480.  C         .         .         .         .         .         I L       .   EM    .         .         .
      3500.  C         .         .         .         .         .         I   L     .   EM    .         .         .
      3520.  C         .         .         .         .         .         .I    L   .   E M   .         .         .
      3540.  C         .         .         .         .         .         . I     LR.   E M   .         .         .
      3560.  C         .         .         .         .         .         . I       LR  E  M  .         .         .
      3580.  C         .         .         .         .         .         .  I      . LRE  M  .         .         .
      3600.  C         .         .         .         .         .         .   I     .   ER  M .         .         .
      3620.  C         .         .         .         .         .         .   I     .   E LRM .         .         .
0.68  3640.  .         .         .         .         .         .         .    I    C   E    L.         .         .
      3660.  .         .         .         .         .         .         .     I   .C  WE   LR         .         .
      3680.  .         .         .         .         .         .         .     I   .C  WE    L         .         .
      3700.  .         .         .         .         .         .         .      I  . C  E    LR        .         .
      3720.  .         .         .         .         .         .         .       I . C WE    L R       .         .
      3740.  .         .         .         .         .         .         .       I . C WE    .LRM      .         .
      3760.  .         .         .         .         .         .         .        I.  C WE   .L R      .         .
      3780.  .         .         .         .         .         .         .         I    CWE .L  R     .         .
      3800.  .         .         .         .         .         .         .         I    CW E . L  R   .         .
      3820.  .         .         .         .         .         .         .         .I    W E . L  R   .         .
0.72  3840.  .         .         .         .         .         .         .         . I    W E.  L  R  .         .
      3860.  .         .         .         .         .         .         .         . I    CWE.   L RM .         .
      3880.  .         .         .         .         .         .         .         .  I    CWE    LRM .         .
      3900.  .         .         .         .         .         .         .         .  I     CWE    LM .         .
      3920.  .         .         .         .         .         .         .         .   I     CWE    LM.         .
      3940.  .         .         .         .         .         .         .         .   I     CW E   RL.         .
      3960.  .         .         .         .         .         .         .         .    I    .CW E  R L.         .
      3980.  .         .         .         .         .         .         .         .     I   . CWE  R ML         .
0.75  4000.  .         .         .         .         .         .         .         .     I   . C WE R  L         .
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T1         FLYNN LANE WASH 100 YEAR PROFILE WITH 1' ENCROACHMENT
T3      100 YR PROF W/ 1' ENCROA

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q          WSEL      FQ

                 3                  0                                              1241.7

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW        CHNIM     ITRACE

      2
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 2


CCHV=    0.100 CEHV=    0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=     1515.1    1648.5  TYPE=      1  TARGET=      133.360
     0.000      2.60   1241.70      0.00   1241.70   1242.41      0.71      0.00      0.00   1240.10
    1700.0     707.0     993.0       0.0     124.5     133.0       0.0       0.0       0.0 100000.00
      0.00      5.68      7.47      0.00     0.013     0.013     0.000     0.000   1239.10   1515.14
  0.001369        0.        0.        0.         0         0         0      0.00    133.36   1648.50


*SECNO 0.016
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      900.0    1149.0  TYPE=      1  TARGET=      249.000
     0.016      3.92   1246.04   1246.04   1246.04   1247.19      1.15      0.26      0.13   1243.46
    1700.0     307.7    1369.8      22.5     304.5     143.2      29.2       1.2       0.6   1244.77
      0.01      1.01      9.57      0.77     0.100     0.016     0.100     0.000   1242.12    900.00
  0.002277      140.      150.      160.        20        14         0      0.00    249.00   1149.00


*SECNO 0.037
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     2078.5    2132.5  TYPE=      1  TARGET=       54.000
     0.037      3.81   1246.61   1246.61   1246.61   1248.18      1.57      0.29      0.13   1244.10
    1700.0       0.0    1700.0       0.0       0.0     169.0       0.0       2.1       1.0 100000.00
      0.01      0.00     10.06      0.00     0.000     0.016     0.000     0.000   1242.80   2078.50
  0.002887      110.      115.      115.        20         8         0      0.00     54.00   2132.50


*SECNO 0.055
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1080.0    1132.0  TYPE=      1  TARGET=       52.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


     0.055      4.01   1248.41   1248.41   1248.41   1250.04      1.63      0.28      0.02   1246.00
    1700.0       0.0    1700.0       0.0       0.0     166.2       0.0       2.4       1.1 100000.00
      0.01      0.00     10.23      0.00     0.000     0.016     0.000     0.000   1244.40   1080.00
  0.002907      125.       95.       95.        20         8         0      0.00     52.00   1132.00


*SECNO 0.080
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1035.2    1150.0  TYPE=      1  TARGET=      114.760
     0.080      4.25   1251.55   1251.55   1251.55   1253.16      1.61      0.36      0.00   1248.60
    1700.0     187.6    1428.4      84.0     132.2     128.6      67.8       3.3       1.4   1248.70
      0.01      1.42     11.10      1.24     0.100     0.016     0.100     0.000   1247.30   1035.24
  0.002505      200.      130.      137.        20         8         0      0.00    114.76   1150.00


*SECNO 0.100
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1070.5    1150.0  TYPE=      1  TARGET=       79.500
     0.100      3.59   1252.59   1252.59   1252.59   1253.82      1.23      0.29      0.04   1251.60
    1700.0       0.0    1700.0       0.0       0.0     190.9       0.0       3.9       1.7 100000.00
      0.02      0.00      8.90      0.00     0.000     0.016     0.000     0.000   1249.00   1070.50
  0.003005      100.      105.      100.        20        15         0      0.00     79.50   1150.00


*SECNO 0.116
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1076.5    1130.3  TYPE=      1  TARGET=       53.800
     0.116      3.52   1253.72   1253.72   1253.72   1255.29      1.58      0.23      0.10   1252.20
    1700.0       0.0    1700.0       0.0       0.0     168.7       0.0       4.2       1.8 100000.00
      0.02      0.00     10.08      0.00     0.000     0.016     0.000     0.000   1250.20   1076.50
  0.002793       90.       80.       80.        20         8         0      0.00     53.80   1130.30
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 0.158

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.45


3470 ENCROACHMENT STATIONS=     1006.8    1140.1  TYPE=      1  TARGET=      133.390
     0.158      3.13   1255.73      0.00   1255.73   1256.54      0.82      1.18      0.08 100000.00
    1700.0       0.0    1700.0       0.0       0.0     234.3       0.0       5.2       2.3 100000.00
      0.03      0.00      7.26      0.00     0.000     0.035     0.000     0.000   1252.60   1006.75
  0.014021      160.      220.      310.         3         0         0      0.00    133.39   1140.14
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*SECNO 0.171
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1025.0    1198.0  TYPE=      1  TARGET=      173.000
     0.171      3.18   1256.30   1256.30   1256.30   1257.19      0.90      0.32      0.02   1256.80
    1700.0       0.0    1644.4      55.6       0.0     213.1      19.8       5.6       2.5   1255.61
      0.03      0.00      7.72      2.81     0.000     0.016     0.016     0.000   1253.12   1064.55
  0.002329       50.       68.       60.        20         5         0      0.00    133.45   1198.00


*SECNO 0.188
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1033.1    1145.0  TYPE=      1  TARGET=      111.900
     0.188      5.85   1259.25   1259.25   1259.25   1260.46      1.21      0.46      0.09   1258.20
    1700.0      34.5    1482.9     182.6      18.7     158.1      61.9       6.0       2.7   1257.25
      0.03      1.84      9.38      2.95     0.090     0.050     0.120     0.000   1253.40   1033.10
  0.023664      140.       90.       25.        20        14         0      0.00    111.90   1145.00


*SECNO 0.217

3470 ENCROACHMENT STATIONS=     1030.0    1134.0  TYPE=      1  TARGET=      104.000
     0.217      6.74   1262.24      0.00   1262.24   1263.07      0.83      2.57      0.04   1260.60
    1700.0      52.5    1647.5       0.0      28.7     222.6       0.0       6.9       3.0 100000.00
      0.04      1.83      7.40      0.00     0.090     0.050     0.000     0.000   1255.50   1030.00
  0.012937      160.      150.      150.         2         0         0      0.00     96.56   1126.56
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 0.262

3470 ENCROACHMENT STATIONS=     1020.8    1153.7  TYPE=      1  TARGET=      132.920
     0.262      6.32   1265.91      0.00   1265.91   1266.97      1.06      3.83      0.07   1264.60
    1700.0     118.3    1581.7       0.0      44.5     184.9       0.0       8.2       3.6   1266.70
      0.05      2.66      8.55      0.00     0.090     0.050     0.000     0.000   1259.59   1020.80
  0.020396      220.      240.      260.         2         0         0      0.00     98.08   1118.88


*SECNO 0.287

3470 ENCROACHMENT STATIONS=     1057.6    1118.3  TYPE=      1  TARGET=       60.690
     0.287      6.71   1268.31      0.00   1268.31   1269.40      1.09      2.42      0.01   1267.40
    1700.0       0.0    1700.0       0.0       0.0     202.5       0.0       8.8       3.8 100000.00
      0.05      0.00      8.40      0.00     0.000     0.050     0.000     0.000   1261.60   1057.60
  0.017210      120.      130.      130.         2         0         0      0.00     60.24   1117.84


*SECNO 0.304

3470 ENCROACHMENT STATIONS=     1064.3    1119.1  TYPE=      1  TARGET=       54.770
     0.304      7.19   1269.79      0.00   1269.79   1270.85      1.07      1.45      0.00   1267.50
    1700.0       0.0    1700.0       0.0       0.0     205.1       0.0       9.2       3.9 100000.00
      0.06      0.00      8.29      0.00     0.000     0.050     0.000     0.000   1262.60   1064.30
  0.015059       80.       90.      100.         2         0         0      0.00     54.77   1119.07


CCHV=    0.600 CEHV=    0.800
*SECNO 0.320

3470 ENCROACHMENT STATIONS=     1061.8    1112.4  TYPE=      1  TARGET=       50.590

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1270.87 ELREA=      1272.32

     0.320      7.26   1271.26      0.00   1271.26   1272.49      1.23      1.51      0.13   1269.60
    1540.0       0.0    1540.0       0.0       0.0     173.3       0.0       9.6       4.0 100000.00
      0.06      0.00      8.89      0.00     0.000     0.050     0.000     0.000   1264.00   1061.80
  0.021604       50.       85.       90.         2         0         0      0.00     50.27   1112.07
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2        0.013      0.50      2.60      0.00      6.00      0.00      64.00      1         3      1265.73   1264.47

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1293.32..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1290.65 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.333

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =   1273.38
SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   1293.32   1290.65      0.89      949.      600.    10.074      56.5   1271.15      209.


3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS=     1057.3    1141.5  TYPE=      1  TARGET=       84.160

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1271.95 ELREA=      1274.01

     0.333      7.03   1272.74      0.00   1272.74   1274.18      1.44      0.00      0.00   1271.95
    1540.0     157.5    1382.5       0.0      37.7     137.2       0.0       9.9       4.1   1274.01
      0.06      4.18     10.07      0.00     0.016     0.016     0.000     0.000   1265.71   1057.30
  0.001602       64.       64.       64.        20         0         0      0.00     54.60   1111.90


*SECNO 0.347
7185 MINIMUM SPECIFIC ENERGY
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3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1072.0    1128.3  TYPE=      1  TARGET=       56.340
     0.347      4.91   1273.36   1273.36   1273.36   1275.06      1.69      0.30      0.20   1271.70
    1540.0      35.8    1504.2       0.0      11.9     142.5       0.0      10.1       4.2   1275.60
      0.06      3.01     10.56      0.00     0.090     0.050     0.000     0.000   1268.45   1072.00
  0.023378       50.       75.       70.         6        19         0      0.00     48.86   1120.86


CCHV=    0.100 CEHV=    0.300
*SECNO 0.358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1029.5    1173.8  TYPE=      1  TARGET=      144.350
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                          Page   23

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


     0.358      5.36   1274.96   1274.96   1274.96   1276.32      1.36      1.20      0.03   1273.30
    1540.0      79.3    1460.7       0.0      41.2     151.9       0.0      10.4       4.3   1275.40
      0.06      1.92      9.61      0.00     0.090     0.050     0.000     0.000   1269.60   1029.50
  0.017316       60.       60.       50.         4         8         0      0.00     92.45   1121.95


*SECNO 0.379

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.72


3470 ENCROACHMENT STATIONS=     1042.7    1117.0  TYPE=      1  TARGET=       74.280
     0.379      6.49   1276.91      0.00   1276.91   1277.44      0.53      1.04      0.08   1273.50
    1540.0     330.7    1209.3       0.0     126.1     187.4       0.0      11.0       4.5 100000.00
      0.07      2.62      6.45      0.00     0.090     0.050     0.000     0.000   1270.42   1042.72
  0.005858      115.      110.      105.         3         0         0      0.00     74.28   1117.00


*SECNO 0.420

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1071.0    1131.2  TYPE=      1  TARGET=       60.210
     0.420      5.74   1279.17   1279.17   1279.17   1280.87      1.71      2.29      0.35   1278.51
    1540.0       5.7    1534.3       0.0       4.1     146.1       0.0      12.2       4.8   1280.17
      0.07      1.40     10.50      0.00     0.090     0.050     0.000     0.000   1273.43   1071.00
  0.024092      220.      218.      215.        20        11         0      0.00     50.55   1121.55


*SECNO 0.456

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                          Page   24

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3470 ENCROACHMENT STATIONS=     1081.0    1128.8  TYPE=      1  TARGET=       47.810
     0.456      5.89   1283.01      0.00   1283.01   1283.95      0.94      3.00      0.08   1281.83
    1540.0       0.0    1540.0       0.0       0.0     197.9       0.0      13.0       5.0 100000.00
      0.08      0.00      7.78      0.00     0.000     0.050     0.000     0.000   1277.12   1081.00
  0.011163      176.      190.      215.         2         0         0      0.00     47.65   1128.65


*SECNO 0.466

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     1078.0    1124.7  TYPE=      1  TARGET=       46.700
     0.466      5.46   1284.14      0.00   1284.14   1284.53      0.39      0.53      0.05   1283.17
     984.5       0.0     984.5       0.0       0.0      84.2       0.0      13.8       5.1 100000.00
      0.08      0.00      5.04      0.00     0.000     0.070     0.000     0.000   1278.68   1078.00
  0.009158       34.       51.       75.         2         0         0      0.00     46.70   1124.70


*SECNO 0.501

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1095.1    1115.2  TYPE=      1  TARGET=       20.110
     0.501      4.99   1287.18   1287.18   1287.18   1289.30      2.12      3.65      0.52 100000.00
     984.5       0.0     984.5       0.0       0.0      84.2       0.0      13.8       5.2 100000.00
      0.09      0.00     11.70      0.00     0.000     0.070     0.000     0.000   1282.19   1095.08
  0.069920      188.      185.      165.         4        11         0      0.00     20.11   1115.19


*SECNO 0.544

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.16


3470 ENCROACHMENT STATIONS=     1084.8    1129.9  TYPE=      1  TARGET=       45.200
   Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                          Page   25

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST
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     0.544      7.30   1292.88      0.00   1292.88   1293.21      0.32      3.72      0.18 100000.00
     984.5       0.0     984.5       0.0       0.0     215.3       0.0      14.6       5.4 100000.00
      0.10      0.00      4.57      0.00     0.000     0.070     0.000     0.000   1285.58   1084.75
  0.007016      210.      230.      234.         3         0         0      0.00     45.20   1129.95


*SECNO 0.584

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1081.0    1100.9  TYPE=      1  TARGET=       19.920
     0.584      5.05   1295.95   1295.95   1295.95   1298.09      2.14      3.35      0.54 100000.00
     984.5       0.0     984.5       0.0       0.0      83.9       0.0      15.3       5.5 100000.00
      0.11      0.00     11.74      0.00     0.000     0.070     0.000     0.000   1290.90   1080.97
  0.069634      220.      207.      180.        20        19         0      0.00     19.92   1100.89


CCHV=    0.600 CEHV=    0.800
*SECNO 0.599
3280 CROSS SECTION      0.60 EXTENDED      0.52 FEET


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1099.1    1111.2  TYPE=      1  TARGET=       12.110
     0.599     10.12   1304.02   1304.02   1304.02   1306.94      2.92      1.14      0.63 100000.00
     984.5       0.0     584.7     399.8       0.0      39.7      33.2      15.4       5.6   1293.90
      0.11      0.00     14.74     12.06     0.000     0.015     0.015     0.000   1293.90   1099.08
  0.005545       80.       84.       87.        20        11         0      0.00     12.11   1111.19
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         0.015     0.50      2.60      0.00      5.00      0.00    208.00      1         3      1297.37   1293.98

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5130, EGIC= 1380.47..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1402.14 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.639

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =   1312.77
3280 CROSS SECTION      0.64 EXTENDED      0.11 FEET


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.50

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV    ELTRD    WEIRLN
  1380.47   1402.14      5.83      803.      294.     2.726      19.6   1309.70      183.


3470 ENCROACHMENT STATIONS=     1050.3    1140.6  TYPE=      1  TARGET=       90.310
     0.639     15.34   1312.71      0.00   1312.71   1312.77      0.07      5.83      0.00   1297.37
    1100.0     348.8     250.8     500.4     224.7      92.0     251.0      17.0       5.8   1297.37
      0.14      1.55      2.73      1.99     0.080     0.080     0.080     0.000   1297.37   1050.30
  0.000565      210.      208.      217.         2         0         0      0.00     90.31   1140.61


CCHV=    0.100 CEHV=    0.300
*SECNO 0.677

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.24


3470 ENCROACHMENT STATIONS=     1080.9    1116.8  TYPE=      1  TARGET=       35.890
     0.677      8.54   1312.74      0.00   1312.74   1313.19      0.44      0.30      0.11 100000.00
    1100.0       0.0    1100.0       0.0       0.0     205.9       0.0      18.8       6.1 100000.00
      0.15      0.00      5.34      0.00     0.000     0.080     0.000     0.000   1304.20   1080.92
  0.009743      212.      203.      201.         3         0         0      0.00     35.79   1116.71
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 0.716

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.40


3470 ENCROACHMENT STATIONS=     1087.9    1115.8  TYPE=      1  TARGET=       27.930
     0.716      5.09   1315.99      0.00   1315.99   1317.64      1.65      4.09      0.36 100000.00
    1100.0       0.0    1100.0       0.0       0.0     106.8       0.0      19.6       6.3 100000.00
      0.15      0.00     10.30      0.00     0.000     0.080     0.000     0.000   1310.90   1087.89
  0.061600      203.      205.      200.         3         0         0      0.00     27.93   1115.82


*SECNO 0.745

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.42
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3470 ENCROACHMENT STATIONS=     1083.6    1108.6  TYPE=       1  TARGET=        24.960
     0.745       8.06   1323.04      0.00   1323.04   1324.11      1.07      6.41       0.06 100000.00
    1100.0        0.0    1100.0       0.0       0.0     132.7       0.0      20.0        6.4 100000.00
      0.16       0.00      8.29      0.00     0.000     0.080     0.000     0.000    1314.98   1083.64
  0.030345       149.      153.      150.         3         0         0      0.00      24.94   1108.59
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TW          WEIR FLOW FROM RIGHT BANK

   ASQ       QCOMP      ERRAC      TASQ       TCQ      TABER     NITER      DSWS      USWS     DSSNO     USSNO
  115.54     115.60       0.05    115.54    115.60       0.05         5  1304.017  1312.707     0.599     0.639

PROFILE FOR STREAM  100 YR PROF W/ 1' ENCROA


PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


ELEVATION  1239.     1249.     1259.     1269.     1279.     1289.     1299.     1309.     1319.     1329.
    SECNO   CUMDIS

     0.00      0.  IL E      .         .         .         .         .         .         .         .         R
              20.  IL WE     .         .         .         .         .         .         .         .         R
              40.  CIL WE    .         .         .         .         .         .         .         .         R
              60.  CIL WEM   .         .         .         .         .         .         .         .         R
              80.  C IL WEM  .         .         .         .         .         .         .         .         R
             100.  C IL WE M .         .         .         .         .         .         .         .         R
             120.  C I L WE M.         .         .         .         .         .         .         .         R
             140.  C  IL  WE M         .         .         .         .         .         .         .         R
     0.02    160.  .  IL RWE .M        .         .         .         .         .         .         .         .
             180.  .  IL  WE .M        .         .         .         .         .         .         .         R
             200.  .  I L WE .M        .         .         .         .         .         .         .         R
             220.  .  I L W E.M        .         .         .         .         .         .         .         R
             240.  .  I L W E.M        .         .         .         .         .         .         .         R
             260.  .   IL W E.M        .         .         .         .         .         .         .         R
     0.04    280.  .   IL  WE.M        .         .         .         .         .         .         .         R
             300.  .   IL  WE.M        .         .         .         .         .         .         .         R
             320.  .   I L W EM        .         .         .         .         .         .         .         R
             340.  .    IL  WEM        .         .         .         .         .         .         .         R
     0.05    360.  .    I L W.E        .         .         .         .         .         .         .         R
             380.  .     IL  WEM       .         .         .         .         .         .         .         R
             400.  .     I L W E       .         .         .         .         .         .         .         R
             420.  .      IL .WEM      .         .         .         .         .         .         .         R
             440.  .      I L.W E      .         .         .         .         .         .         .         R
             460.  .       IL. WEM     .         .         .         .         .         .         .         R
             480.  .       IL. W EM    .         .         .         .         .         .         .         R
     0.08    500.  .       I L W EM    .         .         .         .         .         .         .         .
             520.  .        IL  WEM    .         .         .         .         .         .         .         R
             540.  .        I.L WEM    .         .         .         .         .         .         .         R
             560.  .        I.L WEM    .         .         .         .         .         .         .         R
             580.  .        I. LW E    .         .         .         .         .         .         .         R
     0.10    600.  .         I  W E    .         .         .         .         .         .         .         R
             620.  .         I  LWE    .         .         .         .         .         .         .         R
             640.  .         .I LWE    .         .         .         .         .         .         .         R
             660.  .         .I LWME   .         .         .         .         .         .         .         R
     0.12    680.  .         .I L WE   .         .         .         .         .         .         .         R
             700.  C         .I   WE   .         .         .         .         .         .         .         L
             720.  C         . I  WE   .         .         .         .         .         .         .         L
             740.  C         . I  WME  .         .         .         .         .         .         .         L
             760.  C         . I  WME  .         .         .         .         .         .         .         L
             780.  C         . I   WE  .         .         .         .         .         .         .         L
             800.  C         . I   WE  .         .         .         .         .         .         .         L
             820.  C         .  I  WE  .         .         .         .         .         .         .         L
             840.  C         .  I  WEM .         .         .         .         .         .         .         L
             860.  C         .  I  WEM .         .         .         .         .         .         .         L
             880.  C         .  I  WE M.         .         .         .         .         .         .         L
     0.16    900.  C         .   I  E M.         .         .         .         .         .         .         L
             920.  C         .   I  WEM.         .         .         .         .         .         .         L
             940.  C         .   I  WEM.         .         .         .         .         .         .         L
             960.  C         .   I  WEM.         .         .         .         .         .         .         L
     0.17    980.  .         .   I  WEM.         .         .         .         .         .         .         .
            1000.  .         .   I  RWE.         .         .         .         .         .         .         .
            1020.  .         .   I  RLWE         .         .         .         .         .         .         .
            1040.  .         .   I   RWE         .         .         .         .         .         .         .
     0.19   1060.  .         .   I   RLWE        .         .         .         .         .         .         .
            1080.  C         .    I   L.WE       .         .         .         .         .         .         R
            1100.  C         .    I    LWE       .         .         .         .         .         .         R
            1120.  C         .    I    LWE       .         .         .         .         .         .         R
            1140.  C         .    I    L WE      .         .         .         .         .         .         R
            1160.  C         .     I   .LWE      .         .         .         .         .         .         R
            1180.  C         .     I   .L EM     .         .         .         .         .         .         R
            1200.  C         .     I   .L WE     .         .         .         .         .         .         R
     0.22   1220.  C         .     I   . LWEM    .         .         .         .         .         .         R
            1240.  C         .      I  . LWEM    .         .         .         .         .         .         R
            1260.  C         .      I  . L WEM   .         .         .         .         .         .         R
            1280.  C         .      I  .  LWEM   .         .         .         .         .         .         R
            1300.  C         .       I .  LWE M  .         .         .         .         .         .         R
            1320.  C         .       I .  L WEM  .         .         .         .         .         .         R
            1340.  C         .       I .   LWE M .         .         .         .         .         .         R
            1360.  C         .        I.   LWE M .         .         .         .         .         .         R
            1380.  C         .        I.   L WE M.         .         .         .         .         .         R
            1400.  C         .        I.    LWE M.         .         .         .         .         .         R
            1420.  C         .         I    LWE  M         .         .         .         .         .         R
            1440.  C         .         I    L WE M         .         .         .         .         .         R
     0.26   1460.  C         .         I     LWE .M        .         .         .         .         .         .
            1480.  C         .         .I    LWE .M        .         .         .         .         .         R
            1500.  C         .         .I    L WE.M        .         .         .         .         .         R
            1520.  C         .         .I     LWE.M        .         .         .         .         .         R
            1540.  C         .         . I    LWE.M        .         .         .         .         .         R
            1560.  C         .         . I     LWEM        .         .         .         .         .         R
     0.29   1580.  C         .         .  I    LWEM        .         .         .         .         .         R
            1600.  C         .         .  I    L WE        .         .         .         .         .         R
            1620.  C         .         .  I    L WEM       .         .         .         .         .         R
            1640.  C         .         .  I    L WEM       .         .         .         .         .         R
            1660.  C         .         .  I    L .WEM      .         .         .         .         .         R
     0.30   1680.  C         .         .   I   L .WEM      .         .         .         .         .         R
            1700.  C         .         .   I    L.WEM      .         .         .         .         .         R
            1720.  C         .         .   I    L.W E      .         .         .         .         .         R
            1740.  C         .         .   I     L WEM     .         .         .         .         .         R
     0.32   1760.  C         .         .    I    .LWEM     .         .         .         .         .         R
            1780.  C         .         .    I    .L WEM    .         .         .         .         .         R
            1800.  C         .         .     I   . LWE M   .         .         .         .         .         R
     0.33   1820.  C         .         .      I  .  LWE M  .         .         .         .         .         .
            1840.  C         .         .      I  .  LWE M  .         .         .         .         .         .
            1860.  C         .         .       I .  LW EM  .         .         .         .         .         .
            1880.  C         .         .        I.  LW EM  .         .         .         .         .         .
     0.35   1900.  .         .         .        I.  LW ER  .         .         .         .         .         .
            1920.  .         .         .         I  L WEM  .         .         .         .         .         .
            1940.  .         .         .         I   LWREM .         .         .         .         .         .
     0.36   1960.  .         .         .         .I  L WE M.         .         .         .         .         .
            1980.  C         .         .         .I  L WE M.         .         .         .         .         R
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        2000.  C         .         .         .I  L  WEM.         .         .         .         .         .         R
        2020.  C         .         .         .I  L  WEM.         .         .         .         .         .         R
        2040.  C         .         .         .I  L  WEM.         .         .         .         .         .         R
 0.38   2060.  C         .         .         .I  L   EM.         .         .         .         .         .         R
        2080.  C         .         .         . I  L  WEM         .         .         .         .         .         R
        2100.  C         .         .         . I  L  WEM         .         .         .         .         .         R
        2120.  C         .         .         . I   L WEM         .         .         .         .         .         R
        2140.  C         .         .         . I   L  WEM        .         .         .         .         .         R
        2160.  C         .         .         .  I   L WEM        .         .         .         .         .         R
        2180.  C         .         .         .  I   L WEM        .         .         .         .         .         R
        2200.  C         .         .         .  I    LW.EM       .         .         .         .         .         R
        2220.  C         .         .         .   I   LW.EM       .         .         .         .         .         R
        2240.  C         .         .         .   I    LWEM       .         .         .         .         .         R
        2260.  C         .         .         .   I    LWE M      .         .         .         .         .         R
 0.42   2280.  .         .         .         .   I    LWREM      .         .         .         .         .         .
        2300.  C         .         .         .    I    W E M     .         .         .         .         .         R
        2320.  C         .         .         .    I    LWE  M    .         .         .         .         .         R
        2340.  C         .         .         .    I    LW E  M   .         .         .         .         .         R
        2360.  C         .         .         .     I   .LWE   M  .         .         .         .         .         R
        2380.  C         .         .         .     I   .LWE    M .         .         .         .         .         R
        2400.  C         .         .         .      I  . W E    M.         .         .         .         .         R
        2420.  C         .         .         .      I  . LWE     M         .         .         .         .         R
        2440.  C         .         .         .      I  . LWE     .M        .         .         .         .         R
        2460.  C         .         .         .       I .  LWE    .  M      .         .         .         .         R
 0.46   2480.  C         .         .         .       I .  LWE    .  M      .         .         .         .         R
        2500.  C         .         .         .        I.  LWE    .  M      .         .         .         .         R
 0.47   2520.  C         .         .         .         I  LE     .  M      .         .         .         .         R
        2540.  C         .         .         .         I    WE   .  M      .         .         .         .         L
        2560.  C         .         .         .         I     E   . M       .         .         .         .         L
        2580.  C         .         .         .         .I    WE  . M       .         .         .         .         L
        2600.  C         .         .         .         .I    WE  . M       .         .         .         .         L
        2620.  C         .         .         .         .I     WE . M       .         .         .         .         L
        2640.  C         .         .         .         . I    W E.M        .         .         .         .         L
        2660.  C         .         .         .         . I    W E.M        .         .         .         .         L
        2680.  C         .         .         .         .  I    W EM        .         .         .         .         L
        2700.  .         .  C      .         .         .  I    W EM        .         .         .         .         L
 0.50   2720.  .         .         .         .         .  I    W EM        .         .         .         .         L
        2740.  C         .         .         .         .  I     W.E        .         .         .         .         L
        2760.  C         .         .         .         .   I    W.EM       .         .         .         .         L
        2780.  C         .         .         .         .   I     WE M      .         .         .         .         L
        2800.  C         .         .         .         .   I     W EM      .         .         .         .         L
        2820.  C         .         .         .         .    I    .WE M     .         .         .         .         L
        2840.  C         .         .         .         .    I    .WE  M    .         .         .         .         L
        2860.  C         .         .         .         .    I    . WE  M   .         .         .         .         L
        2880.  C         .         .         .         .    I    . WE  M   .         .         .         .         L
        2900.  C         .         .         .         .     I   .  E   M  .         .         .         .         L
        2920.  C         .         .         .         .     I   .  WE   M .         .         .         .         L
 0.54   2940.  C         .         .         .         .     I   .   E    M.         .         .         .         L
        2960.  C         .         .         .         .      I  .   WE   M.         .         .         .         L
        2980.  C         .         .         .         .       I .   WE    M         .         .         .         L
        3000.  C         .         .         .         .       I .    WE   M         .         .         .         L
        3020.  C         .         .         .         .        I.    WE   M         .         .         .         L
        3040.  C         .         .         .         .        I.    WE    .M        .         .         .         L
        3060.  C         .         .         .         .         I     WE   .M        .         .         .         L
        3080.  C         .         .         .         .         I     WE   .M        .         .         .         L
        3100.  C         .         .         .         .         .I    W E . M       .         .         .         L
        3120.  C         .         .         .         .         .I    W E . M       .         .         .         L
 0.58   3140.  .         .         .         .         .         . I    W E.  M      .         .         .         L
        3160.  .         .         .         .         .         .  I     W.E M      .         .         .         L
        3180.  .         .         .         .         .         .  I      .W EM     .         .         .         L
        3200.  .         .         .         .         .         .   I     .  WME    .         .         .         L
        3220.  .         .         .         .         .         .    I    .   MW E  .         .         .         L
 0.60   3240.  .         .         .         .         .         .    I    .   MW  E .         .         .         L
        3260.  C         .         .         .         .         .    I    .    MW E .         .         .         L
        3280.  C         .         .         .         .         .    I    .     MW E.         .         .         L
        3300.  C         .         .         .         .         .     I   .       W  E         .         .         L
        3320.  C         .         .         .         .         .     I   .        W E         .         .         L
        3340.  C         .         .         .         .         .     I   .         W.E        .         .         L
        3360.  C         .         .         .         .         .      I  .          WE        .         .         L
        3380.  C         .         .         .         .         .      I  .         .WE        .         .         L
        3400.  C         .         .         .         .         .      I  .         .ME        .         .         L
        3420.  C         .         .         .         .         .       I .         . WE       .         .         L
 0.64   3440.  C         .         .         .         .         .       I .         .   E      .         .         .
        3460.  C         .         .         .         .         .        I.         .   E      .         .         L
        3480.  C         .         .         .         .         .         I         .   EM     .         .         L
        3500.  C         .         .         .         .         .         I         .   EM     .         .         L
        3520.  C         .         .         .         .         .         .I        .   E M    .         .         L
        3540.  C         .         .         .         .         .         . I       .   E M    .         .         L
        3560.  C         .         .         .         .         .         . I       .   E  M   .         .         L
        3580.  C         .         .         .         .         .         .  I      .   E   M .         .         L
        3600.  C         .         .         .         .         .         .   I     .   E   M .         .         L
        3620.  C         .         .         .         .         .         .   I     .   E    M.         .         L
 0.68   3640.  C         .         .         .         .         .         .    I    .   E    M.         .         L
        3660.  C         .         .         .         .         .         .     I   .   WE     M         .         L
        3680.  C         .         .         .         .         .         .     I   .   WE     .M        .         L
        3700.  C         .         .         .         .         .         .      I  .    E     .M        .         L
        3720.  C         .         .         .         .         .         .       I .    WE    . M       .         L
        3740.  C         .         .         .         .         .         .       I .    WE    .  M      .         L
        3760.  C         .         .         .         .         .         .        I.     WE   .  M      .         L
        3780.  C         .         .         .         .         .         .         I     WE   .   M     .         L
        3800.  C         .         .         .         .         .         .         I     W E .    M    .         L
        3820.  C         .         .         .         .         .         .         .I    W E .    M    .         L
 0.72   3840.  C         .         .         .         .         .         .         . I    W E.    M   .         L
        3860.  C         .         .         .         .         .         .         . I     WE.      M  .         L
        3880.  C         .         .         .         .         .         .         .  I     WE      M  .         L
        3900.  C         .         .         .         .         .         .         .  I      WE     M  .         L
        3920.  C         .         .         .         .         .         .         .   I     .WE     M .         L
        3940.  C         .         .         .         .         .         .         .   I     .W E    M .         L
        3960.  C         .         .         .         .         .         .         .    I    . W E    M.         L
        3980.  C         .         .         .         .         .         .         .     I   .  WE    M.         L
 0.75   4000.  C         .         .         .         .         .         .         .     I   .   WE    M         L
  Run Date:  19FEB97    Run Time: 14:16:39    HMVersion: 6.52    Data File:   MA22REV.HC2                Page   29
```

THIS RUN EXECUTED 19FEB97 14:16:45

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FLYNN LANE WASH

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	SSTA	ENDST	TOPWID	DEPTH	VCH	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
	0.000	1700.00	1240.70	400.00	1658.45	1258.45	1.60	4.71	0.00	0.00	0.00	0.00	0.00
	0.000	1700.00	1241.70	1515.14	1648.50	133.36	2.60	7.47	1515.14	1648.50	100000.00	100000.00	0.00
*	0.016	1700.00	1244.99	120.70	1149.12	1028.42	2.87	8.41	0.00	0.00	0.00	0.00	20.13

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CAUTION SECNO=      0.100  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.100  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.100  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.100  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.100  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.116  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.116  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.116  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.116  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.116  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.158  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.158  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      0.158  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.171  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.171  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.171  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.171  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.171  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO=      0.188  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.188  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.188  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.188  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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WARNING SECNO=      0.262  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      0.287  PROFILE=  1  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      0.320  PROFILE=  1  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      0.333  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.333  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      0.333  PROFILE=  2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=      0.333  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.347  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.347  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      0.358  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      0.358  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.379  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.379  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      0.420  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.420  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.420  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=      0.456  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.456  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      0.501  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.501  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.544  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.544  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      0.584  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO=      0.599  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.599  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.599  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.599  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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WARNING SECNO=      0.677  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=      0.716  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.745  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.745  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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FLOODWAY DATA, FLYNN LANE WASH
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.000	133.	257.	6.6	1241.7	1240.7	1.0
0.016	249.	477.	3.6	1246.0	1245.0	1.0
0.037	54.	169.	10.1	1246.6	1245.9	0.7
0.055	52.	166.	10.2	1248.4	1247.5	0.9
0.080	115.	329.	5.2	1251.5	1250.5	1.0
0.100	79.	191.	8.9	1252.6	1251.6	1.0
0.116	54.	169.	10.1	1253.7	1253.1	0.6
0.158	133.	234.	7.3	1255.7	1255.3	0.4
0.171	133.	233.	7.3	1256.3	1256.3	0.0
0.188	112.	239.	7.1	1259.2	1258.5	0.7
0.217	97.	251.	6.8	1262.2	1261.7	0.5
0.262	98.	229.	7.4	1266.0	1266.0	0.0
0.287	60.	202.	8.4	1268.3	1267.7	0.6
0.304	55.	205.	8.3	1269.7	1269.1	0.6
0.320	50.	173.	8.9	1271.3	1271.1	0.2
0.333	55.	175.	8.8	1272.7	1272.7	0.0

0.347	49.	154.	10.0	1273.4	1273.4	0.0
0.358	92.	193.	8.0	1275.0	1275.0	0.0
0.379	74.	314.	4.9	1276.9	1276.9	0.0
0.420	51.	150.	10.3	1279.2	1279.2	0.0
0.456	48.	198.	7.8	1283.0	1283.0	0.0
0.466	47.	195.	5.0	1284.1	1284.0	0.1
0.501	20.	84.	11.7	1287.1	1286.7	0.4
0.544	45.	215.	4.6	1292.9	1292.1	0.8
0.584	20.	84.	11.7	1295.9	1295.8	0.1
0.599	12.	73.	13.5	1304.1	1303.7	0.4
0.639	90.	568.	1.9	1312.7	1312.7	0.0
0.677	36.	206.	5.3	1312.7	1312.7	0.0
0.716	28.	107.	10.3	1316.0	1316.0	0.0
0.745	25.	133.	8.3	1323.0	1323.0	0.0

EXHIBIT 12

EXHIBIT 13

A split flow analysis was performed at the Lincoln Drive culvert crossing to determine the flow spilling onto Lincoln Drive. As can be seen by the topography, the split flow will not directly reenter the wash. Instead the flows are conveyed northwest within the roadway.

The duplicate effective model shows the flow enters Flynn Lane wash at cross section .420. The topography reveals a tributary ditch between the revised HEC-2 cross sections .466 and .458. However, field visits show that the ditch has been replaced with a five foot diameter culvert. Additional survey data was performed that reveals the inverts and lengths of the culvert. A Manning's analysis results in a maximum capacity of the culvert of 224 cfs. A cursory delineation of the contributing watershed shows that approximately 33% of the 440 cfs concentrates at the culvert. This discharge (approximately 150 cfs) seems consistent with the design of the culvert. The watershed map for this drainage area is shown on Figure 1 in the next section.

The delineation also shows that approximately 33% of the 440 cfs concentrates upstream of the cul-de-sac, just east of the 5' culvert. This 150 cfs combines with the 51 cfs from the split flow analysis resulting from the revised hydraulic model (HEC-2) and is conveyed northwest on Lincoln Drive. Without having detailed field survey, it can't be determined if the flow is diverted southwest in the cul-de-sac or continues west on Lincoln Drive. Two cross sections (1 and 2) were analyzed using a Manning's analysis with the combined flow of 200 cfs. The results show that the flow depths are 0.87' and 1.22', respectively, thereby preventing the area from being removed from the floodplain. However, without performing detailed hydrology and hydraulic analyses, exact water surface elevations can't be established. A flood hazard Zone AO was chosen based on its definition: *areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet.* An average depth of 1 foot resulted from the hydraulic analysis; therefore, this depth should show on the revised floodplain map.

Figure 1, photos of the area in this discussion, the capacity analysis of the culvert, the survey information for the culvert, and the hydraulic analyses of the two cross sections are located in a separate section in this study.

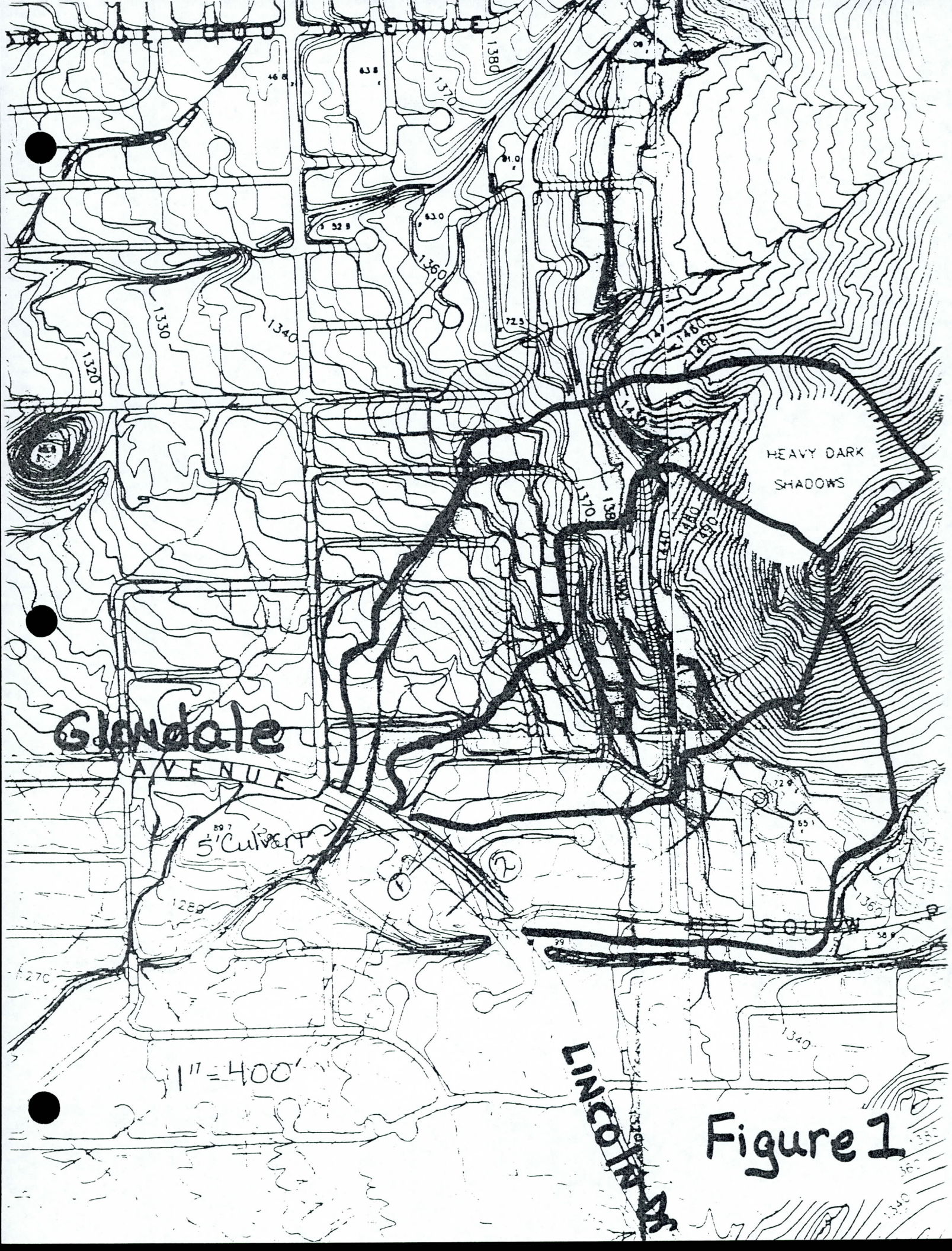

ORANGEWOOD AVENUE
HEAVY DARK SHADOWS
Glendale AVENUE
5' Culvert
1" = 400'
LINCOLN
1380
1370
1360
1330
1340
1320
1350
1340

Figure 1

3-7-97

LEVEL RUN FROM

20 STREET AND GLENDALE

BM = COP BC IN W. H.H.
BM EL = 1278.07

TO

CACTUS WREN ~ 200' E. OF 20TH STREET

TBM = TOP OF N.W. END OF HEADWALL ON SOUTH SIDE OF CACTUS WREN.

TBM = 1304.09

CODE CURVED
J. NICHOLA
G. CHAMBERS
J. MOORE

2/4

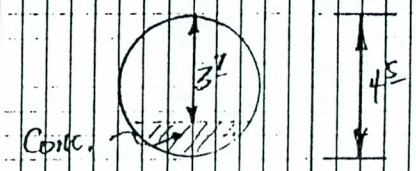
Bm	+	HI	−	EL.	
W. H.H. @ 20 STR + GLENDALE				1278.07	
	9.16	87.23			
T.P.			1.56	85.67	@ MAILBOX 2024 E. @ LINCOLN DRIVE
	9.11	94.78			
T.P.			2.05	92.73	
	6.59	99.32			
T.B.M.#1			3.71	95.61	
	9.98	105.59			
T.B.M.#2			1.50	1304.09	
	1.04	105.13			
(3) S. INV. @ CACTUS WREN			8.49	96.64	
T.P.			11.27	93.86	
	5.62	99.48			
(3) N. INV. @ GLENDALE			9.95	89.53	
T.BM.#1				95.61	
	0.66	96.27			
TOP OF HD WALL S. SIDE OF LINCOLN			7.03	89.24	
(5) FL 5'ϕ CORRIGATED PIPE @ S. END, IN CONC. HEADWALL				−6.90	
				82.34	

WHITE PAINT SPOT ON BK CB. IN CENTER OF RCT. AT N.W. COR OF 22ND ST. AND LINCOLN DR

WHITE PAINT SPOT ON TOP OF W. WING WALL AT END

S. INV. OF 3.6' BY 5' OF ELLIPTICAL CORRUGATED IRON PIPE @ SO. SIDE CACTUS WREN IN CONC. HEADWALL (200' ± E. OF 22ND STREET)

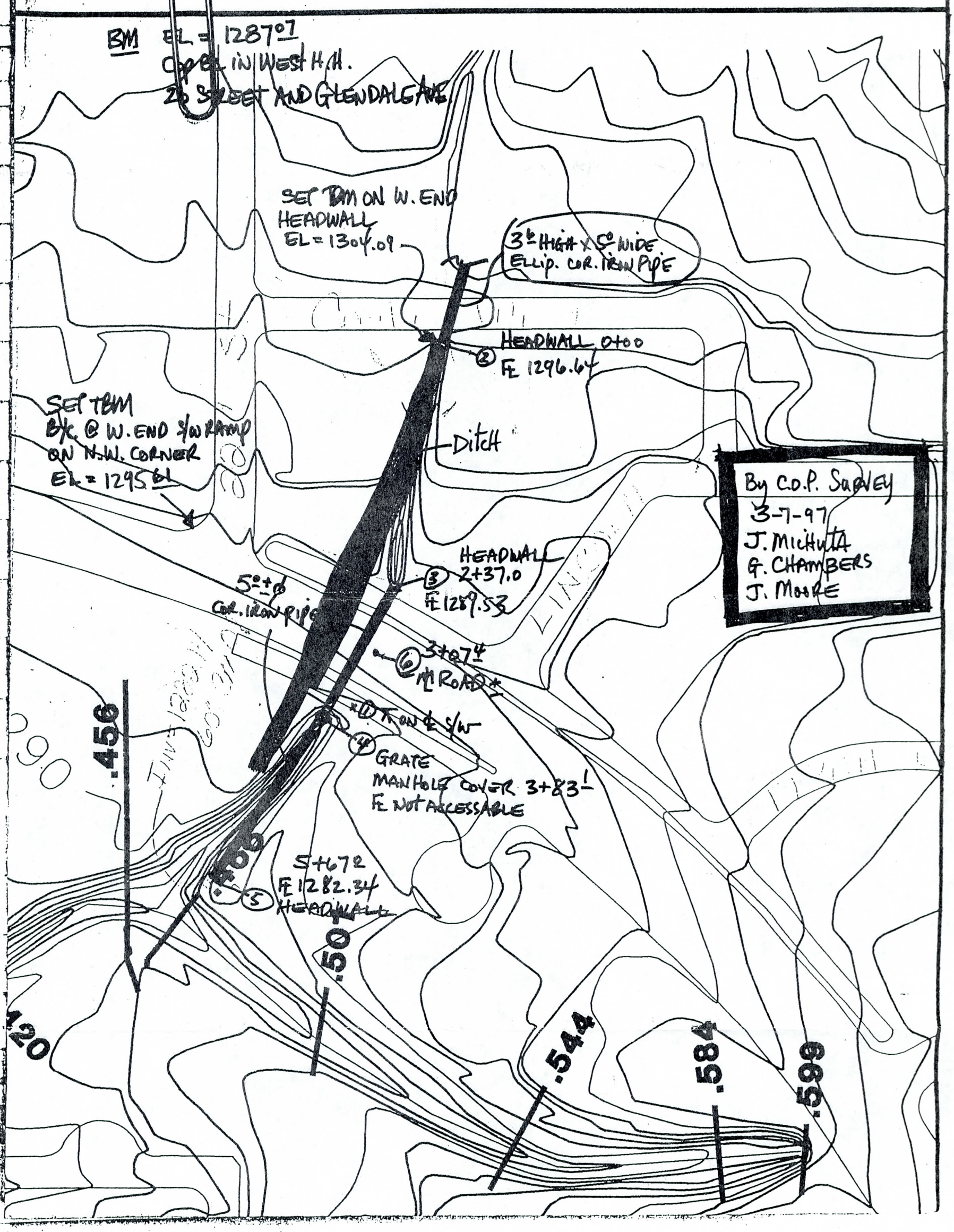
N. INV. OF 4.5' ϕ CORRIGATED IRON PIPE (H. END) IN CONCRETE HEADWALL ON NORTH SIDE OF LINCOLN DRIVE (200' ± E. OF 22ND STREET)

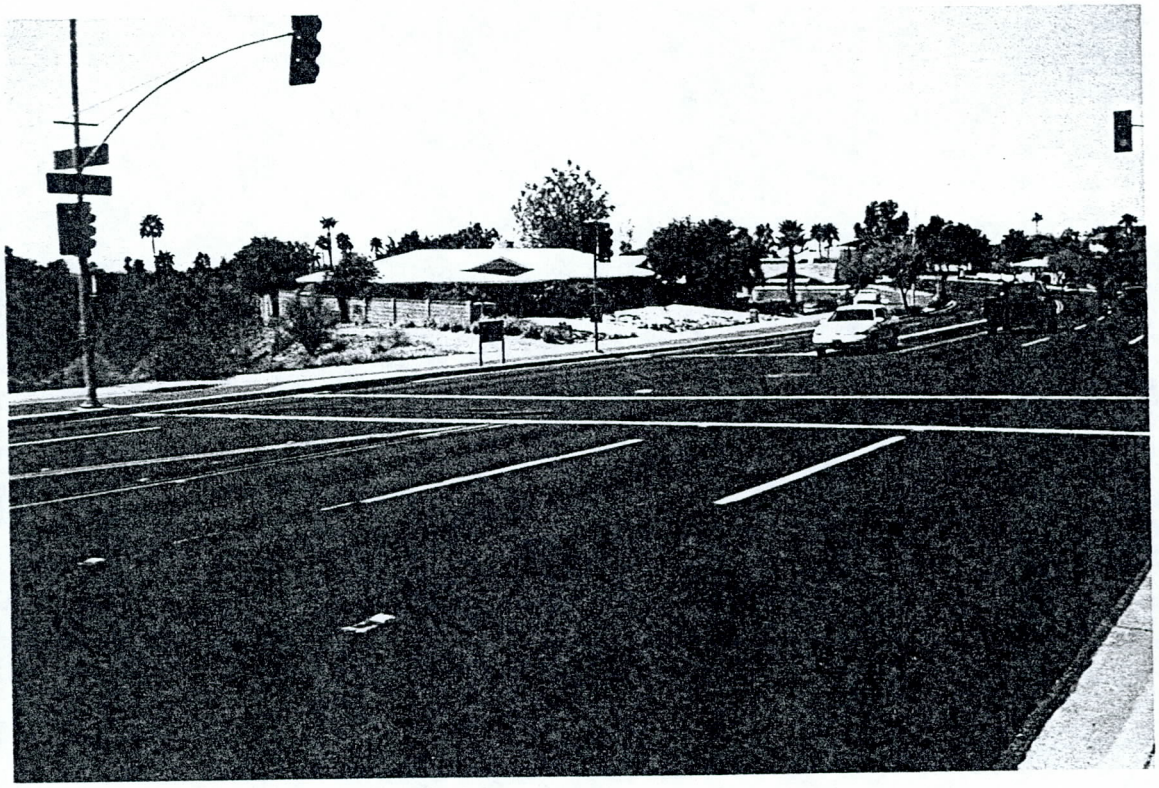


S. END OF 5' ϕ CORRIGATED IRON PIPE IN CONCRETE HEADWALL SOUTH OF LINCOLN DRIVE (ABOUT 200' E. OF 22ND STREET)

4/2

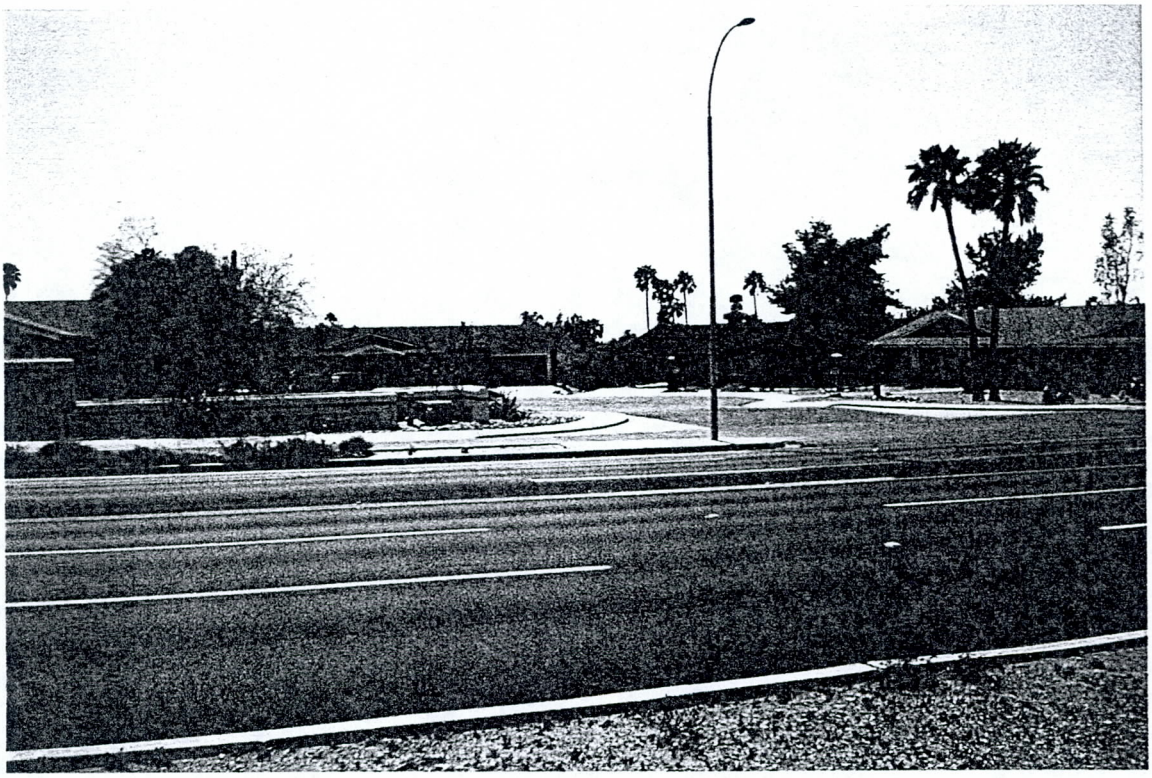
Point			H. ∡	Dist
1.	⊼	RANDOM ES	—	—
2.	INVERT CACTUS	S. OF WREN	255°17'44"	364.47
3.	INVERT GLENDALE	N. SIDE	261°45'08"	128.67
4.	MH S. SIDE GLENDALE WITH GRATE TOP		128°25'46"	23.78
5.	INV. SO. OF GLENDALE		99°45'33"	204.45
6.	APPROX. M.L LINCOLN		265°19'33"	58.54


BM EL = 1287.07
Cpbl IN West H/H.
20 STREET AND GLENDALE AVE
SET BM ON W. END
HEADWALL
EL = 1304.09
3' HIGH X 5' WIDE
ELLIP. COR. IRON PIPE
HEADWALL 0+00
FE 1296.64
SET TBM
B/C @ W. END S/W RAMP
ON N.W. CORNER
EL = 1295.61
Ditch
By C.O.P. SURVEY
3-7-97
J. MICHUTA
G. CHAMBERS
J. MOORE
HEADWALL
2+37.0
FE 1289.53
5' ± Ø
COR. IRON PIPE
3+07 ±
℄ ROAD ±
TOP OF S/W
GRATE
MANHOLE COVER 3+83 ±
FE NOT ACCESSABLE
5+67 2
FE 1282.34
HEADWALL
.456
.50
.544
.584
.599
420

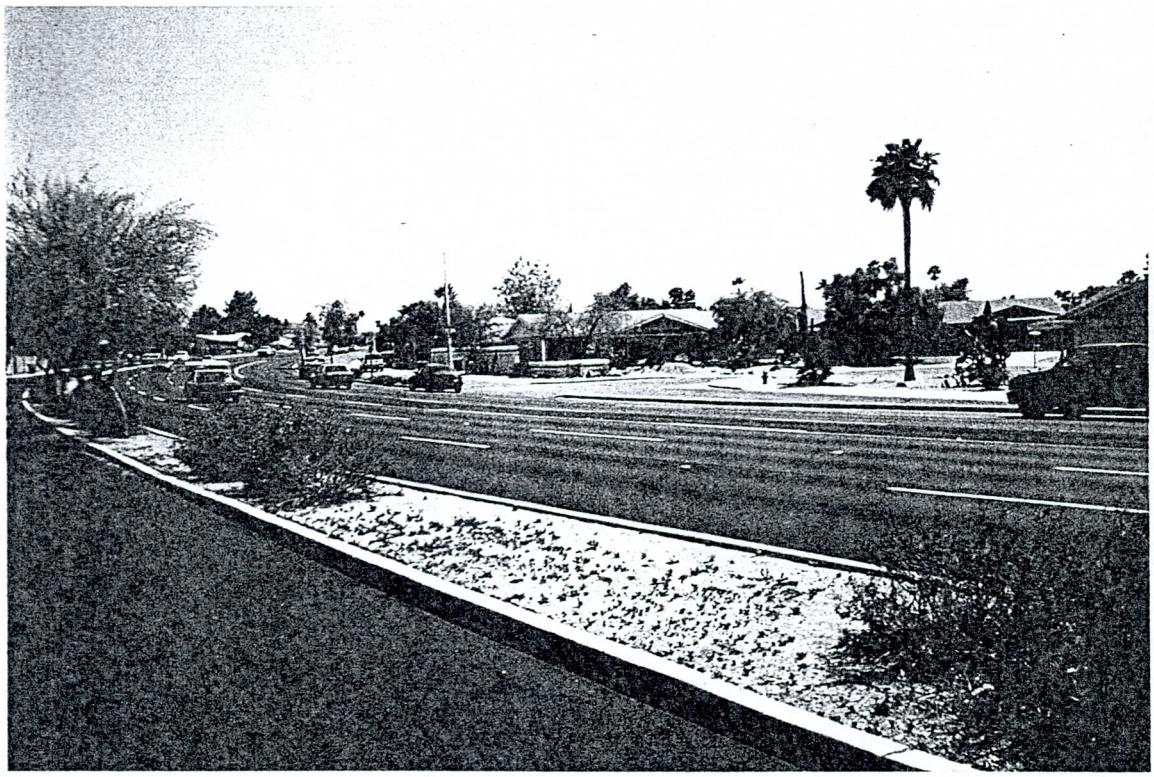


(1) LINCOLN DRIVE
LOOKING NORTHWEST TOWARD 1ST HOUSE DOWNSTREAM OF SPLIT FLOW
TOWARDS APPROXIMATELY CROSS SECTION .599

(2) LINCOLN DRIVE
LOOKING SOUTHEAST ALONG SOUTH SIDE OF ROAD
OPPOSITE VIEW OF PREVIOUS PHOTO



(3) LINCOLN DRIVE
LOOKING SOUTH/SOUTHWEST TOWARDS CUL-DE-SAC



(4) LINCOLN DRIVE
LOOKING SOUTH/SOUTHEAST TOWARDS CUL-DE-SAC

Capacity of 5' dia pipe under Glendale
Worksheet for Circular Channel

Project Description	
Project File	s:\drn\mari0022\fm2\mari0022.fm2
Worksheet	5' dia. culvert under Glendale Ave
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.024	
Channel Slope	0.021800	ft/ft
Depth	5.00	ft
Diameter	60.00	in

Results		
Discharge	208.28	cfs
Flow Area	19.63	ft^2
Wetted Perimeter	15.71	ft
Top Width	0.13e-6	ft
Critical Depth	4.11	ft
Percent Full	100.00	
Critical Slope	0.021677	ft/ft
Velocity	10.61	ft/s
Velocity Head	1.75	ft
Specific Energy	6.75	ft
Froude Number	0.15e-3	
Maximum Discharge	224.05	cfs
Full Flow Capacity	208.28	cfs
Full Flow Slope	0.021800	ft/ft
Flow is subcritical.		

Cross Section 1 along Lincoln Drive
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0022\fm2\mari0022.fm2
Worksheet	Cross Section 1 along Lincoln Drive
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data					
Channel Slope	0.019000 ft/ft				
Elevation range: 1,296.00 ft to 1,299.00 ft.					
Station (ft)	Elevation (ft)		Start Station	End Station	Roughness
1,070.00	1,296.60		1,070.00	1,095.00	0.040
1,095.00	1,296.00		1,095.00	1,182.00	0.015
1,100.00	1,296.00				
1,135.00	1,297.00				
1,155.00	1,298.00				
1,182.00	1,299.00				
Discharge	200.00	cfs			

Results		
Wtd. Mannings Coefficient	0.021	
Water Surface Elevation	1,296.87	ft
Flow Area	31.80	ft^2
Wetted Perimeter	60.71	ft
Top Width	60.43	ft
Height	0.87	ft
Critical Depth	1,297.05	ft
Critical Slope	0.007506	ft/ft
Velocity	6.29	ft/s
Velocity Head	0.61	ft
Specific Energy	1,297.48	ft
Froude Number	1.53	
Flow is supercritical.		
Water elevation exceeds lowest end station by 0.27 ft.		

Cross Section 2 along Lincoln Drive
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0022\fm2\mari0022.fm2
Worksheet	Cross Section 2 along Lincoln Drive
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.022000	ft/ft

Elevation range: 1,300.00 ft to 1,304.00 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
1,015.00	1,302.20	1,015.00	1,100.00	0.040
1,072.00	1,302.00	1,100.00	1,193.00	0.015
1,100.00	1,300.00			
1,140.00	1,302.00			
1,193.00	1,304.00			

Discharge	200.00	cfs

Results		
Wtd. Mannings Coefficient	0.020	
Water Surface Elevation	1,301.22	ft
Flow Area	25.46	ft^2
Wetted Perimeter	41.68	ft
Top Width	41.61	ft
Height	1.22	ft
Critical Depth	1,301.54	ft
Critical Slope	0.006502	ft/ft
Velocity	7.86	ft/s
Velocity Head	0.96	ft
Specific Energy	1,302.18	ft
Froude Number	1.77	
Flow is supercritical.		

N
1" = 100'
(4)
(3)
(2)
1
2
544
584
LINCOL
839