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REMARKS

Federal Emergency Management Agency

Washington, D.C. 20472

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CERTIFIED MAIL
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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 0 7 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

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

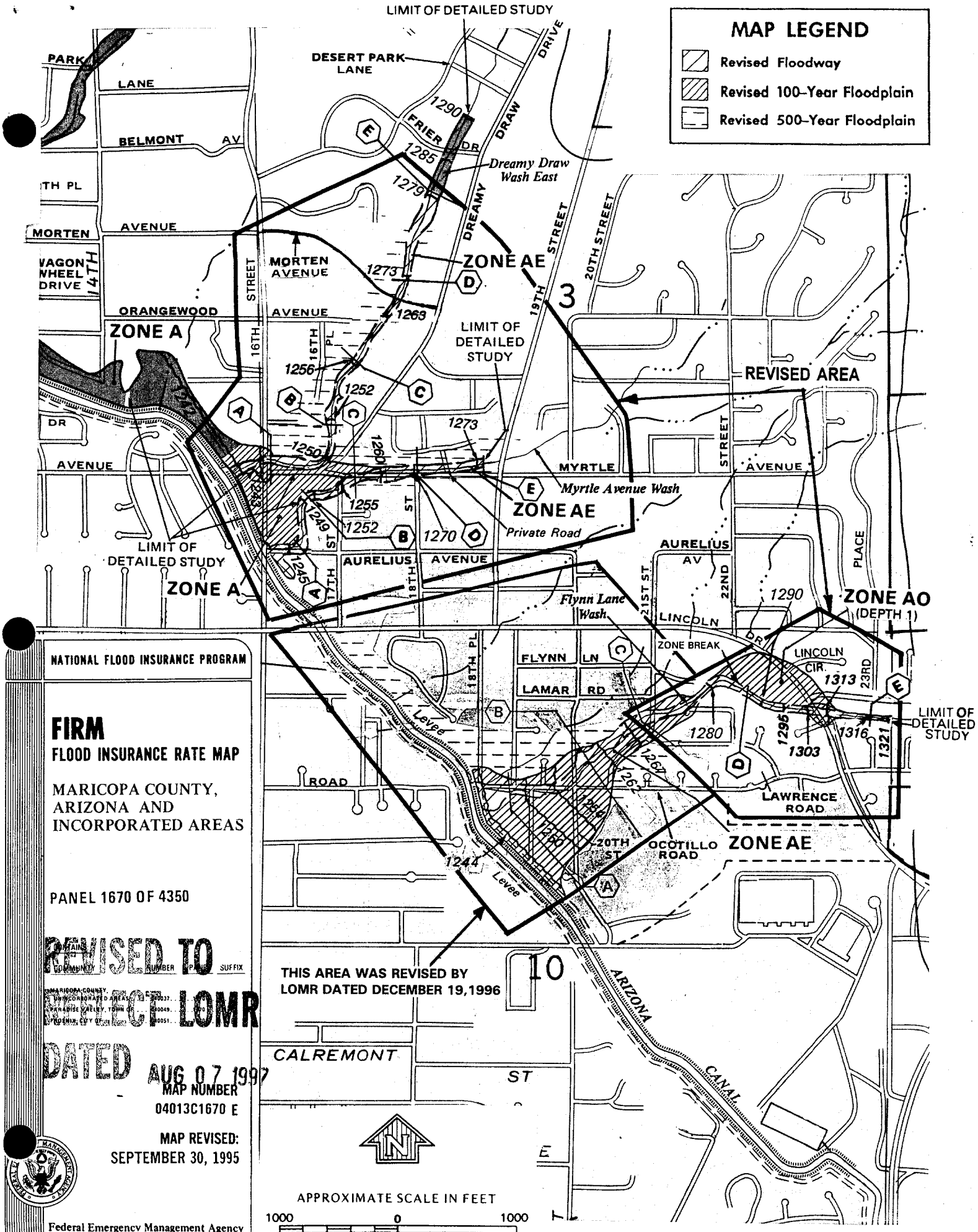

MAP LEGEND
Revised Floodway
Revised 100-Year Floodplain
Revised 500-Year Floodplain
LIMIT OF DETAILED STUDY
DESERT PARK LANE
PARK
LANE
BELMONT AV
TH PL
MORTEN AVENUE
WAGON WHEEL DRIVE
14TH
ORANGEWOOD AVENUE
ZONE A
16TH STREET
MORTEN AVENUE
FRIER DR
DREAMY DRAW
Dreamy Draw Wash East
ZONE AE
19TH STREET
20TH STREET
3
LIMIT OF DETAILED STUDY
REVISED AREA
MYRTLE AVENUE
Myrtle Avenue Wash
ZONE AE
Private Road
AURELIUS AVENUE
LIMIT OF DETAILED STUDY
ZONE A
Flynn Lane Wash
LINCOLN DR
ZONE AO
(DEPTH 1)
ZONE BREAK
FLYNN LN
LAMAR RD
LINCOLN CIR
LIMIT OF DETAILED STUDY
Levee
LAWRENCE ROAD
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
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	[illegible]
At Ocotillo Road	0.98	700	1,300	1,700	[illegible]

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 DATED AUG 07 1997

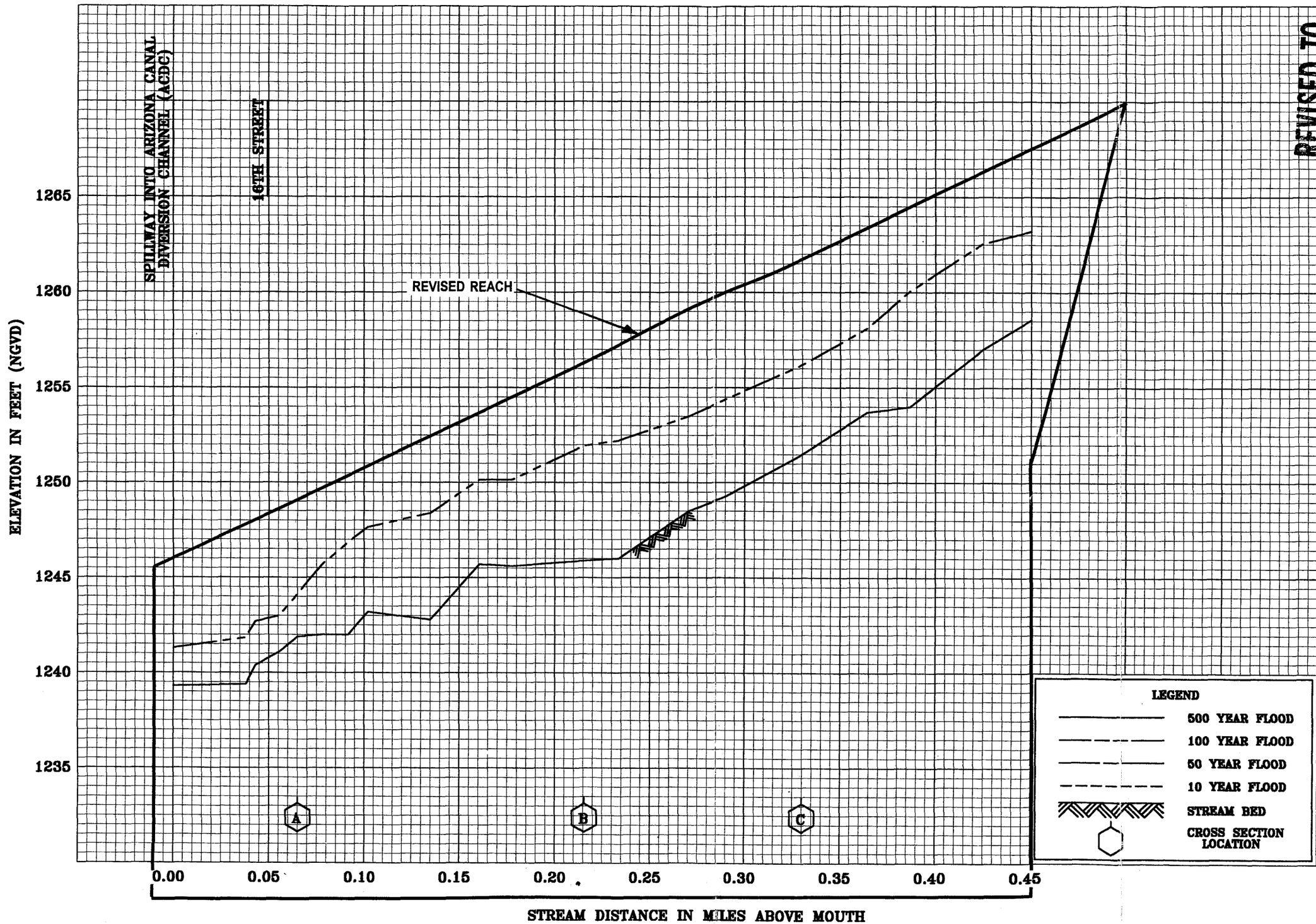
TABLE 5

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

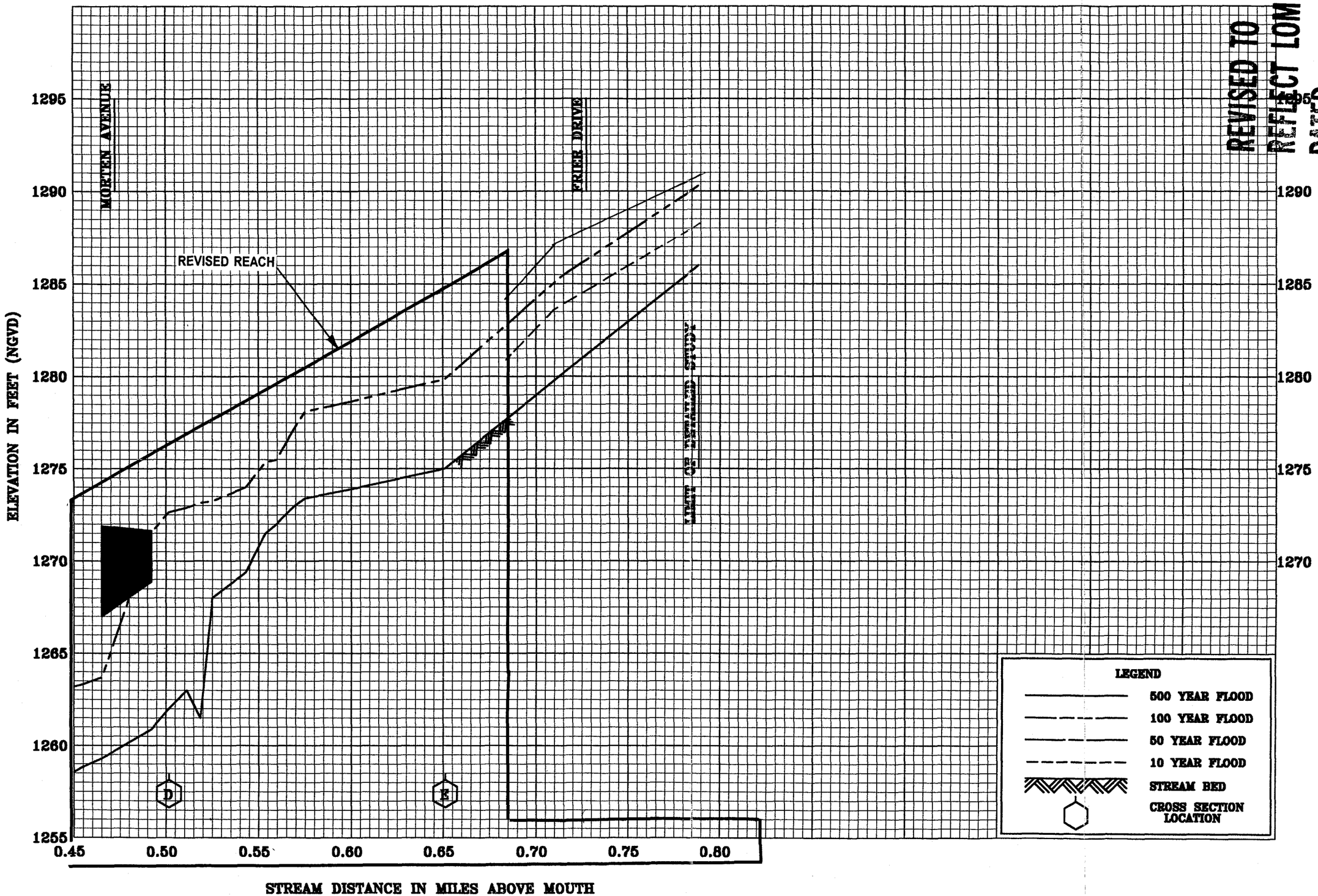
DREAMY DRAW WASH EAST

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

130P



REVISED TO REFLECT LOMR DATED AUG 07 1987

FLOOD PROFILES

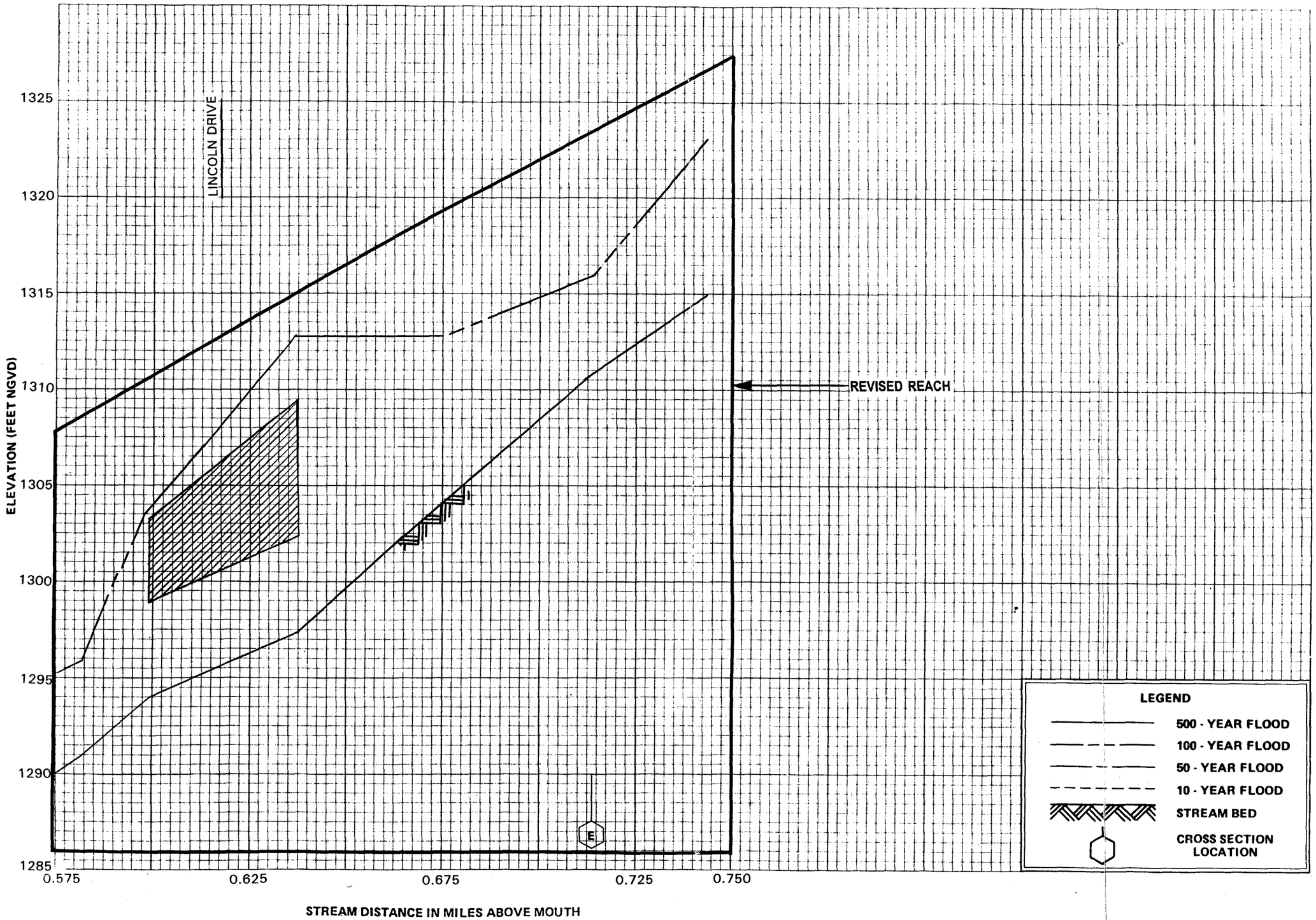
DREAMY DRAW WASH EAST

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

131P



REVISED TO REFLECT LOMR DATED AUG 07 1997

FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

140PA

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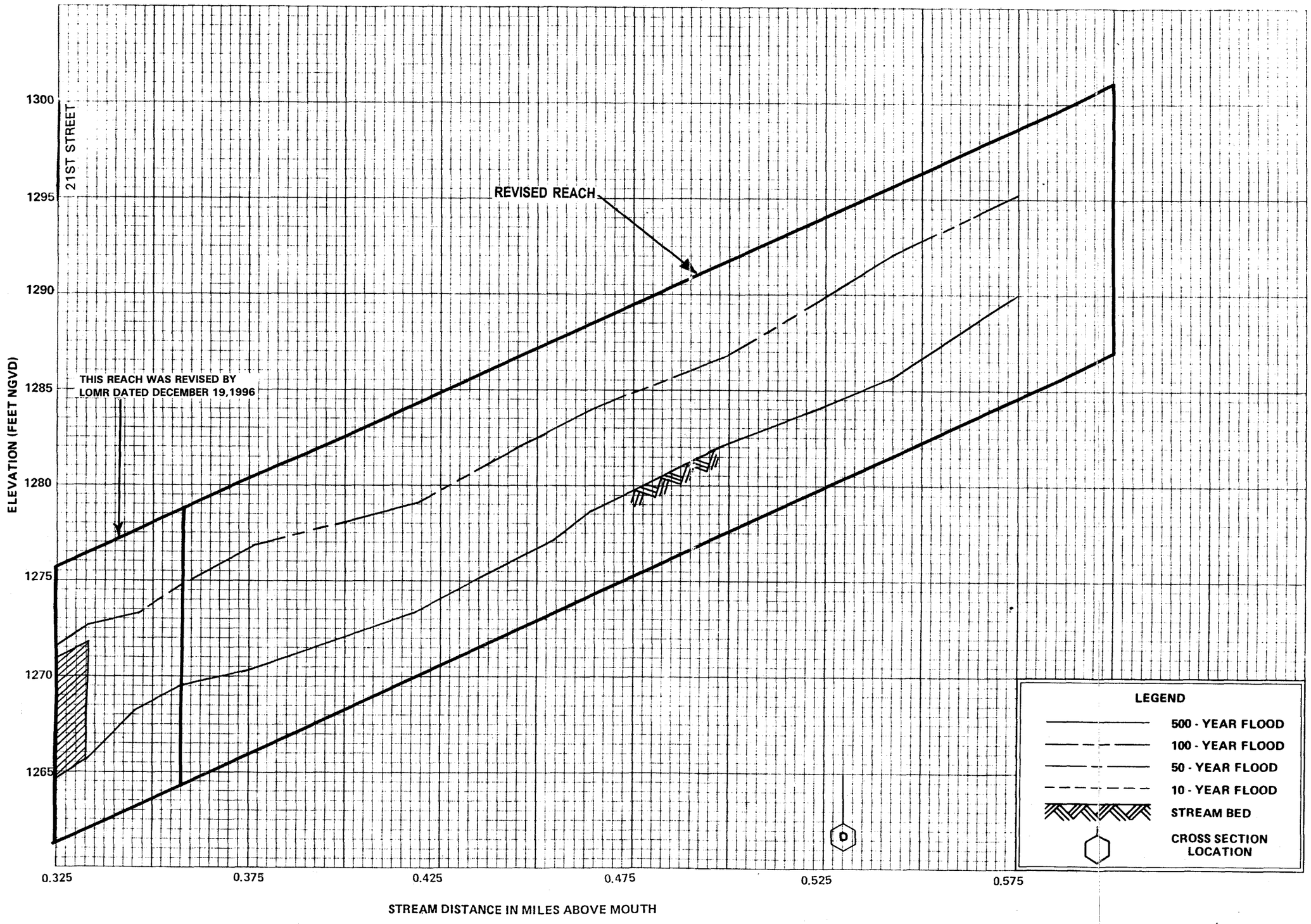


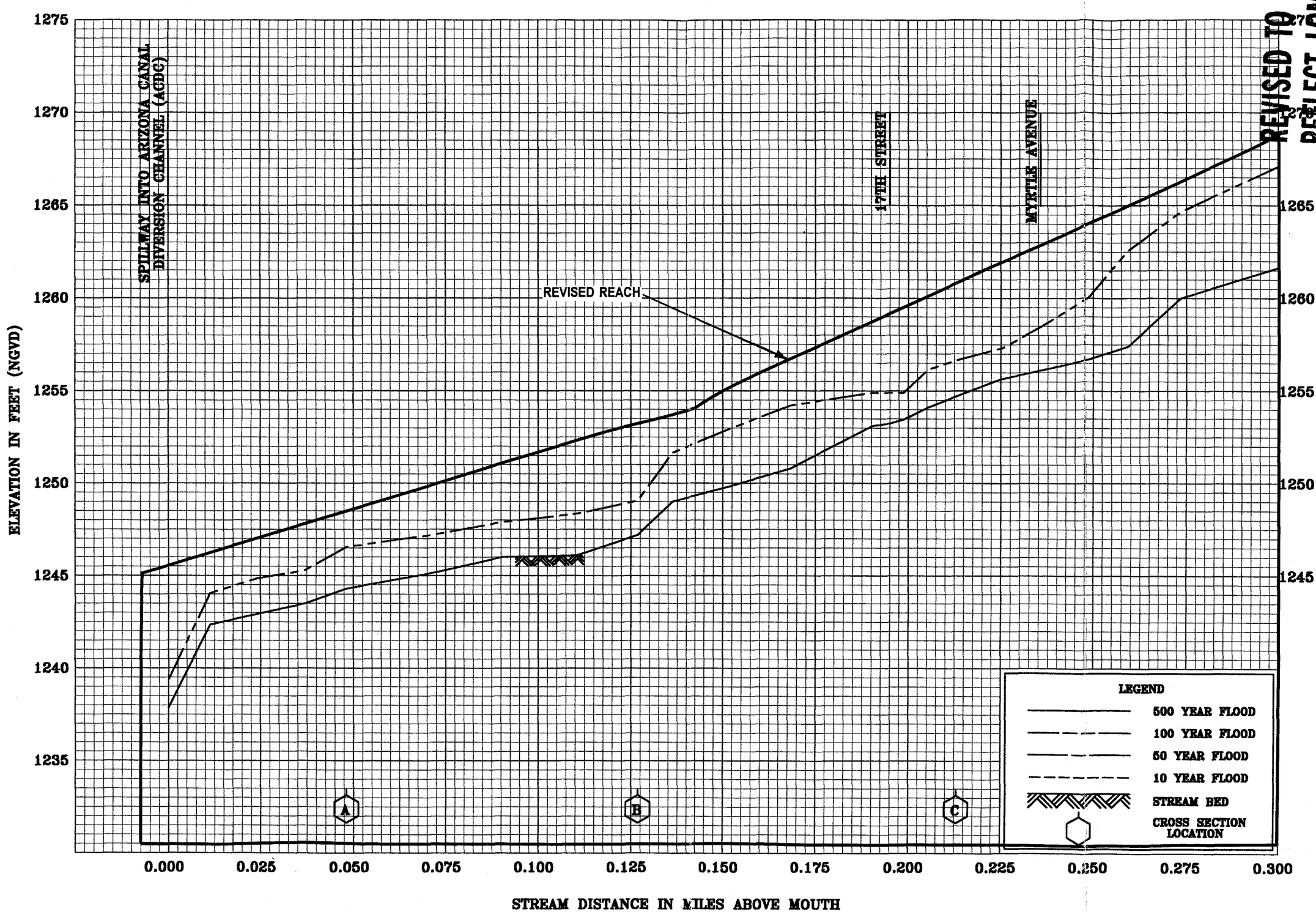
REVISED TO REFLECT LOMR DATED AUG 07 1997

FLOOD PROFILES

FLYNN LANE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



REVISED TO REFLECT LOMR DATED AUG 07 1997

FLOOD PROFILES

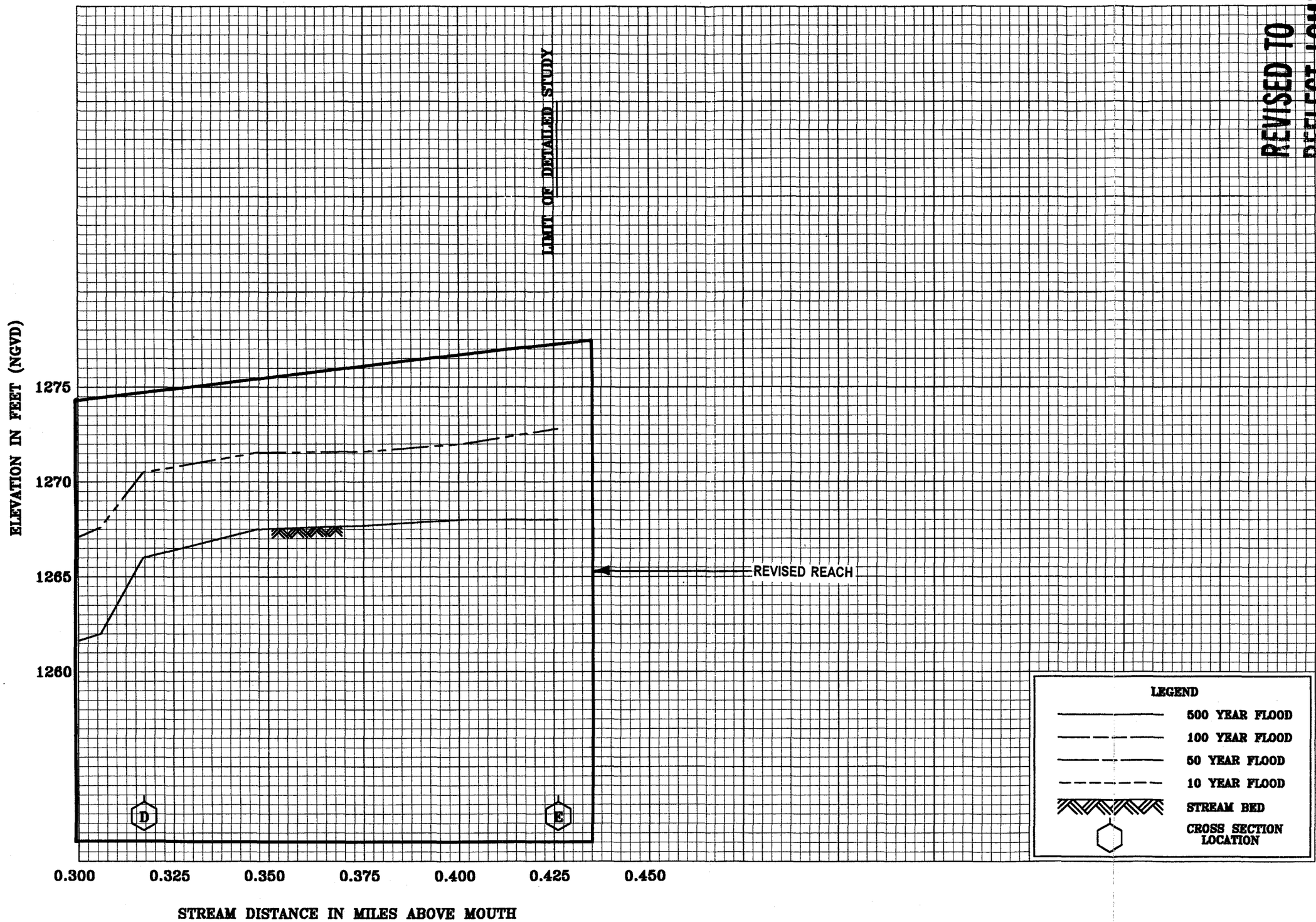
MYRTLE AVENUE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

235P



REVISED TO REFLECT LOMR DATED AUG 27 1997

FLOOD PROFILES

MYRTLE AVENUE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

Federal Emergency Management Agency

Washington, D.C. 20472

August 1, 1997

Mr. George W. Krall, P.E.
Associate
D.N.A. Inc.
340 East Willetta Street
Phoenix, Arizona 85004

IN REPLY REFER TO:
Case No.: 97-09-666R
Community: City of Phoenix, Arizona
Community No.: 040051

316-AD/ACK

Dear Mr. Krall:

This acknowledges receipt of additional data in support of your request for a Conditional Letter of Map Revision for the above-referenced community. Our review of the data submitted indicates we have the minimum data needed to continue our evaluation. If we need additional data to complete our evaluation, or if delays are encountered, we will notify you in writing within 30 days of the date of this letter.

If you write to us about your request, please include the case number shown above in your letter. If you have any questions about the status of your request, please call our Technical Evaluation Contractor, Michael Baker Jr., Inc. The Revisions Coordinator for your state, Mr. Edward Mifflin, may be reached at (703) 317-6227.

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

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

FLOOD CONTROL DISTRICT
RECEIVED
AUG 4 1997
ENG
P&PM
DIR
FILE
REMARKS

Federal Emergency Management Agency

Washington, D.C. 20472

JUN 1 6 1997

Mr. George W. Krall, P.E.
Associate
D.N.A. Inc.
340 East Willetta Street
Phoenix, Arizona 85004

IN REPLY REFER TO:
Case No.: 97-09-666R
Community: City of Phoenix, Arizona
Community No.: 040051

316-AD

Dear Mr. Krall:

This is in reference to your March 24, 1997, request for a Conditional Letter of Map Revision for Maricopa County, Arizona and Incorporated Areas, which is the effective Flood Insurance Rate Map for your community. In our earlier letter to you, we indicated additional data might be required to complete our review of the request. The data required to complete our review, which must be submitted within 90 days of the date of this letter, are explained below.

The submitted report entitled "Final Hydrology Report for the Legends," prepared by D.N.A. Inc., dated March 1997, includes existing and proposed conditions HEC-2 hydraulic computer models for Dreamy Draw Wash East in the vicinity of the proposed site. Based on the hydraulic models, it appears the proposed channel modifications within the regulatory floodway will cause increases in the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) outside the limits of the proposed site. Section 65.12 of the National Flood Insurance Program regulations (copy enclosed) describes the types of information required when a community proposes to permit encroachments upon an adopted regulatory floodway that will cause an increase in base flood elevations (BFEs). Before we can complete our review of your request, we must receive the information required under Section 65.12, including an evaluation of alternatives that would not result in BFE increases; documentation of individual legal notice to all impacted property owners explaining the impact of the proposed action on their property; and certification that no structures are located in areas that would be affected by the increased BFEs.

Please note that we recently received a request from the Flood Control District of Maricopa County (FCDMC) to revise the flood hazard information along Dreamy Draw Wash East. The hydraulic analysis submitted by the FCDMC could affect the BFEs for existing conditions calculated in the March 1997 report. If the proposed encroachments for the Legends subdivision will result in any increase in BFEs compared to existing conditions, the requirements of Section 65.12 described above must be met.

Please send the required data directly 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

For identification purposes, you must include the case number referenced above on all correspondence.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the revised fee schedule that became effective on October 1, 1996. A copy of the notice summarizing the revised fee schedule, which was published in the *Federal Register,* is enclosed for your information.

If you have any questions regarding this matter, 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

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

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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Fulton Brock
Don Stapley
Mary Rose Garrido Wilcox

JUL 16 1997

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

Re :	LOMR request for Dreamy Draw Wash East FIRM Map Panel 1670 E (9-30-1995) *When replying, please refer to :* FCD Contract No. FCD 94-51	Case No.: Community: Community No.: 316-FEE	97-09-831P City of Phoenix, Arizona 040051

Dear Ms. Norlin :

This is in response to a request for additional information, from your office via telephone conversation, on the Letter of Map Revision (LOMR) request submitted, dated May 22, 1997, 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 :	Dreamy Draw Wash East
Flooding Source :	Dreamy Draw Wash East
FIRM Panel Affected :	04013C1670 E (9-30-1995)

The following information are submitted in response to the telephone requests from your office:

1. Revised pages 4 through 6 of Form 4.
2. Revised flood profiles.
3. Hardcopy of revised HEC-2 input/output.
4. Revised Exihibit A.
5. A 3-1/2" diskette with the revised HEC-2 input/out files, updated forms, flood profiles, and Exhibit A.

Following items are also discussed in relation to the submitted documents.

<u>ITEM</u>

1. A careful evaluation of the existing floodplain maps and the proposed floodplain/floodway delineation shows that the cross-section locations were incorrectly identified on the proposed floodplain maps. The cross section locations have been relocated to match the existing floodplain maps. As a result of this revision, the above-mentioned items are submitted.

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 Acuna, 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: PKC BAR HM

Info: HM

REVISED INFORMATION
IN THE MAIN PACKAGE

8/22/97

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.: 97-09-831P
Community: City of Phoenix, Arizona
Community No.: 040051

316-FEE

Dear Mr. Mushtaq:

This responds to your request dated May 22, 1997, for a revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas, which is the effective FIRM for your community.

To minimize the financial burden on the policyholders while maintaining the National Flood Insurance Program (NFIP) as self-sustaining, the Federal Emergency Management Agency (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. Effective March 10, 1997, FEMA modified the fee schedule that became effective on October 1. 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 begin 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.

If you choose to forward your payment using the U.S. Postal Service, please send it to the following address:

Federal Emergency Management Agency
Fee-Collection System Administrator
P.O. Box 3173
Merrifield, VA 22116-3173

If you choose to forward your payment using an overnight service, please send it to the following address:

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

Upon receipt of the requested payment, we will begin our technical review of your request. When you write to us about your request, please include the case number referenced above in your letter. Unless otherwise directed by you in writing, we will keep the submitted data in our files.

If you have any questions concerning the processing of your request, please contact our Technical Evaluation Contractor at the following address: Michael Baker Jr., Inc., 3601 Eisenhower Avenue, Suite 600, Alexandria, Virginia 22304. The Revisions Coordinator for your state, Mr. Edward Mifflin, may be reached at (703) 317-6227. If you have any questions regarding 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

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
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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 Dreamy Draw Wash East
FIRM Map Panel 1670 E (9-30-1995)
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 :	Dreamy Draw Wash East
Flooding Source :	Dreamy Draw Wash East
FIRM Panel Affected :	04013C1670 E (9-30-1995)

This is a request for a LOMR for dreamy Draw Wash East, 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.

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. FEMA application form (Revision Requestor and Community Official Form, Exhibit 1).
3. A notarized copy of the public notice (Exhibit 2).
4. A complete set of LOMR application forms(Exhibit 3).
5. Revised profile plot showing the match point locations (Exhibit 4).

6. Revised Floodplain/floodway boundary annotated on the FIRM panel 1670 E (1"=1000', Exhibit 5).
7. Photographs of the Myrtle Avenue Wash from approximately 700' upstream of Morten Avenue, at the upper limit of the study to the Spillway into the ACDC (Exhibit 6).
8. As-built plans for the spillways at the ACDC by the US Army Corps of Engineers (sheets 29, 30 and 76 of 90, Exhibit 7).
9. Hydraulic plan and profile for the spillways at the ACDC by the US Army Corps of Engineers (plates 4 and 11, Exhibit 8).
10. A copy of the letter, stating that the As-built plans were prepared by the Corps of Engineers (Exhibit 9).
11. A complete set of survey notes (Exhibit 10).
12. Flood insurance study work maps including previous approximate delineation of Myrtle Avenue Wash (1"=100' scale, Exhibit 11).
13. Cross-section location Map for Dreamy Draw Wash East (1"=50'and 1"=20' scale, Exhibit 12).
14. Available topographic mapping (1"=400') of Dreamy Draw Wash East and vicinity (sheet 76 of 111, Exhibit 13).
15. Hard copy input/output of the duplicate effective and the revised HEC-2 model (Exhibit 14).
16. Four 3-1/2" diskettes with the duplicate effective and the revised HEC-2 model, and other necessary information (Exhibit 15).

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 critical depth at the ACDC Spillway. The computed critical depth was 1241.0'.

2. The As-built plans for the different reaches of the ACDC were prepared by the US Army Corps of Engineers. As such, the As-built plans (sheet 29, 30 and 76 of 90, Exhibit 9), submitted with this application package, are not certified by registered professional engineer. A copy of the letter, stating that these As-built plans were prepared by the US army Corps of Engineers, is included in this submittal as a supporting document (Exhibit 11).

3. Results from a split flow analysis, that was performed (model MA19REV.HC2, from Myrtle Avenue LOMR submittal) as part of the Myrtle Avenue Letter of Map Revision, show that approximately 532 cfs. of flow leaves the Myrtle Avenue Wash, spilling into Dreamy Draw Wash East, in the westerly direction. This flow no longer returns to the Myrtle Avenue Wash. Therefore, 532.0 cfs of flow is added to the Dreamy Draw Wash approximately at cross section 0.166.

4. It is proposed that the existing Zone AE, northwest of 16th Street and the Myrtle Avenue alignment should remain due to the minor wash draining that area, west of 16th Street. This watershed was not analyzed as part of this study and; therefore, should remain unchanged. The base flood elevation in this area is 1242 which is very close to the base flood elevation of 1241.29 found in the revised model at about the same location. A transition is made between the existing and revised floodplain delineation.

5. The Dreamy Draw East Wash revised model vertically ties in to the duplicate effective model within

0.45' at cross section 0.59. The floodway and floodplain widths, upstream of Morton Avenue are shown to be equal in Exhibit A. The difference between the floodplain and floodway becomes insignificant at 1"=1000'.

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 Acuna, 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 : PAC EAR RGN SLS 5/21 HM 5/22

Info : HM

FEDERAL EMERGENCY MANAGEMENT AGENCY

APPLICATION FOR LETTER OF MAP REVISION

DREAMY DRAW WASH EAST

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

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. Mintz
Signature

3/28/97
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
     - __ Existing
     - __ Proposed
   - __ Improved methodology
   - __ Improved data
   - __ Floodway revision
   - __ Other
     - Explain
2. Flooding Source: Dreamy Draw East Watershed
3. Project Name/Identifier: Dreamy Draw Wash East
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	1670 E	09/30/95

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	_X_ 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: Revised channelization & spillway into Arizona Canal Diversion Channel (ACDC)

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 development in the floodway? _X_ Yes __ 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 _X_ No

11. Without floodways:

    2A. Does the revision request involve fill, new construction, substantial improvement, or other development 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)? _X_ Yes __ 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 Flood Control District of (entity) Maricopa County 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 Flood control District of Maricopa County (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, _X_ has __ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for _X_ performing __ overseeing compliance with the maintenance and operation plans of the Dreamy Draw East Spillway
(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.

Stanley L. Smith
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 5-21-97
Telephone No. Date

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

Raymond U. Acuña
Signature of Community Official

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

City of Phoenix
Community Name

May 22, 1997
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 2

RECEIVED
SEP 12 1996

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

REMARKS

AFFIDAVIT OF PUBLICATION

ARIZONA **BUSINESS** GAZETTE

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

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 Myrtle Avenue Wash and Dreamy Draw Wash East. 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. 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 Myrtle Avenue Wash and Dreamy Draw Wash East. 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

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 3

Introduction

David Evans and Associates was contracted by the Flood Control District of Maricopa County (FCDMC) to analyze Dreamy Draw Wash East and revise the Flood Insurance Rate Map (FIRM) as necessary. This new analysis has been performed due to the construction of the Arizona Canal Diversion Channel (ACDC) and the construction of channel improvements along the reach. The ACDC was built in 1994 by the US Army Corps of Engineers. It was designed to convey runoff that ponds upstream of the Arizona Canal, an irrigation distribution system in Phoenix.

Area Studied

Detailed hydraulic analysis was performed along Dreamy Draw Wash East between Frier Drive and the spillway into the ACDC, which is located at the downstream portion of a previously studied reach of Dreamy Draw Wash East. The aerial topographic maps used in the design and construction of the ACDC were used to supplement the required ground information (GR cards) used in the revised HEC-2 model.

Several changes to the topography have occurred since the original flood insurance study performed by FEMA. The changes involve the construction of a commercial building at the northeast corner of Myrtle Avenue and 16th Street and a realignment of the conveyance channel around the site along its eastern and southern boundary. Another change to the topography was the construction of a commercial building along the west side of 16th Street at Myrtle Avenue. The building includes a culvert-like conveyance channel under the building, that directs flow from Dreamy Draw Wash East through the spillway into the ACDC. Another change that occurred since the original study was channelization upstream of Morten Avenue which includes another culvert-like conveyance channel under a building.

Hydraulic Analysis

A duplicate effective model was prepared using the data available from the Federal Emergency Management Agency (FEMA). The data was provided to FCDMC on microfiche. A revised model was prepared using the current, more detailed topography. Exhibit B, located in the back pocket, shows the detailed survey information at the downstream end of the study, including the spillway. Exhibit C, also located in the back pocket, shows the detailed survey information at the upstream portion of the study. The remaining topographic information was based on the topographic drawing used for the design and construction of the ACDC. The extent of the study was from approximately 700 feet upstream of Morten Avenue to the spillway into the ACDC.

The Manning roughness coefficients utilized in the new analysis are 0.013 for the concrete spillway, 0.015 for the roadway, 0.022 for dirt covering, 0.025 to 0.04 for overbank ranging from sparse to relatively dense vegetation, and 0.06 for thicker vegetation with some trees.

Boundary Conditions

The starting water surface elevations for the HEC-2 model were established based on critical depth at the ACDC spillways. Due to better topographic information, 35 cross sections were modeled in the new analysis as compared to the 12 in the duplicate effective model. The cross sections are located on the 1"=100' scale topographic map located in the back pocket. Due to the new topographic data and the location and alignment of cross sections, comparing water surface elevations of cross sections by numerical order from the effective model compared to the revised model may not be relevant.

The revised model includes an additional 536 cfs from downstream of cross section .166 to account for the flow that spills out of Myrtle Avenue Wash. This results in 1536 cfs downstream of cross section .166 and 1000 cfs upstream of cross section .166.

Results

Due to the topographic changes in the study area, the alignment of the revised floodplain boundary has been altered. Refer to Exhibit A and Figures 1 and 2 for a summary of the existing and revised floodplain. The Dreamy Draw Wash East floodplain ties into the Myrtle Avenue revised floodplain based on our recent LOMR submittal.

The Dreamy Draw Wash East revised model ties in vertically into the duplicate effective model at cross section 0.59 within 0.45 foot. The floodway and floodplain boundaries upstream of Morton Avenue are shown to be the same on Exhibit A, following the same graphical representation as the existing FIRM panel. Once the floodplain and floodway boundaries are reduced to a 1" = 1000' exhibit, no difference is visible.

The existing Zone AE northwest of 16th Street and the Myrtle Avenue alignment should remain due to the minor wash west of 16th Street. This watershed was not analyzed as part of this study and; therefore, should remain unchanged. The base flood elevation in this area is 1242 which is very close to the base flood elevation of 1241.29 found in the revised model at about the same location.

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: hydraulics
   [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 floodplan due to construction of spillway into ACDC. In addition, channelization was constructed around commercial site at northeast corner of 16th St. & Myrtle Ave. and upstream of Morten Avenue.

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 Resource Engineer

Registration No.: 30013 Expiration Date: 3/31/99

State: Arizona

Type of License: Civil

Teri S. Mintz
Signature

3/28/97
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 30013 TERI S. MINTZ Date Signed 3/28/97 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

Public reporting burden for this form is estimated to average 2.25 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: Dreamy Draw East Watershed
(One form for each flooding source)

Project Name/Identifier: Dreamy Draw Wash East

1. REACH TO BE REVISED

Downstream Limit: 0.001

Upstream Limit: 0.59

2. EFFECTIVE FIS

__ Not studied

__ Studied by approximate methods

Downstream limit of study:
Upstream limit of study:

_X_ Studied by detailed methods

Downstream limit of study: .150
Upstream limit of study: .770

_X_ Floodway delineated

Downstream limit of Floodway: .150
Upstream limit of Floodway: .770

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: Construction of Arizona Canal Division (ACDC) & spillway. Also, a realignment of the channel was done due to construction at the northeast corner of 16th St. & Mrytle Ave. and upstream of Morten Ave.

__ 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.....	1000	1536
500-year.....		
Attach diagram showing changes in 100-year discharge		

2. Explain how the starting water-surface elevations were determined: starting water surface elevation was set at critical depth at spillway

3. Give range of friction loss coefficients (Manning's "n") Channel.. .015 -.04.....
Overbanks.. .015 - .06.....

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
.15	.04 - .06	.016 - .025
.21	.04 - .06	.025 - .035
.46	.04 - .06	.04 - .10

Explain: Field investigation was done to determine 'n' values (photos included). Channel composed of concrete to natural channel with vegetation, overbanks from concrete to fairly dense vegetation, dense vegetation between revised cross sections .498 to .531.

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/or 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?	__ Yes X 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?:	7.7
Specify location	.471 to .498
3. What is the distance between the cross sections in 2 above?:	141'
4. What is the maximum distance between cross sections?	210'
Specify location	.296 - .336
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?	1.04 foot
Specify location	.59
c. What is the maximum velocity?	10.82 fps
Specify location	.141
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: A negligible negative surcharge of .04 feet occurs at cross section .108. A maximum surcharge of 1.04 foot that occurs at cross section .59 rounds to 1 foot.

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? ..... __ Yes _X_ 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.)*

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 _n/a_ within _____ feet *(vertical)* and upstream of the project at cross section _.59_ within _.12_ feet *(vertical)*.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section _n/a_ within _____ feet *(vertical)* and upstream of the project at cross section _.65_ within _.07_ feet *(vertical)*.

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	Dreamy Draw East	Dreamy Draw Wash East

	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]
.471													1263.72	1264.17	+.45
.498													11271.54	11271.54	0
.507													1272.63	1272.66	+.03
.517													1272.90	1273.21	+.31
**.46				1271.92	1271.63	-.29									
.524													1273.16	1273.45	+.29
.531													1273.27	1273.47	+.20
.549													1274.00	1274.27	+.27
.559													1275.37	1275.55	+.18
.566													1275.51	1276.25	+.74
.576													1277.26	1278.18	+.92
.582													1278.09	1278.92	+.83

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	Dreamy Draw East	Dreamy Draw Wash East

	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]
.006													1241.29	1242.00	+.71
.044													1241.86	1241.88	+0.02
.049													1242.70	1243.50	+.80
.061													1243.01	1244.01	+1.00
.071													1244.17	1244.80	+.63
.084													1245.68	1245.81	+.13
.097													1246.84	1246.84	0
.108													1247.65	1247.61	-.04*
**.150				1247.01	1251.60	+4.59									
.141													1248.39	1248.95	+.56
.166													1250.14	1250.20	+.06
.183													1250.14	1250.39	+.25
.221													1251.94	1252.63	+.69

COMMENTS:
*Negative surcharges are negligible, rounds to zero.
**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	Dreamy Draw East	Dreamy Draw Wash East

	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]
.239													1252.20	1252.82	+.62
**.21				1249.51	1251.74	+2.23									
.276													1253.52	1254.41	+.89
.**.26				1252.60	1252.58	-.02									
.296													1254.41	1254.96	+.55
.336													1256.20	1256.39	+.19
**.31				1256.08	1256.09	+.01									
.370													1258.08	1258.21	+.13
.392													1260.04	1260.61	+.57
**.37				1258.42	1258.41	-.01									
.430													1262.53	1262.54	+.01
.460													1263.28	1263.92	+.64
**.41				1263.86	1263.84	-.02									

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.

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FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER-SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODING SOURCE	PROJECT NAME/IDENTIFIER
Phoenix	Dreamy Draw East	Dreamy Draw Wash East

	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]
.59				1279.73	1279.27	-.46							1279.85	1280.89	*+1.04
.65				1285.38	1285.38	0							1285.32	1285.31	**-.01
.73				1290.29	1290.29	0							1290.32	1290.33	+0.01
.77				1292.61	1292.44	-.17							1292.45	1292.45	0

COMMENTS:
*Rounds to 1 foot
**Negative surcharges are negligible, rounds to zero

[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: Dreamy Draw East Watershed

Project Name/Identifier: Dreamy Draw Wash East

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	X Yes __ No __ 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: Not a zone A floodplain and not in a 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.*)? see attached

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

a.	Effective FIS	1" = 1000" scale	20'	Contour interval
b.	Revision Request	1" = 100 scale	2"	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? _X_ Yes __ No

   If yes, please give the location of shift or increase and an explanation for the increase. Floodplain has been shifted in vicinity of northeast corner of 16th St. and Myrtle Ave. Shift is due to channelizing runoff around commercial building that has been constructed upstream of Morten Ave. crossing along with channelizing of flow.

   a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? ..... __ Yes _X_ 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? ___0___

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

   If yes, explain: Floodway has been shifted in vicinity of northeast corner of 16th St. & Myrtle Ave. and upstream of Morten Ave. Shift is due to channelizing runoff around buildings that have been constructed since previous FEMA study.

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

   If no, explain:

8. Manual or digital map submission:

   __ 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

No fill placed

1. The fill is: __ Existing __ Proposed

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

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 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: Dreamy Draw East Watershed

Project Name/Identifier: Dreamy draw Wash East

1. IDENTIFIER

1. Name of roadway, railroad, etc.: Morten Avenue
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Between cross sections .471 & .498
3. This revision reflects *(check one of the following):*

   X New bridge/culvert not modeled in the FIS

   __ Modified bridge/culvert previously modeled in the FIS

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

   (Explain why new analysis was performed)

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 8' high by 12' wide corregated steel pipe
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 degrees - 75 degrees 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

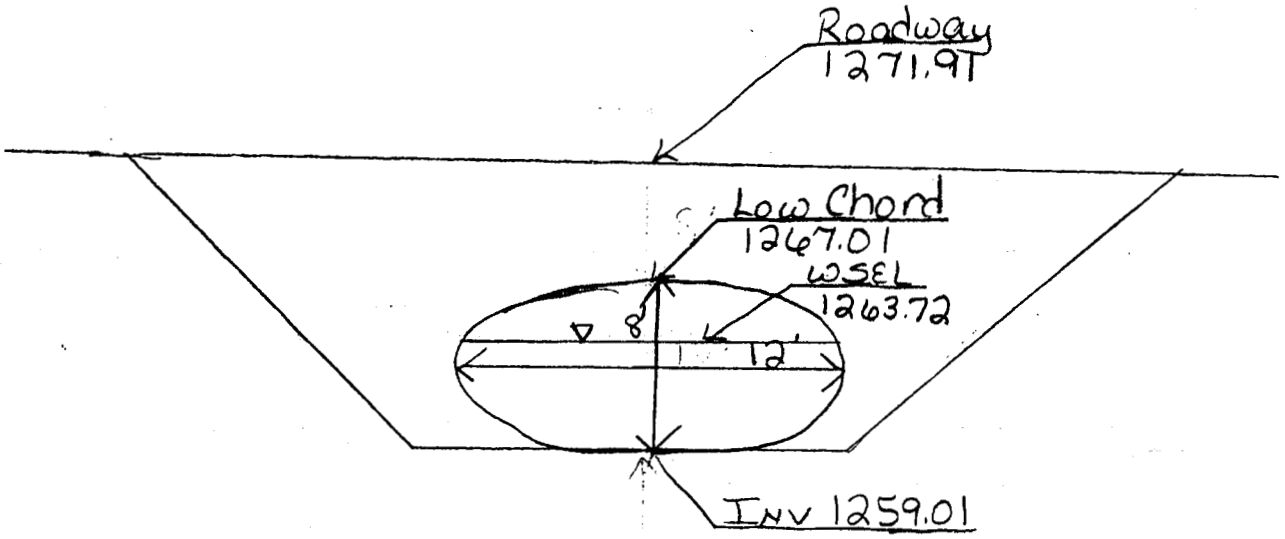
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

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.

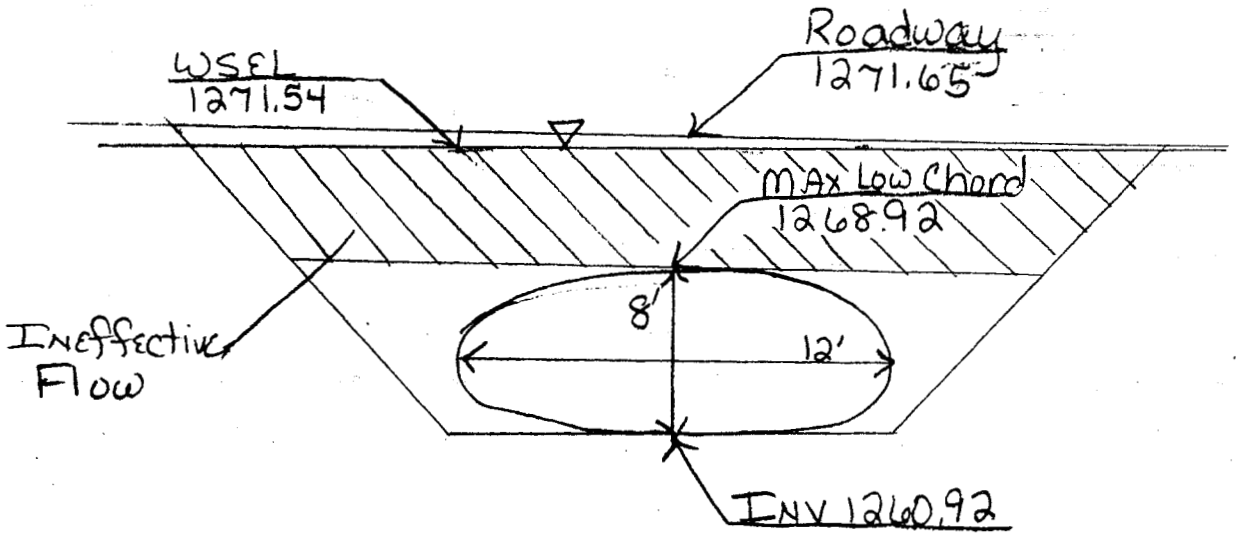
Cross Section .471



Looking Downstream

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.

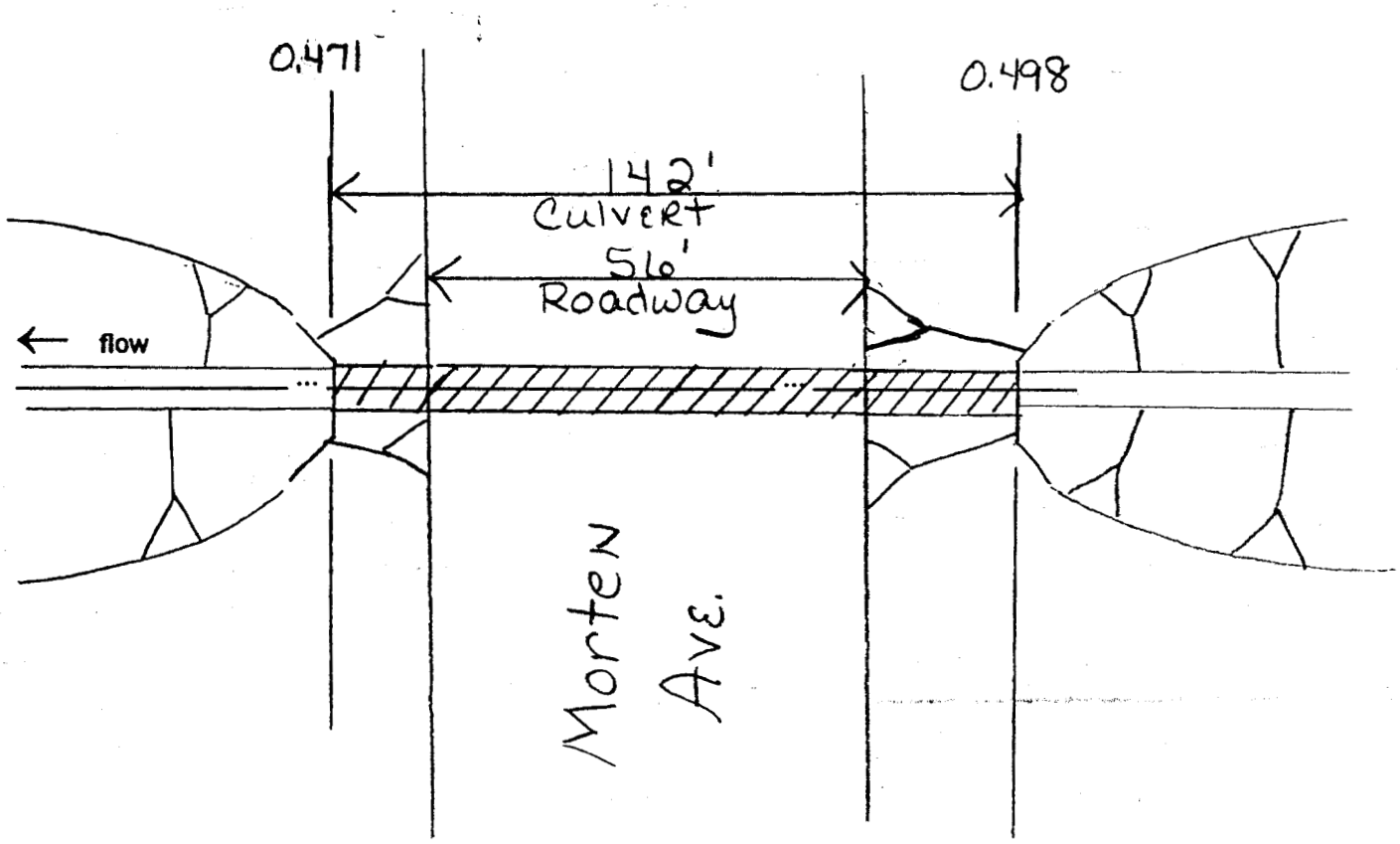
Cross Section .498



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)	142
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	73.9
Total culvert/bridge area (ft^2)	73.9

3. ANALYSIS (Cont'd)

Elevations Above Which Flow is Effective for Overbanks		
	Left Overbank	Right Overbank
Upstream face	1271.7	1271.4
Downstream face	1268.43	1270.18
Minimum Top of Road Elevation		
	Left Overbank	Right Overbank
Upstream face	1271.65	1271.65
Downstream face	1271.91	1271.91
100-Year Elevations		
	Water-Surface Elevations	Energy Gradient Elevations
Upstream face	1271.54	1272.15
Downstream face	1263.72	1264.45

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure(s) (cfs)		808	185	993
The maximum depth of flow over the roadway/railroad (ft.)				0.11
Weir length (ft.)				200

Top Widths	Total Floodplain Width	Floodway Width
Upstream face	21	15
Downstream face	40	41
Top Widths	**Total Effective Flow Width**	**Effective and Ineffective Flow**
Upstream face	12	21
Downstream face	12	40

3. ANALYSIS (Cont'd)

Loss Coefficients	
Entrance loss coefficient	.5
Manning's "n" value assigned to the structure(s)	.024
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 1b and 1c
Critical depth is assumed at several locations along the wash. A subcritical analysis was performed for Dreamy Draw Wash East which is a conservative approach to the revision of a floodplain boundary.

Form 5, Section 1, Part 1K
Reference marker used was B.C.H.H. at 16th Street and Glendale Avenue.

Form 5, Section 1, Part 1L
Vertical Datum was B.C.H.H. at 16th Street and Glendale Avenue, elevation 1229.69. Vertical Control is based on the National Geodetic Vertical Datum of 1929.

Form 5, Section 1, Part 2
Field survey based on horizontal and vertical control as stated in Part 1K and 1L (above) on October of 1996 by David Evans and Associates, Inc.

ATTACHMENT TO FORM 4, SECTION 6

OPERATIONAL INSPECTIONS SCHEDULE - 1996

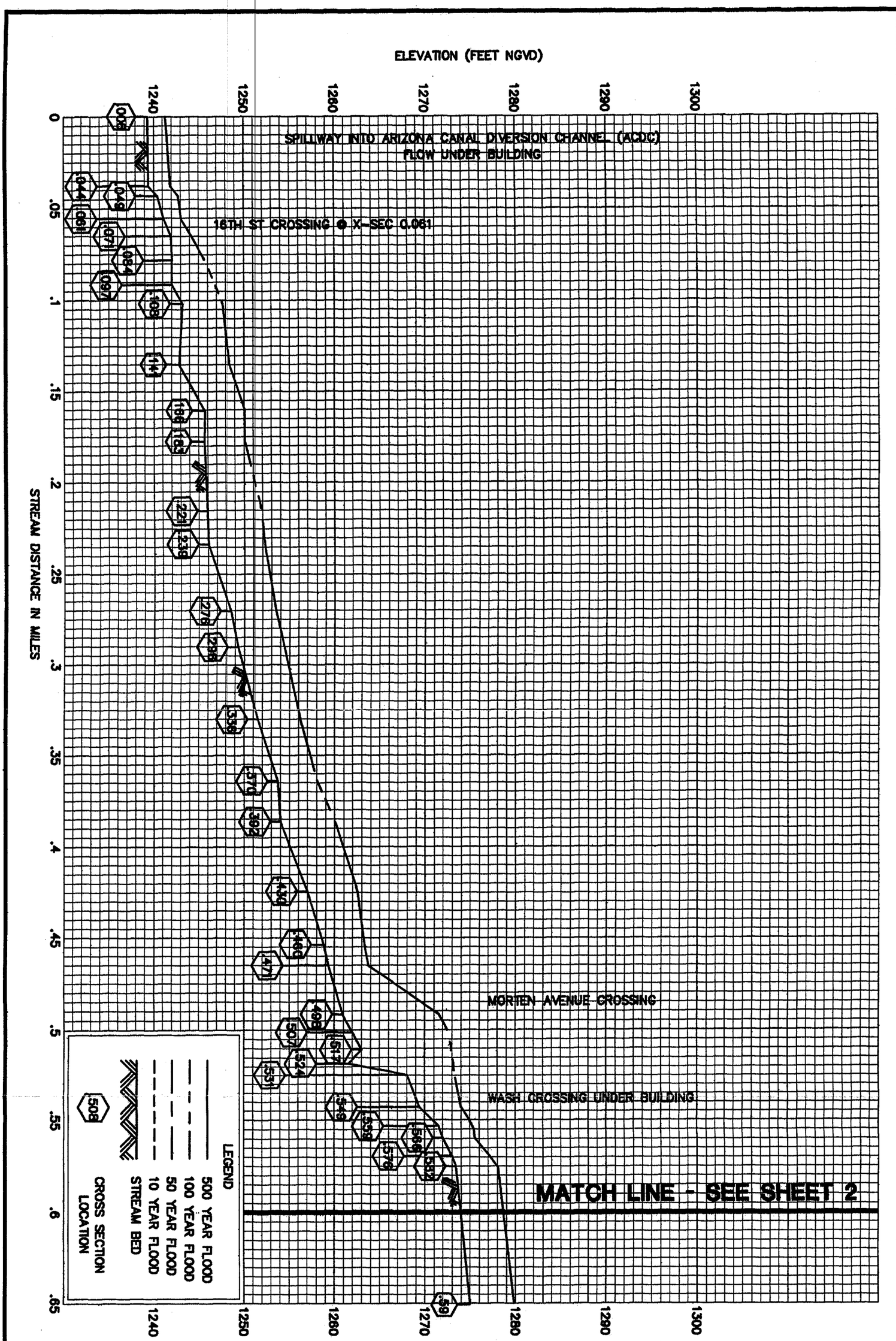
O&M INSPECTION	1/17/96 OPER. INSP.	4/17/96 OPER. INSP.	7/17/96 OPER. INSP.	10/16/96 OPER. INSP.
SADDLEBACK FRS		X	X	X
SADDLEBACK FLOODWAY		X	X	X
HARQUAHALA FRS		X	X	X
HARQUAHALA FLOODWAY		X	X	X
CENTENNIAL DIVERSION		X	X	X
DYSART DRAIN		X	X	X
ELMIRAGE DRAIN		X	X	X
48TH STREET DRAIN		X	X	X
ALMA SCHOOL DRAIN		X	X	X
AGUA FRIA FLOODWAY		X	X	X
INDIAN SCHOOL DRAIN		X	X	X
ADOBE DAM		X	X	X
DREAMY DRAW DAM		X	X	X
CAVE BUTTES AND CAVE CREEK DAMS		X	X	X
SCATTER WASH (BEARDSLEY TO 43RD AVE)		X	X	X
NEW RIVER DAM		X	X	X
SKUNK CREEK AT I-17		X	X	X
McMICKEN DAM	X		X	X
McMICKEN FLOODWAY	X		X	X
SUNSET FRS	X		X	X
SUNNY COVE FRS	X		X	X
SUNSET/SUNNY COVE PIPELINE	X		X	X
OLD CROSS-CUT CANAL	X		X	X
IBW INLET AND INTERCEPTOR	X		X	X
IBW OUTLET	X		X	X
IBW SIDE DRAINS	X		X	X
IBW GREENBELT	X		X	X
BUCKEYE #1	X		X	X
BUCKEYE #2	X		X	X
BUCKEYE #3	X		X	X
WHITE TANKS #3	X		X	X
WHITE TANKS #4	X		X	X
POWERLINE FRS	X	X		X
POWERLINE FLOODWAY	X	X		X
VINEYARD FRS	X	X		X
RITTENHOUSE FRS	X	X		X
SOSSAMAN DRAIN	X	X		X
GUADALUPE ROAD CHANNEL AND BOX	X	X		X
SPOOK HILL FRS	X	X		X
GUADALUPE DAM	X	X		X
SIGNAL BUTTE FRS	X	X		X
PASS MTN. DIVERSION AND FLOODWAY	X	X		X
APACHE JUNCTION FRS	X	X		X
E.M.F. & UNIVERSITY DET. BASIN	X	X		X
SIGNAL BUTTE FLOODWAY	X	X		X
BULLDOG FLOODWAY	X	X		X
APACHE JUNCTION FLOODWAY	X	X		X
SPOOKHILL FLOODWAY AND SED. BASIN	X	X		X
HOLLY ACRES	X	X	X	
PERYVILLE RIPRAP	X	X	X	
SALT/GILA CLEARING	X	X	X	
SALT/GILA LOW FLOW	X	X	X	
SALT RIVER CHANNEL (ADOT)	X	X	X	
SALT RIVER CHANNEL- RIO SALADO	X	X	X	
SALT RIVER CHANNEL - WARNING SIGNS	X	X	X	X
ACDC	X	X	X	
EAST FORK/ CAVE CREEK/ BASIN #4	X	X	X	
NEW RIVER CHANNEL	X	X	X	
SUN CITY DRAINS	X	X	X	
SUN CITY WEST DRAINS	X	X	X	
SKUNK CREEK CHANNELIZATION	X	X	X	
10TH STREET BASIN	X	X	X	X

INSPECTION SCHEDULE FOR 1996
FCDMC DAMS, FLOODWAYS AND DIVERSIONS

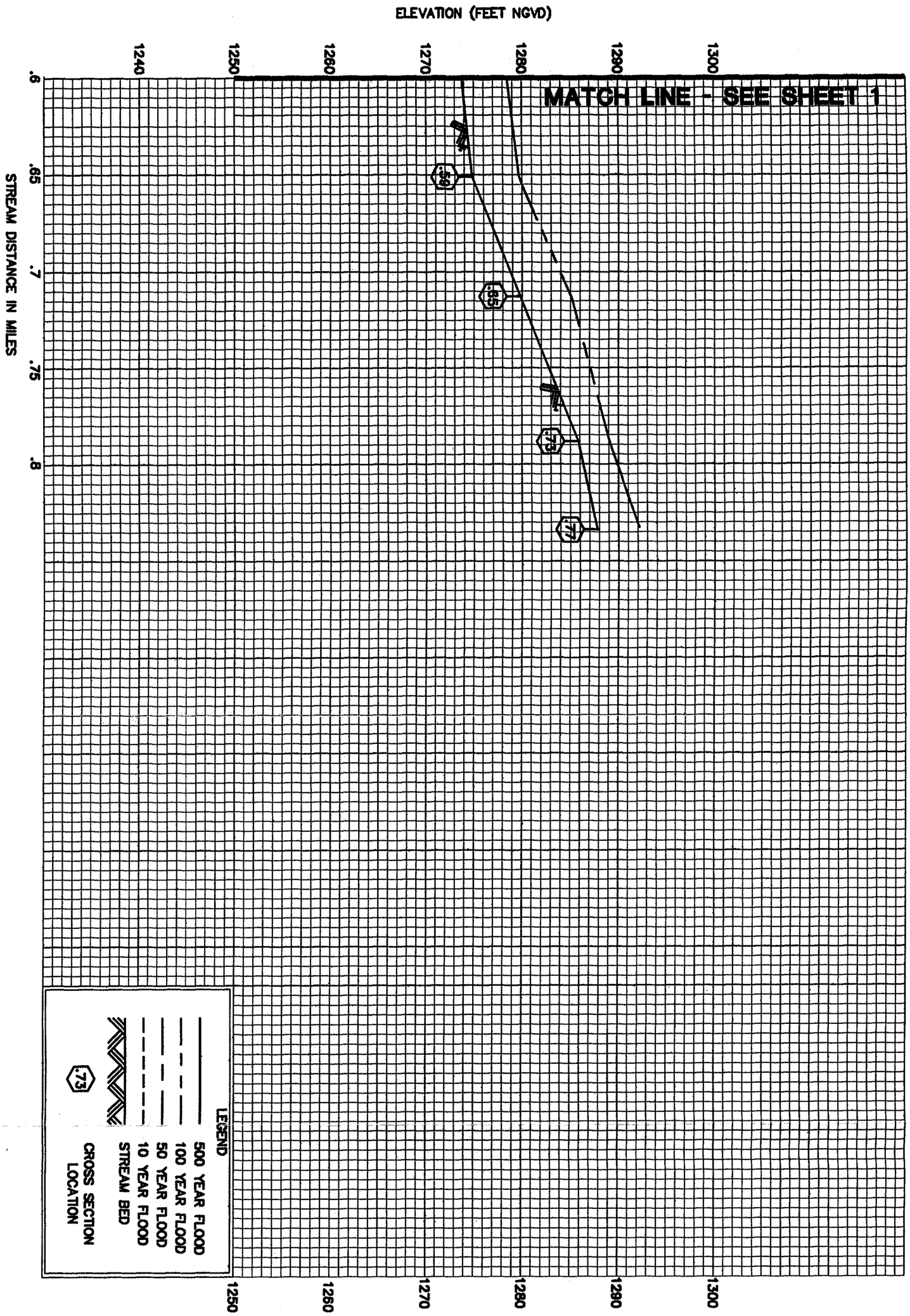
STATE DAM #		LAST INSPECTION 95	ANNUAL INSPECTION 96	INFORMAL INSPECTION 96
	COE STRUCTURES (DAM)			
07.57	ADOBE	5/24/95	5/22/96	12/18/96
#07.58	CAVE BUTTES/CAVE CREEK	5/24/95	5/22/96	12/18/96
#07.56	DREAMY DRAW	5/24/95	5/22/96	12/18/96
#07.55	NEW RIVER DAM	5/24/95	5/22/96	12/18/96
	COE CHANNELS AND FLOODWAYS			
	ACDC (AND CAVE CREEK)	5/25/95	5/23/96	12/19/96
	SKUNK CREEK (I-17) CHAN.	5/25/95	5/23/96	12/19/96
	SKUNK CREEK/NEW RIV. FDY.	5/25/95	5/23/96	12/19/96
	SCS STRUCTURES (FRS)			
#07.52	SADDLEBACK	3/22/95	3/21/96	
#07.53	HARQUAHALA	3/22/95	3/21/96	
#07.48	SUNNY COVE	9/28/95	9/26/96	
#07.49	SUNSET	9/28/95	9/26/96	
#07.28	WHITE TANKS#3	9/28/95	9/26/96	
#07.29	WHITE TANKS#4	9/28/95	9/26/96	
#07.42	BUCKEYE #1	8/24/95	8/22/96	
#07.44	BUCKEYE #2	8/24/95	8/22/96	
#07.45	BUCKEYE #3	8/24/95	8/22/96	
#11.02	POWERLINE	6/22/95	6/27/96	
#11.12	RITTENHOUSE	6/22/95	6/27/96	
#11.11	VINEYARD	6/22/95	6/27/96	
#07.43	GUADALUPE	10/26/95	10/24/96	
#07.50	SPOOK HILL	10/26/95	10/24/96	
#07.60	SIGNAL BUTTE	10/26/95	10/24/96	
	APACHE JUNCTION	10/26/95	10/24/96	
	SCS FLOODWAYS			
	HARQUAHALA	3/23/95	3/21/96	
	SADDLEBACK	3/23/95	3/21/96	
	POWERLINE	6/22/95	6/27/96	
	SPK HILL FDWY AND SD BASIN	11/30/95	11/21/96	
	E.M.F.	11/30/95	11/21/96	
	SIGNAL BUTTE	11/30/95	11/21/96	
	PASS MOUNTAIN	11/30/95	11/21/96	
	BULLDOG	11/30/95	11/21/96	
	SCS DIVERSIONS			
N.A.	CENTENNIAL LEVEE #1	3/23/95	3/21/96	
N.A.	PASS MOUNTAIN	11/30/95	11/21/96	
	FCD STRUCTURES, CHANNELS AND FLOODWAYS			
	HOLLY ACRES RIPRAP	1/26/95	1/25/96	
	PERRYVILLE RIPRAP	1/26/95	1/25/96	
	SALT/GILA LOW FLOW	1/26/95	1/25/96	
	COLTER CHANNEL	1/26/95	1/25/96	
	RIO SALADO	1/26/95	1/25/96	
	ALMA SCHOOL DRAIN	4/27/95	4/25/96	
	AGUA FRIA FLOODWAY	4/27/95	4/25/96	
	INDIAN SCHOOL RD. DRAIN	4/27/95	4/25/96	
	48TH ST. DRAIN	4/27/95	4/25/96	
	DYSART DRAIN	4/27/95	4/25/96	
	EL MIRAGE DRAIN	4/27/95	4/25/96	
#07.21	McMICKEN DAM**	6/29/95	6/20/96	
	McMICKEN FLOODWAY	6/29/95	6/20/96	
	INDIAN BEND WASH (COE)	7/27/95	7/25/96	
	SCATTERWASH	7/27/95	7/25/96	
	EAST FORK/ CAVE CREEK	7/27/95	7/25/96	
	OLD CROSS CUT CANAL	7/27/95	7/25/96	
	SOSSMAN ROAD DRAIN	6/22/95	6/27/96	
	GUADALUPE CHNL AND BOX	6/22/95	6/27/96	
	SALT/GILA CREARING	1/26/95	1/25/96	
	SUN CITY DRAINS	2/23/95	2/22/96	
	SUN CITY WEST DRAINS	2/23/95	2/22/96	
	PARADISE VALY RETN BSN	2/23/95	2/22/96	

*FCD O&D DIV. ONLY **FCD & ADWR ONLY

EXHIBIT 4



1 OF 2	FEDERAL EMERGENCY MANAGEMENT AGENCY MARICOPA COUNTY, AZ AND INCORPORATED AREAS	FLOOD PROFILES DREAMY DRAW WASH EAST



2 OF 2	FEDERAL EMERGENCY MANAGEMENT AGENCY MARICOPA COUNTY, AZ AND INCORPORATED AREAS	FLOOD PROFILES DREAMY DRAW WASH EAST

EXHIBIT 5

1670 F

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

LOMR 8-7-96

MAP NUMBER
04013C1670 E

MAP REVISED:
SEPTEMBER 30, 1995

Federal Emergency Management Agency

FIRM PANEL

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AE — Base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year flood plain.
- ZONE D — Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

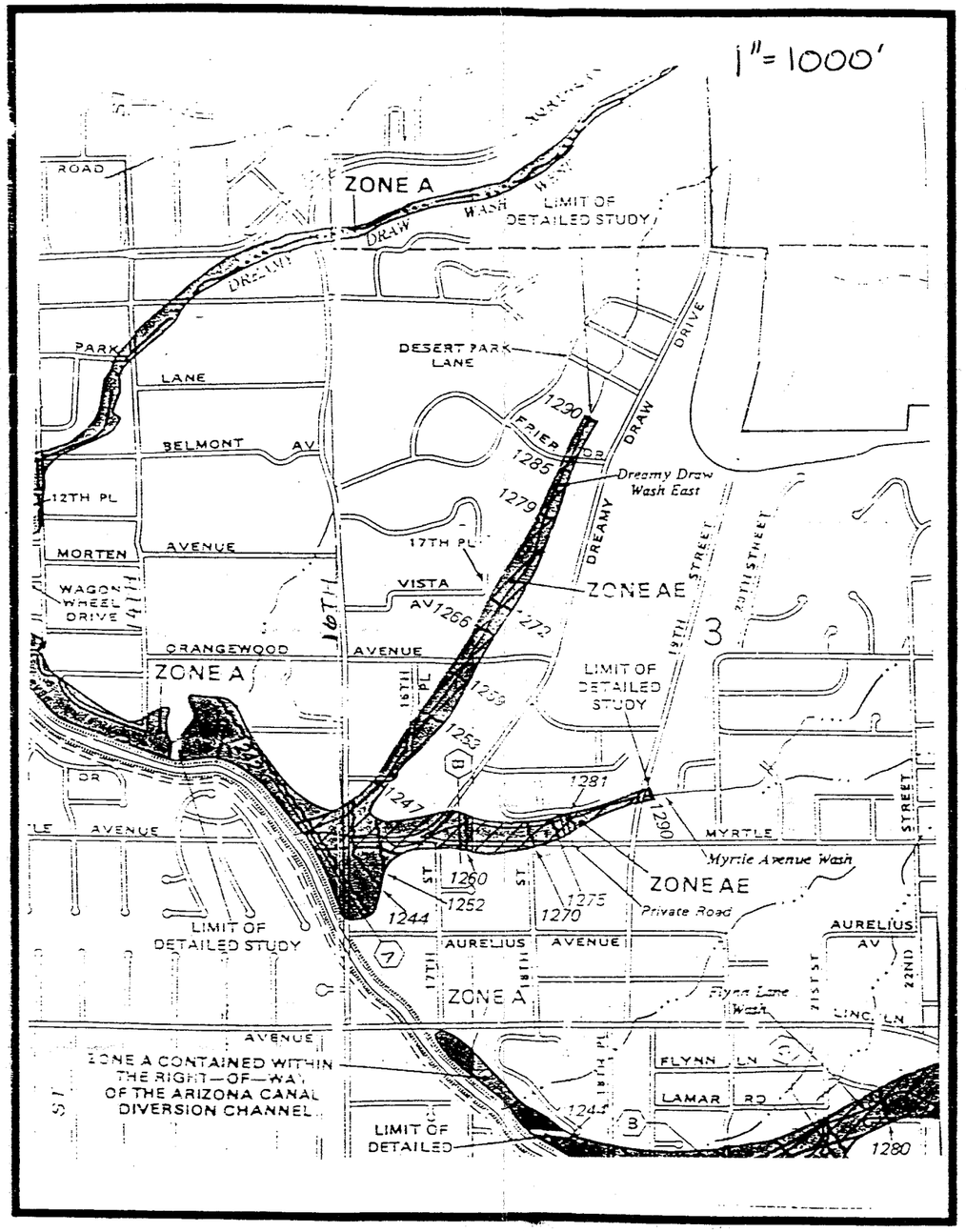
D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7X — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

MAP LEGEND



PORTION OF PANEL SHOWING SITE

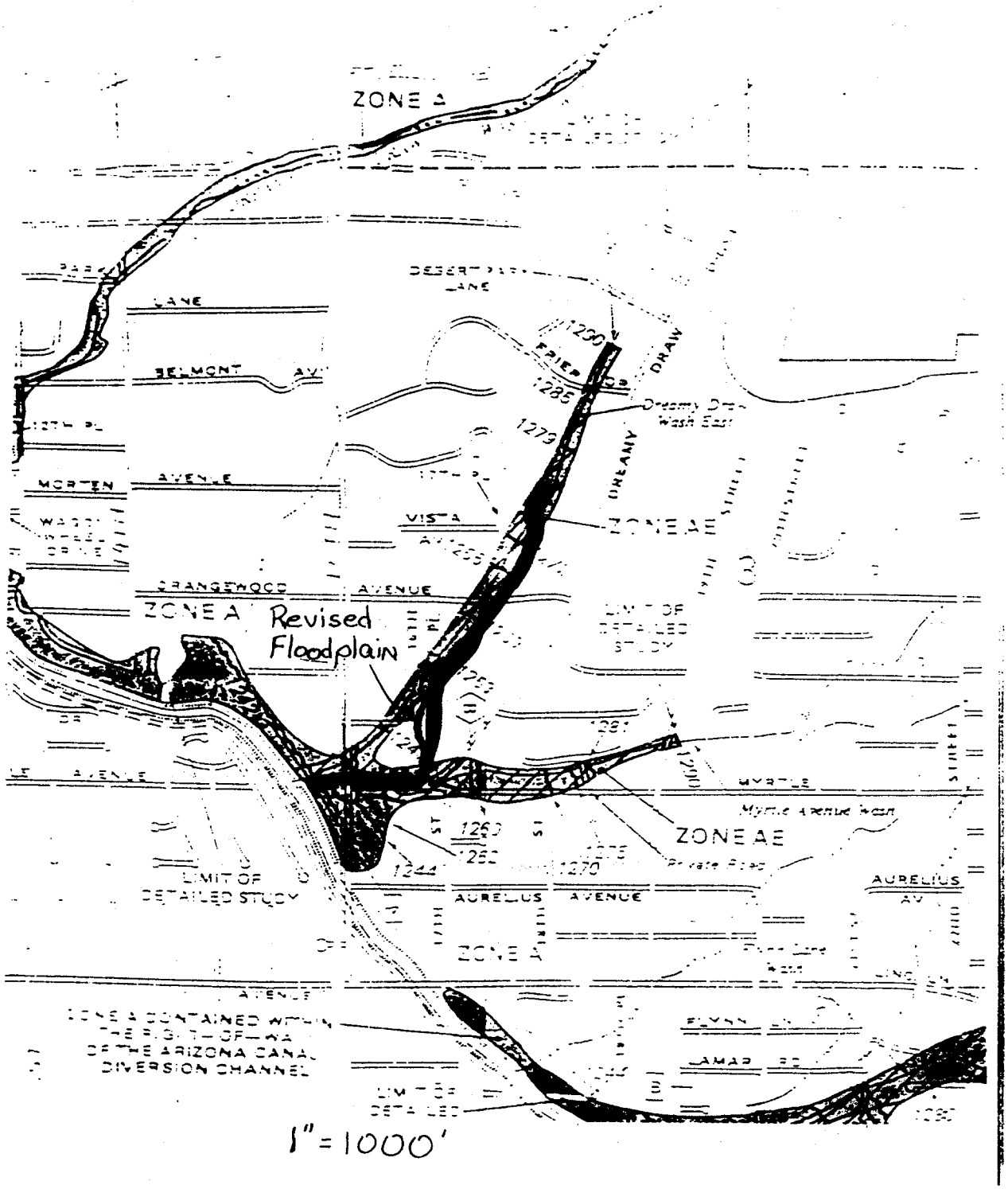
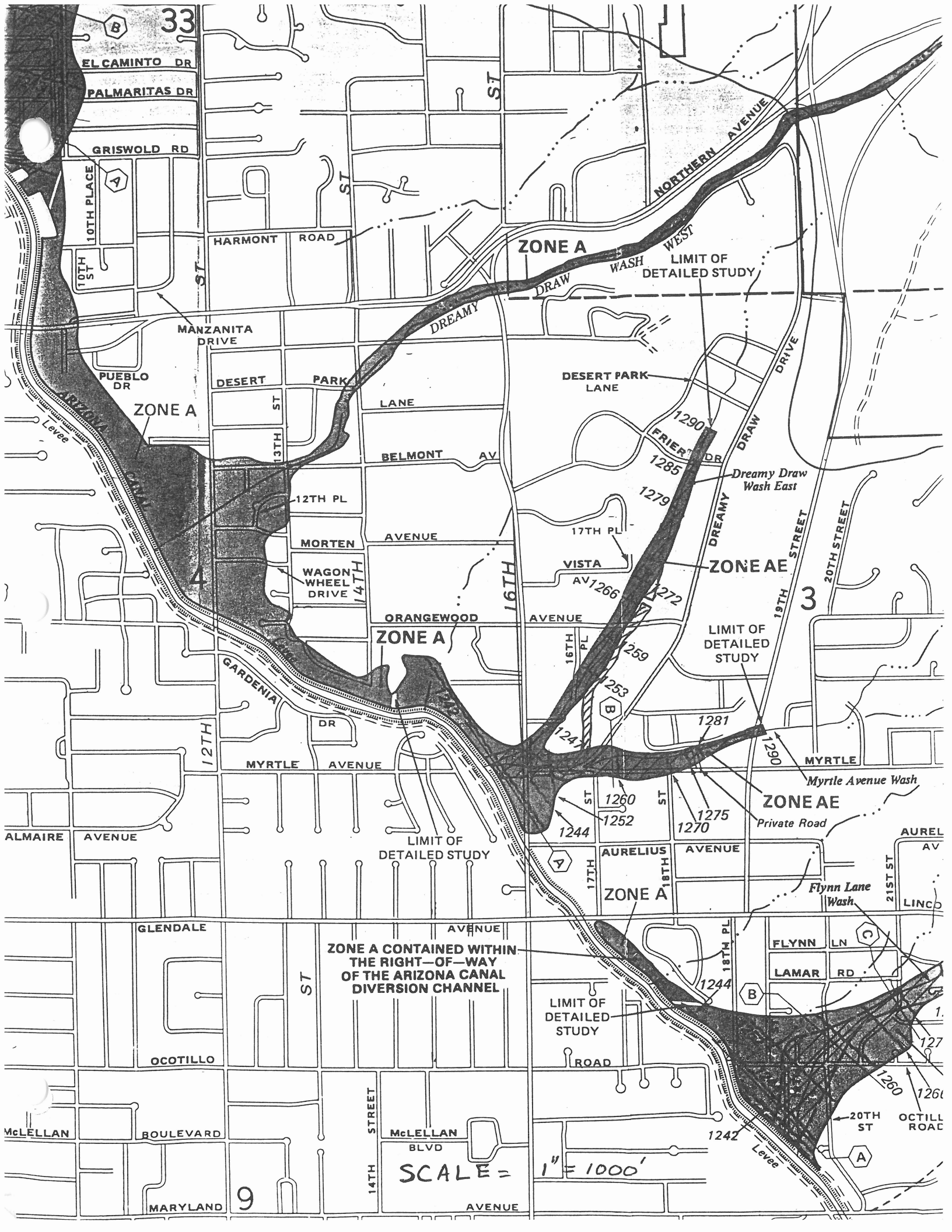
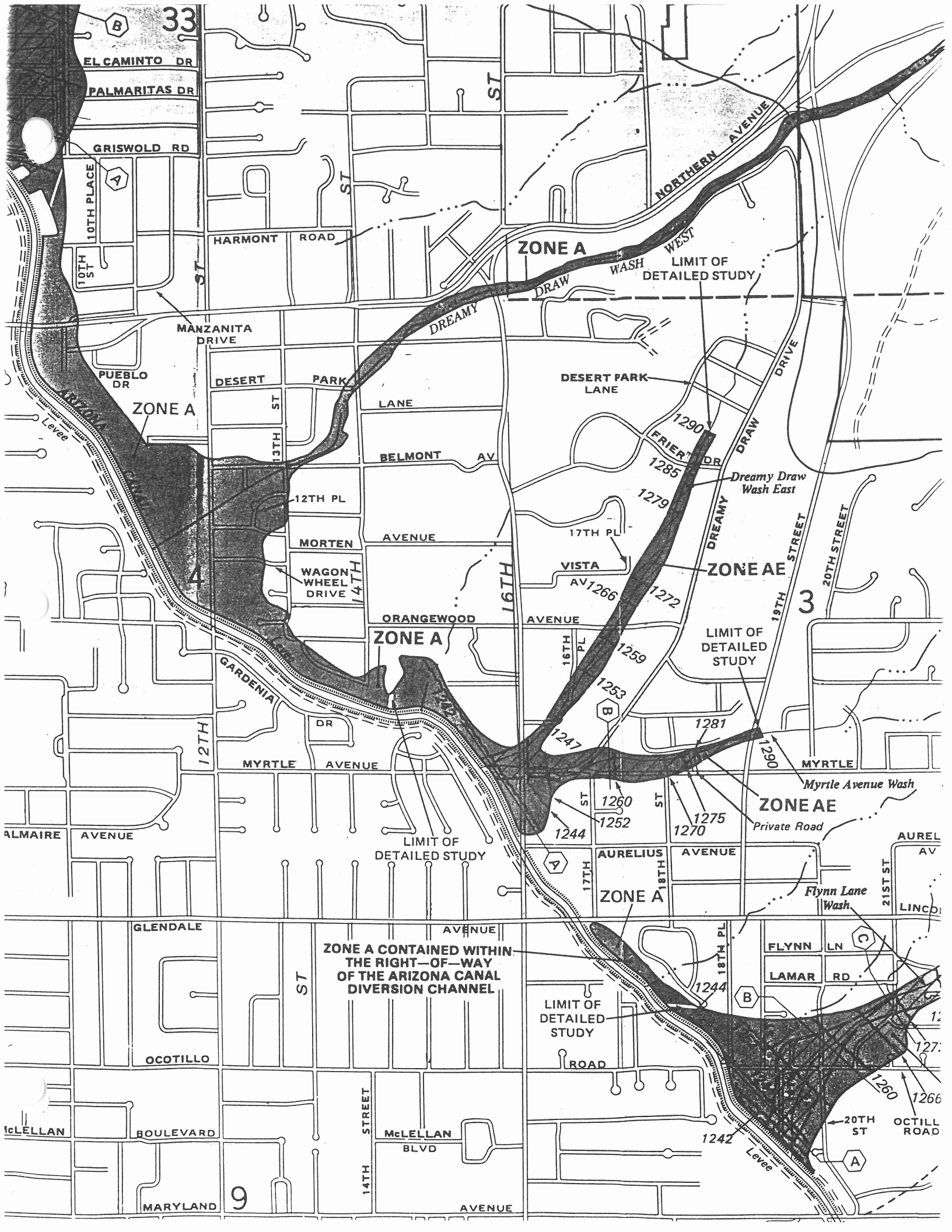
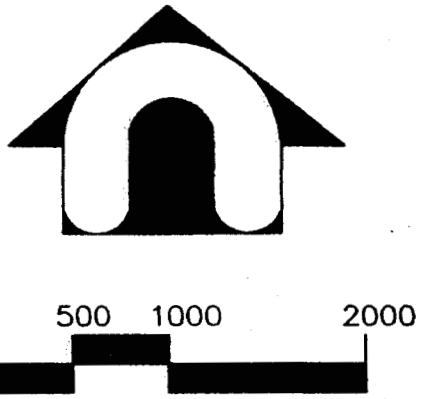

ZONE A
DESERT PARK LANE
BELMONT AVE
MORTEN AVENUE
ORANGEWOOD AVENUE
ZONE A
Revised Floodplain
VISTA AVE
ZONE AE
DREAMY DRAW
Dreamy Draw Wash East
LIMIT OF DETAILED STUDY
MYRTLE
Myrtle Avenue Wash
ZONE AE
Private Road
LIMIT OF DETAILED STUDY
AURELIUS AVENUE
AURELIUS AV
ZONE A
Pima Lane Wash
ZONE A CONTAINED WITHIN THE RIGHT-OF-WAY OF THE ARIZONA CANAL DIVERSION CHANNEL
FLYNN
CAMAR RD
LIMIT OF DETAILED
1"=1000'

Figure 2


33
EL CAMINTO DR
PALMARITAS DR
GRISWOLD RD
10TH PLACE
10TH ST
HARMONT ROAD
NORTHERN AVENUE
ZONE A
LIMIT OF DETAILED STUDY
DREAMY DRAW WASH WEST
MANZANITA DRIVE
PUEBLO DR
DESERT PARK LANE
ZONE A
ARIZONA CANAL
Levee
13TH ST
BELMONT AV
12TH PL
MORTEN AVENUE
WAGON WHEEL DRIVE
14TH
16TH
ORANGEWOOD AVENUE
ZONE A
GARDENIA DR
12TH
MYRTLE AVENUE
ALMAIRE AVENUE
LIMIT OF DETAILED STUDY
DESERT PARK LANE
FRIER DR
DREAMY DRAW DRIVE
Dreamy Draw Wash East
17TH PL
VISTA AV
ZONE AE
19TH STREET
20TH STREET
3
LIMIT OF DETAILED STUDY
16TH PL
MYRTLE
Myrtle Avenue Wash
ZONE AE
Private Road
AURELIUS AVENUE
17TH
18TH
ZONE A
Flynn Lane Wash
21ST ST
FLYNN LN
LAMAR RD
18TH PL
GLENDALE AVENUE
ZONE A CONTAINED WITHIN THE RIGHT—OF—WAY OF THE ARIZONA CANAL DIVERSION CHANNEL
LIMIT OF DETAILED STUDY
OCOTILLO ROAD
McLELLAN BOULEVARD
McLELLAN BLVD
14TH STREET
20TH ST
OCTILLO ROAD
Levee
SCALE = 1" = 1000'
9
MARYLAND AVENUE
1290
1285
1279
1266
1272
1259
1253
1241
1281
1290
1260
1252
1244
1270
1275
1244
1242
1260
1260
127


33
EL CAMINTO DR
PALMARITAS DR
GRISWOLD RD
10TH PLACE
10TH ST
HARMONT ROAD
MANZANITA DRIVE
PUEBLO DR
DESERT PARK LANE
ZONE A
Levee
13TH ST
BELMONT AV
12TH PL
MORTEN AVENUE
WAGON WHEEL DRIVE
14TH
ORANGEWOOD AVENUE
GARDENIA DR
12TH
MYRTLE AVENUE
ALMAIRE AVENUE
LIMIT OF DETAILED STUDY
16TH
16TH PL
17TH PL
VISTA AV
DREAMY DRAW WASH WEST
DREAMY DRAW
NORTHERN AVENUE
LIMIT OF DETAILED STUDY
DESERT PARK LANE
FRIERT DR
DREAMY DRAW DRIVE
Dreamy Draw Wash East
ZONE AE
19TH STREET
20TH STREET
3
LIMIT OF DETAILED STUDY
1290
1285
1279
1266
1272
1259
1253
1247
1281
1290
MYRTLE
Myrtle Avenue Wash
ZONE AE
Private Road
1260
1252
1244
1275
1270
AURELIUS AVENUE
17TH
18TH
ZONE A
Flynn Lane Wash
21ST ST
AUREL AV
LINCO
GLENDALE AVENUE
ZONE A CONTAINED WITHIN THE RIGHT—OF—WAY OF THE ARIZONA CANAL DIVERSION CHANNEL
18TH PL
FLYNN LN
LAMAR RD
1244
LIMIT OF DETAILED STUDY
OCOTILLO ROAD
1260
1266
20TH ST
OCTILL ROAD
McLELLAN BOULEVARD
McLELLAN BLVD
14TH STREET
1242
Levee
MARYLAND AVENUE
9



0 500 1000 2000

SCALE: 1" = 1000'

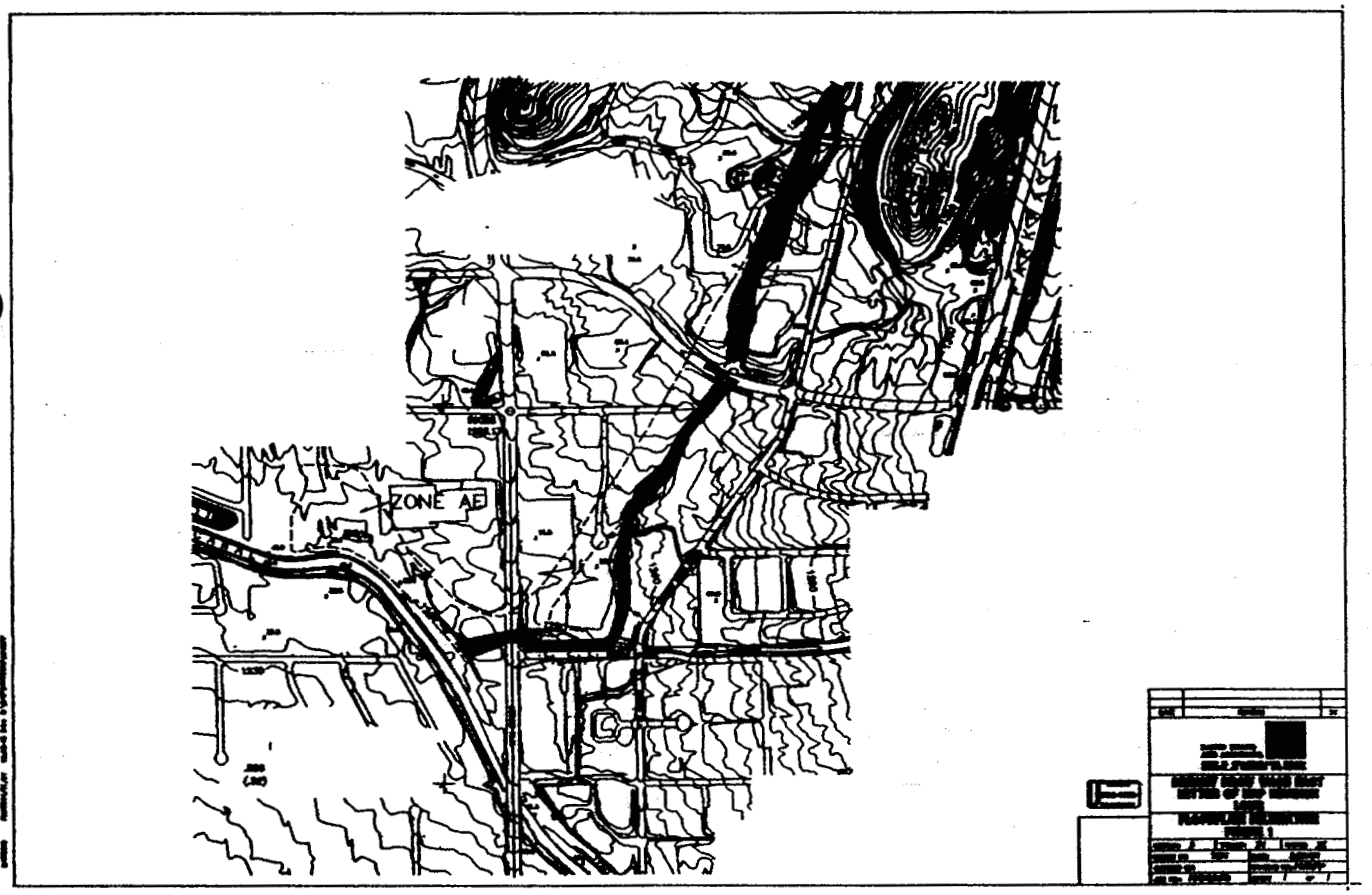
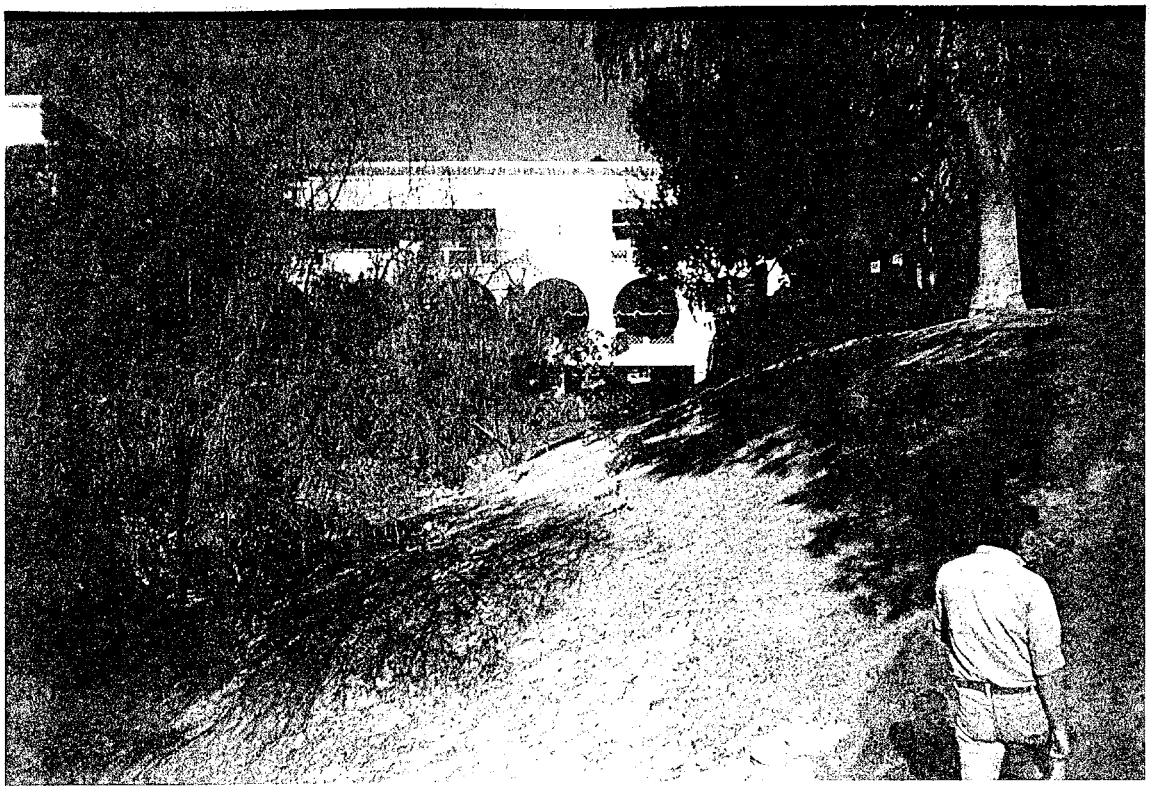
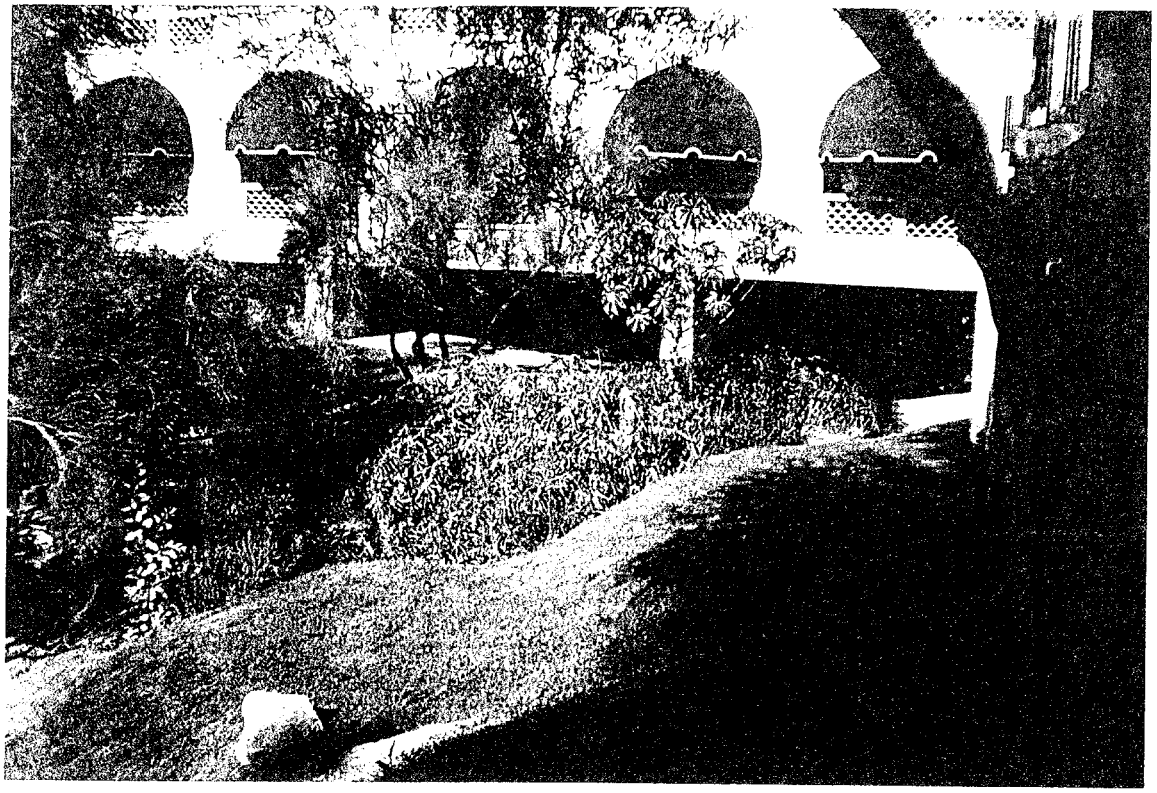


Figure 1

EXHIBIT 6



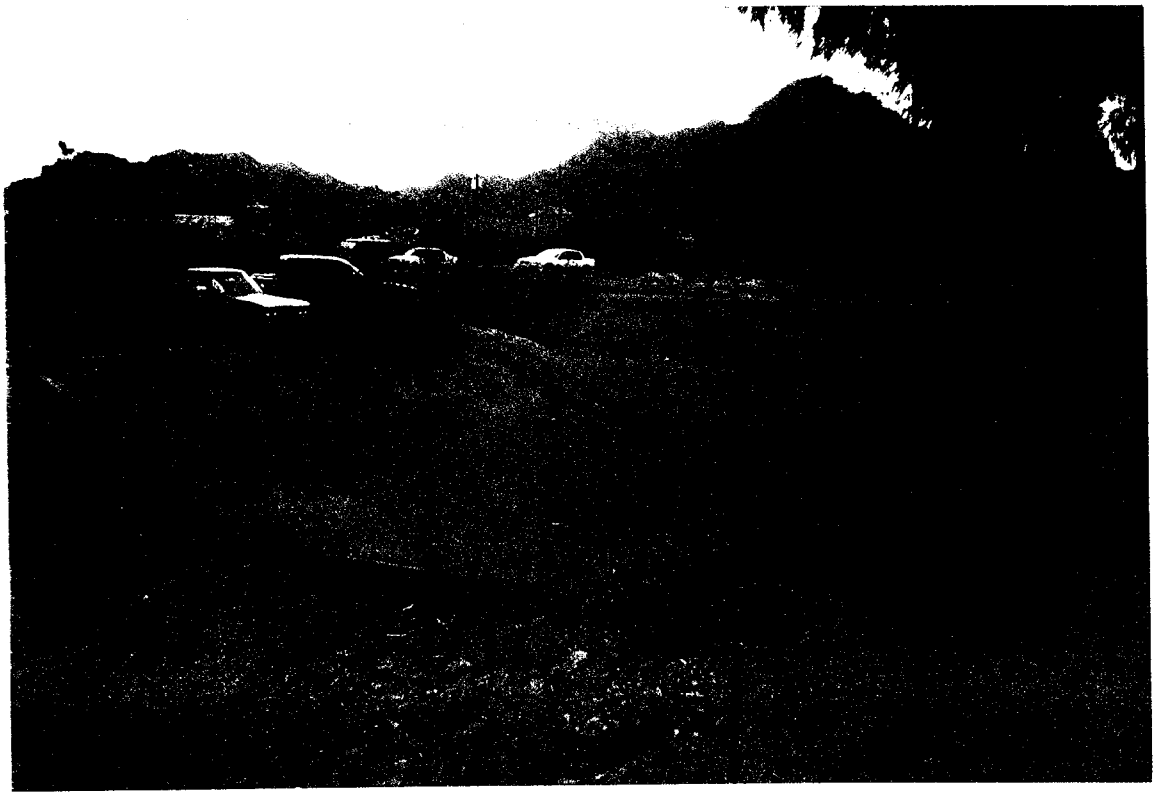
CHANNEL BETWEEN
MORTEN AVENUE & BUILDING
APPROXIMATELY CROSS SECTION .517



DENSE VEGETATION AT OUTLET OF BUILDING
APPROXIMATELY CROSS SECTION .531

INLET OF MORTON AVENUE CULVERT
APPROXIMATELY CROSS SECTION .498

OUTLET OF MORTON AVENUE CULVERT
APPROXIMATELY CROSS SECTION .471

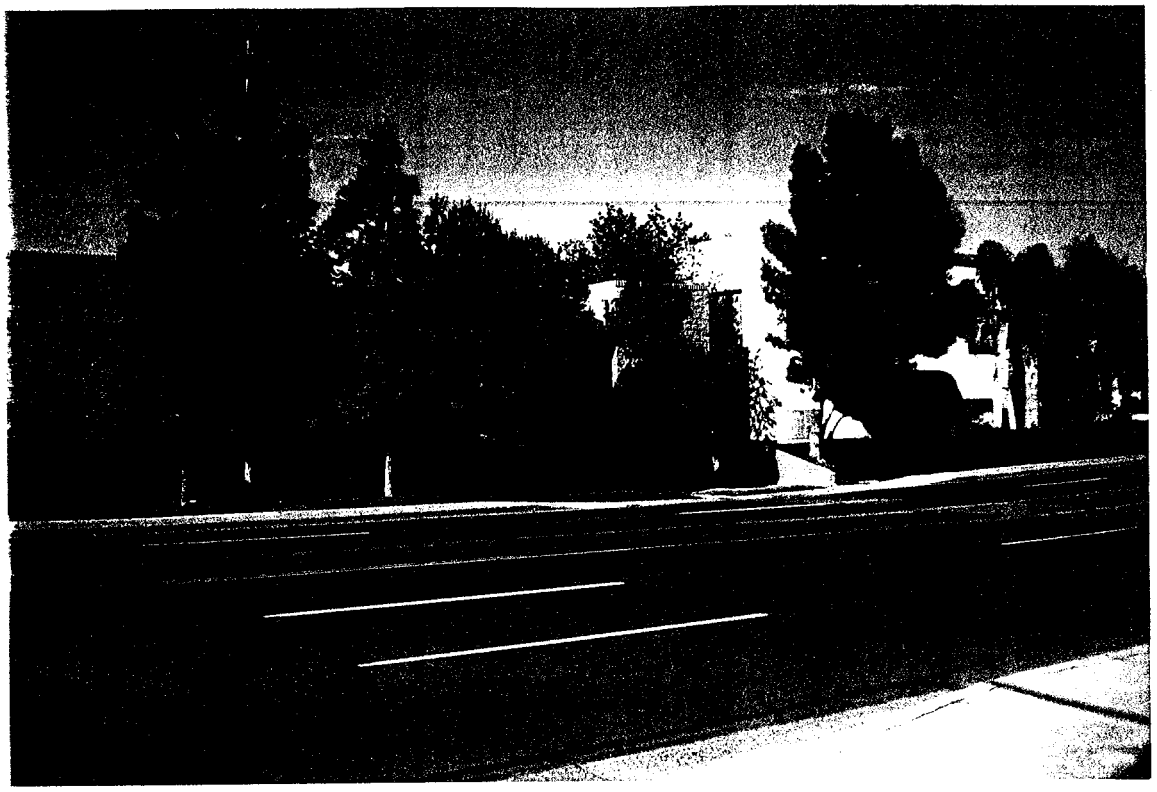


DREAMY DRAW EAST WASH
APPROXIMATELY CROSS SECTION .174
LOOKING NORTHEAST

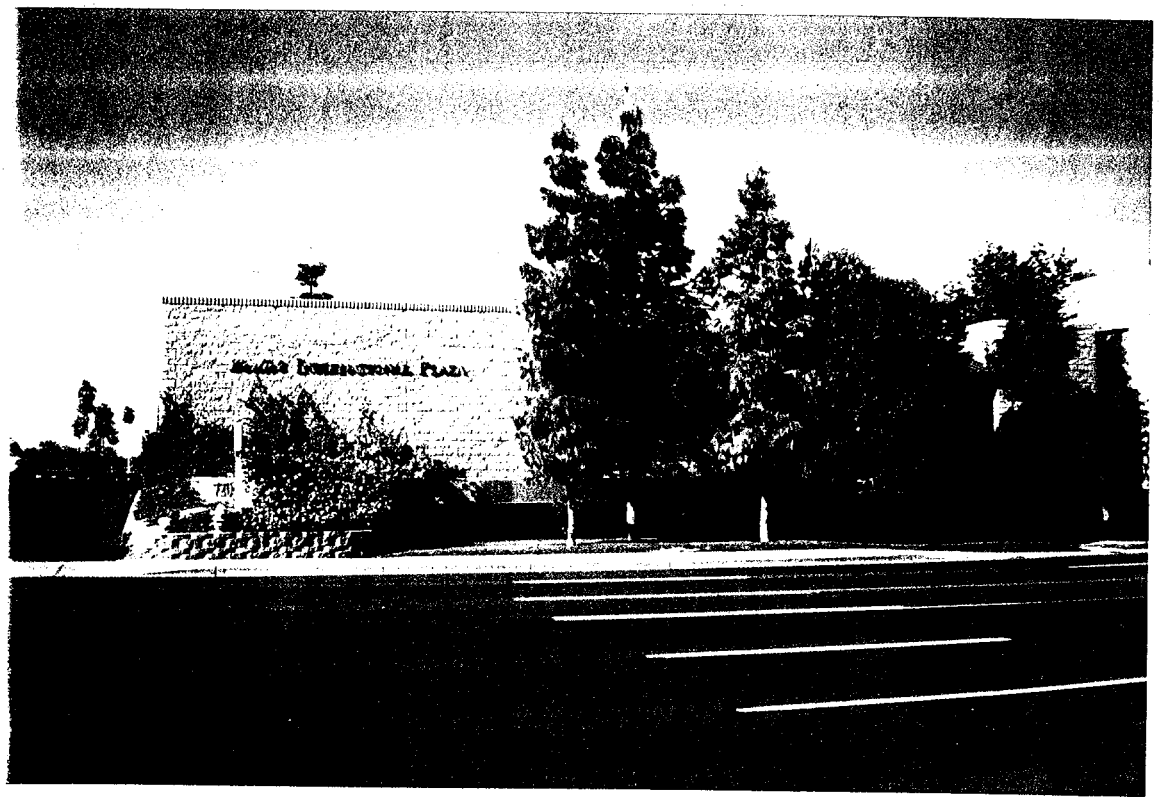
16TH ST. CROSSING OF DREAMY DRAW EAST WASH
APPROXIMATELY CROSS SECTION .078
LOOKING WEST TOWARDS OPENING UNDER BUILDING

DREAMY DRAW EAST WASH
APPROXIMATELY CROSS SECTION .061
LOOKING EAST ACROSS 16TH ST TOWARDS MYRTLE AVE

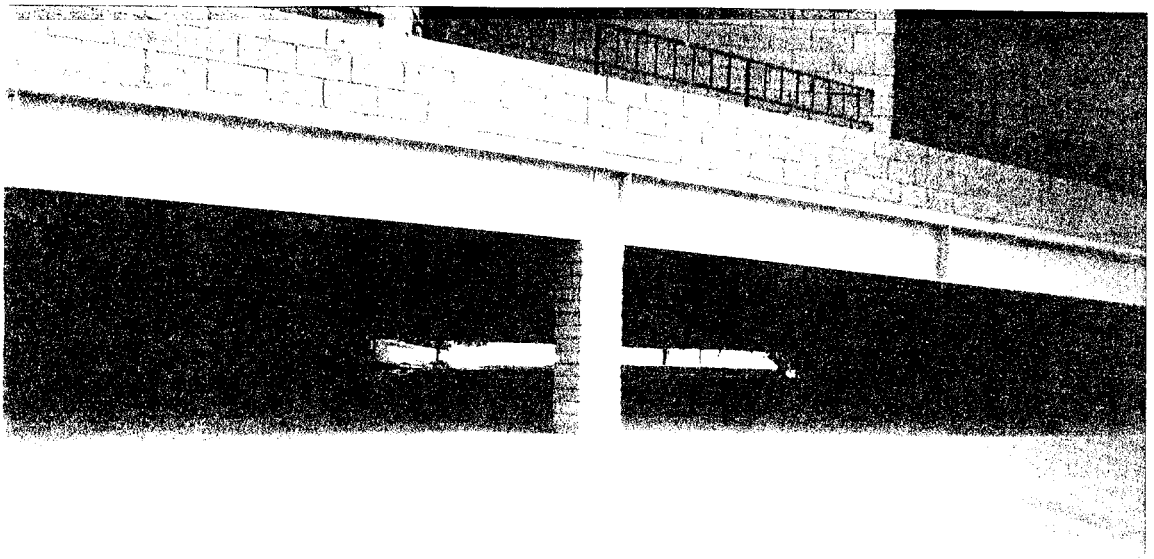
16TH ST CROSSING OF DREAMY DRAW EAST WASH
APPROXIMATELY .061
LOOKING WEST TOWARDS OPENING UNDER BUILDING



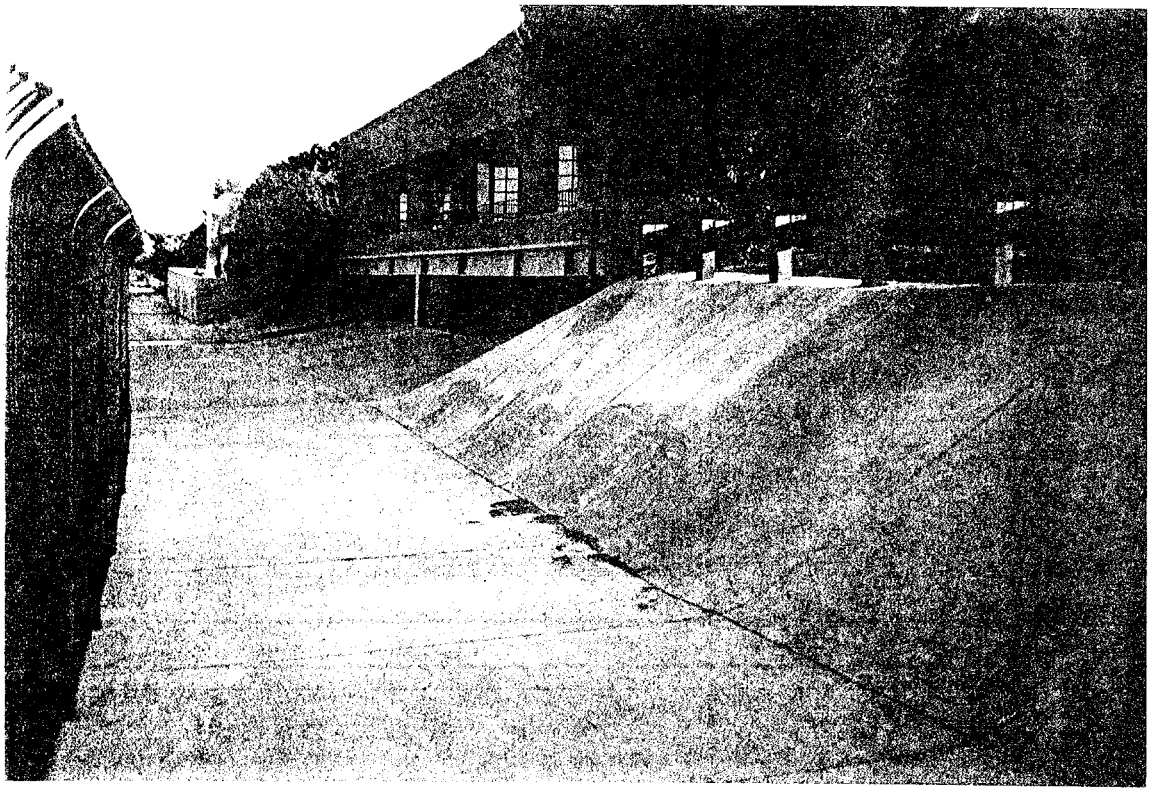
NORTH SIDE OF BUILDING
WHERE DISCHARGE FLOWS UNDER
LOOKING NORTHWEST



SOUTH SIDE OF BUILDING
WHERE DISCHARGE FLOWS UNDER BUILDING
LOOKING WEST

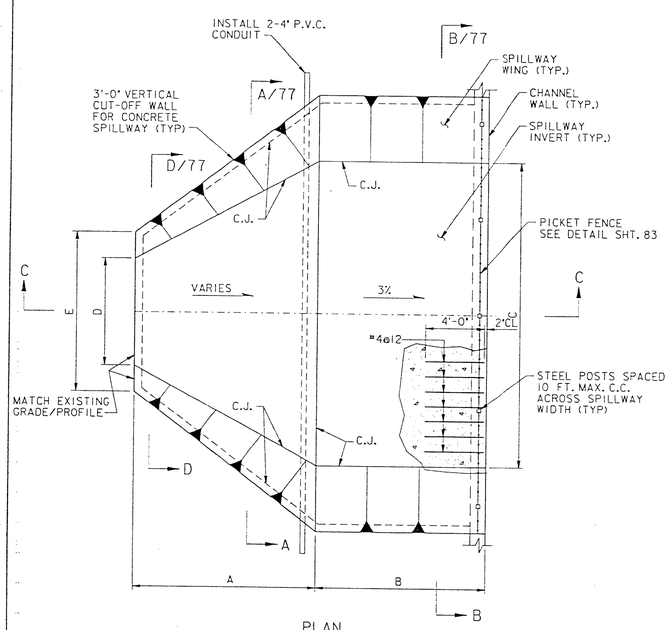


OUTLET UNDER BUILDING
FOR DREAMY DRAW EAST WASH
LOOKING EAST



OUTLET UNDER BUILDING
FOR DREAMY DRAW EAST WASH
LOOKING NORTHWEST

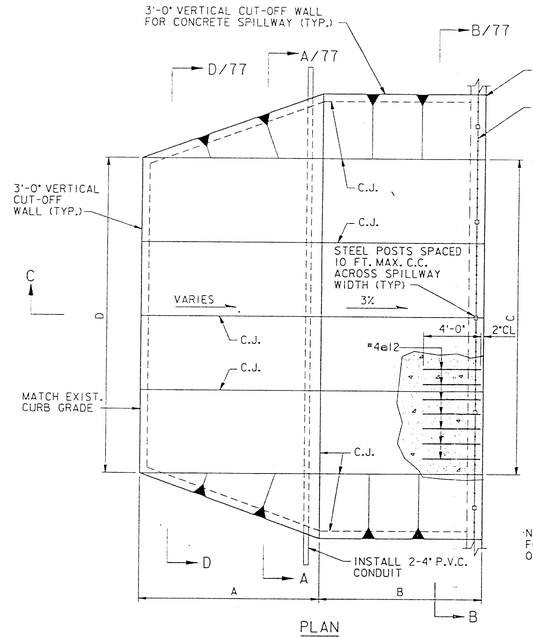
EXHIBIT 7



PLAN

TYPE I OVERFLOW SPILLWAY

N.T.S.

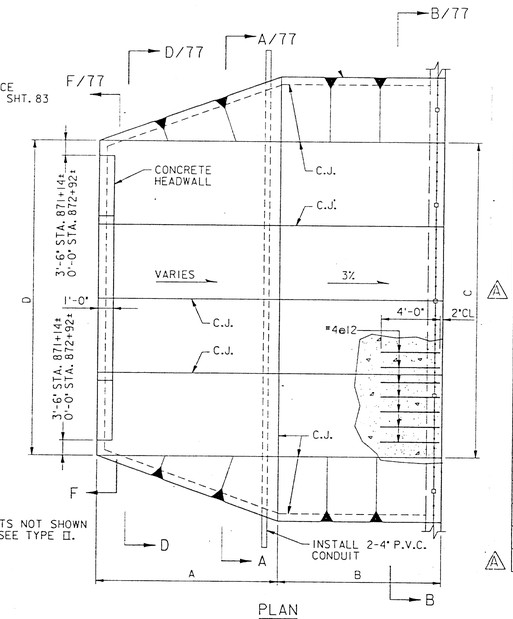


PLAN

TYPE II OVERFLOW SPILLWAY

N.T.S.

NOTE:
FOR CALL OUTS NOT SHOWN ON TYPE III SEE TYPE II.



PLAN

TYPE III OVERFLOW SPILLWAY

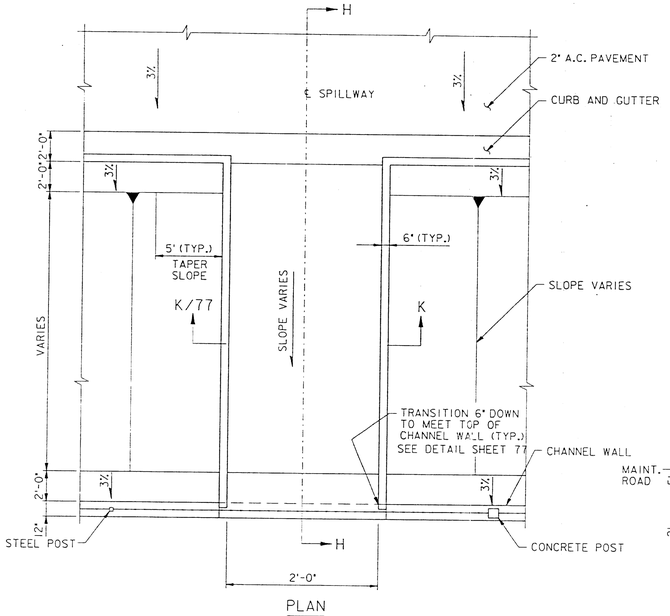
N.T.S.

OVERFLOW SPILLWAY TABULATION

SPILLWAY No.	LOCATION SHT No.	LOCATION ℄ STA.	TYPE	DIST. A	DIST. B	DIST. C	DIST. D	DIST. E	ELEV. Y	ELEV. Z
1	15	1003+65±	II	12	15	20	20	-	1247.05	1235.39
2	16	995+25±	II	7	15	20	20	-	1246.29	1225.79
3	17	983+13±	II	10	15	25	25	-	1244.82	1224.82
4	17	977+56±	II	10	15	35	35	-	1245.37	1224.37
5	20	945+32±	II	10	15	40	40	-	1242.80	1221.80
6	24	883+20±	II	15	10	70	53	-	1240.33	1216.83
7	25	878+48±	II	10	15	20	12	-	1239.99	1216.49
8	25	876+23±	II	10	15	20	20	-	1239.93	1216.43
9	25	872+92±	III	10	15	20	5	-	1239.83	1216.33
10	25	871+14±	III	10	15	20	16	-	1239.77	1216.27
11	25	868+60±	II	10	15	28	28	-	1239.70	1216.20
12	26	861+60±	I	10	15	20	4	-	1239.49	1215.99
13	26	856+35±	I	10	15'L / 3'R	36	28	32	1239.33	1215.83
14	27	849+14±	I	10	15	35	35	37	1239.11	1215.61
15	27	843+16±	I	12	15	25	5	9	1238.43	1215.43
16	28	839+00±	I	5	15	25	3	14	1238.31	1215.31
17	28	835+25±	I	7	15	25	2	15	1238.20	1215.20
18	29	824+82±	I	10	15	20	4	8	1237.88	1214.88
19	29,30	814+00±	II	8-14	15	280	280	-	1236.06	1214.56
20	30	810+32±	II	6	15	20	20	-	1236.95	1214.45
21	30	807+25±	II	4	15	30	30	-	1236.36	1214.36
22	31	800+99±	I	10	15	88	36	40	1236.67	1214.17
23	31,32	791+94±	II	15	38	25	25	-	1235.00	1213.90
24	26	865+10±	I	10	15	10	4	-	1239.59	1216.09

NOTES:

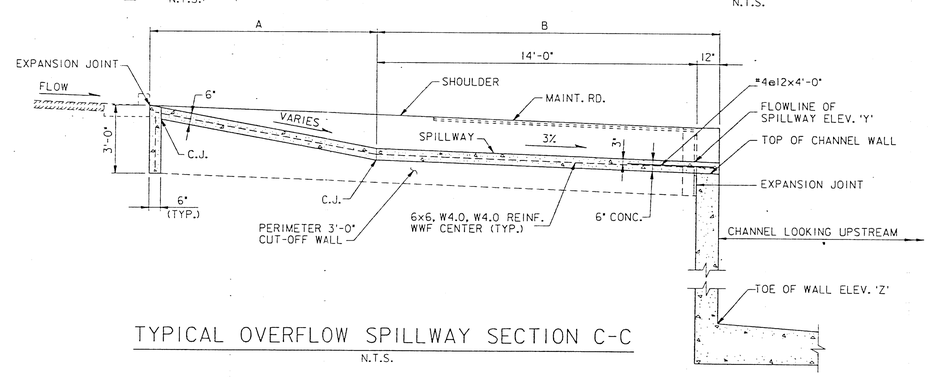
1. FOR IRRIGATION SLEEVES UNDER SPILLWAYS SEE LANDSCAPE PLANS AND PROJECT SPECIFICATIONS.
2. THE CONTRACTION JOINT SPACING OF OVERFLOW SPILLWAY SHALL BE: A UNIFORM MAXIMUM OF 10' CENTER-CENTER PARALLEL TO THE FLOWLINE. AND 20' MAXIMUM CENTER-CENTER PERPENDICULAR TO THE FLOWLINE.
3. FOR PURPOSE OF THIS SHEET ONLY C.J. MEANS CONTRACTION JOINT.
4. FOR GENERAL NOTES AND MISCELLANEOUS DETAILS ---------- SEE SHEET 45.



PLAN

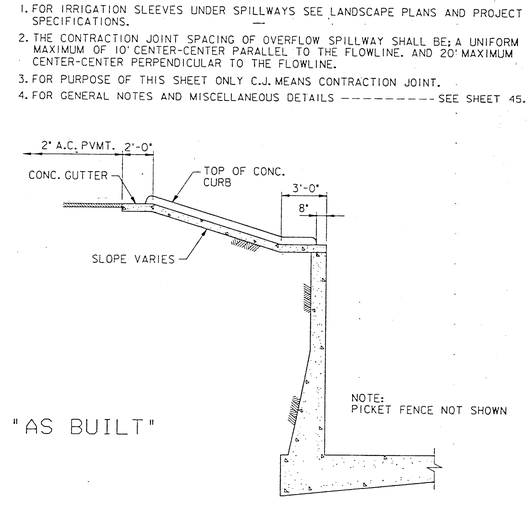
MAINTENANCE ROAD OVERFLOW SPILLWAY

N.T.S.



TYPICAL OVERFLOW SPILLWAY SECTION C-C

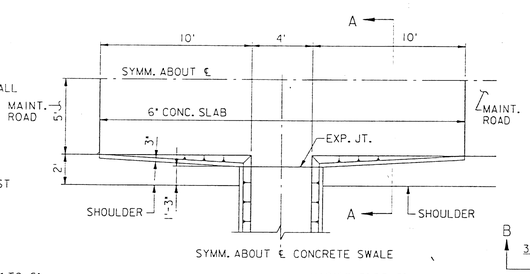
N.T.S.

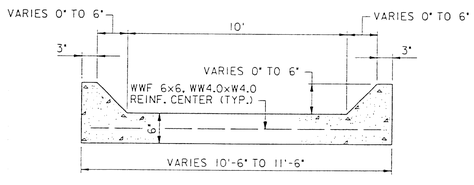


"AS BUILT"

MAINT. RD. OVERFLOW SPILLWAY SECTION H-H

N.T.S.

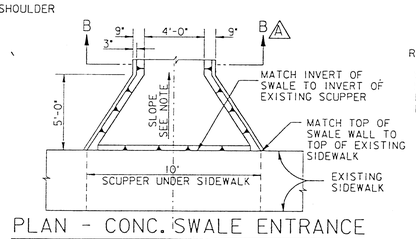




SECTION A-A

PLAN - THRU MAINT. ROAD

N.T.S.

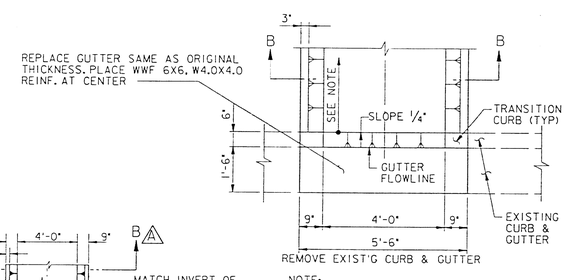


PLAN - CONC. SWALE ENTRANCE AT 20TH STREET SHT 26

N.T.S.

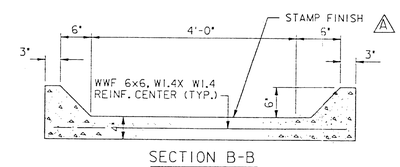
CONCRETE SWALE DETAILS

N.T.S.



NOTE:
SWALE PROFILE TO FOLLOW GROUND LINE AND ROAD SURFACE TO TOP OF CHANNEL WALL. MINIMUM SLOPE IS 3%

PLAN - CONC. SWALE ENTRANCE AT STATE STREET SHT 31



SECTION B-B

SCALE: 1/4 IN = 1 FT

DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
A	REVISED SPILLWAY, ADDED SPILLWAY, SWALE DETAIL, AND ADDED LABEL.	7/29/90	JS/GJD

REVISIONS

U.S. ARMY ENGINEER DISTRICT ST. LOUIS CORPS OF ENGINEERS	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS

DESIGNED BY: G. LEE
DRAWN BY: R. L. HOLT
CHECKED BY: G. LEE

GILA RIVER BASIN
PHOENIX, ARIZONA AND VICINITY (INCLUDING NEW RIVER)

ARIZONA CANAL DIVERSION CHANNEL
(CUDIA CITY WASH TO DREAMY DRAW, INCLUDING CUDIA CITY WASH SEDIMENT BASIN)

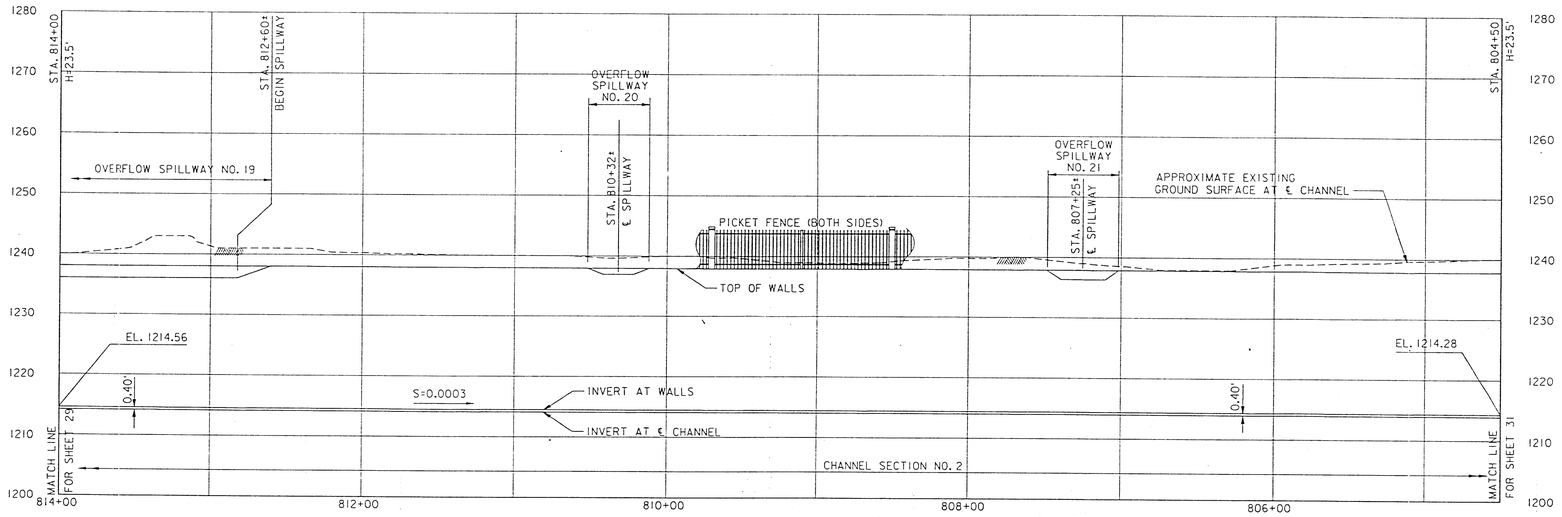
OVERFLOW SPILLWAY DETAILS

SUBMITTED BY:
BOBBY R. HUGHEY
CHIEF, DESIGN BRANCH
ST. LOUIS DISTRICT

SPEC. NO. DACW09-90-B-0029
DISTRICT FILE NO. 252/915 REV"A"

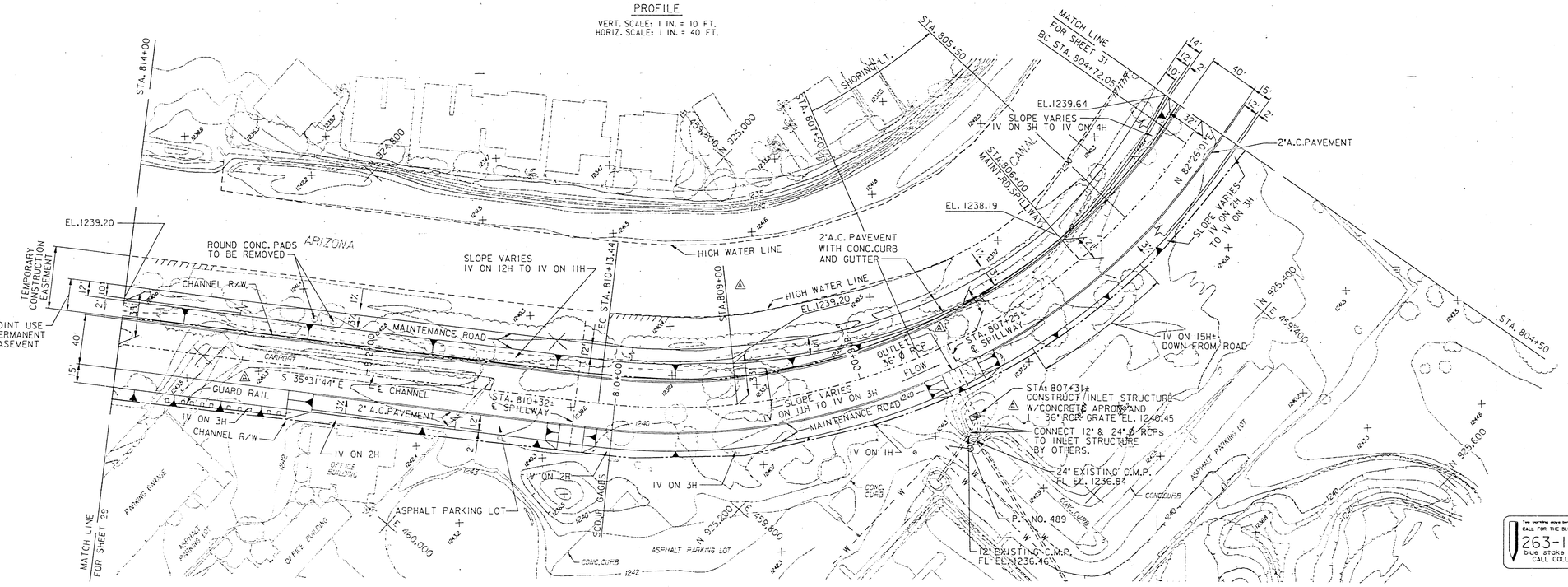
SHEET 76 OF 90 SHEETS

PLOT 4 ACDC76.DGN



PROFILE

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 40 FT.



PLAN

SCALE: 1 IN. = 40 FT.

CHANNEL ℄ CURVE DATA	
P.I. NO.	489
NORTHING	925,302.87
EASTING	459,639.59
Δ	62°02'20"
R	500'
T	300.66'
L	541.39'
B.C. STA.	804+72.05
E.C. STA.	810+13.44

GENERAL NOTE

SEE SHEET 14 FOR GENERAL NOTES.

NOTES:

1. FOR MAINTENANCE ROAD DETAILS — SEE SHEET 35.
2. FOR PICKET FENCE AND GATE DETAILS — SEE SHEET 83.
3. FOR STRUCTURAL DETAILS OF CHANNEL — SEE SHEETS 53 THRU 59.
4. FOR SIDE DRAIN DETAILS — SEE SHEETS 79 & 80.
5. FOR OVERFLOW AND MAINT. RD. SPILLWAY DETAILS — SEE SHEETS 76 & 77.
6. FOR SCOUR GAGE DETAILS — SEE SHEET 45.

"AS BUILT"

SCALE: 1 IN. = 10 FT.
10' 0 10' 20' 30'

SCALE: 1 IN. = 40 FT.
50' 0 50' 100'

THE NATIONAL ONE-CALL SYSTEM, INC. CALL FOR THE BLUE STAKES 263-1100 Blue Stake Center CALL COLLECT

DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
4	DELETED LABELS AND ADDED SIDE DRAIN.	5/1/94	CAUF

REVISIONS

U.S. ARMY ENGINEER DISTRICT ST. LOUIS CORPS OF ENGINEERS	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS

DESIGNED BY: M. E. HAMM
DRAWN BY: L. H. WHITT
CHECKED BY: M. E. HAMM

GILA RIVER BASIN
PHOENIX, ARIZONA AND VICINITY (INCLUDING NEW RIVER)

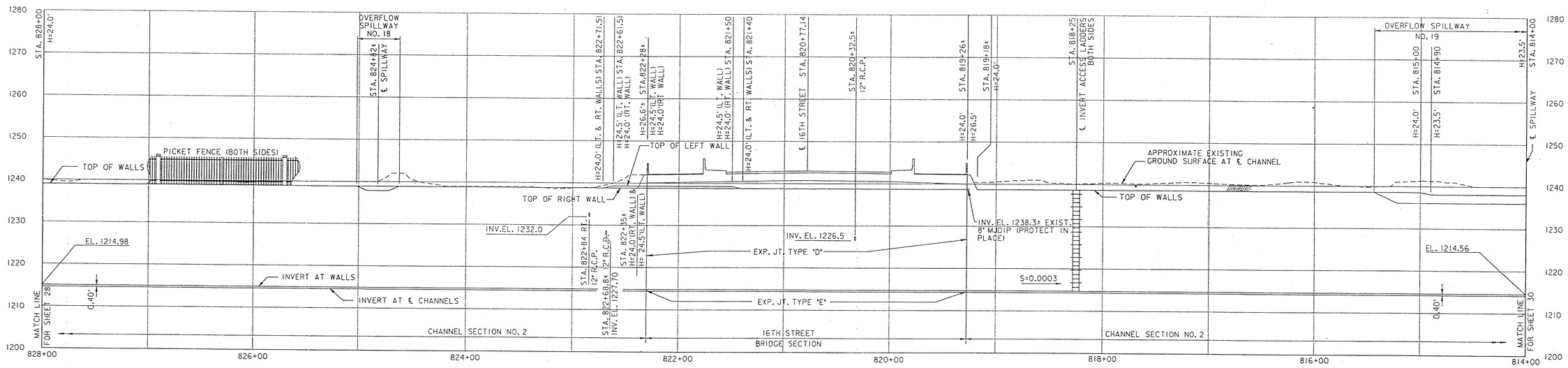
ARIZONA CANAL DIVERSION CHANNEL
(CUDIA CITY WASH TO DREAMY DRAW, INCLUDING CUDIA CITY WASH SEDIMENT BASIN)

DETAIL PLAN
STA. 814+00 TO STA. 804+50

SUBMITTED BY:
BOBBY R. HUGHEY
CHIEF, DESIGN BRANCH
ST. LOUIS DISTRICT

SPEC. NO. DACW09-90-B-0029
DISTRICT FILE NO. 252/869 REV. 'A'

SHEET 30 OF 90 SHEETS

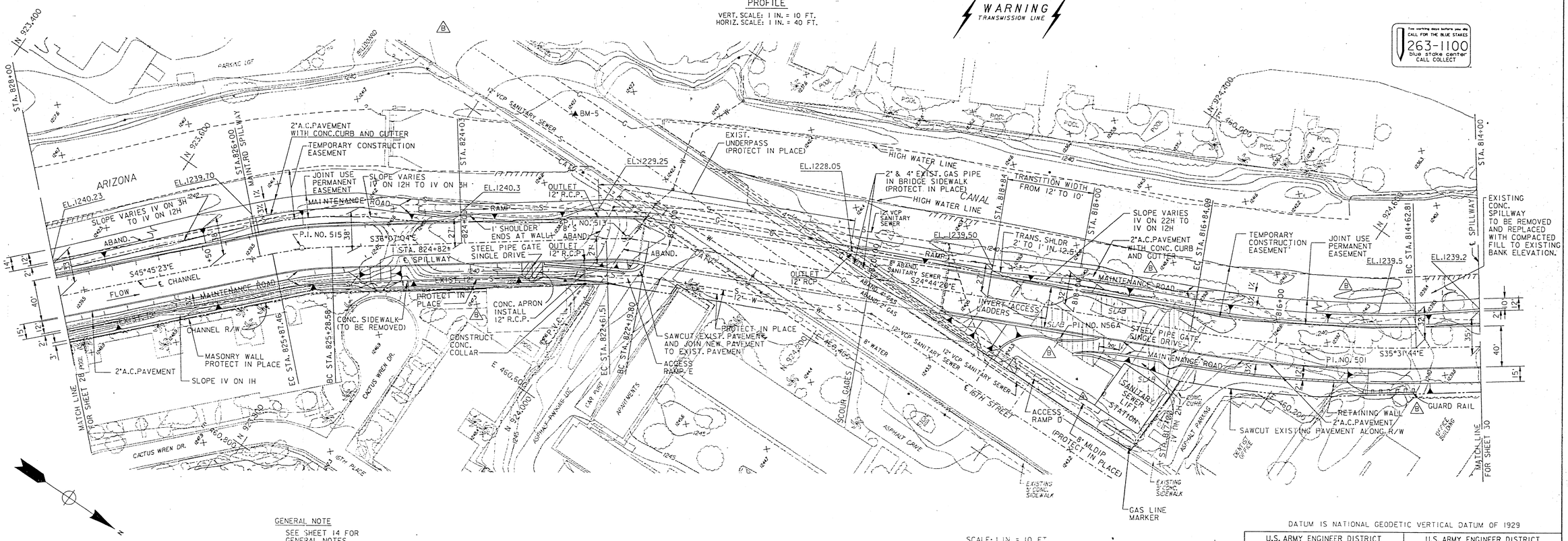


PROFILE

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 40 FT.

WARNING
TRANSMISSION LINE

For warning tape before you dig
CALL FOR THE BLUE STAKES
263-1100
blue stake center
CALL COLLECT



PLAN

SCALE: 1 IN. = 40 FT.

GENERAL NOTE

SEE SHEET 14 FOR GENERAL NOTES.

CHANNEL ℄ CURVE DATA				NORTH MAINT. RD. ℄ CURVE DATA
P.I. NO.	515	513	501	N56A
NORTHING	923,739.36	923,995.84	924,602.17	924,399.97
EASTING	460,606.46	460,419.31	460,139.93	460,266.13
Δ	9°38'19"	11°22'44"	10°47'24"	65°30'26"
R	350'	210'	1175'	60'
T	29.51'	20.92'	110.97'	38.60'
L	58.88'	41.71'	221.28'	68.60'
B.C. STA.	825+28.58	822+19.80	814+62.81	817+70.00
E.C. STA.	825+87.46	822+61.51	816+84.09	———

NOTES:

1. FOR MAINTENANCE ROAD AND GATE DETAILS — SEE SHEET 35.
2. FOR PICKET FENCE DETAILS — SEE SHEET 83.
3. FOR STRUCTURAL DETAILS OF CHANNEL — SEE SHEETS 53 THRU 59.
4. FOR MAINTENANCE ROAD ACCESS RAMP DETAILS — SEE SHEET 36.
5. FOR PIPE GATE DETAILS — SEE SHEET 84.
6. FOR SIDE DRAIN DETAILS — SEE SHEET 79.
7. FOR OVERFLOW AND MAINT. RD. SPILLWAY DETAILS — SEE SHEETS 76 & 77.
8. FOR SCOUR GAGE DETAILS — SEE SHEET 45.
9. FOR UNDERPASS RAMP DETAILS — SEE SHEET 73.
10. FOR INVERT ACCESS LADDER DETAILS — SEE SHEET 85.
11. FOR 16TH STREET BRIDGE PROFILE DETAILS — SEE SHEET 46.

SCALE: 1 IN. = 10 FT.
10' 0 10' 20' 30'

SCALE: 1 IN. = 40 FT.
50' 0 50' 100'

"AS BUILT"

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
B	REVISED LABELS & ACCESS RAMP D. AND ADDED GUARD RAIL	4/13/94	CWF
	CONC. APRON, AND RETAINING WALL	7/27/90	JSV G.J.D.
A	REVISED ACCESS RAMP 'D'		

REVISIONS

DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

U.S. ARMY ENGINEER DISTRICT ST. LOUIS CORPS OF ENGINEERS	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS

DESIGNED BY: M. E. HAMM
DRAWN BY: L. H. WHITT
CHECKED BY: M. E. HAMM

GILA RIVER BASIN
PHOENIX, ARIZONA AND VICINITY (INCLUDING NEW RIVER)

ARIZONA CANAL DIVERSION CHANNEL
(CUDIA CITY WASH TO DREAMY DRAW, INCLUDING CUDIA CITY WASH SEDIMENT BASIN)

DETAIL PLAN
STA. 828+00 TO STA. 814+00

SUBMITTED BY:
BOBBY R. HUGHEY
CHIEF, DESIGN BRANCH
ST. LOUIS DISTRICT

SPEC. NO. DACW09-90-B-0029
DISTRICT FILE NO. 252/868REV.'B'

SHEET 29 OF 90 SHEETS

EXHIBIT 8

US Army Corps of Engineers
Los Angeles District

Gila River Basin

Phoenix, Arizona, and Vicinity
(Including New River)

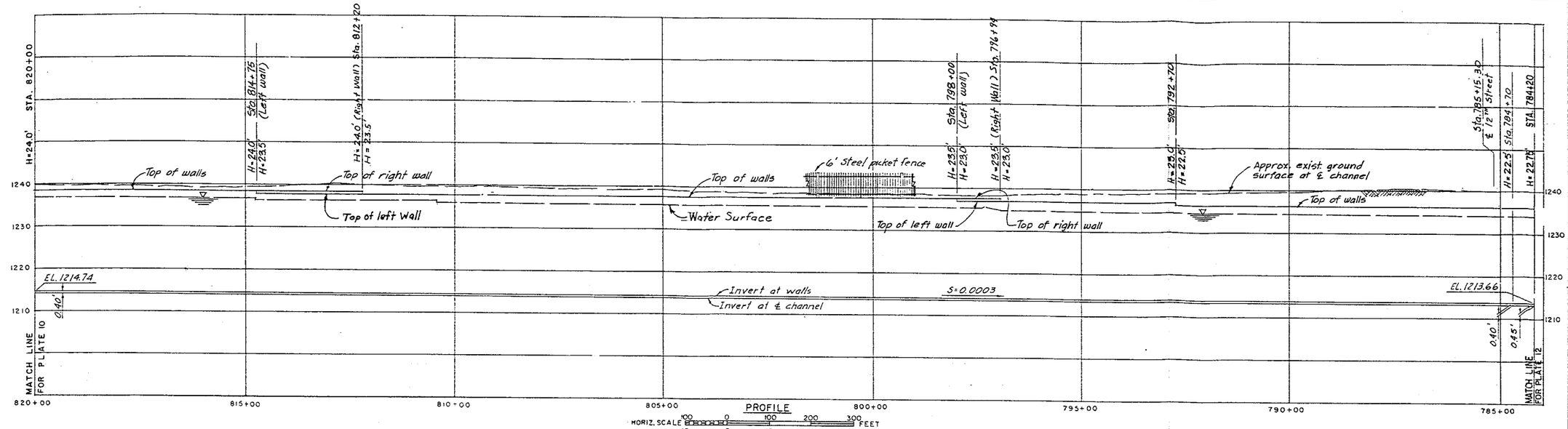
219

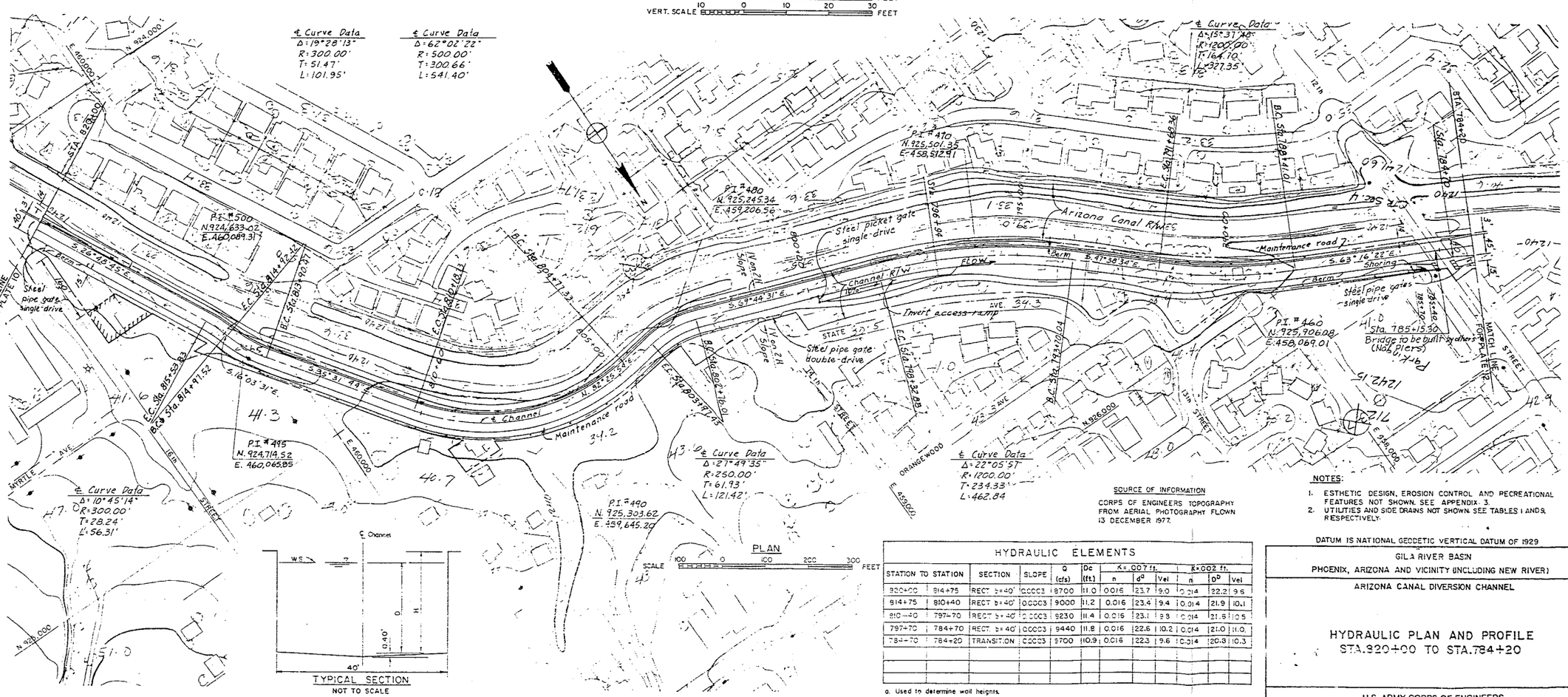
Arizona Canal Diversion Channel

40th Street to Cactus Road
(Including Cudia City Wash Sediment Basin, Cave Creek Sediment Basin, and Cave Creek Channel)

FINAL
April 1986

Design Memorandum No. 12
Feature Design for Arizona Canal Diversion Channel - 40th Street to Cactus Road





SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 13 DECEMBER 1977.

NOTES:

1. ESTHETIC DESIGN, EROSION CONTROL AND RECREATIONAL FEATURES NOT SHOWN. SEE APPENDIX 3.
2. UTILITIES AND SIDE DRAINS NOT SHOWN. SEE TABLES I AND 8, RESPECTIVELY.

HYDRAULIC ELEMENTS

STATION TO STATION		SECTION	SLOPE	Q (cfs)	Dc (ft.)	K=.007 ft. n	K=.007 ft. d[a]	K=.007 ft. Vel	K=.002 ft. n	K=.002 ft. d[b]	K=.002 ft. Vel
820+00	814+75	RECT b=40'	0.0003	8700	11.0	0.016	23.7	9.0	0.014	22.2	9.6
814+75	810+40	RECT b=40'	0.0003	9000	11.2	0.016	23.4	9.4	0.014	21.9	10.1
810+40	797+70	RECT b=40'	0.0003	9230	11.4	0.016	23.1	9.8	0.014	21.6	10.5
797+70	784+70	RECT b=40'	0.0003	9440	11.8	0.016	22.6	10.2	0.014	21.0	11.0
784+70	784+20	TRANSITION	0.0003	9700	10.9	0.016	22.3	9.6	0.014	20.8	10.3

a. Used to determine wall heights.

b. Used to compute plotted water surface profile.

DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

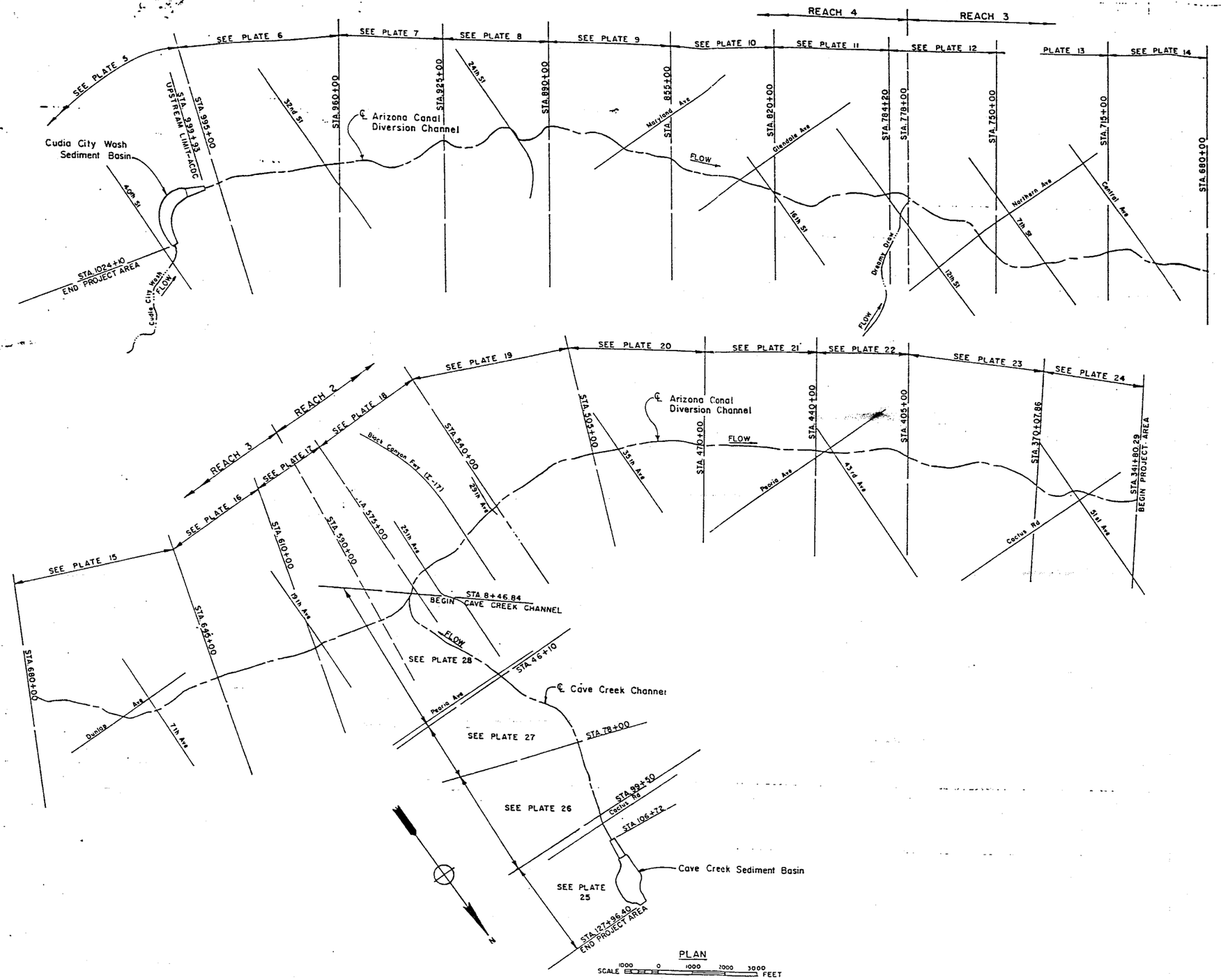
GILA RIVER BASIN

PHOENIX, ARIZONA AND VICINITY (INCLUDING NEW RIVER)

ARIZONA CANAL DIVERSION CHANNEL

HYDRAULIC PLAN AND PROFILE
STA. 820+00 TO STA. 784+20

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT



DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

GILA RIVER BASIN
PHOENIX, ARIZONA AND VICINITY (INCLUDING NEW RIVER)

ARIZONA CANAL DIVERSION CHANNEL

PROJECT
KEY MAP OF HYDRAULIC PLAN AND PROFILE
STA. 1024+10 TO STA. 341+80.29

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

SAFETY PAYS

EXHIBIT 9

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2711
LOS ANGELES, CALIFORNIA 90053-2325

FLOOD CONTROL DISTRICT
RECEIVED
SEP 26 1994

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

REMARKS

REPLY TO
ATTENTION OF:

September 19, 1994

Office of the Chief
Design Branch

Mr. Donald J. Rerick
Project Manager
Flood Control District of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

Note:
19 Sheets NOT 1.
Full Size set.

Dear Mr. Rerick:

We have completed As-Built drawings for the flood control channel, appendix 'A' (Geotechnical reference drawings), and appendix B (Landscape drawings) of Reach 4 entitled "Arizona Canal Diversion Channel (Cudia City Wash to Dreamy Draw including Cudia City Wash Sediment Basin)." We have also revised 10 As-Built drawings of Reach 3 (Arizona Canal Diversion Channel from Dreamy Draw to Cave Creek), and 19 As-Built drawings of Reach 2C (Arizona Canal Diversion Channel from Cave Creek to 29th Avenue). Please replace above drawings of Reach 3 and 2C with the drawings previously sent to you.

As per our requirements, we are sending you one set of full size drawings, one set of half-size reproducibles, and one set of half size prints for the above reaches of the Arizona Canal Diversion Channel.

If you have any questions, please call Mr. Desai (213/894-3702) of my staff.

Sincerely,

Robert E. Koplin, PE
Chief, Engineering Division

EXHIBIT 10

SOKKIA™

MADE IN U.S.A.

SOKKIA™

ECONOMY FIELD BOOK

MARI 0018

Book 1

David Evans & Assoc.

No. 8152-05

FORMULAE FOR RIGHT-ANGLED TRIANGLES

$\sin A = \frac{a}{c} = \cos B$ $\quad \cot A = \frac{b}{a} = \tan B$

$\cos A = \frac{b}{c} = \sin B$ $\quad \sec A = \frac{c}{b} = \operatorname{cosec} B$

$\tan A = \frac{a}{b} = \cot B$ $\quad \operatorname{cosec} A = \frac{c}{a} = \sec B$

Given	Required	Solution
A, c	B, a, b	$B = 90° - A,\ a = c \sin A,\ b = c \cos A$
A, b	B, a, c	$B = 90° - A,\ a = b \tan A,\ c = \frac{b}{\cos A}$
A, a	B, b, c	$B = 90° - A,\ b = a \cot A,\ c = \frac{a}{\sin A}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B,\ b = \sqrt{(c+a)(c-a)}$
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B,\ c = \sqrt{a^2 + b^2}$

FORMULAE FOR SOLVING OBLIQUE TRIANGLES

Given	Required	Solution
A, a, b	B, c	$\sin B = \frac{b \sin A}{a},\ c = \frac{a \sin C}{\sin A}$
A, B, a	C, b, c	$C = 180° - (A + B),\ b = \frac{a \sin B}{\sin A},\ c = \frac{a \sin C}{\sin A}$
A, b, C	B, c	$B + C = 180° - C,\ c = \frac{a \sin C}{\sin A}$
a, b, c	Area	$s = \frac{a+b+c}{2}$, area $= \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area $= \frac{bc \sin A}{2}$
A, B, C, a	Area	area $= \frac{a^2 \sin B \sin C}{2 \sin A}$

MADE IN U.S.A.

6.38 N 6.95 1255.55

1243.436 1254.5

1242.86

1242.867

F. RADKE
K. RADKE
10-6-96

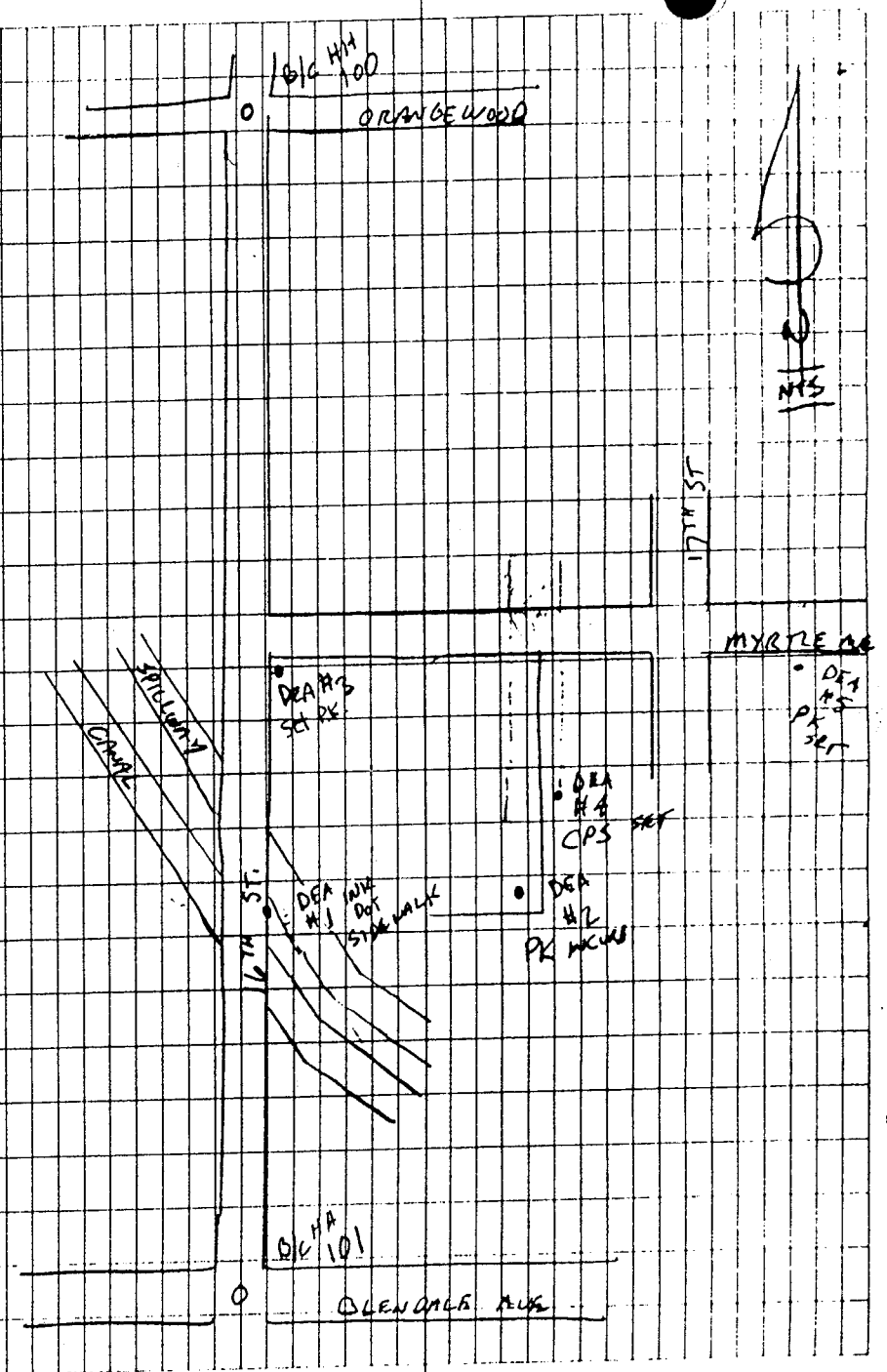
TOPO OF FLOOD PLAIN

1-1

USING BENCH MODE ON TDS
WAS ABLE TO DETERMINE
ELEV OF #1 AS 1242.86.3

ELEV OF PT 101 = 1229.69

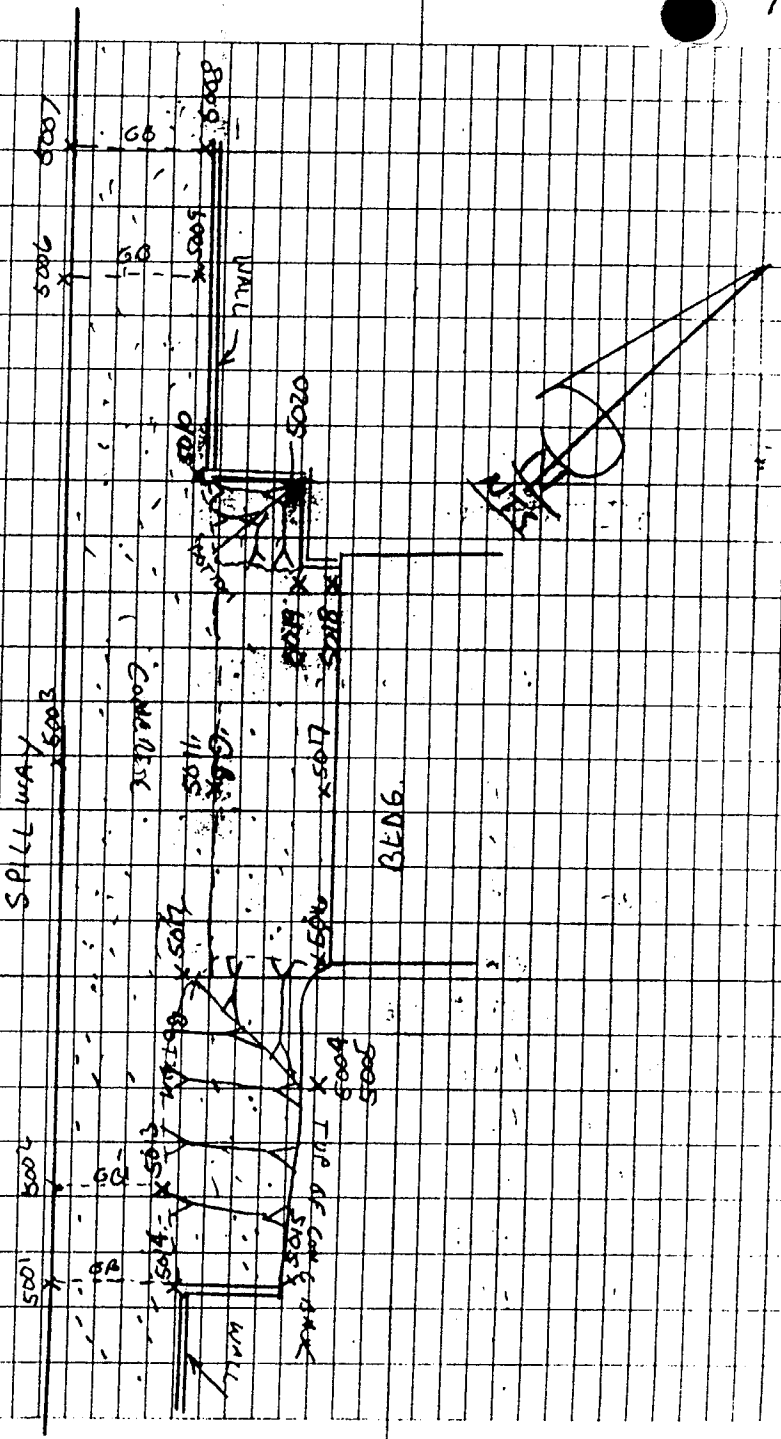
ELEV OF PT 100 = 1254.58
NOT 1255.13 AS THAT IS
GROUND ELEVATION NOT B/C HH
ELEVATION & HH IS .55 DEEP
WHEN YOU TAKE THAT OFF
PT 100 AND 101 WORK WITHIN
THOUSANDTHS



1-5

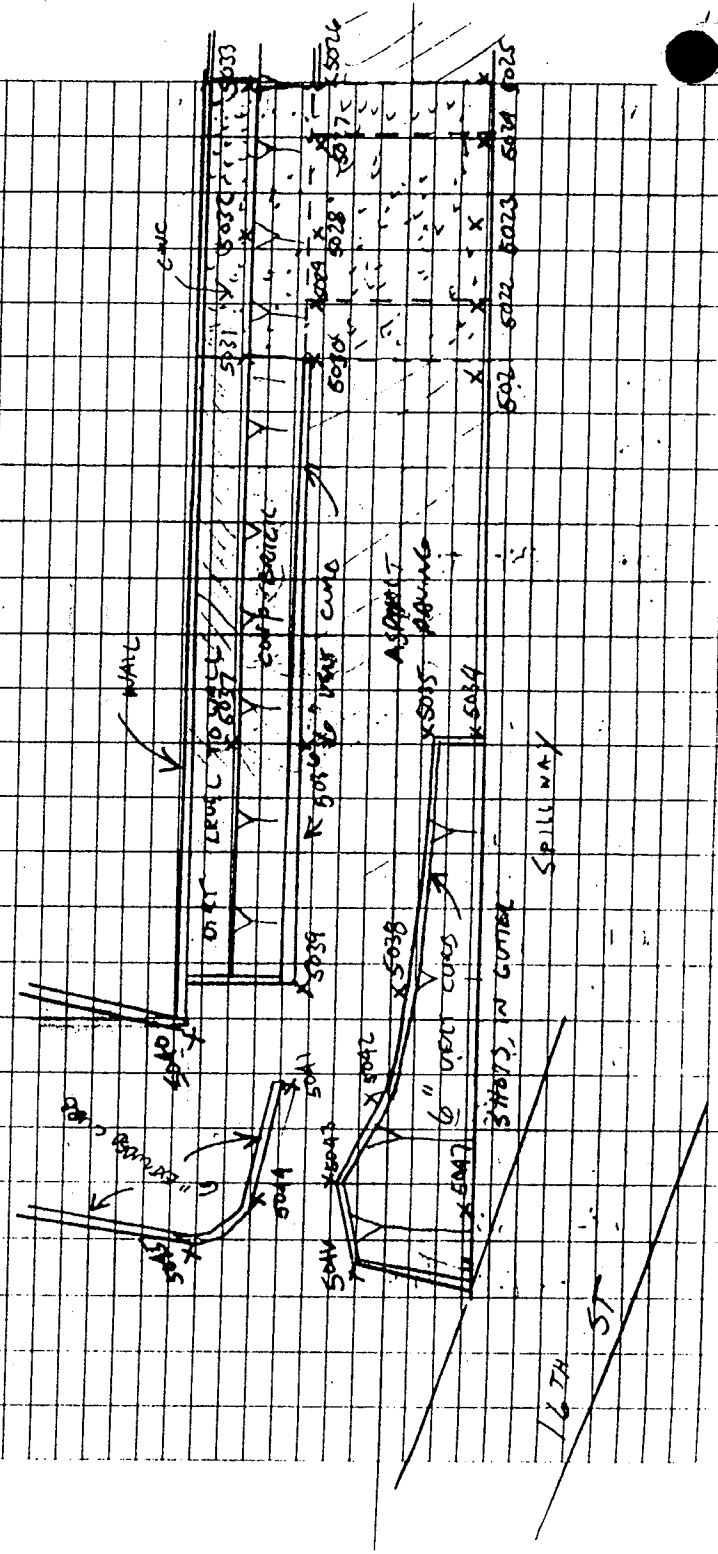
B/S 100

PT. #	CODE	DESC.	HR
5000	252	BACK ✓	4.835
5001	161	Conc. Flat.	"
5005	161	CHK. SHT. SAME AS: 5004	12.835
5006	161	CONC. FLAT	12,835
5021	161	CONC. Flat	"
5034	302	Gutter	"
5037	161	CONC. Flat	"
5038	302	Gutter	"
5040	306	N/G @ WALL	"
5041	302	Gutter	"
5047	161	CONC. Flat	"
5048	187	Ground	"
5049	302	Gut.	"
5050	251	AC.	"
5051	161	CON. Flat	"
5053	302	Gut.	"
5058	306	N/G @ WALL	"
5059	187	Ground	"
5060	302	Gut	"
5061	251	A/C	"
5062	161	CON. FLAT	"
5064	251	A/C	"



A@ 1	BS	100	
PT. #	CODE	DESC.	HR
5065	302	Gut	12.835
5066	187	GROUND	"
~~5067~~	~~252~~	~~BACK ✓ to~~	~~100~~
5067	247		"
5068	247		4.835
~~5068~~	~~252~~	~~BACK ✓ to~~	~~100~~

A@ 2	BS	1 FS	
PT#	CODE	DESC.	HR
5069	252	BACK ✓ TO 1	5.77
5070	306	M/G @ WALL	"
5072	187	GROUND	"
5073	302	Gut	"
5074	161	Cork Flat	"
5075	302	Gut	"
5077	301	B/C T/C	"
5078	187	GROUND	"
5079	306	M/G @ WALL	"
5081	187	GROUND	"
5082	301	B/C T/C	"



TC B/S 1

PT. #	CODE	DESC	HA
5083	302	Gutter	5.77
5084	251	A/C	"
5085	302	Gutter	"
5086	161	Conc. Flat	"
5089	251	A/C	"
5091	302	Gutter	"
5092	301	B/C T/C	"
5093	187	Ground	"
5094	306	M/G @ WALL	"
5095	204	1/2 B/B END	"
5096	230	Top of Bank	"
5097	229	TOE	"
5098	187	GROUND	"
5099	301	B/C T/C	"
5100	302	Gut	"
5101	251	A/C	"
5103	161	CONC.	"
5104	251	A/C	"
5106	302	Gut	"
5107	301	B/C T/C	"
5108	229	TOE	"
5109	230	TOP SLOPE	"
5110	252	BACK ✓	"

F. RADTKE
K. RADTKE
10-7-96

TOPO CONTINUED

T @ 4 BS 2 FS

PT #	CODE	DESC.		H.R.
5111	252	BACK	✓	4.835
5112	161	Conc.	Flat	"
5113	251	A/C		"
5115	302	GUT		"
5116	301	BK T/C		"
5117	229	TOE of	Slope	"
5118	230	Top of	Slope	"
5120	229	TOE		"
5122	230	TOP of	Slope	"
5129	161	Conc	Flat	"
5133	161	CONC FLAT	BASE 5' WALL	"
5135	161	CONC. FLAT	BASE 6', 2' WALL STEP	"
5136	161	Conc Flat	BASE of 2' TO 1½' WALL STEP	"
5137	161	Conc	Flat	"
5138	161	CONC. FLAT	BASE 1½' WALL	"
5139	161	Conc	Flat	"
5140	161	Conc.	Flat BASE 1½' WALL	"
5141	251	A/C		"
5142	197	GROUND		"
5144	237	WALK	CONC.	"
5145	301	B/K T/C		"
5146	302	Gutter		"
5147	251	A/C		"

B 4 BS 2

PT. #	CODE	DESC	HR
5148	302	Gutter	4.835
5149	301	B/C T/C	"
5150	237	WALK CONC	"
5151	187	Ground	"
5153	301	BK T/C	"
5154	251	A/C	"
5155	302	Gutter	"
5156	301	B/C T/C	"
5157	237	WALK CONC	"
5158	187	Ground	"
5159	252	BACK ✓	"

T @ 5 BS 4 FS

Pt#	CODE	DESC.	HR
5160	252	BACK ✓	4.835
5161	161	CONC. FIAT	
5171	230	Top Slope	
5172	229	TOE Slope	
5174	230	TOP Slope	
5177	229	TOE Slope	
5181	230	TOP Slope	
5182	161	Conc. Flat	
5186	161	CONC FIAT	BASE OF 2 INCH WALL
5187	161	CONC FIAT	BASE OF 1 1/2' WALL

100 5 B/S 4

PT.#	CODE	DESC		HR
5188	161	CONC FIAT	BASE 1½' WALL	4.835
5192	161	CONC FIAT	BASE 2INCH WALL	
5193	161	CONC FIAT		
5195	161	CONC FIAT	BASE 6" VERT CURB	
5201	187	GROUND		
5202	301	B/C T/C		
5203	302	Gutter		
5204	251	A/C		
5206	230	TOP SLOPE		
5207	229	TOE SLOPE		
5208	230	TOP SLOPE		
5209	187	GROUND		
5211	230	TOP SLOPE		
5212	229	TOE SLOPE		
5213	230	TOP SLOPE		
5214	251	A/C		
5216	301	B/C T/C	FLAT CURB	
5217	187	GROUND		
5219	301	B/C T/C	FLAT CURB	
5220	251	A/C		
5222	230	TOP SLOPE		
5223	229	TOE SLOPE		
5224	230	TOP SLOPE		

T@ 5 B/S4

PT #	CODE	DESC	HR
5225	187	GROUND	4.835
5226	230	TOP SLOPE	
5227	229	TOE SLOPE	
5228	301	B/C T/C FLAT CURB	
5233	187	GROUND	
5239	230	TOP SLOPE	
5243	301	B/C T/C 6" VERT CURB	
5256	187	GROUND	
5257	302	Gutter	
5267	251	A/C	
5277	230	TOP SLOPE	
5284	229	TOE SLOPE	
5288	230	TOP SLOPE	
5289	191	INV. 12" PIPE	
5290	301	B/C T/C	
5291	302	Gutter	
5292	251	A/C	
5293	302	Gutter	
5294	301	B/C T/C	
5295	187	GROUND	
5296	252	BACK ✓	

TO 6 B/S 5

PT. #	CODE	DESC	HR
7	252	SAME AS #3	4.835

TO 6 B/S 5

PT. #	CODE	DESC.	HR
5297	252	BACK	4.835
5298	187	GROUND	
5305	161	Conc. Flat	
5307	161	Conc Flat (SAME POINT)	12.835
5310	302	Gutter	
5311	301	B/C T/C	
5313	302	Gutter	
5315	301	B/C T/C	
5316	161	Conc. Flat	
5318	302	Gutter	
5319	301	B/C T/C	
5320	302	Gutter	
5321	301	B/C T/C	
5322	302	Gutter	
5323	301	B/C T/C	

6 B/S5

PT.#	CODE	DESC	HR
5324	251	A/C	12.835
5325	302	Gutter	
5326	301	B/C T/C	
5327	187	GROUND	
5329	301	B/C T/C	
5330	302	Gutter	
5331	251	A/C	
5332	302	Gutter	
5333	301	B/C T/C	
5334	230	TOP SLOPE	
5335	229	TOE SLOPE	
5337	252	BACK ✓	4835

BATTERY'S DEAD

1-12

F RADTKE
K RADTKE
R

CONTINUE TOPO

T @ 6 BS 3 FS

PT#	CODE	DESCRIP	HR
5338	252	BACK ✓	4.835
5339	230	DP SLOPE	
5340	229	Toe slope	
5342	230	Top slope	
5343	301	B/C T/C	
5344	302	Gutter	
5345	251	A/C	
5346	302	Gutter	
5347	301	B/C T/C	
5348	187	Ground	
5350	301	B/C T/C	
5351	302	Gutter	
6	251	A/C	
5352	302	Gutter	
5353	301	B/C T/C	
5354	230	Top Slope	
5355	229	Toe Slope	
5357	230	Top Slope	
5359	229	Toe Slope	
5361	230	Top slope	
5362	301	B/C @ T/C	
5363	302	Gutter	
5364	251	A/C	
5365	302	Gutter	

@ 6 BS 3 FS

PTH	CODE	DESC	HR
5366	301	B/C @ T/C	4.835
5367	187	Ground	
5368	251	A/C	
5370	187	Ground	
5371	301	B/C @ T/C	
5372	302	Gutter	
5373	251	A/C	
5374	302	Gutter	
5375	301	B/C @ T/C	
5376	301.	B/C T/C SAME AS 5375	12.835
5377	230	Top slope	
5378	229	Toe slope	
5380	252	BACK ✓	

T @ 3 BS 6 FS

PTH	CODE	DESC.	HR
5381	252	BACK ✓	4.835
5382	230	TOP SLOPE	
5387	301	B/C @ T/C	
5388	302	Gutter	
5393	251.	A/C	
5397	161	Conc Flat	
5399	301	B/C @ T/C	

	13	26	15
OTT	CODE	DESC	HR
5404	302	Gutter	4.83S
5408	251	A/C	
5410	161	conc Flat	
5412	251	A/C	
5414	25L	Back ✓	

DREAMY DRAW WASH EAST

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statistics:

Starting point number: 1

Current point number: 8 ('L' indicates locked point)

Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
1	924005.1094	460385.2883	1242.86	DEA CONTROL MON
2	924030.0261	460665.3043	1245.41	DEA CONTROL MON
3	924655.4251	460382.1280	1242.38	DEA CONTROL MON
4	924351.2570	460700.3259	1251.27	DEA CONTROL MON
5	924647.7895	461153.7010	1255.63	DEA CONTROL MON
6	924682.3972	460610.9071	1247.08	DEA CONTROL MON
7	924655.4132	460382.1419	1242.35	CHECK SHOT
100	925965.0976	460341.3388	1254.58	FD BC
101	923334.4000	460353.7900	1229.69	FD BC
5000	925965.1239	460341.3382	1254.54	CHECK SHOT
5001	924643.5052	460129.8427	1238.53	CONC FLATWORK
5002	924664.7865	460116.2753	1236.06	CONC FLATWORK
5003	924745.5126	460059.9769	1235.95	CONC FLATWORK
5004	924699.2729	460124.6790	1244.58	CONC FLATWORK
5005	924699.2801	460124.6762	1244.57	CONC FLATWORK
6	924865.0479	459975.1474	1235.98	CONC FLATWORK
5007	924883.0468	459961.7671	1238.00	CONC FLATWORK
5008	924888.9145	459972.7229	1238.12	CONC FLATWORK
5009	924872.7042	459984.4778	1236.40	CONC FLATWORK
5010	924805.9709	460032.1016	1236.42	CONC FLATWORK
5011	924747.7122	460075.1863	1236.41	CONC FLATWORK
5012	924707.2397	460104.9719	1236.53	CONC FLATWORK
5013	924673.0953	460127.6665	1236.40	CONC FLATWORK
5014	924651.4640	460139.6737	1238.86	CONC FLATWORK
5015	924660.1805	460152.9173	1245.58	CONC FLATWORK
5016	924715.4038	460116.1883	1239.30	CONC FLATWORK
5017	924755.8734	460088.2487	1239.33	CONC FLATWORK
5018	924795.3068	460059.8999	1239.32	CONC FLATWORK
5019	924794.8692	460056.1279	1238.65	CONC FLATWORK
5020	924805.7186	460048.2663	1240.27	CONC FLATWORK
5021	923828.1873	460565.6232	1238.81	CONC FLATWORK
5022	923819.8131	460572.6958	1237.92	CONC FLATWORK
5023	923811.4856	460578.7551	1237.86	CONC FLATWORK
5024	923803.1687	460584.8276	1237.91	CONC FLATWORK
5025	923794.9778	460589.7203	1238.84	CONC FLATWORK
5026	923801.7815	460601.1665	1239.24	CONC FLATWORK
5027	923811.1442	460594.8075	1238.39	CONC FLATWORK
5028	923818.6331	460589.5126	1238.29	CONC FLATWORK
5029	923828.2533	460582.6715	1238.36	CONC FLATWORK
5030	923836.9171	460576.1701	1239.24	CONC FLATWORK
31	923841.9840	460583.4929	1245.96	CONC FLATWORK
2	923823.5501	460596.3649	1244.90	CONC FLATWORK
5033	923807.4743	460608.5636	1246.03	CONC FLATWORK
5034	923937.6360	460485.2531	1238.80	GUTTER
5035	923939.2582	460487.7235	1238.84	GUTTER

REGISTERED LAND SURVEYOR
28742
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SITTERLEY
5/9/97
Date Signed
ARIZONA U.S.A.

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5036	923946.9790	460496.4163	1239.27	GUTTER
5037	923951.2363	460503.3887	1245.52	CONC FLATWORK
5038	923985.5758	460461.2679	1241.47	GUTTER
5039	923989.4086	460472.0170	1241.36	GUTTER
5040	923993.8595	460475.8986	1244.40	GRADE @ WALL
5041	924001.4748	460465.2711	1241.83	GUTTER

DREAMY DRAW WASH EAST

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Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5042	923998.4363	460454.8398	1241.87	GUTTER
5043	924011.1209	460448.2435	1242.22	GUTTER
5044	924019.9764	460462.6179	1242.52	GUTTER
5045	924024.3727	460467.0692	1242.69	GUTTER
5046	924024.0406	460431.4956	1242.59	GUTTER
5047	924005.0472	460436.9011	1238.78	CONC FLATWORK
5048	924013.8777	460473.6635	1242.50	GROUND SHOT
5049	924024.7338	460473.2700	1242.69	GUTTER
5050	924064.8740	460479.0104	1243.72	AC
5051	924068.4808	460472.4908	1244.03	CONC FLATWORK
5052	924068.1657	460430.3673	1243.99	CONC FLATWORK
5053	924063.9399	460427.0445	1243.38	GUTTER
5054	924058.8848	460427.1084	1243.15	GUTTER
5055	924055.1848	460422.6548	1242.80	GUTTER
5056	924057.7338	460396.2713	1243.14	GUTTER
5057	924023.3082	460391.1239	1242.97	GUTTER
5058	923994.5748	460516.6537	1245.10	GRADE @ WALL
5059	924017.2706	460516.9564	1242.60	GROUND SHOT
5060	924025.3194	460518.1133	1242.90	GUTTER
5061	924065.1340	460515.6176	1243.82	AC
5062	924069.1961	460515.6774	1244.17	CONC FLATWORK
5063	924070.2631	460584.3604	1244.27	CONC FLATWORK
5064	924066.5513	460584.3475	1244.27	AC
5065	924026.3510	460584.1849	1243.56	GUTTER
5066	924015.9401	460585.1568	1242.70	GROUND SHOT
5067	925857.3401	460309.0837	1253.74	SEE NOTES
5068	925857.2625	460309.0869	1253.76	SEE NOTES
5069	924005.1108	460385.3048	1242.89	CHECK SHOT
5070	923995.6289	460583.8945	1246.70	GRADE @ WALL
5071	923996.1943	460627.3854	1246.90	GRADE @ WALL
5072	924020.2052	460626.3728	1243.90	GROUND SHOT
5073	924026.8302	460626.2585	1243.89	GUTTER
5074	924054.2453	460626.5406	1246.18	CONC FLATWORK
5075	924050.2836	460630.3360	1245.61	GUTTER
5076	924027.3311	460656.0082	1244.38	GUTTER
5077	924026.7542	460656.1739	1244.66	T/C@B/C
5078	924022.4521	460660.4342	1244.30	GROUND SHOT
5079	923996.9226	460682.0564	1247.10	GRADE @ WALL
5080	924055.3463	460681.1881	1245.00	GRADE @ WALL
5081	924055.7562	460676.7503	1244.70	GROUND SHOT
5082	924055.9018	460675.0711	1245.83	T/C@B/C
5083	924056.1548	460674.5133	1244.82	GUTTER
5084	924055.4133	460666.8939	1244.49	AC
5085	924057.5587	460645.6661	1245.11	GUTTER
5086	924057.7101	460630.5288	1245.74	GUTTER
5087	924057.6195	460626.6651	1246.20	CONC FLATWORK
5088	924153.0821	460626.1847	1246.35	CONC FLATWORK
5089	924153.1023	460630.0439	1245.97	AC
5090	924153.4086	460665.3308	1245.21	AC
5091	924153.9020	460673.1571	1245.46	GUTTER

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5092	924154.1475	460673.7898	1246.47	T/CMB/C
5093	924154.2853	460676.4282	1245.30	GROUND SHOT
5094	924153.8995	460679.9890	1245.60	GRADE @ WALL
5095	924154.3181	460675.2441	1245.55	FD 1/2" REBAR
[illegible]96	924247.9363	460690.7895	1250.90	TOP

DREAMY DRAW WASH EAST

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Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5097	924248.5780	460683.3869	1246.10	TOE
5098	924248.6588	460678.3373	1245.90	GROUND SHOT
5099	924248.5754	460673.9496	1247.12	T/CØB/C
5100	924248.7019	460673.3092	1246.13	GUTTER
5101	924248.0186	460664.6746	1245.97	AC
5102	924247.2829	460619.5907	1246.61	AC
5103	924244.2794	460615.7844	1246.84	CONC FLATWORK
5104	924355.0714	460641.1353	1248.05	AC
5105	924354.8378	460663.5488	1246.76	AC
5106	924354.4051	460671.6950	1246.83	GUTTER
5107	924354.5444	460672.4486	1247.84	T/CØB/C
5108	924354.2823	460678.3469	1247.00	TOE
5109	924355.9020	460689.1592	1250.40	TOP
5110	924005.1014	460385.3056	1242.89	CHECK SHOT
5111	924030.0094	460665.3027	1245.42	CHECK SHOT
5112	924470.3318	460614.5000	1248.34	CONC FLATWORK
5113	924470.2732	460618.3238	1247.97	AC
5114	924470.1084	460660.6286	1247.24	AC
5115	924470.1752	460669.1114	1247.31	GUTTER
[illegible]16	924470.4570	460669.8173	1248.33	T/CØB/C
[illegible]7	924470.4845	460670.3076	1247.40	TOE
5118	924470.1558	460676.4055	1250.60	TOP
5119	924459.1744	460689.8606	1250.90	TOP
5120	924454.8546	460691.8500	1249.40	TOE
5121	924436.5589	460697.3951	1249.20	TOE
5122	924429.9749	460701.2986	1251.10	TOP
5123	924444.2310	460762.4682	1252.40	TOP
5124	924453.2901	460817.2022	1252.90	TOP
5125	924453.6404	460891.8684	1254.30	TOP
5126	924485.9185	460954.0060	1253.60	TOP
5127	924509.8344	460936.9283	1251.32	CONC FLATWORK
5128	924518.0378	460932.1192	1251.37	CONC FLATWORK
5129	924492.5308	460896.6463	1251.06	CONC FLATWORK
5130	924484.5950	460902.3358	1251.02	CONC FLATWORK
5131	924477.7177	460905.3372	1250.98	CONC FLATWORK
5132	924471.1474	460886.7607	1250.87	CONC FLATWORK
5133	924490.7074	460885.4335	1250.88	CONC FLATWORK
5134	924469.7691	460799.0947	1249.87	CONC FLATWORK
5135	924489.5114	460805.7057	1249.94	CONC FLATWORK
5136	924489.5323	460795.8908	1249.88	CONC FLATWORK
5137	924458.9654	460760.7133	1249.46	CONC FLATWORK
5138	924477.7821	460754.7511	1249.43	CONC FLATWORK
5139	924446.6269	460716.3136	1249.01	CONC FLATWORK
5140	924466.4958	460714.2737	1249.05	CONC FLATWORK
5141	924485.2085	460726.1023	1250.37	AC
[illegible]	924491.0541	460797.3867	1251.30	GROUND SHOT
[illegible]	924395.7587	460962.7547	1253.70	GROUND SHOT
5144	924394.3981	460975.5610	1253.66	WALL CONC.
5145	924395.0133	460979.5036	1253.62	T/CØB/C
5146	924395.2179	460980.0406	1253.14	GUTTER

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5147	924394.6942	460997.9289	1253.60	AC
5148	924395.0787	461013.3716	1253.22	GUTTER
5149	924395.2782	461014.7964	1253.55	T/CaB/C
5150	924395.6691	461018.5381	1253.59	WALL CONC.
5151	924396.2581	461026.5527	1255.10	GROUND SHOT

DREAMY DRAW WASH EAST

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Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5152	924485.5622	461022.1580	1254.50	GROUND SHOT
5153	924485.2131	461013.4726	1253.90	T/CØB/C
5154	924482.7707	460995.9583	1253.89	AC
5155	924475.4238	460979.0901	1253.44	GUTTER
5156	924475.0663	460978.4479	1253.88	T/CØB/C
5157	924476.6948	460974.5305	1253.99	WALL CONC.
5158	924473.2463	460965.6504	1253.80	GROUND SHOT
5160	924351.2626	460700.3279	1251.29	CHECK SHOT
5161	924559.7788	461013.0247	1253.43	CONC FLATWORK
5162	924586.4250	461012.9715	1253.43	CONC FLATWORK
5163	924568.0325	460972.4006	1253.09	CONC FLATWORK
5164	924598.5320	460972.9514	1253.99	CONC FLATWORK
5165	924598.2465	460957.9739	1253.79	CONC FLATWORK
5166	924555.7390	460958.6245	1253.99	CONC FLATWORK
5167	924537.0787	460959.6883	1251.83	CONC FLATWORK
5168	924531.8463	460967.0888	1251.83	CONC FLATWORK
5169	924536.0000	460973.9794	1253.91	CONC FLATWORK
5170	924542.1509	460975.1734	1253.15	CONC FLATWORK
5171	924560.0576	461021.8478	1255.20	TOP
[illegible]72	924565.0211	461020.2564	1253.00	TOE
[illegible]3	924580.2186	461017.9430	1253.40	TOE
5174	924589.2231	461019.0872	1255.10	TOP
5175	924595.7340	461031.1844	1255.70	TOP
5176	924625.7372	461030.0128	1256.10	TOP
5177	924627.5229	461037.9766	1254.80	TOE
5178	924598.1026	461039.4826	1254.30	TOE
5179	924588.9038	461035.6843	1253.90	TOE
5180	924578.0792	461044.8483	1253.90	TOE
5181	924575.8106	461047.7465	1255.40	TOP
5182	924637.1472	461033.4717	1255.04	CONC FLATWORK
5183	924630.2078	461037.4756	1254.94	CONC FLATWORK
5184	924622.8198	461039.1460	1254.75	CONC FLATWORK
5185	924595.4003	461039.6513	1254.23	CONC FLATWORK
5186	924579.5818	461047.2532	1254.16	CONC FLATWORK
5187	924580.3903	461049.6928	1254.24	CONC FLATWORK
5188	924595.2594	461095.9638	1254.77	CONC FLATWORK
5189	924616.7776	461163.6034	1255.64	CONC FLATWORK
5190	924623.3857	461174.7558	1255.89	CONC FLATWORK
5191	924631.0347	461180.5712	1256.13	CONC FLATWORK
5192	924633.6103	461182.3616	1256.15	CONC FLATWORK
5193	924654.6712	461195.9568	1255.84	CONC FLATWORK
5194	924660.7665	461152.1521	1255.48	CONC FLATWORK
5195	924635.1987	461138.7458	1255.75	CONC FLATWORK
5196	924623.0171	461125.5199	1255.17	CONC FLATWORK
5197	924619.6686	461098.0237	1254.91	CONC FLATWORK
[illegible]8	924618.4842	461075.6965	1254.71	CONC FLATWORK
[illegible]9	924623.5689	461060.4358	1254.62	CONC FLATWORK
5200	924637.3713	461055.8864	1255.09	CONC FLATWORK
5201	924624.4030	461355.2067	1263.70	GROUND SHOT
5202	924634.5503	461354.9810	1262.50	T/CØB/C

5203	924635.1425	461355.2314	1262.07	GUTTER
5204	924652.1601	461356.9452	1262.30	AC
5205	924667.2609	461358.7577	1262.41	AC
5206	924671.5790	461359.1467	1262.40	TOP
5207	924684.9573	461360.6766	1257.90	TOE

DREAMY DRAW WASH EAST

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Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5208	924692.2776	461354.1836	1262.00	TOP
5209	924711.8276	461349.5806	1262.70	GROUND SHOT
5210	924710.5745	461317.7302	1261.80	GROUND SHOT
5211	924691.2070	461313.9824	1261.50	TOP
5212	924680.3338	461313.8664	1257.40	TOE
5213	924667.9834	461316.3664	1260.10	TOP
5214	924666.0571	461316.7461	1260.01	AC
5215	924654.0360	461317.3117	1260.26	AC
5216	924633.9946	461316.0342	1260.33	T/CØB/C
5217	924626.2691	461311.9484	1261.90	GROUND SHOT
5218	924626.0537	461270.3177	1259.50	GROUND SHOT
5219	924636.9908	461271.1515	1257.62	T/CØB/C
5220	924658.5772	461274.0754	1257.53	AC
5221	924669.0760	461274.4565	1257.45	AC
5222	924672.0752	461273.8239	1257.90	TOP
5223	924678.2982	461273.1771	1256.50	TOE
5224	924688.0384	461271.5741	1260.70	TOP
5225	924704.3728	461271.6727	1260.60	GROUND SHOT
5226	924685.0490	461252.9588	1259.50	TOP
27	924673.0016	461256.5046	1256.70	TOE
8	924656.7892	461186.3403	1255.71	T/CØB/C
5229	924661.4773	461116.2428	1255.40	T/CØB/C
5230	924660.5286	461031.8865	1254.99	T/CØB/C
5231	924654.7272	461018.0432	1254.62	T/CØB/C
5232	924641.7537	461012.4114	1254.17	T/CØB/C
5233	924642.5229	461031.1666	1254.90	GROUND SHOT
5234	924643.5763	461105.0129	1255.70	GROUND SHOT
5235	924723.3426	461191.3569	1260.20	GROUND SHOT
5236	924726.5855	461122.1038	1258.20	GROUND SHOT
5237	924738.7140	461062.1369	1256.90	GROUND SHOT
5238	924789.5240	461070.4224	1256.90	GROUND SHOT
5239	924798.4225	461047.3050	1256.10	TOP
5240	924715.2844	461029.3027	1256.10	TOP
5241	924702.5924	461123.0554	1257.80	TOP
5242	924698.1409	461184.2491	1259.20	TOP
5243	924688.8480	461186.5131	1256.29	T/CØB/C
5244	924695.4587	461121.4273	1255.41	T/CØB/C
5245	924701.7329	461036.2507	1254.71	T/CØB/C
5246	924710.9222	461019.2670	1254.21	T/CØB/C
5247	924726.5407	461014.0760	1254.27	T/CØB/C
5248	924801.1446	461031.7220	1254.72	T/CØB/C
5249	924814.3724	460997.1764	1254.74	T/CØB/C
5250	924739.4859	460979.2457	1254.28	T/CØB/C
5251	924714.6415	460968.3713	1253.73	T/CØB/C
5252	924704.8597	460941.8399	1253.20	T/CØB/C
3	924664.3887	460957.9261	1253.65	T/CØB/C
4	924658.3012	460971.8183	1253.69	T/CØB/C
5255	924643.8617	460976.5496	1254.33	T/CØB/C
5256	924635.3096	460949.2114	1253.80	GROUND SHOT
5257	924644.2596	460977.1478	1253.88	GUTTER

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5258	924665.1047	460958.0356	1253.21	GUTTER
5259	924704.4266	460941.8355	1252.73	GUTTER
5260	924739.7117	460979.8799	1253.85	GUTTER
5261	924814.0784	460997.5557	1254.32	GUTTER
5262	924801.3708	461031.2443	1254.23	GUTTER

DREAMY DRAW WASH EAST

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Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5263	924726.3248	461013.5151	1253.84	GUTTER
5264	924701.2547	461036.1748	1254.14	GUTTER
5265	924694.9223	461121.5484	1254.95	GUTTER
5266	924688.0468	461189.2144	1255.77	GUTTER
5267	924670.4623	461182.6966	1255.68	AC
5268	924674.5810	461118.6043	1255.44	AC
5269	924676.4429	461032.0030	1254.74	AC
5270	924676.9304	460994.8000	1254.15	AC
5271	924683.1489	460943.1580	1253.15	AC
5272	924639.1316	460994.6550	1254.21	AC
5273	924664.2561	460995.4936	1254.24	AC
5274	924704.2529	460994.9296	1253.60	AC
5275	924735.0258	460996.0783	1254.16	AC
5276	924808.5688	461013.1664	1254.72	AC
5277	924814.4765	460992.1305	1254.60	TOP
5278	924744.0938	460974.5847	1254.10	TOP
5279	924716.7844	460943.8344	1254.20	TOP
5280	924723.9538	460894.4891	1253.30	TOP
5281	924769.4337	460898.4711	1253.80	TOP
[illegible]82	924759.0027	460956.4814	1254.10	TOP
[illegible]3	924832.4464	460978.7408	1254.40	TOP
5284	924824.2600	460987.3309	1252.80	TOE
5285	924748.4376	460964.7692	1252.40	TOE
5286	924738.5876	460946.0781	1251.80	TOE
5287	924741.3374	460895.7928	1251.40	TOE
5288	924746.6716	460874.7328	1252.70	TOP
5289	924745.8878	460876.0034	1251.50	INVERT
5290	924704.3867	460894.5876	1252.18	T/CaB/C
5291	924703.7004	460894.5091	1251.68	GUTTER
5292	924678.9439	460894.3323	1252.25	AC
5293	924664.3140	460894.7705	1251.92	GUTTER
5294	924663.6073	460894.6585	1252.37	T/CaB/C
5295	924656.2855	460895.9129	1252.60	GROUND SHOT
5296	924351.2736	460700.3806	1251.28	CHECK SHOT
5297	924647.7909	461153.6916	1255.60	CHECK SHOT
5298	924722.0743	460286.8682	1239.50	GROUND SHOT
5299	924717.2456	460293.2332	1241.30	GROUND SHOT
5300	924772.9598	460290.5860	1240.10	GROUND SHOT
5301	924776.4771	460286.8349	1239.40	GROUND SHOT
5302	924793.9863	460286.7645	1239.40	GROUND SHOT
5303	924800.8744	460314.9692	1240.50	GROUND SHOT
5304	924773.7437	460305.4042	1240.70	GROUND SHOT
5305	924778.5330	460291.4993	1239.49	CONC FLATWORK
5306	924778.5909	460308.3947	1239.95	CONC FLATWORK
5307	924778.6172	460308.6529	1239.94	CONC FLATWORK
[illegible]8	924783.5724	460315.7463	1240.38	CONC FLATWORK
[illegible]9	924773.7530	460315.1347	1240.43	CONC FLATWORK
5310	924754.2735	460315.2386	1240.55	GUTTER
5311	924754.1979	460314.6763	1241.05	T/CaB/C
5312	924704.8655	460315.0037	1241.69	T/CaB/C

5313	924704.8374	460315.3701	1241.15	GUTTER
5314	924621.7476	460379.7540	1242.45	GUTTER
5315	924621.7518	460380.4092	1242.88	T/CGB/C
5316	924659.4683	460379.8409	1242.03	CONC FLATWORK
5317	924696.5593	460379.6165	1241.69	CONC FLATWORK

6A

DREAMY DRAW WASH EAST

ct: MARI0019 Fri Jan 24 15:13:37 1997

Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5318	924736.3536	460379.4167	1241.46	GUTTER
5319	924736.3105	460379.6052	1241.94	T/CaB/C
5320	924756.4740	460379.4136	1241.25	GUTTER
5321	924756.3863	460380.0474	1241.30	T/CaB/C
5322	924697.9379	460414.7990	1243.26	GUTTER
5323	924698.5362	460415.2173	1243.74	T/CaB/C
5324	924677.0381	460415.6227	1243.53	AC
5325	924658.3991	460414.9075	1243.24	GUTTER
5326	924657.3572	460414.5615	1243.67	T/CaB/C
5327	924638.2144	460416.4881	1244.60	GROUND SHOT
5328	924639.4920	460484.5649	1245.20	GROUND SHOT
5329	924658.5099	460484.9151	1244.89	T/CaB/C
5330	924659.0758	460484.9040	1244.43	GUTTER
5331	924677.6260	460485.1400	1244.82	AC
5332	924699.0083	460485.6260	1244.56	GUTTER
5333	924699.4764	460485.5760	1245.04	T/CaB/C
5334	924714.0963	460486.8602	1244.10	TOP
5335	924723.7760	460485.9451	1242.00	TOE
5336	924744.1393	460448.2111	1242.10	TOE
[illegible]37	924647.7963	461153.7017	1255.62	CHECK SHOT
[illegible]B	924655.4249	460382.1301	1242.37	CHECK SHOT
5339	924754.3206	460551.2117	1244.60	TOP
5340	924743.0199	460553.5944	1241.90	TOE
5341	924722.2279	460559.0891	1242.20	TOE
5342	924713.0226	460557.6478	1245.20	TOP
5343	924700.3979	460555.4703	1246.32	T/CaB/C
5344	924699.8189	460555.6477	1245.86	GUTTER
5345	924679.6301	460555.3751	1246.19	AC
5346	924659.9721	460555.5959	1245.65	GUTTER
5347	924659.2946	460555.5867	1246.11	T/CaB/C
5348	924638.3473	460555.2920	1246.60	GROUND SHOT
5349	924639.4158	460607.8645	1247.70	GROUND SHOT
5350	924659.9058	460608.9095	1247.04	T/CaB/C
5351	924660.6359	460609.0082	1246.57	GUTTER
5352	924700.5252	460608.2721	1246.76	GUTTER
5353	924701.0622	460608.3030	1247.26	T/CaB/C
5354	924714.1222	460608.5398	1246.30	TOP
5355	924722.1542	460608.9020	1243.20	TOE
5356	924746.4849	460608.5983	1243.60	TOE
5357	924754.7286	460609.3352	1245.90	TOP
5358	924755.7932	460682.8560	1247.70	TOP
5359	924744.1685	460682.4244	1242.00	TOE
5360	924725.7260	460679.5548	1242.70	TOE
5361	924708.9337	460685.0710	1248.50	TOP
5362	924701.9677	460684.8590	1248.59	T/CaB/C
[illegible]3	924701.3742	460684.9539	1248.09	GUTTER
[illegible]4	924679.1239	460686.4055	1248.32	AC
5365	924661.5023	460686.9900	1247.95	GUTTER
5366	924660.8700	460687.0931	1248.40	T/CaB/C
5367	924648.7797	460685.9459	1249.60	GROUND SHOT

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5368	924632.6881	460719.2053	1249.40	AC
5369	924633.2825	460787.3168	1251.35	AC
5370	924648.3907	460783.0078	1250.00	GROUND SHOT
5371	924662.0408	460778.0296	1250.03	T/CUB/C
5372	924662.6755	460778.7145	1249.60	GUTTER

DREAMY DRAW WASH EAST

ct: MARI0019 Fri Jan 24 15:13:37 1997

Current Coordinate Listing (All)

Point	Northing	Easting	Elevation	Description
5373	924681.1982	460777.9525	1249.84	AC
5374	924702.4572	460779.8429	1249.57	GUTTER
5375	924703.0586	460780.1377	1250.08	T/CaB/C
5376	924702.9935	460780.1010	1250.06	T/CaB/C
5377	924715.0790	460782.3532	1248.50	TOP
5378	924722.9663	460782.9575	1242.80	TOE
5379	924745.6763	460805.2940	1246.60	TOE
5380	924655.4480	460382.2519	1242.36	CHECK SHOT
5381	924682.3968	460610.9024	1247.11	CHECK SHOT
5382	924753.4025	460480.4001	1243.70	TOP
5383	924751.4322	460379.6831	1241.82	T/CaB/C
5384	924757.7580	460379.7547	1241.32	T/CaB/C
5385	924796.3350	460379.5424	1241.17	T/CaB/C
5386	924802.1138	460379.5890	1241.67	T/CaB/C
5387	924824.3386	460379.4932	1241.91	T/CaB/C
5388	924824.3694	460378.6837	1241.43	GUTTER
5389	924801.8461	460379.0014	1241.18	GUTTER
5390	924796.8840	460378.9999	1241.16	GUTTER
5391	924756.7100	460379.1133	1241.30	GUTTER
5392	924751.5670	460379.1046	1241.34	GUTTER
[illegible]3	924755.0115	460385.3489	1241.81	AC
5394	924795.9708	460384.7714	1241.70	AC
5395	924795.6002	460413.3377	1242.48	AC
5396	924766.3331	460406.2470	1241.84	AC
5397	924774.9572	460379.1178	1241.14	CONC FLATWORK
5398	924784.4898	460379.0759	1241.09	CONC FLATWORK
5399	924824.3760	460314.0009	1241.36	T/CaB/C
5400	924804.5303	460314.1626	1241.09	T/CaB/C
5401	924799.4567	460314.2697	1240.58	T/CaB/C
5402	924759.5078	460314.5669	1240.49	T/CaB/C
5403	924754.1620	460314.5309	1241.09	T/CaB/C
5404	924754.2449	460315.1688	1240.59	GUTTER
5405	924759.4398	460315.1428	1240.50	GUTTER
5406	924799.6185	460314.9444	1240.60	GUTTER
5407	924804.7134	460314.8998	1240.60	GUTTER
5408	924824.4902	460314.7599	1240.84	GUTTER
5409	924823.5841	460345.1405	1241.36	AC
5410	924784.0297	460345.4327	1240.86	CONC FLATWORK
5411	924774.2414	460345.7975	1240.91	CONC FLATWORK
5412	924715.8059	460345.7140	1241.69	AC
5413	924634.5375	460346.5837	1242.85	AC
5414	924682.4007	460610.8819	1247.10	CHECK SHOT

EXHIBIT 11

ZONE AE

MATCH LINE - SEE SHEET 2

MYRTLE AVENUE

DREAMY DRAW DRIVE

16TH STREET

17TH STREET

SCALE: 1"=100'

0 50 100 200

LEGEND

———	REVISED 100 YR FLOODPLAIN, ZONE AE
———	REVISED 100 YR FLOODWAY
— — —	EXISTING 100 YR FLOODPLAIN
.526 ———	REVISED CROSS SECTION LOCATION
(.52) — — —	EXISTING CROSS SECTION LOCATION

DATE	REVISION	BY

DAVID EVANS AND ASSOCIATES, [redacted]
2929 E. CAMELBACK ROAD
PHOENIX, AZ 85016-4445 (602) 995-5000

CALL THE NUMBER BELOW BEFORE YOU DIG
263-1100
BLUE STAKE CENTER

DREAMY DRAW WASH EAST LETTER OF MAP REVISION LOMR

FLOODPLAIN DELINEATION EXHIBIT A

SECTION: 3	TWNSHP: 2N	RANGE: 3E
DESIGN BY: TSM	DATE: 7/10/97	
CHECKED BY:	DRAWING NO.: MA19X8D1	
JOB NO.: MAR10019	SHEET 1 OF 2	

MAR10019 pha60 07/10/97 10.29.10 tsm S:\CAD\MAR10019\MA19X5D1

LEGEND

REVISED 100 YR FLOODPLAIN, ZONE AE

REVISED 100 YR FLOODWAY

EXISTING 100 YR FLOODPLAIN

.526 REVISED CROSS SECTION LOCATION

(.52) EXISTING CROSS SECTION LOCATION

SCALE: 1" =100'

0 50 100 200

FRIER DRIVE

16TH STREET

ORANGEWOOD AVENUE

MORTON AVENUE

DREAMY DRAW DRIVE

MATCHLINE - SEE SHEET 1

(.73) (.65) (.59) (.46) (.41) (.37)

.582 .576 .566 .559 .549 .531 .524 .517 .507 .498 .471 .460 .430 .392 .370 .336

1290 1288 1286 1284 1370 1360 1340 1320 1300 1390 1300

01.5 83.5 02.5 07.4 78.6 72.2 67.4 59.2 45.1 59028 1255.13 77.3 01.1 82.1 05.5 99.9 99.0 05.3 03.3 10.9

DATE	REVISION	BY

DAVID EVANS AND ASSOCIATES,

2929 E. CAMELBACK ROAD
PHOENIX, AZ 85016-3446 (602) 995-2000

263-1100

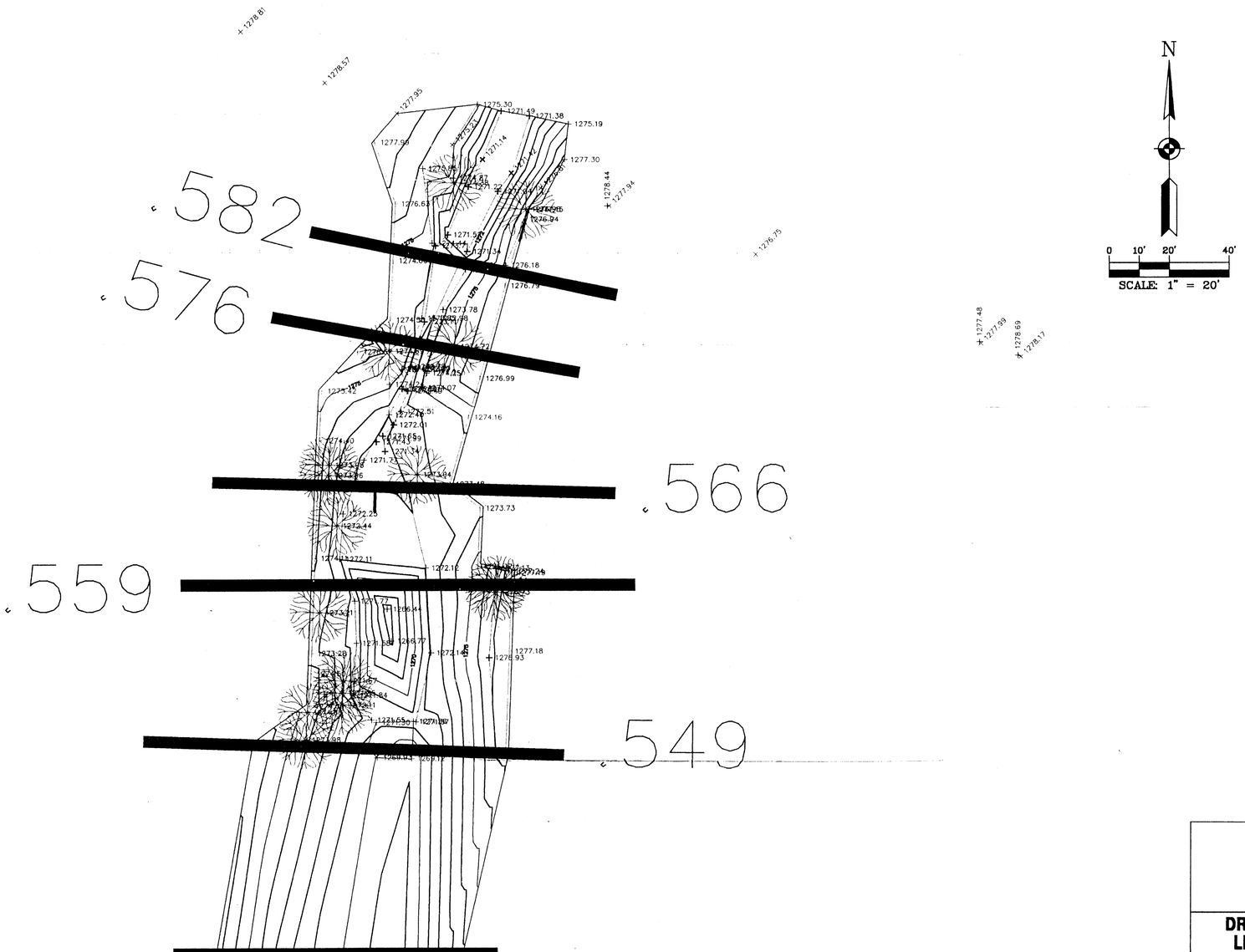
DREAMY DRAW WASH EAST LETTER OF MAP REVISION LOMR

FLOODPLAIN DELINEATION EXHIBIT A

SECTION: 3	TWNSHP: 2N	RANGE: 3E
DESIGN BY: TSM	DATE: 7/10/97	
CHECKED BY:	DRAWING NO.: MA19XSD2	
JOB NO.: MAR10019	SHEET 2 OF 2	

MAR10019 pho60 07/10/97 10:55:44 tsm S:\CAD\MAR10019\MA19XSD2

EXHIBIT 12



DREAMY DRAW WASH EAST
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT "C"

SECTION: 3	TWNSHP: 2N		RANGE: 3E
DESIGN BY: T&M		DATE: 3/28/97	
CHECKED BY:		DRAWING NO.: MA195VY1	
JOB NO.: MAR10019		SHEET 1 OF 2	

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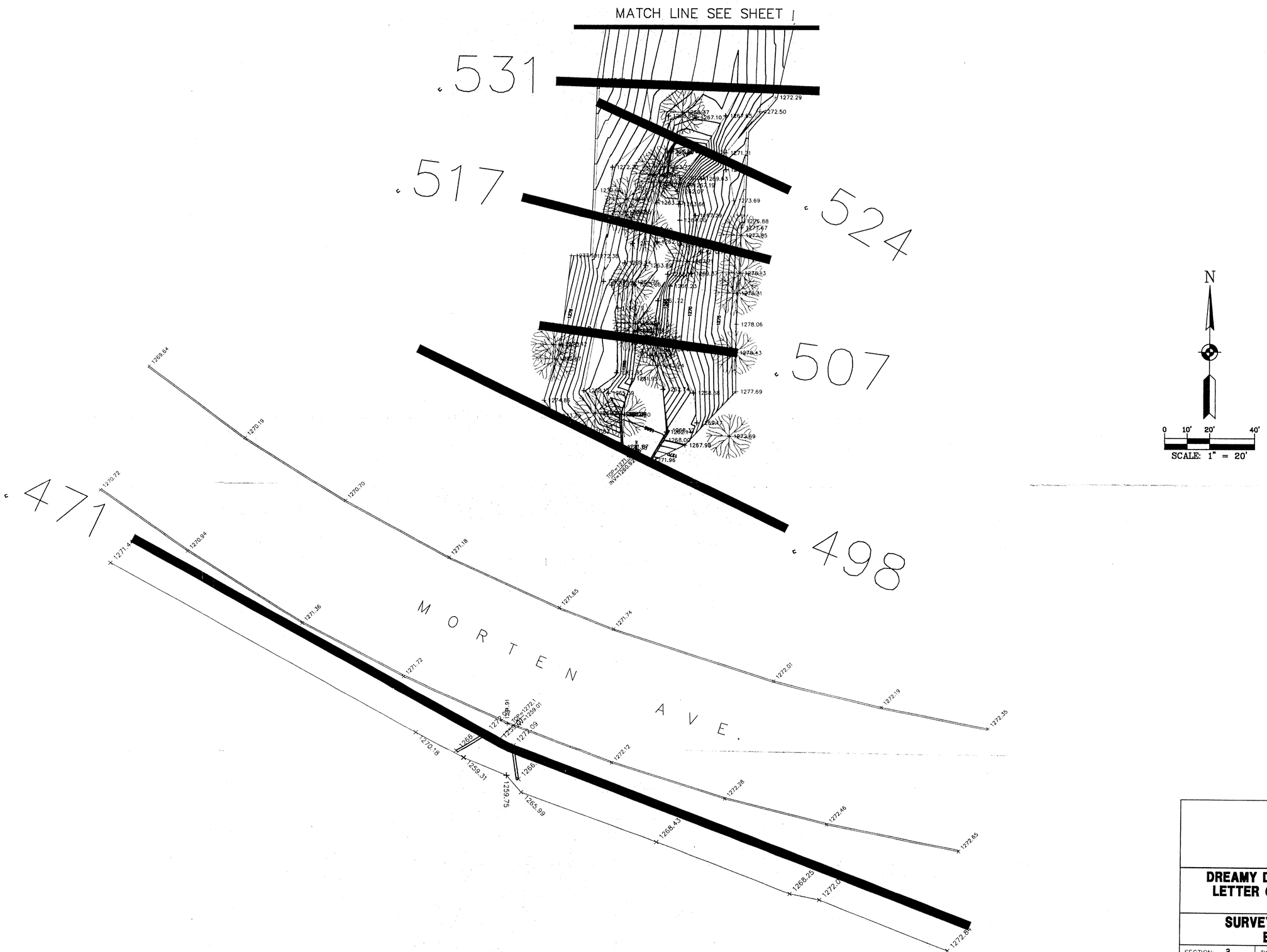

DREAMY DRAW WASH EAST
LETTER OF MAP REVISION
LOMR

SURVEY INFORMATION
EXHIBIT "C"

SECTION: 3	TWNSHP: 2N	RANGE: 3E	
DESIGN BY: TSM	DATE: 3/28/97		
CHECKED BY:	DRAWING NO.: MA195VT2		
JOB NO.: MAR10019	SHEET 2 OF 2		

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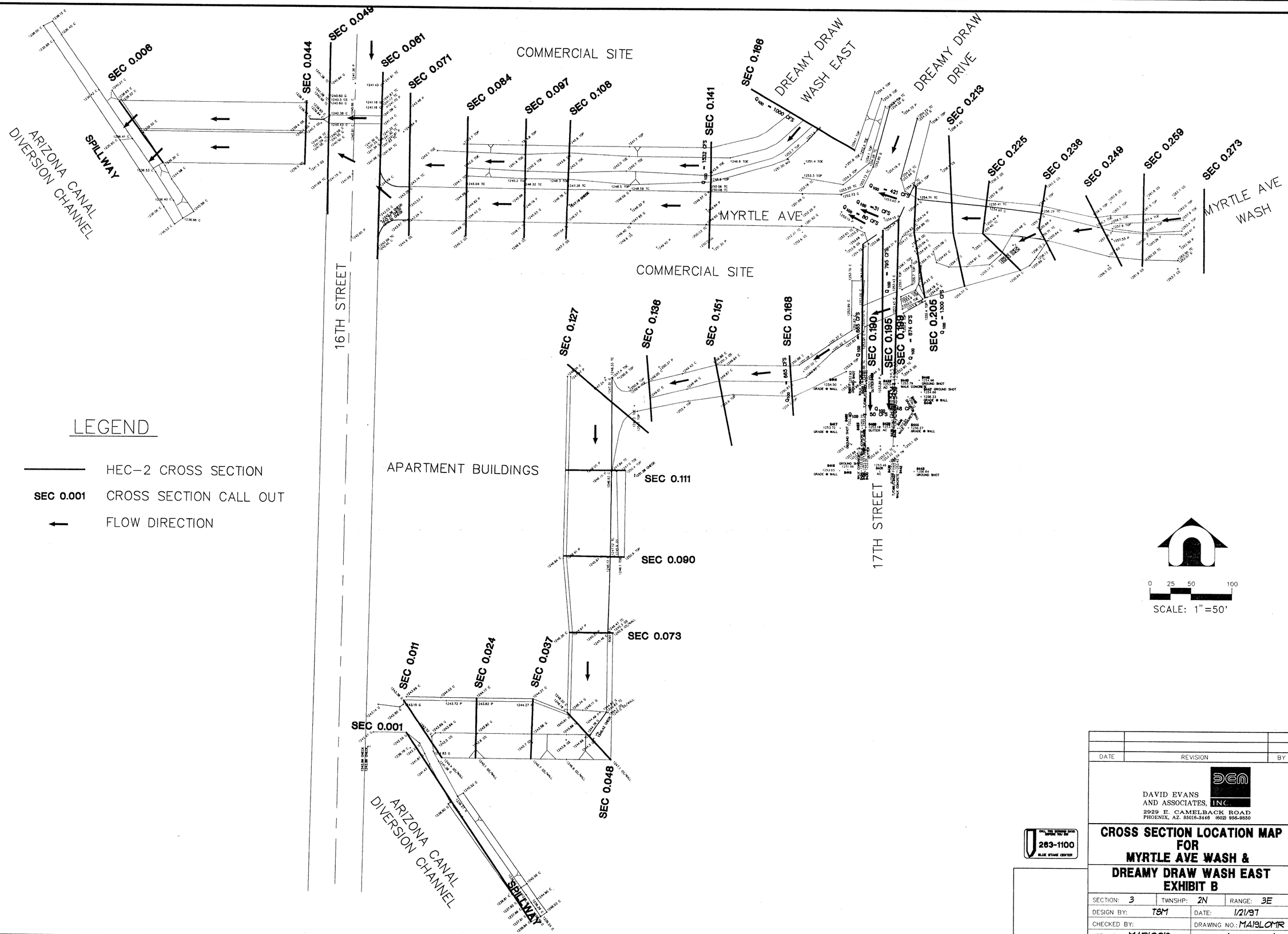


DATE	REVISION	BY

DAVID EVANS AND ASSOCIATES, INC.
2929 E. CAMELBACK ROAD
PHOENIX, AZ. 85016-3446 (602) 956-9850

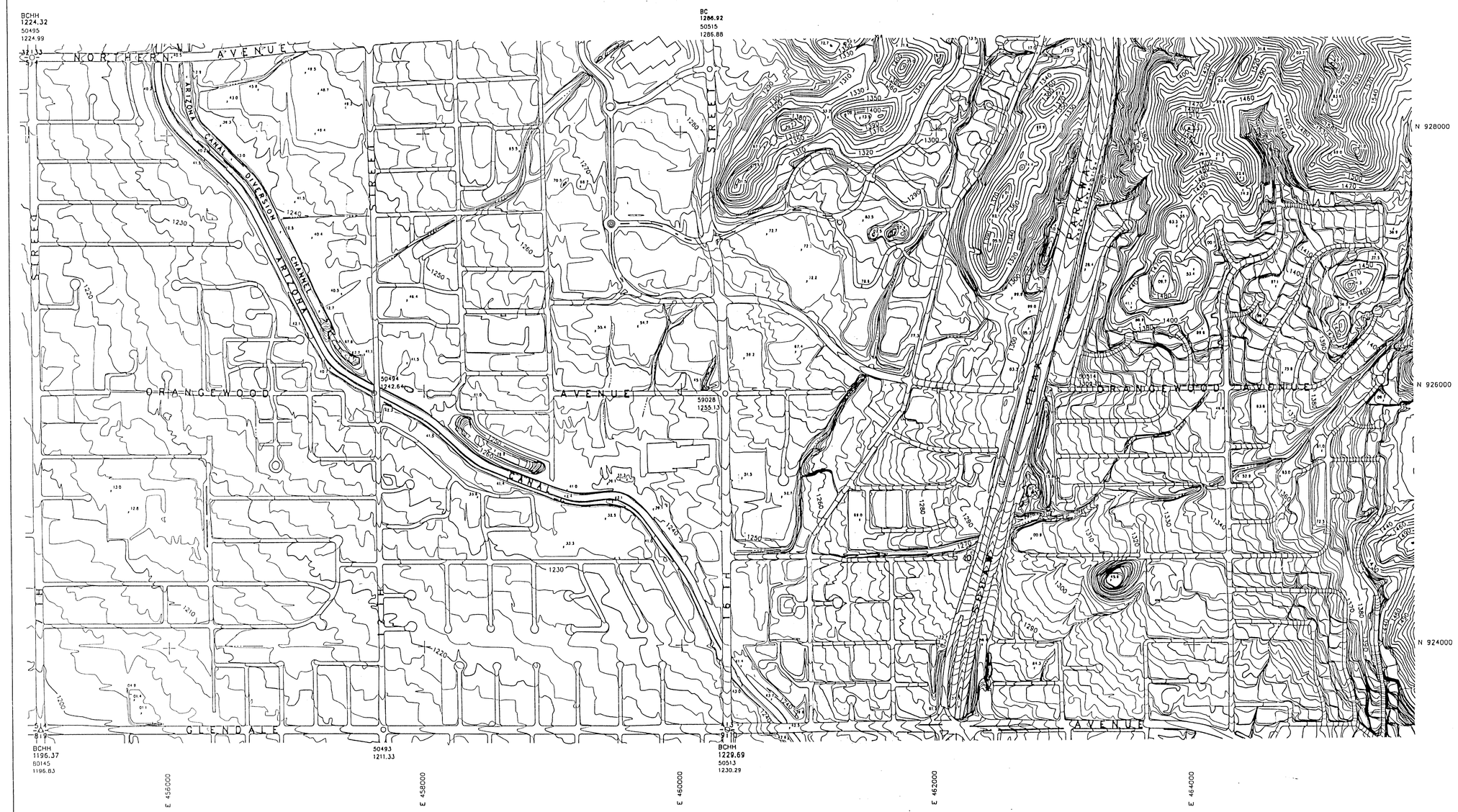
CALL TWO WORKING DAYS BEFORE YOU DIG 263-1100 BLUE STAKE CENTER

CROSS SECTION LOCATION MAP FOR MYRTLE AVE WASH & DREAMY DRAW WASH EAST EXHIBIT B

SECTION: 3	TWNSHP: 2N	RANGE: 3E
DESIGN BY: TSM	DATE: 1/21/97	
CHECKED BY:	DRAWING NO.: MA19LOMR	
JOB NO.: MAR10019	SHEET 1 OF 1	

MAR10019 PHO10 03/06/97 09:46:43 SKT S:\CAD\MAR10019\MA19LOMR

EXHIBIT 13



SEC. 4,3 T. 2 N. R. 3 E.

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

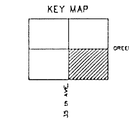
KAMINSKI HUBBARD engineering, inc.

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	GREENWAY RD.
	14	13	18	17	16	15	14	13	18	17	THUNDERBIRD RD.
	23	24	19	20	21	22	23	24	19	20	CACTUS RD.
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	SHEA BLVD.
DUNLAP AVE.	35	36	31	32	33	34	35	36	31	32	DOUBLE TREE RANCH RD.
											NORTHERN AVE.
GLENDALE AVE.	2	1	6	5			2	1	6	5	PICKAW BEHO RD.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8	MC DONALD DR.
CAMELBACK RD	14	13	18	17	16	15	14	13	18	17	CHAPARRAL RD.

35th AVE. 27th AVE. 19th AVE. 7th ST. 16th ST. 24th ST. 32nd ST. 40th ST. 48th ST. 56th ST.

DATE FLOWN : 11-15-1990

NORTH

FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY

ARIZONA CANAL DIVERSION CHANNEL
AREA DRAINAGE MASTER STUDY
PHASE 1

DRN:	DATE:	SCALE:	JOB NO.	SHEET
DES:	DATE:	1" = 400' HORIZ.	0146	76 of 111
CHD:	DATE:	1" = ____ VERT.		

KENNEY AERIAL MAPPING INC.

EXHIBIT 14

HEC2 S/N: 1363000967 HMVersion: 6.52 Data File: MA19DDEX.HC2

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*     ****************************************
*     HEC-2 WATER SURFACE PROFILES            *
*                                             *
*  Version   4.6.2;  May 1991                 *
*                                             *
*  RUN DATE    25NOV96    TIME   12:35:07     *
*********************************************
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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
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   :::
:::                                       :::
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============================
H A E S T A D   M E T H O D S
============================
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

```
T1          DREAMY DRAW WASH EAST
T2          STATIONS ARE LEFT TO RIGHT LOOKING UPSTREAM
T3          100 YEAR PROFILE RUN
            FILE: MA19DDEX.HC2 DUPLICATE, EFFECTIVE MODEL
J1       1       2       0       0     0.0       0       1       0 246.000       0
J2       0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
J3    1.      34.     27.     28.     31.     32.     33.     0.0     0.0     0.0
NC 0.060   0.060   0.040   0.100   0.300
NT   2.01000.0001000.000                                     0.0     0.0     0.0
ET          0.0   10.40     0.0     0.0     0.0     0.0     0.0     0.0     0.0
X1  .150   10.001208.0001335.000     0.0     0.0     0.0     0.0     0.0     0.0
GR251.501000.000 251.5001130.000 250.0001208.000 247.0001225.000 244.0001240.000
GR244.001250.000 244.0001265.000 251.0001295.000 254.0001335.000 255.0001420.000
X1 0.210  12.0001270.0001470.000 300.000 315.000 305.000     0.0     0.0     0.0
GR253.001000.000 253.5001107.000 253.5001200.000 254.0001270.000 246.0001300.000
GR246.001365.000 252.0001392.000 255.0001433.000 258.0001470.000 259.5001555.000
GR261.001630.000 262.0001690.000     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.260  14.0001315.0001440.000 270.000 270.000 270.000     0.0     0.0     0.0
GR257.001000.000 257.5001090.000 257.0001195.000 256.0001315.000 251.5001331.000
GR249.001348.000 249.0001360.000 252.0001375.000 255.0001403.000 258.0001440.000
GR260.001545.000 262.5001675.000 264.5001788.000 267.0001790.000     0.0     0.0
X1 0.310  12.000 360.000 445.000 280.000 280.000 280.000     0.0     0.0     0.0
GR261.00   0.000 261.000 118.000 261.000 260.000 260.000 360.000 252.000 395.000
GR251.00 410.000 252.000 415.000 260.000 445.000 261.000 516.000 264.000 643.000
GR268.00 770.000 270.000 862.000     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.370  11.000 345.000 426.000 275.000 275.000 275.000     0.0     0.0     0.0
GR265.50     0.0 267.500 115.000 267.500 230.000 266.000 345.000 256.000 362.000
GR255.00 390.000 256.000 400.000 264.000 426.000 266.000 500.000 269.000 562.000
GR272.50 820.000     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.410  13.000 290.000 382.000 245.000 245.000 245.000     0.0     0.0     0.0
GR[illegible]0     0.0 273.000 132.000 270.000 253.000 268.000 290.000 263.000 315.000
GR260.00 335.000 259.500 340.000 260.000 345.000 265.000 360.000 270.000 382.000
GR272.00 503.000 276.500 645.600 278.000 745.000     0.0     0.0     0.0     0.0
X1 0.460  11.000 390.000 417.000 240.000 260.000 250.000     0.0     0.0     0.0
GR274.00     0.0 274.000 118.000 276.000 268.000 274.000 340.000 270.000 390.000
GR266.00 395.000 266.500 400.000 266.000 405.000 282.000 417.000 284.000 510.000
GR282.00 720.000     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.520  12.000 332.000 400.000 340.000 340.000 340.000     0.0     0.0     0.0
GR276.00     0.0 277.000 105.000 279.500 185.000 280.000 298.000 276.000 332.000
GR270.00  352.00 270.000 355.000 270.000 361.000 274.000 382.000 278.000 400.000
GR278.00  530.00 278.500 683.000     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.590  12.000 290.000 376.000 370.000 340.000 350.000     0.0     0.0     0.0
GR284.00   0.000 288.000  25.000 289.500  88.000 292.000 148.000 286.000 217.000
GR282.00 290.000 276.000 328.000 275.000 333.000 276.000 342.000 282.000 376.000
GR283.00 470.000 281.000 610.000     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.650  10.000 320.000 372.000 310.000 330.000 325.000     0.0     0.0     0.0
GR288.00     0.0 286.000 110.000 288.000 135.000 286.000 320.000 280.000 338.000
GR289.00 345.000 280.000 358.000 286.000 372.000 289.000 442.000 292.000 527.000
X1 0.730  11.000 290.000 373.000 440.000 400.000 400.000     0.0     0.0     0.0
GR296.00     0.0 292.000 102.000 293.500 198.000 292.000 290.000 286.000 334.000
GR286.00 345.000 286.000 352.000 292.000 373.000 292.000 445.000 296.000 530.000
GR308.00 600.000     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
X1 0.770  13.000 860.000 930.000 215.000 250.000 240.000     0.0     0.0     0.0
GR305.00 500.000 300.000 562.000 296.000 650.000 296.500 750.000 296.000 860.000
G[illegible].00 880.000 288.000 893.000 288.000 898.000 288.000 902.000 296.000 930.000
G[illegible]0 975.000 296.0001055.000 300.0001145.000     0.0     0.0     0.0     0.0
EJ
T1       DREAMY DRAW WSH 100 YEAR PROFILE WITH 1' ENCROACHMENT
T3       100 YR PROFILE W/1' ENCR
J1            3                                                  251.600
```

J2 2

Ek

THIS RUN EXECUTED 25NOV96 12:35:07

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

1 DREAMY DRAW WASH EAST
2 STATIONS ARE LEFT TO RIGHT LOOKING UPSTREAM
3 100 YEAR PROFILE RUN
4 FILE: MA19DDEX.HC2 DUPLICATE, EFFECTIVE MODEL

1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	-1	2	0	0	0.0	0	1	0	246.000	0

2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

3 VARIABLE CODES FOR SUMMARY PRINTOUT

		34.	27.	28.	31.	32.	33.	0.0	0.0	0.0
NC	0.060	0.060	0.040	0.100	0.300					
NT	2.0	1000.000	1000.000					0.0	0.0	0.0
ET		0.0	10.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	.150	10.00	1208.000	1335.000	0.0	0.0	0.0	0.0	0.0	0.0
GR	251.50	1000.000	251.500	1130.000	250.000	1208.000	247.000	1225.000	244.000	1240.000
GR	244.00	1250.000	244.000	1265.000	251.000	1295.000	254.000	1335.000	255.000	1420.000
X1	0.210	12.000	1270.000	1470.000	300.000	315.000	305.000	0.0	0.0	0.0
GR	253.00	1000.000	253.500	1107.000	253.500	1200.000	254.000	1270.000	246.000	1300.000
GR	246.00	1365.000	252.000	1392.000	255.000	1433.000	258.000	1470.000	259.500	1555.000
GR	261.00	1630.000	262.000	1690.000	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.260	14.000	1315.000	1440.000	270.000	270.000	270.000	0.0	0.0	0.0
GR	257.00	1000.000	257.500	1090.000	257.000	1195.000	256.000	1315.000	251.500	1331.000
GR	249.00	1348.000	249.000	1360.000	252.000	1375.000	255.000	1403.000	258.000	1440.000
GR	260.00	1545.000	262.500	1675.000	264.500	1788.000	267.000	1790.000	0.0	0.0
X1	0.310	12.000	360.000	445.000	280.000	280.000	280.000	0.0	0.0	0.0
GR	261.00	0.000	261.000	118.000	261.000	260.000	260.000	360.000	252.000	395.000
GR	251.00	410.000	252.000	415.000	260.000	445.000	261.000	516.000	264.000	643.000
GR	268.00	770.000	270.000	862.000	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.370	11.000	345.000	426.000	275.000	275.000	275.000	0.0	0.0	0.0
GR	5.50	0.0	267.500	115.000	267.500	230.000	266.000	345.000	256.000	362.000
GR	5.00	390.000	256.000	400.000	264.000	426.000	266.000	500.000	269.000	562.000
GR	272.50	820.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

X1	.410	13.000	290.000	382.000	245.000	245.000	245.000	0.0	0.0	0.0
GR	270.00	0.0	273.000	132.000	270.000	253.000	268.000	290.000	263.000	315.000
GR	260.00	335.000	259.500	340.000	260.000	345.000	265.000	360.000	270.000	382.000
GR	272.00	503.000	276.500	645.600	278.000	745.000	0.0	0.0	0.0	0.0
X1	0.460	11.000	390.000	417.000	240.000	260.000	250.000	0.0	0.0	0.0
GR	274.00	0.0	274.000	118.000	276.000	268.000	274.000	340.000	270.000	390.000
GR	266.00	395.000	266.500	400.000	266.000	405.000	282.000	417.000	284.000	510.000
GR	282.00	720.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.520	12.000	332.000	400.000	340.000	340.000	340.000	0.0	0.0	0.0
GR	276.00	0.0	277.000	105.000	279.500	185.000	280.000	298.000	276.000	332.000
GR	270.00	352.00	270.000	355.000	270.000	361.000	274.000	382.000	278.000	400.000
GR	278.00	530.00	278.500	683.000	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.590	12.000	290.000	376.000	370.000	340.000	350.000	0.0	0.0	0.0
GR	284.00	0.000	288.000	25.000	289.500	88.000	292.000	148.000	286.000	217.000
GR	282.00	290.000	276.000	328.000	275.000	333.000	276.000	342.000	282.000	376.000
GR	283.00	470.000	281.000	610.000	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.650	10.000	320.000	372.000	310.000	330.000	325.000	0.0	0.0	0.0
GR	288.00	0.0	286.000	110.000	288.000	135.000	286.000	320.000	280.000	338.000
GR	289.00	345.000	280.000	358.000	286.000	372.000	289.000	442.000	292.000	527.000
X	0.730	11.000	290.000	373.000	440.000	400.000	400.000	0.0	0.0	0.0
GR	6.00	0.0	292.000	102.000	293.500	198.000	292.000	290.000	286.000	334.000
GR	286.00	345.000	286.000	352.000	292.000	373.000	292.000	445.000	296.000	530.000
GR	308.00	600.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	0.770	13.000	860.000	930.000	215.000	250.000	240.000	0.0	0.0	0.0
GR	305.00	500.000	300.000	562.000	296.000	650.000	296.500	750.000	296.000	860.000
GR	292.00	880.000	288.000	893.000	288.000	898.000	288.000	902.000	296.000	930.000
GR	298.00	975.000	296.000	1055.000	300.000	1145.000	0.0	0.0	0.0	0.0

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

CHV= 0.100 CEHV= 0.300
SECNO 0.150
720 CRITICAL DEPTH ASSUMED

0.150	3.01	247.01	247.01	246.00	248.14	1.12	0.00	0.00	250.00
1000.0	0.0	1000.0	0.0	0.0	117.5	0.0	0.0	0.0	254.00
0.00	0.00	8.51	0.00	0.000	0.040	0.000	0.000	244.00	1224.92
0.018430	0.	0.	0.	0	13	0	0.00	53.00	1277.92

SECNO 0.210

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.89

0.210	3.51	249.51	0.00	0.00	249.71	0.20	1.48	0.09	254.00
000.0	0.0	1000.0	0.0	0.0	279.3	0.0	1.4	0.5	258.00
.02	0.00	3.58	0.00	0.000	0.040	0.000	0.000	246.00	1286.82
.199	300.	305.	315.	3	0	0	0.00	93.99	1380.81

SECNO 0.260
685 20 TRIALS ATTEMPTED WSEL,CWSEL
693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.260	3.60	252.60	252.60	0.00	253.71	1.11	1.31	0.27	256.00
1000.0	0.0	1000.0	0.0	0.0	118.5	0.0	2.6	1.0	258.00
0.03	0.00	8.44	0.00	0.000	0.040	0.000	0.000	249.00	1327.09
0.018164	270.	270.	270.	20	5	0	0.00	53.52	1380.61

SECNO 0.310

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.63

0.310	5.08	256.08	0.00	0.00	256.70	0.61	2.94	0.05	260.00
1000.0	0.0	1000.0	0.0	0.0	159.0	0.0	3.5	1.3	260.00
0.04	0.00	6.29	0.00	0.000	0.040	0.000	0.000	251.00	377.17
0.006835	280.	280.	280.	3	0	0	0.00	53.11	430.28

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.370

0.370	3.42	258.42	0.00	0.00	259.41	0.99	2.60	0.11	266.00
1000.0	0.0	1000.0	0.0	0.0	125.4	0.0	4.4	1.6	264.00
0.05	0.00	7.97	0.00	0.000	0.040	0.000	0.000	255.00	357.89
0.013904	275.	275.	275.	3	0	0	0.00	49.97	407.86

SECNO 0.410

645 INT SEC ADDED BY RAISING SEC 0.41, -2.250 FT AND MULTIPLYING BY 1.361

7185 MINIMUM SPECIFIC ENERGY
5720 CRITICAL DEPTH ASSUMED

1.010	3.80	261.05	261.05	0.00	262.13	1.08	1.96	0.03	265.75
1000.0	0.0	1000.0	0.0	0.0	120.0	0.0	4.8	1.8	267.75
0.06	0.00	8.33	0.00	0.000	0.040	0.000	0.000	257.25	426.55
0.018642	123.	123.	123.	2	8	0	0.00	56.37	482.92

6 SEC ADDED BY RAISING SEC 1.01, 2.250 FT AND MULTIPLYING BY 0.735

7185 MINIMUM SPECIFIC ENERGY
5720 CRITICAL DEPTH ASSUMED

0.410	4.36	263.86	263.86	0.00	265.09	1.23	2.23	0.05	268.00
1000.0	0.0	1000.0	0.0	0.0	112.4	0.0	5.1	1.9	270.00
0.06	0.00	8.90	0.00	0.000	0.040	0.000	0.000	259.50	310.71
0.017855	123.	123.	123.	2	8	0	0.00	45.86	356.57

SECNO 0.460
5685 20 TRIALS ATTEMPTED WSEL,CWSEL
5693 PROBABLE MINIMUM SPECIFIC ENERGY
5720 CRITICAL DEPTH ASSUMED

0.460	5.92	271.92	271.92	0.00	273.52	1.60	3.88	0.11	270.00
1000.0	64.5	935.5	0.0	23.0	89.4	0.0	5.7	2.2	282.00
0.07	2.81	10.46	0.00	0.060	0.040	0.000	0.000	266.00	366.03
0.013624	240.	250.	260.	20	11	0	0.00	43.41	409.44

SECNO 0.520

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

1645 INT SEC ADDED BY RAISING SEC 0.52, -2.000 FT AND MULTIPLYING BY 0.721

3265 DIVIDED FLOW

3280 CROSS SECTION 1.01 EXTENDED 0.34 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.67

1.010	6.34	274.34	0.00	0.00	274.92	0.57	1.30	0.10	274.00
1000.0	2.6	997.4	0.0	4.8	164.1	0.0	6.3	2.4	276.00
0.08	0.53	6.08	0.00	0.060	0.040	0.000	0.000	268.00	0.00
0.004873	170.	170.	170.	2	0	0	0.00	71.81	283.06

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.000 FT AND MULTIPLYING BY 1.387

0.520	5.27	275.27	0.00	0.00	275.83	0.56	0.91	0.00	276.00
1000.0	0.0	1000.0	0.0	0.0	166.0	0.0	6.9	2.7	278.00
0.08	0.00	6.03	0.00	0.000	0.040	0.000	0.000	270.00	334.44
0.005968	170.	170.	170.	3	0	0	0.00	53.27	387.71

*SECNO 0.590

1645 INT SEC ADDED BY RAISING SEC 0.59, -2.500 FT AND MULTIPLYING BY 0.971

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.010	4.33	276.83	276.83	0.00	277.97	1.14	1.71	0.17	279.50
1000.0	0.0	1000.0	0.0	0.0	116.5	0.0	7.5	2.9	279.50
0.09	0.00	8.58	0.00	0.000	0.040	0.000	0.000	272.50	298.14
0.018717	185.	175.	170.	4	15	0	0.00	52.37	350.51

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.500 FT AND MULTIPLYING BY 1.029

0.590	4.73	279.73	0.00	0.00	280.49	0.76	2.48	0.04	282.00
1000.0	0.0	1000.0	0.0	0.0	142.5	0.0	8.0	3.1	282.00
0.10	0.00	7.02	0.00	0.000	0.040	0.000	0.000	275.00	304.40
0.011132	185.	175.	170.	2	0	0	0.00	58.72	363.12

*SECNO 0.650

1645 INT SEC ADDED BY RAISING SEC 0.65, -2.500 FT AND MULTIPLYING BY 1.344

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.010	4.73	282.23	282.23	0.00	283.43	1.21	2.38	0.13	283.50
00.0	0.0	1000.0	0.0	0.0	113.5	0.0	8.5	3.3	283.50
.10	0.00	8.81	0.00	0.000	0.040	0.000	0.000	277.50	435.21
0.020049	155.	163.	165.	2	5	0	0.00	48.01	495.98

1645 INT SEC ADDED BY RAISING SEC 1.01, 2.500 FT AND MULTIPLYING BY 0.744

3265 DIVIDED FLOW

0.650	5.38	285.38	285.33	0.00	286.68	1.30	3.22	0.03	286.00
1000.0	0.0	1000.0	0.0	0.0	109.4	0.0	8.9	3.5	286.00
0.11	0.00	9.14	0.00	0.000	0.040	0.000	0.000	280.00	321.86
0.019594	155.	163.	165.	3	8	0	0.00	40.66	370.56

*SECNO 0.730

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.79

0.730	4.29	290.29	0.00	0.00	290.79	0.49	4.03	0.08	292.00
1000.0	0.0	1000.0	0.0	0.0	177.2	0.0	10.2	3.9	292.00
0.13	0.00	5.64	0.00	0.000	0.040	0.000	0.000	286.00	302.51
0.006114	440.	400.	400.	4	0	0	0.00	64.52	367.03

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.770

645 INT SEC ADDED BY RAISING SEC 0.77, -1.000 FT AND MULTIPLYING BY 1.377

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.66

1.010	4.01	291.01	0.00	0.00	292.01	1.00	1.06	0.15	295.00
1000.0	0.0	1000.0	0.0	0.0	124.6	0.0	10.6	4.1	295.00
0.13	0.00	8.03	0.00	0.000	0.040	0.000	0.000	287.00	1023.34
0.014034	108.	120.	125.	2	0	0	0.00	49.73	1073.07

1645 INT SEC ADDED BY RAISING SEC 1.01, 1.000 FT AND MULTIPLYING BY 0.726

0.770	4.61	292.61	0.00	0.00	293.82	1.20	1.75	0.06	296.00
1000.0	0.0	1000.0	0.0	0.0	113.5	0.0	11.0	4.2	296.00
0.14	0.00	8.81	0.00	0.000	0.040	0.000	0.000	288.00	876.95
156	108.	120.	125.	3	0	0	0.00	41.19	918.14

PROFILE FOR STREAM 100 YEAR PROFILE RUN

PLO 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   244.     254.     264.     274.     284.     294.     304.     314.     324.     334.
   SECNO  CUMDIS

  0.15      0.  I  WE L M R          .        .        .        .        .        .        .        .        .
           50.  I  WE  LM .R         .        .        .        .        .        .        .        .        .
          100.  CI  WE LM .R         .        .        .        .        .        .        .        .        .
          150.  CI  WE  L . R        .        .        .        .        .        .        .        .        .
          200.  CI   E  ML.  R       .        .        .        .        .        .        .        .        .
          250.  C I  E   L.  R       .        .        .        .        .        .        .        .        .
          300.  C I  WE  ML   R      .        .        .        .        .        .        .        .        .
  0.21    350.  C I   E  ML   R      .        .        .        .        .        .        .        .        .
          400.  C  I  E   L   R      .        .        .        .        .        .        .        .        .
          450.  C  I   E  ML  R      .        .        .        .        .        .        .        .        .
          500.  C   I  WE .L  R      .        .        .        .        .        .        .        .        .
          550.  C   I   WE.LM R      .        .        .        .        .        .        .        .        .
  0.26    600.  .    I   WE LMR      .        .        .        .        .        .        .        .        .
          650.  C    I   WE  LR      .        .        .        .        .        .        .        .        .
          700.  C     I   WE LMR     .        .        .        .        .        .        .        .        .
          750.  C     I   WE  LR     .        .        .        .        .        .        .        .        .
          800.  C     I   .WE  LM    .        .        .        .        .        .        .        .        .
          850.  C      I  . E   LM   .        .        .        .        .        .        .        .        .
   .31    900.  C      I  . WE  LM   .        .        .        .        .        .        .        .        .
          950.  C       I . E   LM .        .        .        .        .        .        .        .        .
         1000.  C       I . WE  RLM.        .        .        .        .        .        .        .        .
         1050.  C        I.  WE   RL.       .        .        .        .        .        .        .        .
         1100.  C         I   WE   RL       .        .        .        .        .        .        .        .
  0.37   1150.  C         .I  WE    R L     .        .        .        .        .        .        .        .
         1200.  C         . I  W E  . L     .        .        .        .        .        .        .        .
         1250.  C         .  I   WE . LR    .        .        .        .        .        .        .        .
  1.01   1300.  .         .  I   WE . L R   .        .        .        .        .        .        .        .
         1350.  .         .   I   WE.  L R  .        .        .        .        .        .        .        .
  0.41   1400.  .         .     I   WE  L R .        .        .        .        .        .        .        .
         1450.  .         .      I  .W EL  MR .      .        .        .        .        .        .        .
         1500.  .         .       I . WEL  M .R      .        .        .        .        .        .        .
         1550.  .         .        I.    WE M .  R   .        .        .        .        .        .        .
         1600.  .         .         .I    W EM.     R .        .        .        .        .        .        .
  0.46   1650.  .         .         . I   L W E      R .        .        .        .        .        .        .
         1700.  C         .         .  I   L WE     R .        .        .        .        .        .        .
         1750.  C         .         .  I    LWE   R   .        .        .        .        .        .        .
  1.01   1800.  C         .         .   I     WER     .        .        .        .        .        .        .
         1850.  C         .         .    I    .E R   .        .        .        .        .        .        .
         1900.  C         .         .    I    .E R   .        .        .        .        .        .        .
         1950.  C         .         .     I   .WE R  .        .        .        .        .        .        .
  0.52   2000.  C         .         .     I   .WE R  .        .        .        .        .        .        .
         2050.  C         .         .      I  . ELR  .        .        .        .        .        .        .
         2100.  C         .         .      I  . WELR .        .        .        .        .        .        .
   .01   2150.  .         .         .       I.  WEML .        .        .        .        .        .        .
         2200.  C         .         .       I.   WEL .        .        .        .        .        .        .
         2250.  C         .         .        I   WEML .        .        .        .        .        .        .
         2300.  C         .         .        .I   WEML .       .        .        .        .        .        .
  0.59   2350.  C         .         .        .I    EML .       .        .        .        .        .        .
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      2400.  C        .         .         . I   WEL .         .         .         .         .         .         .
      2450.  C        .         .         .  I   WELM         .         .         .         .         .         .
 1.01 2500.  .        .         .         .   I   WEL M       .         .         .         .         .         .
      2550.  .        .         .         .   I    WE M       .         .         .         .         .         .
      2600.  .        .         .         .    I    WE M      .         .         .         .         .         .
  .65 2650.  .        .         .         .     I   .WLEM     .         .         .         .         .         .
      2700.  .     C  .         .         .      I  . WE M    .         .         .         .         .         .
      2750.  C        .         .         .       I .  WE M   .         .         .         .         .         .
      2800.  C        .         .         .       I .  WE  M  .         .         .         .         .         .
      2850.  C        .         .         .        I.   WE  M .         .         .         .         .         .
      2900.  C        .         .         .         I   WEL  M.         .         .         .         .         .
      2950.  C        .         .         .         .I   WEL  M         .         .         .         .         .
      3000.  C        .         .         .         .I    EL  .M        .         .         .         .         .
 0.73 3050.  C        .         .         .         . I   WEL . M       .         .         .         .         .
      3100.  C        .         .         .         . I    E L.  M      .         .         .         .         .
      3150.  C        .         .         .         .  I   WE .L   M    .         .         .         .         .
 1.01 3200.  C        .         .         .         .  I   WE .L   M    .         .         .         .         .
      3250.  C        .         .         .         .  I    WE.L   M    .         .         .         .         .
 0.77 3300.  C        .         .         .         .   I    WE L   M   .         .         .         .         .
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T'  DREAMY DRAW WSH 100 YEAR PROFILE WITH 1' ENCROACHMENT
T3  100 YR PROFILE W/1' ENCR

J1  ICHECK   INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ

             3                                                     251.600
MULTIPLE PROFILE RUN WITH INTERPOLATED CROSS SECTIONS

J2  NPROF    IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE

    2
```

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.150
2800 NAT Q1= 73.66 WSELK= 247.01 ENC Q1= 128.02 WSEL= 248.01 RATIO= -0.7379
NAT Q1= 128. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 248.01
3280 CROSS SECTION 0.15 EXTENDED 0.10 FEET

3470 ENCROACHMENT STATIONS= 1208.0 1335.0 TYPE= 4 TARGET= 0.000

0.150	7.60	251.60	0.00	247.01	251.67	0.07	0.00	0.00	250.00
1000.0	0.0	1000.0	0.0	0.0	459.6	0.0	0.0	0.0	254.00
0.00	0.00	2.18	0.00	0.000	0.040	0.000	0.000	244.00	1208.00
0.000437	0.	0.	0.	0	0	0	0.00	95.00	1303.00

*SECNO 0.210
2800 NAT Q1= 213.23 WSELK= 249.51 ENC Q1= 332.61 WSEL= 250.51 RATIO= -0.5599
NAT Q1= 333. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 250.51

3470 ENCROACHMENT STATIONS= 1270.0 1470.0 TYPE= 4 TARGET= 0.000

0.210	5.74	251.74	0.00	249.51	251.80	0.06	0.12	0.00	254.00
1000.0	0.0	1000.0	0.0	0.0	508.9	0.0	3.4	0.7	258.00
0.04	0.00	1.97	0.00	0.000	0.040	0.000	0.000	246.00	1278.48
0.000379	300.	305.	315.	2	0	0	0.00	112.35	1390.83

*SECNO 0.260
2800 NAT Q1= 74.20 WSELK= 252.60 ENC Q1= 127.10 WSEL= 253.60 RATIO= -0.7129
NAT Q1= 127. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 253.60

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 1315.0 1440.0 TYPE= 4 TARGET= 0.000

0.260	3.58	252.58	252.58	252.60	253.71	1.12	0.31	0.32	256.00
1000.0	0.0	1000.0	0.0	0.0	117.6	0.0	5.3	1.2	258.00
0.05	0.00	8.51	0.00	0.000	0.040	0.000	0.000	249.00	1327.15
0.018554	270.	270.	270.	20	14	0	0.00	53.29	1380.44

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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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*SECNO 0.310
 2800 NAT Q1=     120.96  WSELK=     256.08  ENC Q1=     183.87  WSEL=     257.08  RATIO=  -0.5201
 NAT Q1=     184.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=     257.08

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66


3470 ENCROACHMENT STATIONS=      360.0     445.0  TYPE=      4  TARGET=        0.000
     0.310      5.09    256.09      0.00    256.08    256.70      0.61      2.94      0.05    260.00
    1000.0       0.0    1000.0       0.0       0.0     159.7       0.0       6.2       1.6    260.00
      0.06      0.00      6.26      0.00     0.000     0.040     0.000     0.000    251.00    377.11
  0.006746      280.      280.      280.         3         0         0      0.00     53.23    430.34


*SECNO 0.370
 2[illegible] NAT Q1=      84.81  WSELK=     258.42  ENC Q1=     141.99  WSEL=     259.42  RATIO=  -0.6743
 N[illegible]=     142.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=     259.42

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


3470 ENCROACHMENT STATIONS=      345.0     426.0  TYPE=      4  TARGET=        0.000
     0.370      3.41    258.41      0.00    258.42    259.40      0.99      2.59      0.12    266.00
    1000.0       0.0    1000.0       0.0       0.0     124.9       0.0       7.1       1.9    264.00
      0.07      0.00      8.00      0.00     0.000     0.040     0.000     0.000    255.00    357.90
  0.014063      275.      275.      275.         3         0         0      0.00     49.93    407.83


*SECNO 0.410
 2800 NAT Q1=      74.84  WSELK=     263.86  ENC Q1=     123.84  WSEL=     264.86  RATIO=  -0.6548
 NAT Q1=     124.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=     264.86
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      290.0     382.0  TYPE=      4  TARGET=        0.000
     0.410      4.34    263.84    263.84    263.86    265.09      1.25      3.91      0.08    268.00
    1000.0       0.0    1000.0       0.0       0.0     111.6       0.0       7.8       2.2    270.00
      0.08      0.00      8.96      0.00     0.000     0.040     0.000     0.000    259.50    310.80
  0.018228      245.      245.      245.        12        11         0      0.00     45.72    356.52
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NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.460
2800 NAT Q1= 85.67 WSELK= 271.92 ENC Q1= 108.14 WSEL= 272.92 RATIO= -0.2623
NAT Q1= 125. RATIOS LOB, CH, ROB= 0.1353 0.8647 0.0000 WSEL= 272.92

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 390.0 417.0 TYPE= 4 TARGET= 0.135

0.460	5.63	271.63	271.63	271.92	273.84	2.21	4.85	0.29	270.00
1000.0	0.0	1000.0	0.0	0.0	83.8	0.0	8.3	2.4	282.00
0.09	0.00	11.93	0.00	0.000	0.040	0.000	0.000	266.00	390.00
0.020696	240.	250.	260.	20	11	0	0.00	19.22	409.22

'SECNO 0.520
2[illegible] NAT Q1= 129.44 WSELK= 275.27 ENC Q1= 195.06 WSEL= 276.27 RATIO= -0.5070
[illegible]= 195. RATIOS LOB, CH, ROB= 0.0013 0.9987 0.0000 WSEL= 276.27

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.49

3470 ENCROACHMENT STATIONS= 332.0 400.0 TYPE= 4 TARGET= 0.001

0.520	5.97	275.97	0.00	275.27	276.34	0.37	2.31	0.18	276.00
1000.0	0.0	1000.0	0.0	0.0	205.4	0.0	9.5	2.7	278.00
0.11	0.00	4.87	0.00	0.000	0.040	0.000	0.000	270.00	332.09
0.003345	340.	340.	340.	2	0	0	0.00	58.79	390.88

'SECNO 0.590
2800 NAT Q1= 94.78 WSELK= 279.73 ENC Q1= 156.30 WSEL= 280.73 RATIO= -0.6491
NAT Q1= 156. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 280.73

3301 HV CHANGED MORE THAN HVINS

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

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
           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=      290.0     376.0  TYPE=      4  TARGET=       0.000
    0.590      4.27    279.27    279.27    279.73    280.41      1.13      2.32      0.23    282.00
   1000.0       0.0    1000.0       0.0       0.0     117.2       0.0      10.8       3.1    282.00
     0.12      0.00      8.53      0.00     0.000     0.040     0.000     0.000    275.00    307.26
 0.018773      370.      350.      340.        20        19         0      0.00     53.30    360.56


*SECNO 0.650
 2800 NAT Q1=      71.44  WSELK=     285.38  ENC Q1=     115.24  WSEL=     286.38  RATIO=  -0.6132
 NAT Q1=     116.  RATIOS LOB, CH, ROB=   0.0084  0.9904  0.0012  WSEL=     286.38

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      320.0     372.0  TYPE=      4  TARGET=       0.010
    0.650      5.38    285.38    285.31    285.38    286.68      1.29      6.22      0.05    286.00
   1000.0       0.0    1000.0       0.0       0.0     109.5       0.0      11.6       3.5    286.00
     0.13      0.00      9.13      0.00     0.000     0.040     0.000     0.000    280.00    321.85
     9534      310.      325.      330.         5        11         0      0.00     40.68    370.56


*SECNO 0.730
 2800 NAT Q1=     127.89  WSELK=     290.29  ENC Q1=     200.69  WSEL=     291.29  RATIO=  -0.5693
 NAT Q1=     201.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=     291.29

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.78


3470 ENCROACHMENT STATIONS=      290.0     373.0  TYPE=      4  TARGET=       0.000
    0.730      4.29    290.29      0.00    290.29    290.79      0.50      4.03      0.08    292.00
   1000.0       0.0    1000.0       0.0       0.0     176.9       0.0      12.9       4.0    292.00
     0.15      0.00      5.65      0.00     0.000     0.040     0.000     0.000    286.00    302.54
 0.006137      440.      400.      400.         3         0         0      0.00     64.48    367.02


*SECNO 0.770
 2800 NAT Q1=      81.23  WSELK=     292.61  ENC Q1=     125.74  WSEL=     293.61  RATIO=  -0.5480
 NAT Q1=     126.  RATIOS LOB, CH, ROB=   0.0000  1.0000  0.0000  WSEL=     293.61
```

CNO	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

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 860.0 930.0 TYPE= 4 TARGET= 0.000

0.770	4.44	292.44	292.44	292.61	293.80	1.37	2.34	0.26	296.00
1000.0	0.0	1000.0	0.0	0.0	106.6	0.0	13.7	4.2	296.00
0.15	0.00	9.38	0.00	0.000	0.040	0.000	0.000	288.00	877.81
0.017821	215.	240.	250.	3	8	0	0.00	39.73	917.54

PROFILE FOR STREAM 100 YR PROFILE W/1' ENCR

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   244.     254.     264.     274.     284.     294.     304.     314.     324.     334.
    SECNO   CUMDIS

    0.15     0.  I     L E R          .        .        .        .        .        .        .        .
            50.  I      LE .R         .        .        .        .        .        .        .        .
           100.  CI     LE .R         .        .        .        .        .        .        .        .
           150.  CI      E . R        .        .        .        .        .        .        .        .
           200.  CI      EL.  R       .        .        .        .        .        .        .        .
           250.  C I     EL.  R       .        .        .        .        .        .        .        .
           300.  C I     EML   R      .        .        .        .        .        .        .        .
    0.21   350.  C I     EML   R      .        .        .        .        .        .        .        .
           400.  C  I    E L   R      .        .        .        .        .        .        .        .
           450.  C  I    WEML  R      .        .        .        .        .        .        .        .
           500.  C   I   WE.L  R      .        .        .        .        .        .        .        .
           550.  C   I   WE.LM R      .        .        .        .        .        .        .        .
    0.26   600.  .    I   WE LMR      .        .        .        .        .        .        .        .
           650.  C    I  WE  LR       .        .        .        .        .        .        .        .
           700.  C     I  WE LMR      .        .        .        .        .        .        .        .
           750.  C     I  WE  LR      .        .        .        .        .        .        .        .
           800.  C     I  .WE  LM     .        .        .        .        .        .        .        .
           850.  C      I . E   LM    .        .        .        .        .        .        .        .
    0.31   900.  C      I . WE  LM    .        .        .        .        .        .        .        .
           950.  C       I . E   LM .        .        .        .        .        .        .        .
          1000.  C       I . WE  RLM.        .        .        .        .        .        .        .
          1050.  C        I. WE   RL.        .        .        .        .        .        .        .
          1100.  C         I  WE   RL        .        .        .        .        .        .        .
    0.37  1150.  C         .I WE    R L      .        .        .        .        .        .        .
          1200.  C         . I  WE  .RL      .        .        .        .        .        .        .
          1250.  C         .  I  WE . RL     .        .        .        .        .        .        .
          1300.  C         .   I  WE.  LR    .        .        .        .        .        .        .
          1350.  C         .    I  WE   LR   .        .        .        .        .        .        .
    0.41  1400.  .         .     I  WE  L R  .        .        .        .        .        .        .
          1450.  .         .      I  .W EL  MR .       .        .        .        .        .        .
          1500.  .         .       I .  W E  M .R      .        .        .        .        .        .
          1550.  .         .        I.    WE M .  R    .        .        .        .        .        .
          1600.  .         .         .I    W EM.     R .        .        .        .        .        .
    0.46  1650.  .         .         . I   L W E       R .      .        .        .        .        .
          1700.  C         .         .  I   LW E      R .       .        .        .        .        .
          1750.  C         .         .  I    LW.E     R .       .        .        .        .        .
          1800.  C         .         .   I    LWE    R .        .        .        .        .        .
          1850.  C         .         .   I     WE    R .        .        .        .        .        .
          1900.  C         .         .    I    LWE  R .        .        .        .        .        .
          1950.  C         .         .     I   .WE R .         .        .        .        .        .
    0.52  2000.  C         .         .     I   . E R .         .        .        .        .        .
          2050.  C         .         .      I  . WE R .        .        .        .        .        .
          2100.  C         .         .      I  .  WER .        .        .        .        .        .
          2150.  C         .         .       I .  WELR .       .        .        .        .        .
          2200.  C         .         .        I.   WER .       .        .        .        .        .
          2250.  C         .         .         I   WELR .      .        .        .        .        .
          2300.  C         .         .         I    WEL .      .        .        .        .        .
    0.59  2350.  .         .         .         .I   WEML .      .        .        .        .        .
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      2400.  .        .        .        . I   WEML.        .        .        .        .        .
      2450.  .        .        .        .  I   WEL.        .        .        .        .        .
      2500.  .        .        .        .  I    WEL        .        .        .        .        .
      2550.  .        .        .        .   I    WEM        .        .        .        .        .
      2600.  .        .        .        .    I    WEM        .        .        .        .        .
 J.65 2650.  .        .        .        .     I   .WLEM     .        .        .        .        .
      2700.  .     C  .        .        .      I  . WE M    .        .        .        .        .
      2750.  C        .        .        .       I .  WE M   .        .        .        .        .
      2800.  C        .        .        .       I .  WE  M  .        .        .        .        .
      2850.  C        .        .        .        I.   WE  M .        .        .        .        .
      2900.  C        .        .        .         I   WEL  M.        .        .        .        .
      2950.  C        .        .        .         .I   WEL  M        .        .        .        .
      3000.  C        .        .        .         .I    EL  .M       .        .        .        .
0.73  3050.  C        .        .        .         . I   WEL . M      .        .        .        .
      3100.  C        .        .        .         . I    E L.  M     .        .        .        .
      3150.  C        .        .        .         .  I   WE L   M    .        .        .        .
      3200.  C        .        .        .         .  I    WE.L   M   .        .        .        .
      3250.  C        .        .        .         .   I   WE.L   M   .        .        .        .
0.77  3300.  .        .        .        .         .   I   W E L   M  .        .        .        .
```

THIS RUN EXECUTED 25NOV96 12:35:08

****
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

100 YEAR PROFILE RUN

SUMMARY PRINTOUT

	CWSEL	.01K	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
*	247.014	73.66	0.00	0.00	0.00	0.00	0.00
	251.600	478.45	1208.00	1335.00	100000.00	100000.00	0.00
*	249.514	213.23	0.00	0.00	0.00	0.00	6.56
	251.739	513.38	1270.00	1470.00	100000.00	100000.00	6.56
*	252.601	74.20	0.00	0.00	0.00	0.00	11.11
*	252.583	73.41	1315.00	1440.00	100000.00	100000.00	11.11
*	256.081	120.96	0.00	0.00	0.00	0.00	7.14
*	256.090	121.75	360.00	445.00	100000.00	100000.00	7.14
	258.418	84.81	0.00	0.00	0.00	0.00	14.55
*	258.410	84.33	345.00	426.00	100000.00	100000.00	14.55
*	263.858	74.84	0.00	0.00	0.00	0.00	18.37
*	263.840	74.07	290.00	382.00	100000.00	100000.00	18.37
*	271.918	85.67	0.00	0.00	0.00	0.00	26.00
*	271.628	69.51	390.00	417.00	100000.00	100000.00	26.00
*	275.268	129.44	0.00	0.00	0.00	0.00	11.76
*	275.970	172.89	332.00	400.00	100000.00	100000.00	11.76
*	279.727	94.78	0.00	0.00	0.00	0.00	14.29
*	279.275	72.98	290.00	376.00	100000.00	100000.00	14.29
*	285.384	71.44	0.00	0.00	0.00	0.00	15.38
	285.383	71.55	320.00	372.00	100000.00	100000.00	15.38
*	290.294	127.89	0.00	0.00	0.00	0.00	15.00
*	290.293	127.66	290.00	373.00	100000.00	100000.00	15.00

	CWSEL	.01K	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
*	292.612	81.23	0.00	0.00	0.00	0.00	8.33
*	292.439	74.91	860.00	930.00	100000.00	100000.00	8.33

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=    247.014  PROFILE=  1  CRITICAL DEPTH ASSUMED

WARNING SECNO=    247.014  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    247.014  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    247.014  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    247.014  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    247.014  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    247.014  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    247.014  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    247.014  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    247.014  PROFILE=  1  INTERPOLATED X-SECTIONS USED
CAUTION SECNO=    247.014  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  2  MINIMUM SPECIFIC ENERGY

C    N SECNO=     247.014  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAU  ON SECNO=    247.014  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    247.014  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    247.014  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    247.014  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=    247.014  PROFILE=  1  INTERPOLATED X-SECTIONS USED
WARNING SECNO=    247.014  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    247.014  PROFILE=  1  INTERPOLATED X-SECTIONS USED
CAUTION SECNO=    247.014  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    247.014  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=    247.014  PROFILE=  1  INTERPOLATED X-SECTIONS USED

WARNING SECNO=    247.014  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    247.014  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    247.014  PROFILE=  1  INTERPOLATED X-SECTIONS USED
CAUTION SECNO=    247.014  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    247.014  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

HEC2 S/N: 1363000967 HMVersion: 6.52 Data File: MA19REV.HC2

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*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    28JUL97    TIME   11:33:33 *
*******************************************
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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              *
****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
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   :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
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==========
H A E S T A D M E T H O D S
==========

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

```
T1          DREAMY DRAW EAST WASH REVISED 7/10/97
T2          STATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM
T3          100 YEAR PROFILE RUN
T4          FILE: MA19REV.HC2 REVISED MODEL
J1     0      2      0      0     -1      0      0      0 1241.0      0
J2     1      0      0      0      0      0     -1      0      0      0
J3    38     43      1     53     54      4      8     26     27     28
J3    31     32     33    200
NC 0.015  0.015  0.015  0.100  0.300
*           FLOW IS COMBINATION OF DREAMY DRAW EAST FLOW OF 1000 CFS & SPLIT
*             FLOW FROM MYRTLE AVENUE WASH MODEL
*           SPLIT OCCURS AT INTERSECTION OF 17th ST & MYRTLE AVENUE
QT     2    1536   1536
*           OUTLET UNDER BUILDING
ET                4.1    950   1048
X1 0.006       8    950   1048
GR1244.6     950 1239.3    950 1239.33   1000 1244.33   1000 1244.33   1001
GR1239.3    1001 1239.3   1048 1244.3    1048
*           ENTRANCE UNDER BUILDING
ET                4.1    946   1017
X1 0.044       8    945   1017    170    225    200
GR1244.5     945 1239.5    945 1239.4    980 1244.5    980 1244.5    981
GR1239.4     981 1239.4   1017 1244.4   1017
ET                4.1    968   1022
*           16th STREET CROSSING
NH     3    .022    995   .015   1005   .022   1200
X1 0.049      11    975   1027     28     28     28
GR1243.6     800 1241.69    927 1241.05    975 1240.49    980 1240.43    995
GR1240.4    1000 1240.38   1005 1240.58   1021 1241.09   1027 1241.36   1047
GR1244.0    1200
ET                4.1    969   1031
NH     3    .016    995   .015   1005   .016   1200
X1 0.061      14    972   1023     65     65     65
GR1243.7     800 1242.88    840 1242.03    880 1241.69    916 1241.94    957
GR1241.8     972 1241.3     977 1241.14    995 1241.1    1000 1241.09   1005
GR1241.2    1018 1241.67   1023 1241.91   1045 1244.0    1200
ET                4.1    980   1040
NH     6     .02    925   .016    965   .025    994   .015   1030   .016
NH  1030     .02   1190
X1  .071      16    965   1090     60     40     50
GR1245.0     870 1244.6    905 1243.67    925 1243.24    925 1243.53    943
GR1243.3     965 1243.74   965   1242    994   1242    1000   1242   1010
GR1241.9    1030 1242.48   1060 1244.0   1090 1246.0    1095 1247.0   1110
GR1247.5    1190
ET                4.1    970   1030
NH     4    .027    925   .016    965   .027   1020   .016   1070
X1  .084      13    980   1020     70     70     70
GR1245.7     905 1244.89    925 1244.43    925 1244.82    943 1244.56    965
GR1245.1     965 1244.1     980 1242.0    990 1242.0    1000 1242.0    1010
GR1243.7    1020 1244.0    1025 1246.0   1070
ET                4.1    977   1013
NH     4    .027    925   .016    967   .025   1020   .016   1070
X1  .097      13    980   1020     70     70     70
GR1246.9     900 1248.11    925 1245.65    925 1246.19    945 1245.86    967
GR1246.4     967 1245.2     980 1242.2    990 1242.0    1000 1242.9    1010
GR1244.6    1020 1246.0    1030 1248.0   1070
ET                4.1    983   1018
NH     4     .02    925   .016    968   .025   1021   .016   1090
X1 0.108      14    980   1021     55     55     55
GR1247.7     905 1247.04    925 1246.57    925 1247.10    950 1246.6     968
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GR1247.2     968  1246.3     980  1243.2     990  1243.4    1000  1243.6    1013
GR1245.9    1021  1246.0    1025  1248.0    1072  1250.0    1090
ET                   4.1     985    1015
NH     4     .02     930    .016     970    .025    1028    .016    1080
X[illegible]141      15     983    1028     175     175     175
G[illegible]1.4     900    1250     916 1250.03     930  1249.6     930 1249.84     950
GR1249.6     970 1250.08     970  1248.5     983  1242.8     990  1243.0    1000
GR1245.5    1013  1246.0    1014  1248.0    1022  1250.0    1028  1252.0    1080
*           SOURCE OF FLOW (1000 CFS) GENERATED FROM DREAMY DRAW EAST WATERSHED
QT     2    1000    1000
ET                   4.1     985    1015
NH     3     .03     970    .022    1025    .016    1080
X1 0.166       7     970    1025     155     100     135
GR1254.1     915  1254.3     970  1245.7     990  1245.7    1000  1245.7    1010
GR1250.0    1025  1252.0    1080
ET                   4.1     994    1020
NC   .03    .035    .025
X1 0.183      10     972    1030      95      90      90
GR1254.8     940  1254.0     972  1252.0     979  1250.0     985  1248.0     990
GR1247.0     998  1245.6    1000  1248.0    1020  1250.0    1030  1252.0    1078
ET                   4.1     995    1021
NC                  .035
X1 0.221      10     989    1060     205     190     200
GR1258.0     915  1256.0     973  1254.0     989  1250.0     993  1245.9    1000
GR1246.0    1012  1248.0    1021  1250.0    1037  1252.0    1060  1252.5    1090
ET                   4.1     992    1016
NC  0.06    0.06    0.04
X1 0.239      10     965    1042      95     100      95
GR1258.0     925  1256.0     965  1254.0     970  1250.0     985  1248.0     995
G[illegible]46.0    1000  1248.0    1010  1250.0    1020  1252.0    1042  1252.7    1130
[illegible]                  4.1     975    1010
X1 0.276      11     935    1020     180     200     195
GR1260.0     900  1258.0     935  1256.0     950  1254.0     960  1252.0     973
GR1250.0     990  1248.5    1000  1250.0    1007  1252.0    1015  1254.0    1020
GR1256.0    1060
ET                   4.1     993    1026
X1 0.296      10     990    1035      75     130     105
GR1260.0     945  1258.0     960  1256.0     980  1254.0     990  1252.0     995
GR1249.3    1000  1250.0    1007  1252.0    1028  1254.0    1035  1256.0    1040
ET                   4.1     985    1018
X1 0.336      12     970    1028     190     225     210
GR1262.0     915  1260.0     950  1258.0     965  1256.0     970  1254.0     982
GR1252.0     990  1251.5    1000  1252.0    1007  1254.0    1020  1256.0    1028
GR1258.0    1045  1260.0    1070
ET                   4.1     985    1010
X1 0.370      12     975    1022     200     160     180
GR1264.2     930  1264.0     950  1262.0     970  1260.0     975  1258.0     980
GR1254.0     995  1253.7    1000  1254.0    1006  1258.0    1020  1260.0    1022
GR1262.0    1045  1264.0    1140
ET                   4.1     985    1013
X1  .392      11     970    1027     118     119     118
GR  1264     970    1262     977    1260     982    1258     990    1256     995
GR  1254    1000    1256    1008    1258    1012    1260    1016    1262    1021
GR  1264    1027
ET                   4.1     983    1012
[illegible]430      10     960    1012     185     210     200
G[illegible]67.0     830  1266.0     940  1264.0     960  1260.0     970  1258.0     990
GR1257.0    1000  1258.0    1006  1260.0    1010  1262.0    1012  1266.0    1045
ET                   4.1     973    1012
X1 0.460      12     965    1020     165     150     155
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GR1268.0     950  1266.0     960  1264.0     965  1262.0     976  1260.0     980
GR1258.8    1000  1260.0    1007  1262.0    1009  1264.0    1020  1268.0    1030
GR1268.0    1045  1270.0    1050
NC  .015    .015    .015      .3      .5
E[illegible]              4.1     981    1022
X1 [illegible].471      10     981    1035      65      60      60
X3    10       0       0                                  1267.01 1267.01
GR1272.8     779  1270.0     840 1268.25     853 1268.43     917 1265.99     981
GR1259.8     981  1259.5    1000 1259.31    1011 1270.18    1035 1271.44    1190
*           WASH CROSSING @ MORTEN AVENUE
*           ONE 8' HIGH X 12' WIDE CORREGATED STEEL PIPE.
*           USED 9.7' EQUIVALENT PIPE FOR ANALYSIS.
*    DENSE VEGETATION  (BAMBOO, SHRUBS, ETC.) ON WASH BOTTOM, WITH SEVERAL TREES
NC   .04     .04     .10      .6      .8
ET                   4.1     992    1007
SC 1.024      0.5     2.6     200     9.7       0     142     1.1 1260.92 1259.01
X1 0.498        9     992    1007     145     142     141
X2     0        0       2 1268.82 1271.65
X3    10        0                                  1268.92 1268.92
GR1272.1     900 1271.74     975  1271.7     992 1260.95     992 1260.92    1000
GR1260.9    1007  1271.4    1007 1271.83    1025 1273.39    1040
NC                          .3      .5
ET                   4.1     991    1016
X1 0.507       11     961    1037      60      40      50
GR  1278     961    1267     990    1265     994    1263     997    1262    1000
GR  1262    1005    1265    1010    1267    1013    1268    1020    1269    1025
GR  1275    1037
ET                   4.1     983    1019
X1 0.517       14     963    1029      45      55      50
G[illegible]1280     950    1279     956    1278     963    1275     970    1270     981
G[illegible]265     988    1264     990    1263    1000    1264    1003    1265    1006
GR  1270    1019    1272    1025  1272.5    1029    1276    1029
ET                   4.1     988    1029
X1 0.524       14     978    1045      38      40      40
GR1273.5     978    1273     981    1272     988    1270     990  1261.5    1000
GR  1262    1002    1263    1008    1264    1011    1265    1012    1266  1012.5
GR  1267    1015    1270    1022    1271    1026    1275    1045
*           OUTLET OF CROSSING UNDER BUILDING
NC   .06     .06     .04
ET                   4.1     991    1035
X1 0.531       26     981    1061      37      18      34
GR  1277     981  1272.5     981    1270     992  1269.5     994    1277     994
GR  1277     996    1269     996  1268.0    1000    1268    1003  1268.7    1010
GR  1269    1013  1269.4    1016    1277    1016    1277    1018  1269.6    1018
GR  1270    1020    1270    1023    1271    1030    1272    1039    1277    1039
GR  1277    1041  1272.8    1041    1273    1042    1275    1050    1276    1055
GR1277.2    1061
*           INLET OF CROSSING UNDER BUILDING
ET                   4.1     986    1031
X1 0.549       22     992    1040      96      96      96
GR  1277     967    1277     971    1274     982    1272     989  1271.9     990
GR  1277     990    1277     992  1271.2     992    1270     997  1269.4    1000
GR  1270    1007  1270.9    1016    1277    1016    1277    1018  1271.3    1018
GR  1272    1022    1273    1028    1275    1040    1277    1040    1277    1042
GR1275.5    1042    1277    1051
E[illegible]              4.1     996    1025
X1 [illegible].559       17     959    1024      57      54      55
GR  1280     915    1278     958    1277     959    1276     965    1275     970
GR  1274     975    1273     980    1272     981  1271.5     982  1271.5    1000
GR1271.5    1010    1272    1011    1273    1016  1273.4    1024    1274    1042
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GR  1276    1055    1278    1067
ET                  4.1     990     1010
X1 0.566      13    973     1021      32      34      33
GR  1279    920     1274    966 1273.48     973     1273    980     1272    990
GR  1272    1000    1272    1014    1273    1018    1274    1019    1274    1021
GR  1275    1035    1276    1043    1278    1055
ET                  4.1     983     1011
X1 0.576      11    979     1014      48      60      52
GR  1278    937     1276.1  978     1276.5  979     1276    984     1275    990
GR  1274    996     1273    1000    1274    1005    1274.8  1014    1276    1033
GR  1278    1041
ET                  4.1     991     1015
X1 0.582      13    983     1023      28      30      30
GR1278.3    950     1278    957     1276.8  983     1276    986     1275    991
GR  1274    995     1273.5  997     1273.4  1000    1274    1010    1275    1023
GR  1276    1031    1278    1040    1278.4  1060
NC   .03     .03    .027      .1       .3
ET                  4.1     304     363
X1   .59      12    290     376     400     410     400
GR  1284      0     1288      25    1289.5    88    1292    148     1286    217
GR  1282    290     1276    328     1275    333     1276    342     1282    376
GR  1283    470     1281    610       0       0       0       0       0       0
NC   .06     .06    .04
ET                  10.4
X1   .65      10    320     372     310     330     325       0       0       0
GR  1288      0     1286    110     1288    135     1286    320     1280    338
GR  1289    345     1280    358     1286    372     1289    442     1292    527
ET                  10.4
X1   .73      11    290     373     440     400     400       0       0       0
GR  1296      0     1292    102    1293.5   198     1292    290     1286    334
GR  1286    345     1286    352     1292    373     1292    445     1296    530
GR  1308    600       0       0       0       0       0       0       0       0
ET                  10.4
X1   .77      13    860     930     215     250     240       0       0       0
GR  1305    500     1300    562     1296    650   1296.5    750     1296    860
GR  1292    880     1288    893     1288    898     1288    902     1296    930
GR  1298    975     1296    1055    1300    1145      0       0       0       0
EJ
T1          DREAMY`DRAW EAST WASH 100-YR PROFILE WITH 1 FOOT ENCROACHMENT
T3      100 YR PROFILE W/ 1' ENR
J1            3                                                   1242.0
J2     2


ER
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THIS RUN EXECUTED 28JUL97 11:33:33

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

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


T1          DREAMY DRAW EAST WASH REVISED 7/10/97
T2          STATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM
T3          100 YEAR PROFILE RUN
T4          FILE: MA19REV.HC2 REVISED MODEL

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0       -1        0        0        0     1241.0     0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      1        0        0        0        0        0       -1        0        0        0


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

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

NC    0.015    0.015    0.015    0.100    0.300
            FLOW IS COMBINATION OF DREAMY DRAW EAST FLOW OF 1000 CFS & SPLIT
              FLOW FROM MYRTLE AVENUE WASH MODEL
            SPLIT OCCURS AT INTERSECTION OF 17th ST & MYRTLE AVENUE
QT        2     1536     1536
            OUTLET UNDER BUILDING
ET                         4.1      950     1048
X1    0.006        8      950     1048
GR   1244.6      950   1239.3      950   1239.33     1000  1244.33     1000  1244.33     1001
GR   1239.3     1001   1239.3     1048    1244.3     1048
            ENTRANCE UNDER BUILDING

ET                         4.1      946     1017
X1    0.044        8      945     1017       170      225      200
GR   1244.5      945   1239.5      945   1239.4      980   1244.5      980   1244.5      981
GR   1239.4      981   1239.4     1017   1244.4     1017

ET                         4.1      968     1022
            16th STREET CROSSING
NH        3     .022      995     .015     1005     .022     1200
X1    0.049       11      975     1027       28       28       28
GR   1243.6      800  1241.69      927  1241.05      975  1240.49      980  1240.43      995
GR   1240.4     1000  1240.38     1005  1240.58     1021  1241.09     1027  1241.36     1047
GR   1244.0     1200
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ET                      4.1     969     1031
NH      3     .016      995     .015    1005     .016     1200
X1  0.061        14     972     1023      65       65       65
GR  1243.7      800  1242.88     840  1242.03      880  1241.69      916  1241.94      957
GR  1241.8      972  1241.3      977  1241.14      995  1241.1      1000  1241.09     1005
GR  1241.2     1018  1241.67    1023  1241.91     1045  1244.0      1200

ET                      4.1     980     1040
NH      6      .02      925     .016     965     .025      994     .015     1030     .016
NH   1030      .02     1190
X1   .071       16      965    1090      60       40       50
GR  1245.0      870  1244.6     905  1243.67      925  1243.24      925  1243.53      943
GR  1243.3      965  1243.74    965  1242         994  1242        1000  1242        1010
GR  1241.9     1030  1242.48   1060  1244.0      1090  1246.0      1095  1247.0      1110
GR  1247.5     1190

ET                      4.1     970     1030
NH      4     .027      925     .016     965     .027     1020     .016     1070
X1   .084       13      980    1020      70       70       70
GR  1245.7      905  1244.89    925  1244.43      925  1244.82      943  1244.56      965
GR  1245.1      965  1244.1     980  1242.0       990  1242.0      1000  1242.0      1010
GR  1243.7     1020  1244.0    1025  1246.0      1070

ET                      4.1     977     1013
NH      4     .027      925     .016     967     .025     1020     .016     1070
X1   .097       13      980    1020      70       70       70
GR  1246.9      900  1248.11    925  1245.65      925  1246.19      945  1245.86      967
GR  1246.4      967  1245.2     980  1242.2       990  1242.0      1000  1242.9      1010
GR  1244.6     1020  1246.0    1030  1248.0      1070

ET                      4.1     983     1018
NH      4      .02      925     .016     968     .025     1021     .016     1090
X1  0.108       14      980    1021      55       55       55
GR  1247.7      905  1247.04    925  1246.57      925  1247.10      950  1246.6       968
GR  1247.2      968  1246.3     980  1243.2       990  1243.4      1000  1243.6      1013
GR  1245.9     1021  1246.0    1025  1248.0      1072  1250.0      1090

ET                      4.1     985     1015
NH      4      .02      930     .016     970     .025     1028     .016     1080
X1  0.141       15      983    1028     175      175      175
GR  1251.4      900  1250      916  1250.03      930  1249.6       930  1249.84      950
GR  1249.6      970  1250.08   970  1248.5       983  1242.8       990  1243.0      1000
GR  1245.5     1013  1246.0    1014  1248.0      1022  1250.0      1028  1252.0      1080
          SOURCE OF FLOW (1000 CFS) GENERATED FROM DREAMY DRAW EAST WATERSHED

QT      2     1000     1000
ET                      4.1     985     1015
NH      3      .03      970     .022    1025     .016     1080
X1  0.166        7      970    1025     155      100      135
GR  1254.1      915  1254.3    970  1245.7       990  1245.7      1000  1245.7      1010
GR  1250.0     1025  1252.0    1080
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ET			4.1	994	1020					
NC	.03	.035	.025							
X1	0.183	10	972	1030	95	90	90			
GR	1254.8	940	1254.0	972	1252.0	979	1250.0	985	1248.0	990
GR	1247.0	998	1245.6	1000	1248.0	1020	1250.0	1030	1252.0	1078
ET			4.1	995	1021					
NC			.035							
X1	0.221	10	989	1060	205	190	200			
GR	1258.0	915	1256.0	973	1254.0	989	1250.0	993	1245.9	1000
GR	1246.0	1012	1248.0	1021	1250.0	1037	1252.0	1060	1252.5	1090
ET			4.1	992	1016					
NC	0.06	0.06	0.04							
X1	0.239	10	965	1042	95	100	95			
GR	1258.0	925	1256.0	965	1254.0	970	1250.0	985	1248.0	995
GR	1246.0	1000	1248.0	1010	1250.0	1020	1252.0	1042	1252.7	1130
ET			4.1	975	1010					
X1	0.276	11	935	1020	180	200	195			
GR	1260.0	900	1258.0	935	1256.0	950	1254.0	960	1252.0	973
GR	1250.0	990	1248.5	1000	1250.0	1007	1252.0	1015	1254.0	1020
GR	1256.0	1060								
ET			4.1	993	1026					
X1	0.296	10	990	1035	75	130	105			
GR	1260.0	945	1258.0	960	1256.0	980	1254.0	990	1252.0	995
GR	1249.3	1000	1250.0	1007	1252.0	1028	1254.0	1035	1256.0	1040
ET			4.1	985	1018					
X1	0.336	12	970	1028	190	225	210			
GR	1262.0	915	1260.0	950	1258.0	965	1256.0	970	1254.0	982
GR	1252.0	990	1251.5	1000	1252.0	1007	1254.0	1020	1256.0	1028
GR	1258.0	1045	1260.0	1070						
ET			4.1	985	1010					
X1	0.370	12	975	1022	200	160	180			
GR	1264.2	930	1264.0	950	1262.0	970	1260.0	975	1258.0	980
GR	1254.0	995	1253.7	1000	1254.0	1006	1258.0	1020	1260.0	1022
GR	1262.0	1045	1264.0	1140						
ET			4.1	985	1013					
X1	.392	11	970	1027	118	119	118			
GR	1264	970	1262	977	1260	982	1258	990	1256	995
GR	1254	1000	1256	1008	1258	1012	1260	1016	1262	1021
GR	1264	1027								
ET			4.1	983	1012					
X1	0.430	10	960	1012	185	210	200			
GR	1267.0	830	1266.0	940	1264.0	960	1260.0	970	1258.0	990
GR	1257.0	1000	1258.0	1006	1260.0	1010	1262.0	1012	1266.0	1045

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ET                          4.1       973      1012
X1   0.460        12        965      1020       165       150       155
GR   1268.0      950     1266.0       960    1264.0       965    1262.0       976    1260.0       980
GR   1258.8     1000     1260.0      1007    1262.0      1009    1264.0      1020    1268.0      1030
GR   1268.0     1045     1270.0      1050

NC    .015      .015       .015        .3        .5
ET                          4.1       981      1022
X1   0.471        10        981      1035        65        60        60
X3      10         0          0                                        1267.01   1267.01
GR   1272.8       779     1270.0       840   1268.25       853   1268.43       917   1265.99       981
GR   1259.8       981     1259.5      1000   1259.31      1011   1270.18      1035   1271.44      1190
          WASH CROSSING @ MORTEN AVENUE
          ONE 8' HIGH X 12' WIDE CORREGATED STEEL PIPE.
          USED 9.7' EQUIVALENT PIPE FOR ANALYSIS.
     DENSE VEGETATION  (BAMBOO, SHRUBS, ETC.) ON WASH BOTTOM, WITH SEVERAL TREES

NC     .04       .04       .10        .6        .8
ET                          4.1       992      1007
SC   1.024       0.5       2.6       200       9.7         0       142       1.1   1260.92   1259.01
X1   0.498         9       992      1007       145       142       141
X2       0         0         2   1268.82   1271.65
X3      10         0                                        1268.92   1268.92
GR   1272.1       900   1271.74       975    1271.7       992   1260.95       992   1260.92      1000
GR   1260.9      1007    1271.4      1007   1271.83      1025   1273.39      1040

NC                                      .3        .5
ET                          4.1       991      1016
X1   0.507        11        961      1037        60        40        50
GR    1278       961      1267       990      1265       994      1263       997      1262      1000
GR    1262      1005      1265      1010      1267      1013      1268      1020      1269      1025
GR    1275      1037

ET                          4.1       983      1019
X1   0.517        14        963      1029        45        55        50
GR    1280       950      1279       956      1278       963      1275       970      1270       981
GR    1265       988      1264       990      1263      1000      1264      1003      1265      1006
GR    1270      1019      1272      1025    1272.5      1029      1276      1029

ET                          4.1       988      1029
X1   0.524        14        978      1045        38        40        40
GR   1273.5       978      1273       981      1272       988      1270       990    1261.5      1000
GR    1262      1002      1263      1008      1264      1011      1265      1012      1266    1012.5
GR    1267      1015      1270      1022      1271      1026      1275      1045
          OUTLET OF CROSSING UNDER BUILDING

NC     .06       .06       .04
ET                          4.1       991      1035
X1   0.531        26        981      1061        37        18        34
GR    1277       981    1272.5       981      1270       992    1269.5       994      1277       994
GR    1277       996      1269       996    1268.0      1000      1268      1003    1268.7      1010
GR    1269      1013    1269.4      1016      1277      1016      1277      1018    1269.6      1018
GR    1270      1020      1270      1023      1271      1030      1272      1039      1277      1039
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GR      1277      1041    1272.8      1041      1273      1042      1275      1050      1276      1055
GR    1277.2      1061
            INLET OF CROSSING UNDER BUILDING

ET                        4.1       986      1031
X1    0.549        22       992      1040        96        96        96
GR     1277       967      1277       971      1274       982      1272       989    1271.9       990
GR     1277       990      1277       992    1271.2       992      1270       997    1269.4      1000
GR     1270      1007    1270.9      1016      1277      1016      1277      1018    1271.3      1018
GR     1272      1022      1273      1028      1275      1040      1277      1040      1277      1042
GR   1275.5      1042      1277      1051

ET                        4.1       996      1025
X1    0.559        17       959      1024        57        54        55
GR     1280       915      1278       958      1277       959      1276       965      1275       970
GR     1274       975      1273       980      1272       981    1271.5       982    1271.5      1000
GR   1271.5      1010      1272      1011      1273      1016    1273.4      1024      1274      1042
GR     1276      1055      1278      1067

ET                        4.1       990      1010
X1    0.566        13       973      1021        32        34        33
GR     1279       920      1274       966   1273.48       973      1273       980      1272       990
GR     1272      1000      1272      1014      1273      1018      1274      1019      1274      1021
GR     1275      1035      1276      1043      1278      1055

ET                        4.1       983      1011
X1    0.576        11       979      1014        48        60        52
GR     1278       937    1276.1       978    1276.5       979      1276       984      1275       990
GR     1274       996      1273      1000      1274      1005    1274.8      1014      1276      1033
GR     1278      1041

ET                        4.1       991      1015
X1    0.582        13       983      1023        28        30        30
GR   1278.3       950      1278       957    1276.8       983      1276       986      1275       991
GR     1274       995    1273.5       997    1273.4      1000      1274      1010      1275      1023
GR     1276      1031      1278      1040    1278.4      1060

NC      .03       .03      .027        .1        .3
ET                        4.1       304       363
X1      .59        12       290       376       400       410       400
GR     1284         0      1288        25    1289.5        88      1292       148      1286       217
GR     1282       290      1276       328      1275       333      1276       342      1282       376
GR     1283       470      1281       610         0         0         0         0         0         0

NC      .06       .06       .04
ET                       10.4
X1      .65        10       320       372       310       330       325         0         0         0
GR     1288         0      1286       110      1288       135      1286       320      1280       338
GR     1289       345      1280       358      1286       372      1289       442      1292       527
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ET			10.4							
X1	.73	11	290	373	440	400	400	0	0	0
GR	1296	0	1292	102	1293.5	198	1292	290	1286	334
GR	1286	345	1286	352	1292	373	1292	445	1296	530
GR	1308	600	0	0	0	0	0	0	0	0
ET			10.4							
X1	.77	13	860	930	215	250	240	0	0	0
GR	1305	500	1300	562	1296	650	1296.5	750	1296	860
GR	1292	880	1288	893	1288	898	1288	902	1296	930
GR	1298	975	1296	1055	1300	1145	0	0	0	0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.006

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

0.006	1.99	1241.29	1241.29	1241.00	1242.28	0.99	0.00	0.00	1244.60
1536.0	0.0	1536.0	0.0	0.0	192.2	0.0	0.0	0.0	1244.30
0.00	0.00	7.99	0.00	0.000	0.015	0.000	0.000	1239.30	950.00
0.002902	0.	0.	0.	0	7	0	0.00	97.00	1048.00

*SECNO 0.044

3[illegible]DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.044	2.46	1241.86	1241.86	0.00	1243.09	1.23	0.58	0.07	1244.50
1536.0	0.0	1536.0	0.0	0.0	172.6	0.0	0.8	0.4	1244.40
0.01	0.00	8.90	0.00	0.000	0.015	0.000	0.000	1239.40	945.00
0.002927	170.	200.	225.	0	11	0	0.00	71.00	1017.00

1490 NH CARD USED
*SECNO 0.049

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.049	2.32	1242.70	1242.70	0.00	1243.26	0.56	0.09	0.07	1241.05
1536.0	394.3	829.9	311.8	97.9	113.0	81.7	1.0	0.5	1241.09
0.01	4.03	7.34	3.82	0.022	0.020	0.022	0.000	1240.38	859.73
0.003479	28.	28.	28.	0	11	0	0.00	265.03	1124.76

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

1490 NH CARD USED
*SECNO 0.061
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.061	1.92	1243.01	1243.01	0.00	1243.51	0.50	0.19	0.01	1241.80
1536.0	624.7	628.9	282.4	129.8	90.5	71.5	1.4	0.9	1241.67
0.01	4.81	6.95	3.95	0.016	0.016	0.016	0.000	1241.09	833.77
0.002526	65.	65.	65.	0	15	0	0.00	292.64	1126.41

1490 NH CARD USED
*SECNO 0.071
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.071	2.27	1244.17	1244.17	0.00	1244.85	0.68	0.15	0.05	1243.74
1536.0	145.1	1390.9	0.0	33.4	204.2	0.0	1.7	1.2	1244.00
0.01	4.34	6.81	0.04	0.016	0.018	0.020	0.000	1241.90	914.24
0.003527	60.	50.	40.	0	11	0	0.00	176.19	1090.43

1490 NH CARD USED
*SECNO 0.084
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.084	3.68	1245.68	1245.68	0.00	1246.41	0.74	0.27	0.02	1244.10
1536.0	314.7	973.1	248.2	64.6	128.1	40.8	2.1	1.5	1243.70
0.02	4.87	7.59	6.08	0.019	0.027	0.016	0.000	1242.00	905.53
0.004079	70.	70.	70.	0	14	0	0.00	157.24	1062.77

1490 NH CARD USED
*SECNO 0.097
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.097	4.84	1246.84	1246.84	0.00	1247.66	0.83	0.24	0.03	1245.20
1536.0	206.1	1207.2	122.7	49.6	153.4	22.3	2.5	1.7	1244.60
0.02	4.16	7.87	5.49	0.018	0.025	0.016	0.000	1242.00	925.00
0.002979	70.	70.	70.	0	9	0	0.00	121.71	1046.71

1490 NH CARD USED
*SECNO 0.108
7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

3720 CRITICAL DEPTH ASSUMED

0.108	4.45	1247.65	1247.65	0.00	1248.41	0.76	0.17	0.01	1246.30
1536.0	194.7	1148.1	193.2	51.0	149.6	38.7	2.8	1.9	1245.90
0.02	3.81	7.68	4.99	0.018	0.025	0.016	0.000	1243.20	906.58
0.003047	55.	55.	55.	0	15	0	0.00	157.14	1063.72

1490 NH CARD USED
*SECNO 0.141

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.141	5.59	1248.39	1248.39	0.00	1250.21	1.82	0.76	0.32	1248.50
1536.0	0.0	1536.0	0.0	0.0	142.0	0.0	3.5	2.3	1250.00
0.03	0.00	10.82	0.00	0.000	0.025	0.000	0.000	1242.80	983.13
0.006676	175.	175.	175.	0	11	0	0.00	40.04	1023.18

NH CARD USED
*SECNO 0.166

3301 HV CHANGED MORE THAN HVINS

0.166	4.44	1250.14	1249.25	0.00	1250.87	0.73	0.55	0.11	1254.30
1000.0	0.0	999.8	0.2	0.0	145.8	0.2	4.0	2.4	1250.00
0.03	0.00	6.86	0.73	0.000	0.022	0.016	0.000	1245.70	979.69
0.002268	155.	135.	100.	4	14	0	0.00	48.98	1028.67

*SECNO 0.183
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.183	4.54	1250.14	1250.14	0.00	1251.36	1.23	0.33	0.15	1254.00
1000.0	0.0	999.9	0.1	0.0	112.5	0.2	4.3	2.5	1250.00
0.03	0.00	8.89	0.59	0.000	0.025	0.035	0.000	1245.60	984.59
0.006910	95.	90.	90.	0	5	0	0.00	48.66	1033.25

*SECNO 0.221

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.59

0.221	6.04	1251.94	1250.13	0.00	1252.27	0.34	0.82	0.09	1254.00
1000.0	0.0	1000.0	0.0	0.0	214.7	0.0	5.0	2.8	1252.00
0.05	0.00	4.66	0.00	0.000	0.035	0.000	0.000	1245.90	991.06
0.002731	205.	200.	190.	2	11	0	0.00	68.22	1059.28

*SECNO 0.239

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.67

0.239	6.20	1252.20	1251.16	0.00	1252.69	0.49	0.37	0.05	1256.00
1000.0	0.0	998.9	1.1	0.0	177.9	2.7	5.4	2.9	1252.00
0.05	0.00	5.62	0.43	0.000	0.040	0.060	0.000	1246.00	976.73
006172	95.	95.	100.	2	9	0	0.00	91.15	1067.88

*SECNO 0.276

0.276	5.02	1253.52	1252.93	0.00	1254.24	0.72	1.48	0.07	1258.00
1000.0	0.0	1000.0	0.0	0.0	146.5	0.0	6.2	3.3	1254.00
0.06	0.00	6.83	0.00	0.000	0.040	0.000	0.000	1248.50	963.06
0.009552	180.	195.	200.	2	19	0	0.00	55.76	1018.82

*SECNO 0.296

0.296	5.11	1254.41	1253.72	0.00	1255.20	0.78	0.93	0.02	1254.00
1000.0	0.3	999.5	0.2	0.4	140.8	0.2	6.5	3.4	1254.00
0.06	0.78	7.10	0.75	0.060	0.040	0.060	0.000	1249.30	987.93
0.008321	75.	105.	130.	2	15	0	0.00	48.11	1036.04

*SECNO 0.336

0.336	4.70	1256.20	1255.28	0.00	1256.76	0.56	1.54	0.02	1256.00
1000.0	0.0	999.9	0.1	0.0	166.7	0.2	7.3	3.6	1256.00
0.07	0.02	6.00	0.43	0.060	0.040	0.060	0.000	1251.50	969.51
0.006499	190.	210.	225.	2	15	0	0.00	60.18	1029.68

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 0.370

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.370	4.38	1258.08	1258.08	0.00	1259.44	1.36	1.82	0.24	1260.00
1000.0	0.0	1000.0	0.0	0.0	106.8	0.0	7.8	3.9	1260.00
0.08	0.00	9.36	0.00	0.000	0.040	0.000	0.000	1253.70	979.80
0.017944	200.	180.	160.	0	11	0	0.00	40.28	1020.08

*SECNO 0.392

0.392	6.04	1260.04	1259.91	0.00	1261.44	1.40	1.99	0.01	1264.00
1000.0	0.0	1000.0	0.0	0.0	105.4	0.0	8.1	4.0	1264.00
0.08	0.00	9.49	0.00	0.000	0.040	0.000	0.000	1254.00	981.90
0.015816	118.	118.	119.	3	11	0	0.00	34.21	1016.10

*SECNO 0.430

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.90

0.430	5.53	1262.53	1261.09	0.00	1263.03	0.50	1.50	0.09	1264.00
1000.0	0.0	999.2	0.8	0.0	176.4	1.2	8.8	4.2	1262.00
0.09	0.00	5.67	0.67	0.000	0.040	0.060	0.000	1257.00	963.67
0.004372	185.	200.	210.	3	19	0	0.00	52.72	1016.39

*SECNO 0.460

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.59

0.460	4.48	1263.28	1262.88	0.00	1264.23	0.96	1.07	0.14	1264.00
1000.0	0.0	1000.0	0.0	0.0	127.5	0.0	9.3	4.3	1264.00
0.10	0.00	7.85	0.00	0.000	0.040	0.000	0.000	1258.80	968.96
0.012381	165.	155.	150.	3	15	0	0.00	47.08	1016.04

[illegible]ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
[illegible]	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= 0.300 CEHV= 0.500
*SECNO 0.471

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.56

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1267.01 ELREA= 1267.01

0.471	4.41	1263.72	1262.64	0.00	1264.45	0.73	0.14	0.07	1265.99
1000.0	0.0	1000.0	0.0	0.0	146.3	0.0	9.5	4.4	1270.18
0.10	0.00	6.84	0.00	0.000	0.015	0.000	0.000	1259.31	981.00
0.000977	65.	60.	60.	2	15	0	0.00	39.74	1020.74

CCHV= 0.600 CEHV= 0.800

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
[illegible]	1	0.024	0.50	2.60	200.00	9.70	0.00	142.00	1	1	1260.92	1259.01

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 1 - SQUARE EDGE ENTRANCE WITH HEADWALL

5130, EGIC= 1274.64..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1274.36 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.498

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1272.15

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.20

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1274.64	1274.36	7.71	185.	808.	6.276	73.9	1271.65	200.

0.498	10.64	1271.54	0.00	0.00	1272.15	0.61	7.71	0.00	1271.70
1000.0	0.0	999.6	0.4	0.0	159.3	0.4	10.0	4.5	1271.40
0.10	0.00	6.28	1.00	0.000	0.100	0.040	0.000	1260.90	992.00
0.024642	145.	141.	142.	4	0	0	0.00	20.91	1012.91

CCHV= 0.300 CEHV= 0.500
*[illegible] 0.507

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.15

0.507	10.63	1272.63	1268.01	0.00	1272.78	0.16	0.50	0.14	1278.00

1000.0	0.0	1000.0	0.0	0.0	312.7	0.0	10.3	4.5	1275.00
0.11	0.00	3.20	0.00	0.000	0.100	0.000	0.000	1262.00	975.17
0.005331	60.	50.	40.	2	11	0	0.00	57.08	1032.25

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.517

0.517	9.90	1272.90	1268.14	0.00	1273.08	0.18	0.28	0.01	1278.00
1000.0	0.0	1000.0	0.0	0.0	295.1	0.0	10.6	4.6	1276.00
0.11	0.00	3.39	0.00	0.000	0.100	0.000	0.000	1263.00	974.63
0.006063	45.	50.	55.	2	11	0	0.00	54.37	1029.00

*SECNO 0.524

0.524	11.66	1273.16	1267.89	0.00	1273.36	0.19	0.27	0.01	1273.50
1000.0	0.0	1000.0	0.0	0.0	282.5	0.0	10.9	4.7	1275.00
0.12	0.00	3.54	0.00	0.000	0.100	0.000	0.000	1261.50	980.02
0.007635	38.	40.	40.	2	14	0	0.00	56.26	1036.28

*SECNO 0.531

3265 DIVIDED FLOW

0.531	5.27	1273.27	1272.16	0.00	1273.77	0.50	0.26	0.15	1277.00
1000.0	0.0	1000.0	0.0	0.0	176.5	0.0	11.1	4.7	1277.20
0.12	0.00	5.67	0.00	0.000	0.040	0.000	0.000	1268.00	981.00
0.007416	37.	34.	18.	2	22	0	0.00	56.07	1043.07

*SECNO 0.549

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.65

0.549	4.60	1274.00	1273.81	0.00	1275.12	1.12	1.05	0.31	1277.00
1000.0	27.3	972.7	0.0	9.0	113.2	0.0	11.4	4.8	1277.00
0.12	3.03	8.59	0.00	0.060	0.040	0.000	0.000	1269.40	982.01
0.017548	96.	96.	96.	1	15	0	0.00	47.96	1033.98

*SECNO 0.559

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.79

0.559	3.87	1275.37	1274.52	0.00	1275.82	0.45	0.50	0.20	1277.00
1000.0	0.0	914.4	85.6	0.0	163.8	36.0	11.6	4.9	1273.40
0.12	0.00	5.58	2.38	0.000	0.040	0.060	0.000	1271.50	968.19
0.005500	57.	55.	54.	3	14	0	0.00	82.67	1050.86

*SECNO 0.566

0.566	3.51	1275.51	1274.85	0.00	1276.07	0.56	0.20	0.05	1273.48
1000.0	53.2	917.7	29.1	23.0	147.5	15.2	11.7	5.0	1274.00
0.13	2.32	6.22	1.91	0.060	0.040	0.060	0.000	1272.00	952.07
0.006386	32.	33.	34.	2	15	0	0.00	87.04	1039.11

*SECNO 0.576
MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.576	4.26	1277.26	1277.26	0.00	1278.24	0.99	0.50	0.21	1276.50
1000.0	33.6	795.8	170.7	15.4	91.7	38.5	11.9	5.1	1274.80
0.13	2.18	8.68	4.43	0.060	0.040	0.060	0.000	1273.00	953.00
0.015365	48.	52.	60.	0	11	0	0.00	85.03	1038.03

*SECNO 0.582

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.77

0.582	4.69	1278.09	1277.08	0.00	1278.62	0.53	0.24	0.14	1276.80
1000.0	24.4	890.2	85.4	18.1	145.6	30.8	12.1	5.1	1275.00
0.13	1.35	6.11	2.77	0.060	0.040	0.060	0.000	1273.40	954.85
0.004906	28.	30.	30.	3	15	0	0.00	89.75	1044.60

CCHV= 0.100 CEHV= 0.300
*SECNO 0.590

0.590	4.85	1279.85	1279.28	0.00	1280.54	0.69	1.87	0.05	1282.00
1000.0	0.0	1000.0	0.0	0.0	149.7	0.0	13.6	5.8	1282.00
0.15	0.00	6.68	0.00	0.000	0.027	0.000	0.000	1275.00	303.63
0.004450	400.	400.	410.	4	11	0	0.00	60.17	363.80

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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 0.650

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.650	5.32	1285.32	1285.32	0.00	1286.68	1.36	2.70	0.20	1286.00
1000.0	0.0	1000.0	0.0	0.0	107.0	0.0	14.6	6.2	1286.00
0.16	0.00	9.34	0.00	0.000	0.040	0.000	0.000	1280.00	322.03
0.020780	310.	325.	330.	0	8	0	0.00	40.21	370.42

*SECNO 0.730

3301 HV CHANGED MORE THAN HVINS

3 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.87

0.730	4.32	1290.32	1289.29	0.00	1290.81	0.49	4.04	0.09	1292.00
1000.0	0.0	1000.0	0.0	0.0	178.9	0.0	15.9	6.7	1292.00
0.18	0.00	5.59	0.00	0.000	0.040	0.000	0.000	1286.00	302.31
0.005952	440.	400.	400.	4	14	0	0.00	64.81	367.12

*SECNO 0.770

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0.770	4.44	1292.44	1292.44	0.00	1293.80	1.37	2.29	0.26	1296.00
1000.0	0.0	1000.0	0.0	0.0	106.6	0.0	16.7	7.0	1296.00
0.18	0.00	9.38	0.00	0.000	0.040	0.000	0.000	1288.00	877.81
0.017820	215.	240.	250.	0	8	0	0.00	39.73	917.54

PROFILE FOR STREAM 100 YEAR PROFILE RUN

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

     0.01      0.  I WE L   .        .        .        .        .        .        .        .        .        .
              20.  I WE L   .        .        .        .        .        .        .        .        .        .
              40.  I WE L   .        .        .        .        .        .        .        .        .        .
              60.  I WE L   .        .        .        .        .        .        .        .        .        .
              80.  I WE L   .        .        .        .        .        .        .        .        .        .
             100.  I WE L   .        .        .        .        .        .        .        .        .        .
             120.  I WE L   .        .        .        .        .        .        .        .        .        .
             140.  I W EL   .        .        .        .        .        .        .        .        .        .
             160.  I W EL   .        .        .        .        .        .        .        .        .        .
             180.  I  WEL   .        .        .        .        .        .        .        .        .        .
     0.04    200.  I  WEL   .        .        .        .        .        .        .        .        .        .
             220.  .I WEM   .        .        .        .        .        .        .        .        .        .
     0.05    240.  .ILWE    .        .        .        .        .        .        .        .        .        .
             260.  .ILWE    .        .        .        .        .        .        .        .        .        .
             280.  . I E    .        .        .        .        .        .        .        .        .        .
     0.06    300.  . ILE    .        .        .        .        .        .        .        .        .        .
             320.  . ILWE   .        .        .        .        .        .        .        .        .        .
             340.  . I LE   .        .        .        .        .        .        .        .        .        .
     0.07    360.  .  ILWE  .        .        .        .        .        .        .        .        .        .
             380.  .  I WE  .        .        .        .        .        .        .        .        .        .
             400.  .  I LE  .        .        .        .        .        .        .        .        .        .
     0.08    420.  .  IRLWE .        .        .        .        .        .        .        .        .        .
             440.  .  I L E .        .        .        .        .        .        .        .        .        .
             460.  .  I L WE .       .        .        .        .        .        .        .        .        .
             480.  .  I RLWE .       .        .        .        .        .        .        .        .        .
     0.10    500.  .  I RL E .       .        .        .        .        .        .        .        .        .
             520.  .  I  L WE.       .        .        .        .        .        .        .        .        .
     0.11    540.  .   I  LWE.       .        .        .        .        .        .        .        .        .
             560.  .   I  LWE.       .        .        .        .        .        .        .        .        .
             580.  .   I   LWE       .        .        .        .        .        .        .        .        .
             600.  .   I   LWE       .        .        .        .        .        .        .        .        .
             620.  .   I   LWE       .        .        .        .        .        .        .        .        .
             640.  .   I   LWEM      .        .        .        .        .        .        .        .        .
             660.  .   I    WEM      .        .        .        .        .        .        .        .        .
             680.  .   I    WRE      .        .        .        .        .        .        .        .        .
             700.  .   I    WREM     .        .        .        .        .        .        .        .        .
     0.14    720.  .   I    W.EM     .        .        .        .        .        .        .        .        .
             740.  .   I    WLEM     .        .        .        .        .        .        .        .        .
             760.  .   I    CWEM     .        .        .        .        .        .        .        .        .
             780.  .    I   CWEL     .        .        .        .        .        .        .        .        .
             800.  .    I    WEML    .        .        .        .        .        .        .        .        .
             820.  .     I   WE L    .        .        .        .        .        .        .        .        .
             840.  .     I   CE ML   .        .        .        .        .        .        .        .        .
     0.17    860.  .     I   CWEM L  .        .        .        .        .        .        .        .        .
             880.  .     I   CWEM L  .        .        .        .        .        .        .        .        .
             900.  .     I   CWEM L  .        .        .        .        .        .        .        .        .
             920.  .     I   .WEM L  .        .        .        .        .        .        .        .        .
     0.18    940.  .     I   .WEM L  .        .        .        .        .        .        .        .        .
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      960.  .    I   .WEM L    .         .         .         .         .         .         .         .         .
      980.  .    I   .WEM L    .         .         .         .         .         .         .         .         .
     1000.  .    I   .WEM L    .         .         .         .         .         .         .         .         .
     1020.  .    I   .CEM L    .         .         .         .         .         .         .         .         .
     1040.  .    I   .CWE L    .         .         .         .         .         .         .         .         .
     1060.  .    I   .CWE L    .         .         .         .         .         .         .         .         .
     1080.  .     I  .CWE L    .         .         .         .         .         .         .         .         .
     1100.  .     I  .CWE L    .         .         .         .         .         .         .         .         .
     1120.  .     I  .CWE L    .         .         .         .         .         .         .         .         .
0.22 1140.  .     I  .C E L    .         .         .         .         .         .         .         .         .
     1160.  .     I  .C E L    .         .         .         .         .         .         .         .         .
     1180.  .     I  .C E  L   .         .         .         .         .         .         .         .         .
     1200.  .     I  .C E  L   .         .         .         .         .         .         .         .         .
     1220.  .     I  . CE  L   .         .         .         .         .         .         .         .         .
0.24 1240.  .     I  . CE   L  .         .         .         .         .         .         .         .         .
     1260.  .     I  . CWE  L  .         .         .         .         .         .         .         .         .
     1280.  .     I  . CWE  L  .         .         .         .         .         .         .         .         .
     1300.  .     I  . CWE  L  .         .         .         .         .         .         .         .         .
     1320.  .      I . WEM  L .         .         .         .         .         .         .         .         .
     1340.  .      I . CEM  L .         .         .         .         .         .         .         .         .
     1360.  .      I . CEM  L .         .         .         .         .         .         .         .         .
     1380.  .      I . CWEM L .         .         .         .         .         .         .         .         .
     1400.  .       I. CWEM L .         .         .         .         .         .         .         .         .
     1420.  .       I. CWEM  L.         .         .         .         .         .         .         .         .
0.28 1440.  .       I.  WE M L.         .         .         .         .         .         .         .         .
     1460.  .       I.  WE ML .         .         .         .         .         .         .         .         .
     1480.  .        I  CE L  .         .         .         .         .         .         .         .         .
     1500.  .        I  CELM  .         .         .         .         .         .         .         .         .
     1520.  .        I  CWEM  .         .         .         .         .         .         .         .         .
0.30 1540.  .        I  CWEM  .         .         .         .         .         .         .         .         .
     1560.  .        I   WEM  .         .         .         .         .         .         .         .         .
     1580.  .        I   WEM  .         .         .         .         .         .         .         .         .
     1600.  .       .I  CE M .         .         .         .         .         .         .         .         .
     1620.  .       .I  CE M .         .         .         .         .         .         .         .         .
     1640.  .       .I  CWE M.         .         .         .         .         .         .         .         .
     1660.  .       .I  CWE M.         .         .         .         .         .         .         .         .
     1680.  .       .I  CWE M.         .         .         .         .         .         .         .         .
     1700.  .       . I  WE  M         .         .         .         .         .         .         .         .
     1720.  .       . I  CE  M         .         .         .         .         .         .         .         .
     1740.  .       . I  CE  .M        .         .         .         .         .         .         .         .
0.34 1760.  .       . I  CE  .M        .         .         .         .         .         .         .         .
     1780.  .       . I  CWE .M        .         .         .         .         .         .         .         .
     1800.  .       .  I  WE . M       .         .         .         .         .         .         .         .
     1820.  .       .  I  CE . M       .         .         .         .         .         .         .         .
     1840.  .       .  I  CWE. M       .         .         .         .         .         .         .         .
     1860.  .       .  I   WE.  M      .         .         .         .         .         .         .         .
     1880.  .       .   I  WE.  M      .         .         .         .         .         .         .         .
     1900.  .       .   I  W E   M     .         .         .         .         .         .         .         .
     1920.  .       .   I  CWE   M     .         .         .         .         .         .         .         .
0.37 1940.  .       .   I   WEL   M    .         .         .         .         .         .         .         .
     1960.  .       .   I   WEL   M    .         .         .         .         .         .         .         .
     1980.  .       .    I  W.EL  M    .         .         .         .         .         .         .         .
     2000.  .       .    I   WE L M    .         .         .         .         .         .         .         .
     2020.  .       .    I   WE L M    .         .         .         .         .         .         .         .
     2040.  .       .    I   W E LM    .         .         .         .         .         .         .         .
0.39 2060.  .       .    I   .WE  L    .         .         .         .         .         .         .         .
     2080.  .       .    I   .WE  L    .         .         .         .         .         .         .         .
     2100.  .       .    I   .WE RL    .         .         .         .         .         .         .         .
     2120.  .       .     I  .W ERL    .         .         .         .         .         .         .         .
     2140.  .       .     I  .CWERLM   .         .         .         .         .         .         .         .
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      2160.  .     .   I  .CWERLM  .     .     .     .     .     .     .     .
      2180.  .     .    I .CWERLM  .     .     .     .     .     .     .     .
      2200.  .     .    I .CWE LM  .     .     .     .     .     .     .     .
      2220.  .     .    I . CE LM  .     .     .     .     .     .     .     .
      2240.  .     .    I . CWEL M .     .     .     .     .     .     .     .
0.43  2260.  .     .     I . CWEL M .     .     .     .     .     .     .     .
      2280.  .     .     I . CWEL M .     .     .     .     .     .     .     .
      2300.  .     .     I . CWEL M .     .     .     .     .     .     .     .
      2320.  .     .     I . CREL M .     .     .     .     .     .     .     .
      2340.  .     .      I.  CEL  M .     .     .     .     .     .     .     .
      2360.  .     .      I.  CWE  M .     .     .     .     .     .     .     .
      2380.  .     .      I.  CWE  M .     .     .     .     .     .     .     .
0.46  2400.  .     .       I   WE   M.     .     .     .     .     .     .     .
      2420.  .     .       I   WE R  M     .     .     .     .     .     .     .
      2440.  .     .       I  CWEL  R.M    .     .     .     .     .     .     .
0.47  2460.  .     .       I  CWE L  .RM   .     .     .     .     .     .     .
      2480.  C     .       I     EL  .RM   .     .     .     .     .     .     .
      2500.  C     .       I      EL .RM   .     .     .     .     .     .     .
      2520.  C     .       .I      EL.RM   .     .     .     .     .     .     .
      2540.  C     .       .I       WE RM  .     .     .     .     .     .     .
      2560.  C     .       .I        WERM  .     .     .     .     .     .     .
      2580.  C     .       .I        .WEM  .     .     .     .     .     .     .
0.50  2600.  C     .       . I       . WE  .     .     .     .     .     .     .
      2620.  C     .       . I       .  ERL .     .     .     .     .     .     .
      2640.  C     .       . I       .  E R L .  .     .     .     .     .     .
0.51  2660.  .     .       .  I     C.  E  R  L.  .     .     .     .     .     .
      2680.  .     .       .  I     C.  WE R  L.  .     .     .     .     .     .
0.52  2700.  .     .       .   I    C.   E  R L.  .     .     .     .     .     .
      2720.  .     .       .  I     C.   EML  .  .     .     .     .     .     .
0.52  2740.  .     .       . I      C.   E R  .  .     .     .     .     .     .
      2760.  .     .       .     I   .C  E LR  .  .     .     .     .     .     .
0.53  2780.  .     .       .        I.  CE   L .  .     .     .     .     .     .
      2800.  .     .       .        I.  CWE  L .  .     .     .     .     .     .
      2820.  .     .       .        I.   WE  L .  .     .     .     .     .     .
      2840.  .     .       .         I   WE  L .  .     .     .     .     .     .
      2860.  .     .       .         I   CWE L .  .     .     .     .     .     .
0.55  2880.  .     .       .         I    WE L .  .     .     .     .     .     .
      2900.  .     .       .         .I   WE L .  .     .     .     .     .     .
      2920.  .     .       .         . I  CE L .  .     .     .     .     .     .
0.56  2940.  .     .       .         . I RCWELM.  .     .     .     .     .     .
0.57  2960.  .     .       .         .  ILRWE M.  .     .     .     .     .     .
      2980.  .     .       .         .  I LCWEM.  .     .     .     .     .     .
      3000.  .     .       .         .  I R CEM.  .     .     .     .     .     .
0.58  3020.  .     .       .         .   I RLWE.  .     .     .     .     .     .
0.58  3040.  .     .       .         .   I R CE.  .     .     .     .     .     .
      3060.  .     .       .         .   I R CE.  .     .     .     .     .     .
      3080.  .     .       .         .   I R CWE  .     .     .     .     .     .
      3100.  .     .       .         .   I  RCWE  .     .     .     .     .     .
      3120.  .     .       .         .   I  RCWE  .     .     .     .     .     .
      3140.  .     .       .         .    I RCWE  .     .     .     .     .     .
      3160.  .     .       .         .    I  CWE  .     .     .     .     .     .
      3180.  .     .       .         .    I  RWE  .     .     .     .     .     .
      3200.  .     .       .         .    I   WE  .     .     .     .     .     .
      3220.  .     .       .         .    I   CE  .     .     .     .     .     .
      3240.  .     .       .         .    I   CE  .     .     .     .     .     .
      3260.  .     .       .         .    I   CE  .     .     .     .     .     .
      3280.  .     .       .         .    I   CEL .     .     .     .     .     .
      3300.  .     .       .         .    I   CWE .     .     .     .     .     .
      3320.  .     .       .         .    I   CWE .     .     .     .     .     .
      3340.  .     .       .         .    I   CWE .     .     .     .     .     .
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      3360.  .         .         .         .   I    WEL      .         .         .         .         .         .
      3380.  .         .         .         .   I    WEL      .         .         .         .         .         .
      3400.  .         .         .         .    I   WEL      .         .         .         .         .         .
      3420.  .         .         .         .    I   WEL      .         .         .         .         .         .
0.59  3440.  .         .         .         .    I   CEML     .         .         .         .         .         .
      3460.  .         .         .         .    I   CWEL     .         .         .         .         .         .
      3480.  .         .         .         .    I   .WEL     .         .         .         .         .         .
      3500.  .         .         .         .     I  .CEL     .         .         .         .         .         .
      3520.  .         .         .         .     I  .CWEL    .         .         .         .         .         .
      3540.  .         .         .         .     I  . WEL    .         .         .         .         .         .
      3560.  .         .         .         .      I . CWE    .         .         .         .         .         .
      3580.  .         .         .         .      I .  WEM   .         .         .         .         .         .
      3600.  .         .         .         .      I .  WEL   .         .         .         .         .         .
      3620.  .         .         .         .      I .  CWEM  .         .         .         .         .         .
      3640.  .         .         .         .       I.   WEM  .         .         .         .         .         .
      3660.  .         .         .         .       I.   WEM  .         .         .         .         .         .
      3680.  .         .         .         .       I.   CWEM .         .         .         .         .         .
      3700.  .         .         .         .        I    WEM .         .         .         .         .         .
      3720.  .         .         .         .        I    WLEM .        .         .         .         .         .
      3740.  .         .         .         .        I     WEM .        .         .         .         .         .
      3760.  .         .         .         .        .I    WE M.        .         .         .         .         .
0.65  3780.  .         .         .         .        .I    WE M.        .         .         .         .         .
      3800.  .         .         .         .        .I    WLEM.        .         .         .         .         .
      3820.  .         .         .         .        .I    CWE M        .         .         .         .         .
      3840.  .         .         .         .        . I    WE M        .         .         .         .         .
      3860.  .         .         .         .        . I    WE M        .         .         .         .         .
      3880.  .         .         .         .        . I    WE .M       .         .         .         .         .
      3900.  .         .         .         .        .  I   CWE.M       .         .         .         .         .
      3920.  .         .         .         .        .  I   CWE. M      .         .         .         .         .
      3940.  .         .         .         .        .  I    WE. M      .         .         .         .         .
      3960.  .         .         .         .        .  I    WE. M      .         .         .         .         .
      3980.  .         .         .         .        .   I   CEL  M     .         .         .         .         .
      4000.  .         .         .         .        .   I   CWE  M     .         .         .         .         .
      4020.  .         .         .         .        .   I   CWE   M    .         .         .         .         .
      4040.  .         .         .         .        .    I   WEL  M    .         .         .         .         .
      4060.  .         .         .         .        .    I   CEL  M    .         .         .         .         .
      4080.  .         .         .         .        .    I   CEL   M   .         .         .         .         .
      4100.  .         .         .         .        .     I  CWEL  M   .         .         .         .         .
      4120.  .         .         .         .        .     I  CWEL   M  .         .         .         .         .
      4140.  .         .         .         .        .     I   CEL   M  .         .         .         .         .
      4160.  .         .         .         .        .     I   CEL   M  .         .         .         .         .
0.73  4180.  .         .         .         .        .      I  CWEL   M .         .         .         .         .
      4200.  .         .         .         .        .      I  CWEL   M .         .         .         .         .
      4220.  .         .         .         .        .      I  .WEL   M .         .         .         .         .
      4240.  .         .         .         .        .      I  .CE L   M .        .         .         .         .
      4260.  .         .         .         .        .      I  .CWEL   M .        .         .         .         .
      4280.  .         .         .         .        .       I .CWEL   M .        .         .         .         .
      4300.  .         .         .         .        .       I . WE L   M.        .         .         .         .
      4320.  .         .         .         .        .       I . WE L   M.        .         .         .         .
      4340.  .         .         .         .        .       I . W EL   M.        .         .         .         .
      4360.  .         .         .         .        .       I . CWE L   M        .         .         .         .
      4380.  .         .         .         .        .       I .  WE L   M        .         .         .         .
      4400.  .         .         .         .        .        I.  WE L   M        .         .         .         .
0.77  4420.  .         .         .         .        .        I.  W E L  .M       .         .         .         .
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T DREAMY DRAW EAST WASH 100-YR PROFILE WITH 1 FOOT ENCROACHMENT
TS 100 YR PROFILE W/ 1' ENR

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3							1242.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2									

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 0.006

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 950.0 1048.0 TYPE= 1 TARGET= 98.000

0.006	2.70	1242.00	0.00	1241.29	1242.54	0.54	0.00	0.00	1294.60
1536.0	0.0	1536.0	0.0	0.0	261.1	0.0	0.0	0.0	100000.00
0.00	0.00	5.88	0.00	0.000	0.015	0.000	0.000	1239.30	950.00
0.001083	0.	0.	0.	0	0	0	0.00	97.00	1048.00

*SECNO 0.044

3[illegible] DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 946.0 1017.0 TYPE= 1 TARGET= 71.000

0.044	2.48	1241.88	1241.88	1241.86	1243.12	1.24	0.34	0.21	100000.00
1536.0	0.0	1536.0	0.0	0.0	171.8	0.0	1.0	0.4	100000.00
0.01	0.00	8.94	0.00	0.000	0.015	0.000	0.000	1239.40	946.00
0.002928	170.	200.	225.	3	11	0	0.00	70.00	1017.00

1490 NH CARD USED
*SECNO 0.049
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 968.0 1022.0 TYPE= 1 TARGET= 54.000

0.049	3.12	1243.50	1243.50	1242.70	1244.99	1.49	0.11	0.07	1241.05
1536.0	123.1	1412.9	0.0	16.9	141.6	0.0	1.1	0.4	100000.00
0.01	7.31	9.98	0.00	0.022	0.022	0.000	0.000	1240.38	968.00
[illegible]05342	28.	28.	28.	20	11	0	0.00	54.00	1022.00

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

1490 NH CARD USED
*SECNO 0.061
3280 CROSS SECTION 0.06 EXTENDED 0.01 FEET

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

3470 ENCROACHMENT STATIONS= 969.0 1031.0 TYPE= 1 TARGET= 62.000

0.061	2.92	1244.01	1244.01	1243.01	1245.38	1.37	0.24	0.01	1241.80
1536.0	37.3	1368.1	130.6	6.6	141.4	18.3	1.3	0.5	1241.67
0.01	5.67	9.67	7.12	0.016	0.016	0.016	0.000	1241.09	969.00
0.002708	65.	65.	65.	20	11	0	0.00	62.00	1031.00

1490 NH CARD USED
*SECNO 0.071
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 980.0 1040.0 TYPE= 1 TARGET= 60.000

0.071	2.90	1244.80	1244.80	1244.17	1246.18	1.38	0.19	0.00	100000.00
1536.0	0.0	1536.0	0.0	0.0	163.1	0.0	1.5	0.6	100000.00
0.01	0.00	9.42	0.00	0.000	0.022	0.000	0.000	1241.90	980.00
0.005536	60.	50.	40.	20	5	0	0.00	60.00	1040.00

1490 NH CARD USED
*SECNO 0.084
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 970.0 1030.0 TYPE= 1 TARGET= 60.000

0.084	3.81	1245.81	1245.81	1245.68	1247.22	1.40	0.41	0.01	1244.10
1536.0	69.0	1281.4	185.6	13.8	133.5	18.3	1.8	0.7	1243.70
0.01	5.01	9.60	10.14	0.027	0.027	0.016	0.000	1242.00	970.00
0.006177	70.	70.	70.	20	11	0	0.00	60.00	1030.00

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

1490 NH CARD USED
*SECNO 0.097

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 977.0 1013.0 TYPE= 1 TARGET= 36.000

0.097	4.84	1246.84	1246.84	1246.84	1248.81	1.97	0.45	0.17	1245.20
1536.0	22.0	1514.0	0.0	4.5	133.6	0.0	2.0	0.8	100000.00
0.01	4.90	11.33	0.00	0.025	0.025	0.000	0.000	1242.00	977.00
0.006546	70.	70.	70.	20	11	0	0.00	36.00	1013.00

1490 NH CARD USED
*SECNO 0.108
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 983.0 1018.0 TYPE= 1 TARGET= 35.000

0.108	4.41	1247.61	1247.61	1247.65	1249.58	1.97	0.37	0.00	100000.00
1536.0	0.0	1536.0	0.0	0.0	136.3	0.0	2.2	0.8	100000.00
0.02	0.00	11.27	0.00	0.000	0.025	0.000	0.000	1243.20	983.00
0.007098	55.	55.	55.	20	11	0	0.00	35.00	1018.00

1490 NH CARD USED
*SECNO 0.141

3470 ENCROACHMENT STATIONS= 985.0 1015.0 TYPE= 1 TARGET= 30.000

0.141	6.15	1248.95	0.00	1248.39	1250.62	1.67	1.00	0.03	100000.00
1536.0	0.0	1536.0	0.0	0.0	148.1	0.0	2.8	0.9	100000.00
0.02	0.00	10.37	0.00	0.000	0.025	0.000	0.000	1242.80	985.00
0.004721	175.	175.	175.	2	0	0	0.00	30.00	1015.00

1490 NH CARD USED
*SECNO 0.166

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

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 985.0 1015.0 TYPE= 1 TARGET= 30.000

0.166	4.50	1250.20	0.00	1250.14	1251.18	0.98	0.49	0.07	100000.00
1000.0	0.0	1000.0	0.0	0.0	125.9	0.0	3.2	1.0	100000.00
0.02	0.00	7.94	0.00	0.000	0.022	0.000	0.000	1245.70	985.00
0.002610	155.	135.	100.	3	0	0	0.00	30.00	1015.00

*SECNO 0.183

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 994.0 1020.0 TYPE= 1 TARGET= 26.000

0.183	4.79	1250.39	1250.39	1250.14	1252.20	1.81	0.38	0.25	100000.00
1000.0	0.0	1000.0	0.0	0.0	92.5	0.0	3.4	1.1	100000.00
0.03	0.00	10.81	0.00	0.000	0.025	0.000	0.000	1245.60	994.00
0.007995	95.	90.	90.	20	8	0	0.00	26.00	1020.00

*SECNO 0.221
3280 CROSS SECTION 0.22 EXTENDED 0.13 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.61

3470 ENCROACHMENT STATIONS= 995.0 1021.0 TYPE= 1 TARGET= 26.000

0.221	6.73	1252.63	0.00	1251.94	1253.26	0.63	0.94	0.12	100000.00
1000.0	0.0	1000.0	0.0	0.0	157.2	0.0	4.0	1.2	100000.00
0.04	0.00	6.36	0.00	0.000	0.035	0.000	0.000	1245.90	995.00
0.003078	205.	200.	190.	2	0	0	0.00	26.00	1021.00

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
           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 0.239
3280 CROSS SECTION      0.24 EXTENDED      0.13 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.64


3470 ENCROACHMENT STATIONS=      992.0    1016.0  TYPE=      1  TARGET=      24.000
     0.239      6.82   1252.82      0.00   1252.20   1253.80      0.97      0.43      0.10 100000.00
    1000.0       0.0    1000.0       0.0       0.0     126.4       0.0       4.3       1.3 100000.00
      0.04      0.00      7.91      0.00     0.000     0.040     0.000     0.000   1246.00    992.00
  0.007457       95.       95.      100.         2         0         0      0.00     24.00   1016.00


*SECNO 0.276

3470 ENCROACHMENT STATIONS=      975.0    1010.0  TYPE=      1  TARGET=      35.000
     0.276      5.91   1254.41      0.00   1253.52   1255.07      0.67      1.24      0.03 100000.00
    1000.0       0.0    1000.0       0.0       0.0     152.7       0.0       4.9       1.4 100000.00
      0.05      0.00      6.55      0.00     0.000     0.040     0.000     0.000   1248.50    975.00
   005516      180.      195.      200.         2         0         0      0.00     35.00   1010.00


*SECNO 0.296

3470 ENCROACHMENT STATIONS=      993.0    1026.0  TYPE=      1  TARGET=      33.000
     0.296      5.66   1254.96      0.00   1254.41   1255.74      0.78      0.63      0.04 100000.00
    1000.0       0.0    1000.0       0.0       0.0     140.8       0.0       5.3       1.5 100000.00
      0.05      0.00      7.10      0.00     0.000     0.040     0.000     0.000   1249.30    993.00
  0.006655       75.      105.      130.         2         0         0      0.00     33.00   1026.00


*SECNO 0.336

3470 ENCROACHMENT STATIONS=      985.0    1018.0  TYPE=      1  TARGET=      33.000
     0.336      4.89   1256.39      0.00   1256.20   1257.22      0.83      1.47      0.01 100000.00
    1000.0       0.0    1000.0       0.0       0.0     136.7       0.0       6.0       1.6 100000.00
      0.06      0.00      7.32      0.00     0.000     0.040     0.000     0.000   1251.50    985.00
  0.007325      190.      210.      225.         2         0         0      0.00     33.00   1018.00


*SECNO 0.370
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ECNO	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

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 985.0 1010.0 TYPE= 1 TARGET= 25.000

0.370	4.51	1258.21	1258.21	1258.08	1260.07	1.86	2.04	0.31	100000.00
1000.0	0.0	1000.0	0.0	0.0	91.4	0.0	6.4	1.7	100000.00
0.06	0.00	10.95	0.00	0.000	0.040	0.000	0.000	1253.70	985.00
0.019786	200.	180.	160.	2	11	0	0.00	25.00	1010.00

*SECNO 0.392

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.43

3470 ENCROACHMENT STATIONS= 985.0 1013.0 TYPE= 1 TARGET= 28.000

0.392	6.61	1260.61	0.00	1260.04	1261.73	1.12	1.58	0.07	100000.00
1000.0	0.0	1000.0	0.0	0.0	117.7	0.0	6.7	1.8	100000.00
0.07	0.00	8.50	0.00	0.000	0.040	0.000	0.000	1254.00	985.00
0.009692	118.	118.	119.	2	0	0	0.00	28.00	1013.00

*SECNO 0.430

3470 ENCROACHMENT STATIONS= 983.0 1012.0 TYPE= 1 TARGET= 29.000

0.430	5.54	1262.54	0.00	1262.53	1263.50	0.96	1.75	0.02	100000.00
1000.0	0.0	1000.0	0.0	0.0	127.2	0.0	7.3	1.9	100000.00
0.08	0.00	7.86	0.00	0.000	0.040	0.000	0.000	1257.00	983.00
0.007965	185.	200.	210.	2	0	0	0.00	29.00	1012.00

*SECNO 0.460

3470 ENCROACHMENT STATIONS= 973.0 1012.0 TYPE= 1 TARGET= 39.000

0.460	5.12	1263.92	0.00	1263.28	1264.61	0.69	1.09	0.03	100000.00
1000.0	0.0	1000.0	0.0	0.0	149.6	0.0	7.8	2.1	100000.00
0.08	0.00	6.69	0.00	0.000	0.040	0.000	0.000	1258.80	973.00
0.006201	165.	155.	150.	0	0	0	0.00	39.00	1012.00

ECNO	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= 0.300 CEHV= 0.500
*SECNO 0.471

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.99

3470 ENCROACHMENT STATIONS= 981.0 1022.0 TYPE= 1 TARGET= 41.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1267.01 ELREA= 1267.01

0.471	4.86	1264.17	0.00	1263.72	1264.74	0.58	0.09	0.04	1265.99
1000.0	0.0	1000.0	0.0	0.0	164.3	0.0	8.0	2.1	100000.00
0.08	0.00	6.09	0.00	0.000	0.015	0.000	0.000	1259.31	981.00
0.000694	65.	60.	60.	2	0	0	0.00	40.73	1021.73

CCHV= 0.600 CEHV= 0.800

SPECIAL CULVERT

UNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1	0.024	0.50	2.60	200.00	9.70	0.00	142.00	1	1	1260.92	1259.01

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 1 - SQUARE EDGE ENTRANCE WITH HEADWALL

5130, EGIC= 1274.64..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1274.36 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 0.498

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1272.16

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.17

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1274.64	1274.36	7.41	187.	808.	6.276	73.9	1271.65	200.

3470 ENCROACHMENT STATIONS= 992.0 1007.0 TYPE= 1 TARGET= 15.000

0.498	10.64	1271.54	0.00	1271.54	1272.16	0.61	7.41	0.00	1271.70
1000.0	0.0	1000.0	0.0	0.0	159.3	0.0	8.5	2.2	100000.00
0.09	0.00	6.28	0.00	0.000	0.100	0.000	0.000	1260.90	992.00
24764	145.	141.	142.	2	0	0	0.00	15.00	1007.00

CCHV= 0.300 CEHV= 0.500

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 0.507

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.54

3470 ENCROACHMENT STATIONS= 991.0 1016.0 TYPE= 1 TARGET= 25.000

0.507	10.66	1272.66	0.00	1272.63	1273.00	0.34	0.77	0.08	100000.00
1000.0	0.0	1000.0	0.0	0.0	212.6	0.0	8.7	2.2	100000.00
0.09	0.00	4.70	0.00	0.000	0.100	0.000	0.000	1262.00	991.00
0.010437	60.	50.	40.	2	0	0	0.00	25.00	1016.00

*SECNO 0.517

3470 ENCROACHMENT STATIONS= 983.0 1019.0 TYPE= 1 TARGET= 36.000

0.517	10.21	1273.21	0.00	1272.90	1273.42	0.20	0.37	0.04	100000.00
1000.0	0.0	1000.0	0.0	0.0	276.2	0.0	9.0	2.3	100000.00
0.10	0.00	3.62	0.00	0.000	0.100	0.000	0.000	1263.00	983.00
0.005523	45.	50.	55.	2	0	0	0.00	36.00	1019.00

*SECNO 0.524

3470 ENCROACHMENT STATIONS= 988.0 1029.0 TYPE= 1 TARGET= 41.000

0.524	11.95	1273.45	0.00	1273.16	1273.64	0.19	0.22	0.00	100000.00
1000.0	0.0	1000.0	0.0	0.0	284.0	0.0	9.3	2.3	100000.00
0.10	0.00	3.52	0.00	0.000	0.100	0.000	0.000	1261.50	988.00
0.005625	38.	40.	40.	2	0	0	0.00	41.00	1029.00

*SECNO 0.531

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 991.0 1035.0 TYPE= 1 TARGET= 44.000

0.531	5.47	1273.47	0.00	1273.27	1274.08	0.61	0.23	0.21	100000.00
1000.0	0.0	1000.0	0.0	0.0	159.0	0.0	9.4	2.3	100000.00
0.10	0.00	6.29	0.00	0.000	0.040	0.000	0.000	1268.00	991.00
0.008160	37.	34.	18.	2	0	0	0.00	40.00	1035.00

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 0.549

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 986.0 1031.0 TYPE= 1 TARGET= 45.000

0.549	4.87	1274.27	0.00	1274.00	1275.24	0.97	0.98	0.18	1277.00
1000.0	22.9	977.1	0.0	7.8	122.5	0.0	9.8	2.4	100000.00
0.11	2.93	7.98	0.00	0.060	0.040	0.000	0.000	1269.40	986.00
0.013076	96.	96.	96.	2	0	0	0.00	41.00	1031.00

*SECNO 0.559

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 996.0 1025.0 TYPE= 1 TARGET= 29.000

0.559	4.05	1275.55	1275.55	1275.37	1277.26	1.71	0.86	0.37	100000.00
1000.0	0.0	994.3	5.7	0.0	94.5	2.1	9.9	2.5	1273.40
0.11	0.00	10.52	2.66	0.000	0.040	0.060	0.000	1271.50	996.00
0.019146	57.	55.	54.	20	15	0	0.00	29.00	1025.00

*SECNO 0.566
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 990.0 1010.0 TYPE= 1 TARGET= 20.000

0.566	4.25	1276.25	1276.25	1275.51	1278.40	2.15	0.70	0.22	100000.00
1000.0	0.0	1000.0	0.0	0.0	85.0	0.0	10.0	2.5	100000.00
0.11	0.00	11.77	0.00	0.000	0.040	0.000	0.000	1272.00	990.00
0.023369	32.	33.	34.	2	8	0	0.00	20.00	1010.00

*SECNO 0.576
3280 CROSS SECTION 0.58 EXTENDED 0.18 FEET

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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


3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      983.0    1011.0  TYPE=      1  TARGET=       28.000
     0.576      5.18   1278.18   1277.80   1277.26   1279.57      1.39      0.94      0.23 100000.00
    1000.0       0.0    1000.0       0.0       0.0     105.8       0.0      10.1       2.5 100000.00
      0.11      0.00      9.45      0.00     0.000     0.040     0.000     0.000   1273.00    983.00
  0.014322       48.       52.       60.        12         8         0      0.00     28.00   1011.00


*SECNO 0.582
3280 CROSS SECTION      0.58 EXTENDED      0.52 FEET


3470 ENCROACHMENT STATIONS=      991.0    1015.0  TYPE=      1  TARGET=       24.000
     0.582      5.52   1278.92      0.00   1278.09   1279.99      1.07      0.33      0.09 100000.00
    1000.0       0.0    1000.0       0.0       0.0     120.4       0.0      10.2       2.5 100000.00
      0.11      0.00      8.31      0.00     0.000     0.040     0.000     0.000   1273.40    991.00
  .008792       28.       30.       30.         2         0         0      0.00     24.00   1015.00


CCHV=    0.100 CEHV=    0.300
*SECNO 0.590

3301 HV CHANGED MORE THAN HVINS


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


3470 ENCROACHMENT STATIONS=      304.0     363.0  TYPE=      1  TARGET=       59.000
     0.590      5.89   1280.89      0.00   1279.85   1281.24      0.35      1.17      0.07 100000.00
    1000.0       0.0    1000.0       0.0       0.0     211.1       0.0      11.7       2.9 100000.00
      0.13      0.00      4.74      0.00     0.000     0.027     0.000     0.000   1275.00    304.00
  0.001449      400.      400.      410.         4         0         0      0.00     59.00    363.00


*SECNO 0.650
 2800 NAT Q1=      69.37  WSELK=    1285.32  ENC Q1=     111.96  WSEL=    1286.32  RATIO=  -0.6139
 NAT Q1=     113.  RATIOS LOB, CH, ROB=   0.0054  0.9938  0.0008  WSEL=    1286.32
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ECNO	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

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 320.0 372.0 TYPE= 4 TARGET= 0.006

0.650	5.31	1285.31	1285.31	1285.32	1286.68	1.36	1.18	0.30	1286.00
1000.0	0.0	1000.0	0.0	0.0	106.7	0.0	12.9	3.3	1286.00
0.14	0.00	9.37	0.00	0.000	0.040	0.000	0.000	1280.00	322.06
0.020948	310.	325.	330.	20	11	0	0.00	40.15	370.40

*SECNO 0.730
2800 NAT Q1= 129.62 WSELK= 1290.32 ENC Q1= 202.93 WSEL= 1291.32 RATIO= -0.5656
Q1= 203. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 1291.32

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.88

3470 ENCROACHMENT STATIONS= 290.0 373.0 TYPE= 4 TARGET= 0.000

0.730	4.33	1290.33	0.00	1290.32	1290.81	0.48	4.04	0.09	1292.00
1000.0	0.0	1000.0	0.0	0.0	179.2	0.0	14.2	3.8	1292.00
0.16	0.00	5.58	0.00	0.000	0.040	0.000	0.000	1286.00	302.28
0.005931	440.	400.	400.	3	0	0	0.00	64.85	367.14

*SECNO 0.770
2800 NAT Q1= 74.91 WSELK= 1292.44 ENC Q1= 117.11 WSEL= 1293.44 RATIO= -0.5633
NAT Q1= 117. RATIOS LOB, CH, ROB= 0.0000 1.0000 0.0000 WSEL= 1293.44

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	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= 860.0 930.0 TYPE= 4 TARGET= 0.000

0.770	4.44	1292.44	1292.44	1292.44	1293.80	1.37	2.29	0.26	1296.00
1000.0	0.0	1000.0	0.0	0.0	106.6	0.0	15.0	4.1	1296.00
0.17	0.00	9.38	0.00	0.000	0.040	0.000	0.000	1288.00	877.81
0.017827	215.	240.	250.	2	8	0	0.00	39.73	917.54

PROFILE FOR STREAM 100 YR PROFILE W/ 1' ENR

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

    0.01     0.  I  E M   .        .        .        .        .  L     .        .        .        .        R
            20.  I  E M   .        .        .        .        .        .        .        .        .        L
            40.  I  E M   .        .        .        .        .        .        .        .        .        L
            60.  I  E M   .        .        .        .        .        .        .        .        .        L
            80.  I  E M   .        .        .        .        .        .        .        .        .        L
           100.  I  WEM   .        .        .        .        .        .        .        .        .        L
           120.  I  WEM   .        .        .        .        .        .        .        .        .        L
           140.  I  WEM   .        .        .        .        .        .        .        .        .        L
           160.  I  WEM   .        .        .        .        .        .        .        .        .        L
           180.  I  WEM   .        .        .        .        .        .        .        .        .        L
    0.04   200.  I  WEM   .        .        .        .        .        .        .        .        .        L
           220.  .I  WE   .        .        .        .        .        .        .        .        .        L
    0.05   240.  .IL WME  .        .        .        .        .        .        .        .        .        R
           260.  .IL WME  .        .        .        .        .        .        .        .        .        R
           280.  . I  WE  .        .        .        .        .        .        .        .        .        R
    0.06   300.  . IL WE  .        .        .        .        .        .        .        .        .        .
           320.  . I  WE  .        .        .        .        .        .        .        .        .        L
           340.  . I  W EM .       .        .        .        .        .        .        .        .        L
    0.07   360.  .  I  WEM .       .        .        .        .        .        .        .        .        L
           380.  .  I  WEM .       .        .        .        .        .        .        .        .        L
           400.  .  I  WE  .       .        .        .        .        .        .        .        .        L
    0.08   420.  .  IRL WE .       .        .        .        .        .        .        .        .        .
           440.  .  I L WE .       .        .        .        .        .        .        .        .        R
           460.  .  I L WME.       .        .        .        .        .        .        .        .        R
           480.  .  I  LWME.       .        .        .        .        .        .        .        .        R
    0.10   500.  .  I  L WME       .        .        .        .        .        .        .        .        R
           520.  .  I    WME       .        .        .        .        .        .        .        .        L
    0.11   540.  .   I   W EM      .        .        .        .        .        .        .        .        L
           560.  C   I   W EM      .        .        .        .        .        .        .        .        L
           580.  C   I    W.E      .        .        .        .        .        .        .        .        L
           600.  C   I    W.E      .        .        .        .        .        .        .        .        L
           620.  C   I    W.EM     .        .        .        .        .        .        .        .        L
           640.  C   I    W.EM     .        .        .        .        .        .        .        .        L
           660.  C   I    W.EM     .        .        .        .        .        .        .        .        L
           680.  C   I    W.EM     .        .        .        .        .        .        .        .        L
           700.  C   I     WE M    .        .        .        .        .        .        .        .        L
    0.14   720.  C   I     WE M    .        .        .        .        .        .        .        .        L
           740.  C   I     WE M    .        .        .        .        .        .        .        .        L
           760.  C   I     WE M    .        .        .        .        .        .        .        .        L
           780.  C    I    W EM    .        .        .        .        .        .        .        .        L
           800.  C    I    W EM    .        .        .        .        .        .        .        .        L
           820.  C     I   .WEM    .        .        .        .        .        .        .        .        L
           840.  C     I   .WEM    .        .        .        .        .        .        .        .        L
    0.17   860.  C     I   .WEM    .        .        .        .        .        .        .        .        L
           880.  C     I   .WEM    .        .        .        .        .        .        .        .        L
           900.  C     I   .WEM    .        .        .        .        .        .        .        .        L
           920.  C     I   .W E    .        .        .        .        .        .        .        .        L
    0.18   940.  .     I   .W E    .        .        .        .        .        .        .        .        L
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       960.  C     I   .W E      .         .         .         .         .         .         .         .         L
       980.  C     I   . WE      .         .         .         .         .         .         .         .         L
      1000.  C     I   . WE      .         .         .         .         .         .         .         .         L
      1020.  C     I   . WE      .         .         .         .         .         .         .         .         L
      1040.  C     I   . WE      .         .         .         .         .         .         .         .         L
      1060.  C     I   . WME     .         .         .         .         .         .         .         .         L
      1080.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1100.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1120.  C      I  .  WE     .         .         .         .         .         .         .         .         L
 0.22 1140.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1160.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1180.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1200.  C      I  .  WE     .         .         .         .         .         .         .         .         L
      1220.  C      I  .  WE     .         .         .         .         .         .         .         .         L
 0.24 1240.  C      I  .  MWE    .         .         .         .         .         .         .         .         L
      1260.  C      I  .   WE    .         .         .         .         .         .         .         .         L
      1280.  C      I  .   WE    .         .         .         .         .         .         .         .         L
      1300.  C      I  .   WE    .         .         .         .         .         .         .         .         L
      1320.  C       I .   WE    .         .         .         .         .         .         .         .         L
      1340.  C       I .   WE    .         .         .         .         .         .         .         .         L
      1360.  C       I .    E    .         .         .         .         .         .         .         .         L
      1380.  C       I .    EM   .         .         .         .         .         .         .         .         L
      1400.  C        I.    WE   .         .         .         .         .         .         .         .         L
      1420.  C        I.    WE   .         .         .         .         .         .         .         .         L
 0.28 1440.  C        I.    WEM  .         .         .         .         .         .         .         .         L
      1460.  C        I.    WEM  .         .         .         .         .         .         .         .         L
      1480.  C         I    WEM  .         .         .         .         .         .         .         .         L
      1500.  C         I    WEM  .         .         .         .         .         .         .         .         L
      1520.  C         I     EM  .         .         .         .         .         .         .         .         L
 0.30 1540.  C         I     EM  .         .         .         .         .         .         .         .         L
      1560.  C         I     WE  .         .         .         .         .         .         .         .         L
      1580.  C         I     WE  .         .         .         .         .         .         .         .         L
      1600.  C        .I    WEM .         .         .         .         .         .         .         .         L
      1620.  C        .I    WEM .         .         .         .         .         .         .         .         L
      1640.  C        .I    WE M.         .         .         .         .         .         .         .         L
      1660.  C        .I    WE M.         .         .         .         .         .         .         .         L
      1680.  C        .I     E M.         .         .         .         .         .         .         .         L
      1700.  C        . I    WE M         .         .         .         .         .         .         .         L
      1720.  C        . I    WE M         .         .         .         .         .         .         .         L
      1740.  C        . I    WE .M        .         .         .         .         .         .         .         L
 0.34 1760.  C        . I    WE .M        .         .         .         .         .         .         .         L
      1780.  C        . I    WE .M        .         .         .         .         .         .         .         L
      1800.  C        .  I   W E. M       .         .         .         .         .         .         .         L
      1820.  C        .  I    WE. M       .         .         .         .         .         .         .         L
      1840.  C        .  I    WE. M       .         .         .         .         .         .         .         L
      1860.  C        .  I    W E  M      .         .         .         .         .         .         .         L
      1880.  C        .   I   W E  M      .         .         .         .         .         .         .         L
      1900.  C        .   I    WE   M     .         .         .         .         .         .         .         L
      1920.  C        .   I    WE   M     .         .         .         .         .         .         .         L
 0.37 1940.  .        .   I    W.E   M    .         .         .         .         .         .         .         L
      1960.  C        .   I    W.E   M    .         .         .         .         .         .         .         L
      1980.  C        .    I    WE   M    .         .         .         .         .         .         .         L
      2000.  C        .    I    W E  M    .         .         .         .         .         .         .         L
      2020.  C        .    I    .WE  M    .         .         .         .         .         .         .         L
      2040.  C        .    I    .WE  M    .         .         .         .         .         .         .         L
 0.39 2060.  C        .    I    .WE  M    .         .         .         .         .         .         .         L
      2080.  C        .    I    . WE M    .         .         .         .         .         .         .         L
      2100.  C        .    I    . WE M    .         .         .         .         .         .         .         L
      2120.  C        .     I   . WE M    .         .         .         .         .         .         .         L
      2140.  C        .     I   . WE  M   .         .         .         .         .         .         .         L
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      2160.  C        .    I   . WE  M   .        .        .        .        .        .        .        L
      2180.  C        .     I  . WE  M   .        .        .        .        .        .        .        L
      2200.  C        .     I  .  WE M   .        .        .        .        .        .        .        L
      2220.  C        .     I  .  WE M   .        .        .        .        .        .        .        L
      2240.  C        .     I  .  WE  M  .        .        .        .        .        .        .        L
0.43  2260.  C        .      I . WE  M  .        .        .        .        .        .        .        L
      2280.  C        .      I . WE  M  .        .        .        .        .        .        .        L
      2300.  C        .      I .  E   M .        .        .        .        .        .        .        L
      2320.  C        .      I .  WE  M .        .        .        .        .        .        .        L
      2340.  C        .       I.  WE   M.        .        .        .        .        .        .        L
      2360.  C        .       I.  WE   M.        .        .        .        .        .        .        L
      2380.  C        .       I.  WE    M        .        .        .        .        .        .        L
0.46  2400.  C        .        I   E    .M       .        .        .        .        .        .        L
      2420.  C        .        I   E    .M       .        .        .        .        .        .        L
      2440.  C        .        I   E    . M      .        .        .        .        .        .        L
0.47  2460.  C        .        I   E L  . M      .        .        .        .        .        .        R
      2480.  C        .        I    EL  . M      .        .        .        .        .        .        R
      2500.  C        .        I     WE . M      .        .        .        .        .        .        R
      2520.  C        .       .I     WE. M       .        .        .        .        .        .        R
      2540.  C        .       .I      WE M       .        .        .        .        .        .        R
      2560.  C        .       .I       WE M      .        .        .        .        .        .        R
      2580.  C        .       .I       .WE M     .        .        .        .        .        .        R
0.50  2600.  C        .       . I      . WEM     .        .        .        .        .        .        R
      2620.  C        .       . I      .  E M    .        .        .        .        .        .        L
      2640.  C        .       . I      .  WEM    .        .        .        .        .        .        L
0.51  2660.  C        .       .  I     .  WE M   .        .        .        .        .        .        L
      2680.  C        .       .  I     .   E M   .        .        .        .        .        .        L
0.52  2700.  C        .       .   I    .   E  M  .        .        .        .        .        .        L
      2720.  C        .       .  I     .   E M   .        .        .        .        .        .        L
0.52  2740.  C        .       . I      .   E M   .        .        .        .        .        .        L
      2760.  C        .       .    I   .   WE M  .        .        .        .        .        .        L
0.53  2780.  C        .       .      I.   WE  M .        .        .        .        .        .        L
      2800.  C        .       .      I.   WE  M .        .        .        .        .        .        L
      2820.  C        .       .      I.    E  M .        .        .        .        .        .        L
      2840.  C        .       .       I    WE M .        .        .        .        .        .        L
      2860.  C        .       .       I    WE M .        .        .        .        .        .        L
0.55  2880.  C        .       .       I    WE L .        .        .        .        .        .        R
      2900.  C        .       .       .I   W EM .        .        .        .        .        .        L
      2920.  C        .       .       . I   WEM .        .        .        .        .        .        L
0.56  2940.  .        .       .       . I R W EM.        .        .        .        .        .        L
0.57  2960.  .        .       .       .  I   W E.        .        .        .        .        .        L
      2980.  .        .       .       .  I    WME        .        .        .        .        .        L
      3000.  .        .       .       .  I    WME        .        .        .        .        .        L
0.58  3020.  .        .       .       .   I    WE        .        .        .        .        .        L
0.58  3040.  C        .       .       .   I    MWE       .        .        .        .        .        L
      3060.  C        .       .       .   I    MWE       .        .        .        .        .        L
      3080.  C        .       .       .   I    MWE       .        .        .        .        .        L
      3100.  C        .       .       .   I    MWE       .        .        .        .        .        L
      3120.  C        .       .       .   I     WE       .        .        .        .        .        L
      3140.  C        .       .       .    I    WE       .        .        .        .        .        L
      3160.  C        .       .       .    I    WE       .        .        .        .        .        L
      3180.  C        .       .       .    I    WE       .        .        .        .        .        L
      3200.  C        .       .       .    I    WE       .        .        .        .        .        L
      3220.  C        .       .       .    I    ME       .        .        .        .        .        L
      3240.  C        .       .       .    I    ME       .        .        .        .        .        L
      3260.  C        .       .       .    I    .E       .        .        .        .        .        L
      3280.  C        .       .       .    I    .E       .        .        .        .        .        L
      3300.  C        .       .       .    I    .WE      .        .        .        .        .        L
      3320.  C        .       .       .    I    .WE      .        .        .        .        .        L
      3340.  C        .       .       .    I    .WE      .        .        .        .        .        L
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      3360.  C        .        .        .  I    .WE      .        .        .        .        .        L
      3380.  C        .        .        .  I    .WE      .        .        .        .        .        L
      3400.  C        .        .        .   I   .WE      .        .        .        .        .        L
      3420.  C        .        .        .   I   .WE      .        .        .        .        .        L
0.59  3440.  C        .        .        .   I   . E       .        .        .        .        .        L
      3460.  C        .        .        .   I   . E       .        .        .        .        .        L
      3480.  C        .        .        .   I   . WE      .        .        .        .        .        L
      3500.  C        .        .        .    I  . WE      .        .        .        .        .        L
      3520.  C        .        .        .    I  .  E      .        .        .        .        .        L
      3540.  C        .        .        .    I  .  WE     .        .        .        .        .        L
      3560.  C        .        .        .     I .  WE     .        .        .        .        .        L
      3580.  C        .        .        .     I .  WEM    .        .        .        .        .        L
      3600.  C        .        .        .     I .   WE    .        .        .        .        .        L
      3620.  C        .        .        .     I .   WEM   .        .        .        .        .        L
      3640.  C        .        .        .      I.   WEM   .        .        .        .        .        L
      3660.  C        .        .        .      I.    WE   .        .        .        .        .        L
      3680.  C        .        .        .      I.    WEM  .        .        .        .        .        L
      3700.  C        .        .        .       I    WEM  .        .        .        .        .        L
      3720.  C        .        .        .       I    W EM .        .        .        .        .        L
      3740.  C        .        .        .       I     WEM .        .        .        .        .        L
      3760.  .        .        .     C  .       .I    WE M.        .        .        .        .        L
0.65  3780.  .        .        .        .       .I    WE M.        .        .        .        .        .
      3800.  C        .        .        .       .I    WLEM.        .        .        .        .        .
      3820.  C        .        .        .       .I     WE M        .        .        .        .        .
      3840.  C        .        .        .       . I    WE M        .        .        .        .        .
      3860.  C        .        .        .       . I    WE M        .        .        .        .        .
      3880.  C        .        .        .       . I    WE .M       .        .        .        .        .
      3900.  C        .        .        .       .  I    WE.M       .        .        .        .        .
      3920.  C        .        .        .       .  I    WE. M      .        .        .        .        .
      3940.  C        .        .        .       .  I    WE. M      .        .        .        .        .
      3960.  C        .        .        .       .  I    WE. M      .        .        .        .        .
      3980.  C        .        .        .       .   I    EL  M     .        .        .        .        .
      4000.  C        .        .        .       .   I    WE  M     .        .        .        .        .
      4020.  C        .        .        .       .   I    WE   M    .        .        .        .        .
      4040.  C        .        .        .       .    I   WEL  M    .        .        .        .        .
      4060.  C        .        .        .       .    I    EL  M    .        .        .        .        .
      4080.  C        .        .        .       .    I    EL   M   .        .        .        .        .
      4100.  C        .        .        .       .     I   WEL  M   .        .        .        .        .
      4120.  C        .        .        .       .     I   WEL   M  .        .        .        .        .
      4140.  C        .        .        .       .     I   .EL   M  .        .        .        .        .
      4160.  C        .        .        .       .     I   .EL   M  .        .        .        .        .
0.73  4180.  C        .        .        .       .      I  .WEL   M .        .        .        .        .
      4200.  C        .        .        .       .      I  .WEL   M .        .        .        .        .
      4220.  C        .        .        .       .      I  .WEL   M .        .        .        .        .
      4240.  C        .        .        .       .      I  . E L   M .       .        .        .        .
      4260.  C        .        .        .       .      I  . WEL   M .       .        .        .        .
      4280.  C        .        .        .       .       I . WEL   M .       .        .        .        .
      4300.  C        .        .        .       .       I . WE L   M.       .        .        .        .
      4320.  C        .        .        .       .       I . WE L   M.       .        .        .        .
      4340.  C        .        .        .       .       I . W EL   M.       .        .        .        .
      4360.  C        .        .        .       .       I .  WE L  M        .        .        .        .
      4380.  C        .        .        .       .       I .  WE L  M        .        .        .        .
      4400.  C        .        .        .       .        I.  WE L  M        .        .        .        .
0.77  4420.  .        .        .        .       .        I.  W E L .M       .        .        .        .
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THIS RUN EXECUTED 28JUL97 11:33:34

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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

100 YEAR PROFILE RUN

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	SSTA	ENDST	TOPWID	DEPTH	VCH	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
*	0.006	1536.00	1241.29	950.00	1048.00	97.00	1.99	7.99	0.00	0.00	0.00	0.00	0.00
	0.006	1536.00	1242.00	950.00	1048.00	97.00	2.70	5.88	950.00	1048.00	100000.00	100000.00	0.00
*	0.044	1536.00	1241.86	945.00	1017.00	71.00	2.46	8.90	0.00	0.00	0.00	0.00	0.50
*	0.044	1536.00	1241.88	946.00	1017.00	70.00	2.48	8.94	946.00	1017.00	100000.00	100000.00	0.50
*	0.049	1536.00	1242.70	859.73	1124.76	265.03	2.32	7.34	0.00	0.00	0.00	0.00	35.00
*	0.049	1536.00	1243.50	968.00	1022.00	54.00	3.12	9.98	968.00	1022.00	100000.00	100000.00	35.00
*	0.061	1536.00	1243.01	833.77	1126.41	292.64	1.92	6.95	0.00	0.00	0.00	0.00	10.92
*	0.061	1536.00	1244.01	969.00	1031.00	62.00	2.92	9.67	969.00	1031.00	100000.00	100000.00	10.92
*	0.071	1536.00	1244.17	914.24	1090.43	176.19	2.27	6.81	0.00	0.00	0.00	0.00	16.20
*	0.071	1536.00	1244.80	980.00	1040.00	60.00	2.90	9.42	980.00	1040.00	100000.00	100000.00	16.20
*	0.084	1536.00	1245.68	905.53	1062.77	157.24	3.68	7.59	0.00	0.00	0.00	0.00	1.43
*	0.084	1536.00	1245.81	970.00	1030.00	60.00	3.81	9.60	970.00	1030.00	100000.00	100000.00	1.43
*	0.097	1536.00	1246.84	925.00	1046.71	121.71	4.84	7.87	0.00	0.00	0.00	0.00	0.00
*	0.097	1536.00	1246.84	977.00	1013.00	36.00	4.84	11.33	977.00	1013.00	100000.00	100000.00	0.00
*	0.108	1536.00	1247.65	906.58	1063.72	157.14	4.45	7.68	0.00	0.00	0.00	0.00	21.82
*	0.108	1536.00	1247.61	983.00	1018.00	35.00	4.41	11.27	983.00	1018.00	100000.00	100000.00	21.82
*	0.141	1536.00	1248.39	983.13	1023.18	40.04	5.59	10.82	0.00	0.00	0.00	0.00	-2.29
	0.141	1536.00	1248.95	985.00	1015.00	30.00	6.15	10.37	985.00	1015.00	100000.00	100000.00	-2.29
	0.166	1000.00	1250.14	979.69	1028.67	48.98	4.44	6.86	0.00	0.00	0.00	0.00	21.48
	0.166	1000.00	1250.20	985.00	1015.00	30.00	4.50	7.94	985.00	1015.00	100000.00	100000.00	21.48
*	0.183	1000.00	1250.14	984.59	1033.25	48.66	4.54	8.89	0.00	0.00	0.00	0.00	-1.11
*	0.183	1000.00	1250.39	994.00	1020.00	26.00	4.79	10.81	994.00	1020.00	100000.00	100000.00	-1.11

	SECNO	Q	CWSEL	SSTA	ENDST	TOPWID	DEPTH	VCH	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
*	0.221	1000.00	1251.94	991.06	1059.28	68.22	6.04	4.66	0.00	0.00	0.00	0.00	1.50
*	0.221	1000.00	1252.63	995.00	1021.00	26.00	6.73	6.36	995.00	1021.00	100000.00	100000.00	1.50
*	0.239	1000.00	1252.20	976.73	1067.88	91.15	6.20	5.62	0.00	0.00	0.00	0.00	1.05
*	0.239	1000.00	1252.82	992.00	1016.00	24.00	6.82	7.91	992.00	1016.00	100000.00	100000.00	1.05
	0.276	1000.00	1253.52	963.06	1018.82	55.76	5.02	6.83	0.00	0.00	0.00	0.00	12.82
	0.276	1000.00	1254.41	975.00	1010.00	35.00	5.91	6.55	975.00	1010.00	100000.00	100000.00	12.82
	0.296	1000.00	1254.41	987.93	1036.04	48.11	5.11	7.10	0.00	0.00	0.00	0.00	7.62
	0.296	1000.00	1254.96	993.00	1026.00	33.00	5.66	7.10	993.00	1026.00	100000.00	100000.00	7.62
	0.336	1000.00	1256.20	969.51	1029.68	60.18	4.70	6.00	0.00	0.00	0.00	0.00	10.48
	0.336	1000.00	1256.39	985.00	1018.00	33.00	4.89	7.32	985.00	1018.00	100000.00	100000.00	10.48
*	0.370	1000.00	1258.08	979.80	1020.08	40.28	4.38	9.36	0.00	0.00	0.00	0.00	12.22
*	0.370	1000.00	1258.21	985.00	1010.00	25.00	4.51	10.95	985.00	1010.00	100000.00	100000.00	12.22
	0.392	1000.00	1260.04	981.90	1016.10	34.21	6.04	9.49	0.00	0.00	0.00	0.00	2.54
*	0.392	1000.00	1260.61	985.00	1013.00	28.00	6.61	8.50	985.00	1013.00	100000.00	100000.00	2.54
*	0.430	1000.00	1262.53	963.67	1016.39	52.72	5.53	5.67	0.00	0.00	0.00	0.00	15.00
	0.430	1000.00	1262.54	983.00	1012.00	29.00	5.54	7.86	983.00	1012.00	100000.00	100000.00	15.00
*	0.460	1000.00	1263.28	968.96	1016.04	47.08	4.48	7.85	0.00	0.00	0.00	0.00	11.61
	0.460	1000.00	1263.92	973.00	1012.00	39.00	5.12	6.69	973.00	1012.00	100000.00	100000.00	11.61
*	0.471	1000.00	1263.72	981.00	1020.74	39.74	4.41	6.84	0.00	0.00	0.00	0.00	8.50
*	0.471	1000.00	1264.17	981.00	1021.73	40.73	4.86	6.09	981.00	1022.00	100000.00	100000.00	8.50
*	0.498	1000.00	1271.54	992.00	1012.91	20.91	10.64	6.28	0.00	0.00	0.00	0.00	11.28
*	0.498	1000.00	1271.54	992.00	1007.00	15.00	10.64	6.28	992.00	1007.00	100000.00	100000.00	11.28
*	0.507	1000.00	1272.63	975.17	1032.25	57.08	10.63	3.20	0.00	0.00	0.00	0.00	22.00
*	0.507	1000.00	1272.66	991.00	1016.00	25.00	10.66	4.70	991.00	1016.00	100000.00	100000.00	22.00
	0.517	1000.00	1272.90	974.63	1029.00	54.37	9.90	3.39	0.00	0.00	0.00	0.00	20.00
	0.517	1000.00	1273.21	983.00	1019.00	36.00	10.21	3.62	983.00	1019.00	100000.00	100000.00	20.00
	0.524	1000.00	1273.16	980.02	1036.28	56.26	11.66	3.54	0.00	0.00	0.00	0.00	-37.50
	0.524	1000.00	1273.45	988.00	1029.00	41.00	11.95	3.52	988.00	1029.00	100000.00	100000.00	-37.50
	0.531	1000.00	1273.27	981.00	1043.07	56.07	5.27	5.67	0.00	0.00	0.00	0.00	191.18
	0.531	1000.00	1273.47	991.00	1035.00	40.00	5.47	6.29	991.00	1035.00	100000.00	100000.00	191.18
*	0.549	1000.00	1274.00	982.01	1033.98	47.96	4.60	8.59	0.00	0.00	0.00	0.00	14.58
	0.549	1000.00	1274.27	986.00	1031.00	41.00	4.87	7.98	986.00	1031.00	100000.00	100000.00	14.58
*	0.559	1000.00	1275.37	968.19	1050.86	82.67	3.87	5.58	0.00	0.00	0.00	0.00	38.18
*	0.559	1000.00	1275.55	996.00	1025.00	29.00	4.05	10.52	996.00	1025.00	100000.00	100000.00	38.18

	SECNO	Q	CWSEL	SSTA	ENDST	TOPWID	DEPTH	VCH	STENCL	STENCR	ELENCL	ELENCR	K*CHSL
	0.566	1000.00	1275.51	952.07	1039.11	87.04	3.51	6.22	0.00	0.00	0.00	0.00	15.15
*	0.566	1000.00	1276.25	990.00	1010.00	20.00	4.25	11.77	990.00	1010.00	100000.00	100000.00	15.15
*	0.576	1000.00	1277.26	953.00	1038.03	85.03	4.26	8.68	0.00	0.00	0.00	0.00	19.23
	0.576	1000.00	1278.18	983.00	1011.00	28.00	5.18	9.45	983.00	1011.00	100000.00	100000.00	19.23
*	0.582	1000.00	1278.09	954.85	1044.60	89.75	4.69	6.11	0.00	0.00	0.00	0.00	13.33
	0.582	1000.00	1278.92	991.00	1015.00	24.00	5.52	8.31	991.00	1015.00	100000.00	100000.00	13.33
	0.590	1000.00	1279.85	303.63	363.80	60.17	4.85	6.68	0.00	0.00	0.00	0.00	4.00
*	0.590	1000.00	1280.89	304.00	363.00	59.00	5.89	4.74	304.00	363.00	100000.00	100000.00	4.00
*	0.650	1000.00	1285.32	322.03	370.42	40.21	5.32	9.34	0.00	0.00	0.00	0.00	15.38
*	0.650	1000.00	1285.31	322.06	370.40	40.15	5.31	9.37	320.00	372.00	100000.00	100000.00	15.38
*	0.730	1000.00	1290.32	302.31	367.12	64.81	4.32	5.59	0.00	0.00	0.00	0.00	15.00
*	0.730	1000.00	1290.33	302.28	367.14	64.85	4.33	5.58	290.00	373.00	100000.00	100000.00	15.00
*	0.770	1000.00	1292.44	877.81	917.54	39.73	4.44	9.38	0.00	0.00	0.00	0.00	8.33
*	0.770	1000.00	1292.44	877.81	917.54	39.73	4.44	9.38	860.00	930.00	100000.00	100000.00	8.33

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      0.006  PROFILE=  1  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      0.044  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.044  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.044  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.044  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      0.049  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.049  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.049  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.049  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.049  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.061  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.061  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.061  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.061  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.061  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.071  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.071  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.071  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.071  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.071  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.084  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.084  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.084  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.084  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.084  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.097  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.097  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.097  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.097  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.097  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.108  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.108  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.108  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.108  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.108  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.141  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.141  PROFILE=  1  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      0.183  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      0.183  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.183  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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WARNING SECNO=      0.221  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.221  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.239  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.239  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.370  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.370  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.370  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.370  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.392  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.430  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.460  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.471  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.471  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.498  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.498  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.507  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.507  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.549  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.559  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=      0.559  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.559  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.559  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=      0.566  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.566  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      0.576  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.576  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      0.582  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      0.590  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.650  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.650  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.650  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.650  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.650  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=      0.730  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      0.730  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      0.770  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      0.770  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      0.770  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.770  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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FLOODWAY DATA, 100 YEAR PROFILE RUN
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.006	98.	261.	5.9	1242.0	1241.3	0.7
0.044	71.	172.	8.9	1241.9	1241.9	0.0
0.049	54.	158.	9.7	1243.5	1242.7	0.8
0.061	62.	166.	9.2	1244.0	1243.0	1.0
0.071	60.	163.	9.4	1244.8	1244.2	0.6
0.084	60.	166.	9.3	1245.8	1245.7	0.1
0.097	36.	138.	11.1	1246.8	1246.8	0.0
0.108	35.	136.	11.3	1247.6	1247.6	0.0
0.141	30.	148.	10.4	1249.0	1248.4	0.6
0.166	30.	126.	7.9	1250.2	1250.1	0.1
0.183	26.	93.	10.8	1250.4	1250.1	0.3
0.221	26.	157.	6.4	1252.6	1251.9	0.7
0.239	24.	126.	7.9	1252.8	1252.2	0.6
0.276	35.	153.	6.5	1254.4	1253.5	0.9
0.296	33.	141.	7.1	1254.9	1254.4	0.5
0.336	33.	137.	7.3	1256.4	1256.2	0.2
0.370	25.	91.	10.9	1258.2	1258.1	0.1
0.392	28.	118.	8.5	1260.6	1260.0	0.6
0.430	29.	127.	7.9	1262.5	1262.5	0.0
0.460	39.	150.	6.7	1263.9	1263.3	0.6
0.471	41.	164.	6.1	1264.1	1263.7	0.4
0.498	15.	159.	6.3	1271.5	1271.5	0.0
0.507	25.	213.	4.7	1272.6	1272.6	0.0
0.517	36.	276.	3.6	1273.2	1272.9	0.3
0.524	41.	284.	3.5	1273.5	1273.2	0.3
0.531	44.	159.	6.3	1273.5	1273.3	0.2
0.549	45.	130.	7.7	1274.3	1274.0	0.3
0.559	29.	97.	10.3	1275.6	1275.4	0.2
0.566	20.	85.	11.8	1276.2	1275.5	0.7
0.576	28.	106.	9.5	1278.2	1277.3	0.9
0.582	24.	120.	8.3	1278.9	1278.1	0.8
0.590	59.	211.	4.7	1280.8	1279.8	1.0
0.650	48.	107.	9.4	1285.3	1285.3	0.0
0.730	65.	179.	5.6	1290.3	1290.3	0.0
0.770	40.	107.	9.4	1292.4	1292.4	0.0

EXHIBIT 15