FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Request for Letter of Map Revision

Unnamed Wash No. 1 and No. 2
Gila Bend, Arizona
FCD 99-18

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Phoenix, AZ 85009

Prepared for:

Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, Arizona 85009

January 2002

EEC Job Number 99541

Prepared by:

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Appendix A.1 Unnamed Wash No. 1
Appendix A.2 Unnamed Wash No. 2
Appendix B New HEC-RAS Models
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Attached Reports/Plans (Under Separate Cover)

1. Main Street, As-Built Plans, Barnes Avenue to Business I-8

1.0 INTRODUCTION

1.1 Location

Unnamed Wash No. 1 and Unnamed Wash No. 2 are located in Gila Bend, Arizona. The area covered in this Letter of Map Revision (LOMR) is along both washes between the Gila Bend Canal and Interstate 8. See the location map below (Figure 1).

1.2 Purpose

Due to recent roadway improvements along Main Street, the floodplain boundaries along Unnamed Washes No. 1 and 2 have changed. The roadway improvements included widening of the roadway, new culverts at the wash crossings, and channel improvements upstream of the culverts. This document was prepared to request a LOMR to revise the floodplain and floodway boundaries to reflect the present, post roadway improved conditions.

1.3 Approach

Both floodplains were originally delineated in the "*Gila Bend Area Flood Insurance Study*" by Burgess & Niple in 1992 (Reference 1). The approach for this LOMR was to use the hydrology and the hydraulic model from the original study; revising cross sections, as necessary, to reflect the new roadway and channel improvements. The revised cross sections were developed with a combination of as-built field survey and new mapping. The new mapping was developed with the recently completed Gila Bend Area Drainage Master Plan (Reference 2).

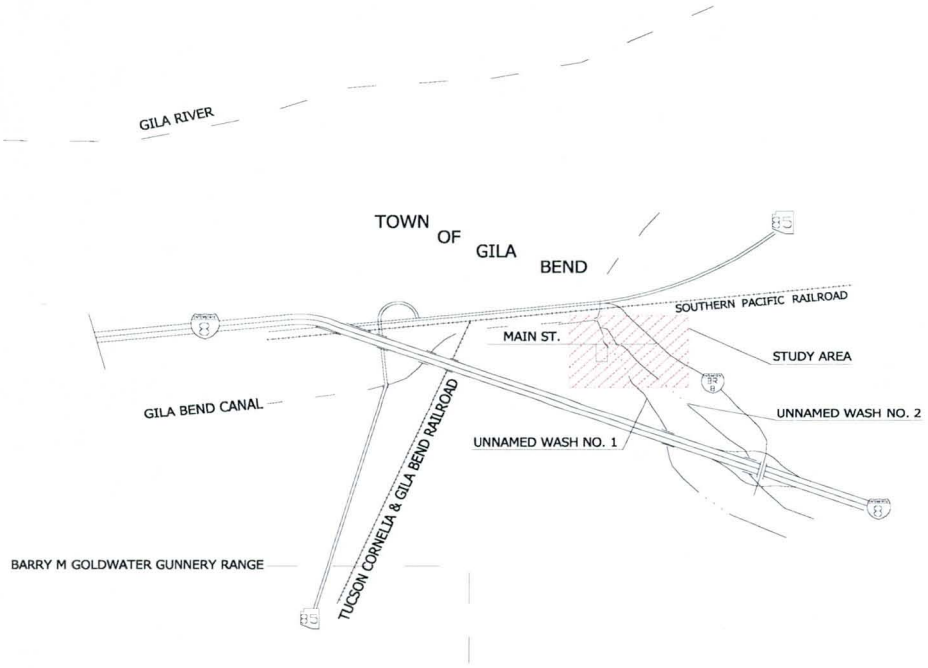

Figure 1 Location Map

2.0 MAPPING AND SURVEY INFORMATION

2.1 Description of Mapping

The mapping used for hydrology was previously developed with the "*Gila Bend Area Floodplain Delineation Study*". For a description of the mapping used to develop the hydrology, refer to "Gila Bend Area Floodplain Delineation Study, FCD 90-67, Technical Data Notebook, by Burgess and Niple Inc. March 1992."

The mapping used for the hydraulic model comes from two sources. Cross sections, not directly effected by the Main Street improvements, remain based upon the Burgess and Niple mapping of 1992. The cross sections that were revised, both upstream and downstream of Main Street, to describe the new culverts and channel improvements are based upon new mapping that was developed with the "*Gila Bend Area Drainage Master Plan*". This new mapping is described in "Gila Bend Area Drainage Master Plan, Floodplain Delineation Study, FCD 99-18, Technical Data Notebook, by Engineering and Environmental Consultants Inc. (EEC), August 2001". The mapping from the 2001 study is more accurate with 2-foot contour intervals, whereas the mapping in the original study, by Burgess and Niple, was based upon 4-foot contour intervals. Both sources of mapping are on the same vertical datum; NGVD 1929.

2.2 As-Built Survey

As-Built plans of the improvements to Main Street (Reference 6) are included with this report under a separate cover. It should be pointed out that there is a vertical datum difference of about 10 feet between the as-built plans and this LOMR. Therefore, supplemental field survey was performed to verify the as-built plans and better describe the channel improvements upstream of Main Street. This as-built field survey was used to create the HEC-RAS model. It was based upon the same horizontal and vertical datum (NGVD 1929) as the existing Burgess and Niple flood study. A copy of the as-built survey is included herein in Appendix H.

2.3 Work Maps

The contours on the work map for this LOMR (Exhibit 1) are the new, 2-foot contours developed with the 2001 study (Reference 2).

A copy of the original, floodplain delineation work map is enclosed in the back of this report for reference (Exhibit 3).

Also included in the back of this report is the FIRM map 04013C3480F (Exhibit 2). It is marked up with the revised floodplain shown on the LOMR work map.

3.0 HYDROLOGIC ANALYSIS

3.1 Existing Hydrologic Analysis

The peak discharges used for this study come from the report by Burgess & Niple "*Gila Bend Area Floodplain Delineation Study*", 1992 (Reference 1).

3.2 Split Flow on Unnamed Wash No. 2 at Main Street

The only change made to the original hydrology is the addition of a split flow of 90 cfs that leaves Unnamed Wash No. 2 at Main Street and flows into Unnamed Wash No. 1. This split flow is caused by the headwater created by the new culverts on the upstream side of Main Street. The headwater on Unnamed Wash No.2 overtops the roadway and spills into the roadside ditch that runs along the downstream edge of the roadway. The roadside ditch conveys the weir flow to Unnamed Wash No. 1.

In order to account for the split flow, the peak discharges used to delineate the floodplain on Unnamed Wash No. 1 were increased by 90 cfs, with a corresponding decrease of 90 cfs on Unnamed Wash No. 2. However, for the floodway delineation on Unnamed Wash No. 2, the peak discharges were not decreased. Instead, they were left the same as the original floodplain delineation so that future development could prevent the split flow and the downstream floodway would have enough capacity to safely convey the entire 100-year flood, including the 90 cfs.

3.3 Summary of Peak Discharges

The following table summarizes the peak discharges for both washes. As noted in Section 3.2, the only difference from the original study is the split flow occurring at Main Street. See table 3.3 on the next page.

Table 3.3 Summary of Peak Discharges

Wash Name	Description	Cross Section ID	Burgess & Niple 100-year Peak Discharge	LOMR 100-year Peak Discharge
			[cfs]	[cfs]
Unnamed Wash No. 1	upstream of confluence with Bender Wash	0.061	900	900
Unnamed Wash No. 1	confluence with Unnamed Wash No. 2, begin LOMR	0.337	900	900
Unnamed Wash No. 1		***0.417***	-	***730***[3]
Unnamed Wash No. 1		0.555	640	730[3]
Unnamed Wash No. 1	downstream of Main Street	***0.610***	-	***730***[3]
Unnamed Wash No. 1	upstream of Main Street	***0.654***	-	***640***
Unnamed Wash No. 1	end of LOMR	0.959	640	640
Unnamed Wash No. 1		1.540	620	620
Unnamed Wash No. 1		2.127	400	400
Unnamed Wash No. 1		2.746	80	80
Unnamed Wash No. 1	end of original study	3.260	50	50
Unnamed Wash No. 2	confluence with Unnamed Wash No. 1, begin LOMR	0.192	670	900
Unnamed Wash No. 2		***0.267***	-	***580***[3] ***(670)***[4]
Unnamed Wash No. 2		0.385	670	580[3] (670)[4]
Unnamed Wash No. 2	downstream of Main Street	***0.560***	-	***580***[3] ***(670)***[4]
Unnamed Wash No. 2	upstream of Main Street	***0.577***	-	***670***
Unnamed Wash No. 2		0.618/0.628	670	670
Unnamed Wash No. 2		0.821/0.844	700	700
Unnamed Wash No. 2	end of LOMR	1.453/1.457	700	700
Unnamed Wash No. 2		1.720/1.724	730	730
Unnamed Wash No. 2		2.138/2.142	620	620
Unnamed Wash No. 2	end of original study	2.776/2.780	460	460

notes: 1. Bold and Italics numbers represent new cross sections
2. Renumbering of River Miles appears as follows: eg. 1.720/1.724
3. 90 cfs split flow from Unnamed Wash No. 2 to Unnamed Wash No. 1 at Main Street.
4. Discharge in parenthesis are for the floodway downstream of Main Street.

4.0 HYDRAULICS

4.1 Computer Model

The original floodplain delineation study was calculated using the "*Water Surface Profiles–HEC-2*" computer model from the U.S. Army Corps of Engineers. For this LOMR, the HEC-2 computer models were converted to HEC-RAS using the "*River Analysis System, HEC-RAS*" computer model. The U.S. Army Corps of Engineers also publishes HEC-RAS. The converted HEC-RAS models were then modified to include the physical changes associated with the Main Street roadway improvements. These changes include new culverts and a certain amount of upstream and downstream channelization.

The limits of the LOMR were determined by comparing the output from the original HEC-2 study with the output generated by the HEC-RAS models. Water surface elevations were compared at cross sections both upstream and downstream of Main Street to find a location where the new roadway has no affect on the floodplains. The following table identifies the limits of this LOMR.

Table 4.1 Limits of Study Summary Table

Wash I.D.	River Mile Station [old/new]	*Burgess & Niple* HEC-2 WSEL [elev.]	*EEC* HEC-RAS WSEL [elev.]	delta [ft]
Unnamed Wash No. 1	0.337	745.32	745.34	0.02
Unnamed Wash No. 1	0.959	761.38	761.38	0
Unnamed Wash No. 2	0.192	743.83	745.34	1.51
Unnamed Wash No. 2	1.043/1.047	776.56	776.62	0.06

Note: The difference of 1.51 feet at RM 0.192 is explained below in Section 4.3

4.2 Methodology

Digital copies of the 4-foot contour interval mapping and the floodplain and floodway line work from the original study were obtained. Since the time of the original study, however, new 2-foot contour interval mapping had been prepared with the "*Gila Bend Area Drainage Master Plan" (Reference 2).* This new mapping was used, along with the as-built survey, to develop new cross sections upstream and downstream of Main Street. Four new cross sections were added to represent the culvert on each wash. An additional cross section was added on the upstream side of Unnamed Wash No. 2 to model the new channelization upstream of Main Street. Other revisions were also made to both washes that are described in the following sections.

Channel and overbank n-values were left the same as the original study.

4.3 Starting Conditions and Starting Water Surface Elevation

The Burgess & Niple study (Reference 1) was the basis for the original floodplain and floodway delineation of Unnamed Washes number 1 and 2. The starting water surface elevation, for both washes, was based on normal depth at the Gila Bend Canal. The assumption was that the peak

stage for ponding behind the Gila Bend Canal was not coincident with the 100-year peak discharge in the two washes. The ponding elevation behind the canal was determined using HEC-1 whereas the floodplains for the two washes were calculated using HEC-2. The resultant floodplains were merged at the edge of the ponding area, behind the canal. This occurs at approximately river mile 0.337 (Unnamed Wash No. 1) and 0.192 (Unnamed Wash No. 2).

The starting condition for Unnamed Wash No. 1 was determined in the original hydrology and set as the known starting water surface elevation in the HEC-2 model. Therefore, the starting water surface elevations did not change from the original Burgess and Niple study. The starting water surfaces for Unnamed Washes No. 1 is 742.28.

From the HEC-RAS modeling Unnamed Wash No. 2 converges with Unnamed Wash No. 1 where they share a common cross section at 0.192 and 0.337. This is also the limits of the ponding behind the Gila Bend Canal. It is reasonable to combine the discharge at this cross section and use the calculated water surface elevation from river mile 0.337 (Unnamed Wash No. 1) as the starting conditions for river mile 0.192 in Unnamed Wash No. 2. Therefore, the starting water surface for Unnamed Wash No. 2 is 745.34.

4.4 Unnamed Wash No. 1 Revisions

The following are the revisions made to Unnamed Wash No. 1:

- Floodplain/floodway delineation on Unnamed Wash No. 1 was modified between river miles 0.337 and 0.959.
- A new cross section was added at RM 0.417 to further define the floodplain between RM 0.337 and 0.559.
- Four cross sections were added at Main Street to model the new 3-6'x4' CBC with the HEC-RAS culvert routine.
- The peak discharge, beginning immediately downstream of Main Street (at Section 0.637), was increased by 90 cfs to account for the split flow that overtops Main Street at Unnamed Wash No. 2. This split flow is collected in the roadside ditch, on the downstream side of Main Street, and conveyed to Unnamed Wash No. 1.

4.5 Unnamed Wash No. 2 Revisions

The following are the revisions made to Unnamed Wash No. 2:

- Floodplain/floodway on Unnamed Wash No. 2 was modified between river miles 0.192 and 1.047.
- A new cross section was added at RM 0.267 to further define the floodplain between RM 0.192 and 0.385.
- The length of the thalweg was increased by the new channelization on the upstream side of Main Street. This resulted in the need to move the tic marks and rename the cross sections upstream of Main Street. Each cross section's identifier (river mile) was modified by adding 0.004 to account for the longer channel length.
- Cross Section 0.618 was removed completely and replaced with five new cross sections used by the HEC-RAS culvert routine for the 3-6'x4' CBC under Main Street.
- Cross section 0.844 (formerly Section 0.821) was moved and realigned to better fit the topography of the new mapping.

- A breakout was located at new section 0.577. This is the cross section located on the upstream side of Main Street. The breakout occurs at the west end of the cross section where the roadway profile is dropping away to the west. The HEC-RAS culvert table for this cross section determined that 90 cfs weir flows over the street. This runoff crosses Main Street and is conveyed westerly in the roadside ditch on the downstream side of the street until it reaches Unnamed Wash No. 1.
- The floodplain, in the original study, at station 1.043 (now 1.047) appears to have been drawn in the wrong location. The left station from the HEC-2 model is Sta. 9629.18, which nearly matches the new HEC-RAS station of 9627.39. However, the left station was plotted at approximately station 9570 on the original study maps. The floodplain for this LOMR was revised at this river mile to reflect the new model.

4.6 Floodways

After the new floodplains were determined, floodways were calculated using the Method 1 floodway encroachment option within HEC-RAS. The floodway boundaries were set to match, or nearly match, the original study. See the work map Exhibit 2.

As described in Section 3.2, the floodway for Unnamed Wash No. 2 was delineated with a future conditions peak discharge that is 90 cfs higher than the existing conditions floodplain flow rate. The higher peak discharge was used to delineate the floodway downstream of Main Street. This future condition floodway is capable of conveying the total flow in Unnamed Wash No. 2, assuming that future development will prevent the split flow at Main Street.

4.7 Base Flood Elevations

The BFEs shown on the work map are placed based upon criteria found in *FEMA 37* (Reference 5).

5.0 RESULTS

1 The floodplain limit along the eastern side of Unnamed Wash No. 2, upstream of Main Street, was significantly reduced; removing 3 houses from the floodway fringe.

2 The roadway improvements cause a split flow of 90 cfs, at Main Street from Unnamed Wash No. 2 to Unnamed Wash No. 1.

3 The floodplain and floodway was revised on both Unnamed Wash No. 1 and No. 2 between the following river miles.

Unnamed Wash No. 1	RM 0.337 to RM 0.959
Unnamed Wash No. 2	RM 0.192 to RM 1.047

6.0 REFERENCES

1. "Gila Bend Area Floodplain Delineation Study, FCD 90-67". Burgess & Niple, March 1992.

2. "Gila Bend Area Drainage Master Plan – Floodplain Delineation Study FCD 99-18". EEC, August 2001.

3. "HEC-2 Water Surface Profiles, User's Manual". U.S. Army Corps of Engineers Hydraulic Engineering Center. September 1990.

4. "HEC-RAS User's Guide, v3.0.1". U.S. Army Corps of Engineers Hydraulic Engineering Center. March 2001.

5. "FEMA 37 – Guidelines and Specifications for Study Contractors". January 1995.

6 "As-built plans – Plans for the construction of: Main Street – Barnes Ave. to Business I-8". Prepared for Maricopa County Department of Transportation. Prepared by David Evans and Associates. December 1999.

Appendix A

ORIGINAL BURGESS & NIPLE HEC-2 MODELS

Appendix A.1

UNNAMED WASH NO. 1

ORIGINAL BURGESS & NIPLE HEC-2 MODELS

```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES            *                                                    *  U.S. ARMY CORPS
OF ENGINEERS        *
 *                                          *                                                    *  HYDROLOGIC
ENGINEERING CENTER       *
 *  Version   4.6.2;  May 1991              *                                                    *  609 SECOND
STREET, SUITE D          *
 *                                          *                                                    *  DAVIS,
CALIFORNIA 95616-4687        *
 *  RUN DATE    03OCT01    TIME   10:46:54  *                                                    *          (916)
756-1104             *
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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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PAGE    1
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  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ************************************
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 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      UNNAMED WASH N0. 1  FLOODWAY            J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                                                          742.28

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                                                     15


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        53        54         8        43        26        10        51
      46        40        41         0       110         0       200
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 IS AT A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER WASH.

THE CONFLUENCE WITH BENDER WASH OCCURS AT A LOCATION WHERE BENDER WASH INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANK WASH.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANK WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH. STARTING ELEVATIONS WERE DETERMINED BY THE

NATURAL PROFILE RUN.

```
 NC     0.06       0.06      0.035       0.1        0.3
 QT        2        900        900
 ET                           4.1      9985      10022
 X1      061         21     9984.9   10028.4
 GR    746.0     9560.0      744.0    9800.0      743.1    9883.3      743.0    9893.2      741.6
9905.6
 GR    741.3     9917.1      741.0    9933.8      741.4    9948.3      741.4    9960.3      742.0
9969.4
 GR    742.5     9978.5      742.7    9984.9      739.3    9991.4      738.5    9997.0      738.0
10000.0
 GR    738.8    10005.6      739.7   10015.0      742.4   10022.0      745.9   10028.4      746.5
10038.5
 GR    746.6    10046.9

 ET                           4.1      9885      10015
 X1      150         16     9973.9   10023.9      472.0     470.0      470.0
 GR    745.1     9620.0      744.0    9685.0      742.0    9720.0      743.5    9952.7      741.5
9960.8
 GR    742.6     9966.2      744.6    9973.9      744.3    9976.5      741.4    9986.0      739.1
9993.2
 GR    738.8    10000.0      739.5   10010.0      743.7   10017.1      745.8   10023.9      746.2
10032.1
 GR    746.8    10034.2
```

SECTION 337 IS IN THE CONFLUENCE AREA WITH UNNAMED WASH NO 2. THE CONFLUENCE OCCURS AT RM 0.209 (UNNAMED WASH NO 2 RM 0.000).

```
 ET                           4.1      9960      10195
 X1      337         51     9956.1   10027.6      755.0    1010.0      987.0
 GR    748.3     9644.3      748.1    9675.1      748.0    9712.7      747.4    9747.4      746.8
9760.9
 GR    746.1     9771.4      746.5    9785.1      747.2    9816.3      747.7    9851.3      747.2
9879.7
 GR    746.2     9895.1      745.6    9902.8      746.9    9922.8      746.9    9938.2      745.5
9956.1
 GR    744.1     9969.3      744.5    9985.5      744.4    9992.0      743.6    9995.4      742.8
10000.0
 GR    743.2    10005.3      744.0   10014.8      745.0   10020.9      746.2   10027.6      743.7
10039.4
 GR    743.8    10048.1      744.0   10071.5      743.5   10112.7      743.4   10152.3      743.4
10176.8
 GR    743.3    10192.1      743.5   10210.8      743.7   10239.8      743.5   10265.9      743.1
10287.5
 GR    743.5    10312.4      744.1   10341.5      743.7   10370.4      743.7   10397.7      744.2
10421.7
 GR    745.4    10437.8      745.2   10465.0      745.3   10495.3      746.2   10524.5      746.6
10549.9
 GR    746.7    10574.3      746.3   10590.4      745.6   10606.4      746.5   10626.6      747.4
10655.8
 GR    747.6    10678.2

 NC    0.035      0.035      0.035
 QT        2        640        640
 ET                           4.1      9875      10035
 X1      555         17     9856.4   10040.6     1200.0    1030.0     1151.0
 GR    752.5     9834.5      751.3    9856.4      749.4    9884.6      749.3    9913.6      750.0
9935.9
 GR    750.3     9953.5      749.6    9968.7      748.7    9980.1      749.6    9991.1      748.8
```

```
9998.1
 GR    748.1    10000.0      748.6    10007.5      749.4    10013.9      748.4    10022.2      748.1
10027.7
 GR    751.3    10040.6      752.4    10065.0
```

MAIN STREET CROSSES AT RM 0.666 (LOW CROSSING - NO STRUCTURE)

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1
    03OCT01      10:46:54
PAGE    3


 ET                            4.1       9891      10018
 X1      769         12      9965.0    10009.3     1050.0     1130.0     1130.0
 GR    758.2     9805.1       757.3     9853.7      754.7     9929.6      754.6     9965.0      752.7
9993.2
 GR    751.5    10000.0       754.3    10009.3      756.4    10020.8      756.1    10066.8      757.7
10109.1
 GR    759.6    10150.7       760.5    10169.0

 NC     0.03       0.03       0.035
 ET                            4.1       9905      10070
 X1      959         18      9775.3    10097.9     1030.0     1000.0     1003.0
 GR    764.6     9775.3       764.5     9814.9      762.9     9850.6      761.9     9881.7      761.2
9908.7
 GR    760.6     9917.8       759.5     9926.6      761.4     9948.6      761.3     9983.2      759.9
9993.9
 GR    759.1    10000.0       760.9    10015.8      760.6    10045.0      759.4    10052.4      761.2
10070.3
 GR    762.9    10097.9       765.2    10130.5      766.8    10165.1

 ET                            4.1       9920      10100
 X1     1151         23      9977.9    10013.8     1040.0     1000.0     1014.0
 GR    774.0     9536.3       772.5     9612.0      772.2     9662.7      771.6     9717.7      770.1
9753.3
 GR    768.8     9818.9       767.9     9873.1      767.5     9912.5      767.4     9956.6      768.0
9977.9
 GR    767.1     9991.1       766.3     9999.2      765.7    10000.0      767.5    10013.8      767.0
10037.5
 GR    767.4    10070.2       768.4    10123.4      767.6    10188.4      767.6    10215.4      768.9
10254.8
 GR    770.4    10291.1       773.1    10325.9      773.2    10369.5

 ET                            4.1       9880      10045
 X1     1347         18      9838.6    10063.7      960.0     1050.0     1035.0
 GR    780.0     9707.6       776.9     9750.3      777.3     9799.9      775.0     9838.6      773.5
9891.3
 GR    773.0     9912.4       771.6     9918.5      771.9     9927.2      772.9     9936.8      773.3
9948.8
 GR    773.9     9978.1       773.3     9992.7      771.8    10000.0      771.4    10011.9      773.2
10026.4
 GR    774.6    10063.7       778.1    10121.0      778.4    10154.5

 QT        2        620        620
 ET                            4.1       9970      10070
 X1     1540         23      9968.7    10071.2     1010.0      985.0     1019.0
 GR    787.7     9662.5       786.1     9707.0      783.7     9742.4      782.1     9766.1      784.5
9810.2
 GR    784.9     9850.4       783.6     9892.1      781.2     9923.9      780.9     9968.7      779.6
9983.4
 GR    779.2     9994.3       779.7    10000.0      781.7    10017.9      781.2    10037.5      778.8
10049.8
 GR    780.9    10071.2       781.1    10101.6      782.2    10135.9      785.8    10176.8      787.6
10223.2
 GR    787.3    10269.6       787.9    10295.9      788.6    10348.2

 QT        2        550        550
 ET                            4.1       9960      10020
 X1     1723         20      9941.3    10023.9      960.0      850.0      966.0
 GR    794.5     9627.3       794.0     9689.1      794.0     9757.0      792.8     9794.2      788.4
9851.6
 GR    788.9     9899.2       789.2     9941.3      787.3     9973.7      786.9     9989.9      786.2
10000.0
 GR    787.8    10023.9       787.8    10071.8      787.9    10135.1      790.3    10173.6      791.8
10209.4
 GR    788.6    10240.4       790.3    10260.6      792.8    10307.2      793.9    10372.4      794.5
```

```
10403.3

 QT        2        480        480
 ET                           4.1       9978      10020
 X1     1921         18     9978.8    10025.4     1040.0      840.0     1045.0
 GR    802.4     9925.7      801.8     9938.7      795.5     9978.8      793.6     9993.3      791.8
9997.4
 GR    791.4    10000.0      792.3    10005.4      796.5    10025.4      797.8    10061.9      797.8
10090.5
 GR    795.9    10111.5      798.1    10141.3      798.7    10163.5      799.3    10196.9      800.1
10241.2
 GR    800.3    10280.0      800.9    10327.4      801.1    10339.3
1
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 QT        2        400        400
 ET                           4.1       9978      10035
 X1     2127         14     9957.6    10089.0     1070.0     1020.0     1088.0
 GR    812.3     9848.0      811.1     9864.5      805.2     9890.5      804.2     9905.0      808.5
9921.3
 GR    806.0     9957.6      802.7     9986.1      801.3     9996.7      801.0    10000.0      802.6
10020.4
 GR    804.6    10048.4      807.0    10089.0      808.5    10137.9      809.3    10184.8

 QT        2        330        330
 ET                           4.1       9995      10030
 X1     2337         15     9990.2    10031.3     1070.0     1160.0     1109.0
 GR    818.7     9852.3      815.9     9880.6      815.3     9892.4      816.7     9917.9      816.3
9956.3
 GR    813.7     9990.2      811.7    10000.0      810.6    10010.0      811.9    10031.3      812.2
10056.9
 GR    812.3    10103.6      813.8    10154.7      816.7    10203.0      817.6    10264.9      818.1
10334.4
```

A FLOW SPLIT OF 65 CFS OCCURS UPSTREAM OF THE I-8 FRONTAGE ROAD.
A FLOW SPLIT OF 45 CFS OCCURS UPSTREAM OF THE I-8 MAINLINE.
THIS FLOW RE-ENTERS UNNAMED WASH NO. 1 BETWEEN SECTIONS 2337 AND 2565.
FLOWS ARE THEREFORE REDUCED BY 110 CFS THROUGH THE INTERSTATE AREA.

Q BEFORE SPLIT 250 CFS
Q AFTER SPLIT 140 CFS

ADD THE 45 CFS BACK IN UPSTREAM OF THE I-8 MAINLINE AT SECTION 2936.
ADD THE 65 CFS BACK IN UPSTREAM OF THE FRONTAGE ROAD AT SECTION 3148.

LEFT OVERBANK GEOMETRY IS REVISED FROM AERIAL DATA TO REFLECT
FLOW OVER THE WESTBOUND ON-RAMP IN THE FAR LEFT OVERBANK.

```
 QT        2        140        140
 ET                           4.1       9985      10015
 X1     2565         11     9974.7    10016.7     1140.0     1130.0     1204.0
 GR    828.2       9610        824       9700         827       9800      824.1     9918.7      822.2
9947.9
 GR    821.5     9974.7      819.5    10000.0      821.6    10016.7      823.1    10056.3      826.2
10118.0
 GR    826.5    10178.2
```

THE FOLLOWING 5 BRIDGE MODELS ARE BASED ON AS BUILT PLANS OBTAINED
FROM THE ARIZONA DEPARTMENT OF TRANSPORTATION WITH INVERTS SURVEYED
USING FIELD METHODS AND LOCAL TBM'S ESTABLISHED USING SPOT ELEVATIONS
FROM AERIAL TOPO MAPPING.

ON RAMP TO WESTBOUND INTERSTATE 8

REPEAT CHANNEL POINTS AND RIGHT OVERBANK DATA OF SECTION 2565 AT THE
DOWNSTREAM FACE OF THE TWIN CMP'S THROUGH RAMP C (WESTBOUND ON-RAMP
TO INTERSTATE 8).

RAISE CHANNEL AND RIGHT OVERBANK ELEVATIONS BY = 820.4 - 819.5 = 0.9 FT.
ADD LEFT OVERBANK DATA FROM TOPO MAP.

AT THIS SECTION, HEC-2 COMPUTES A RELATIVELY LOW DEPTH AT THE
DOWNSTREAM FACE OF THE CULVERT, BUT BECAUSE OF THE HEAD LOSS THROUGH
THE CULVERT, A GREATER DEPTH IS COMPUTED AT THE UPSTREAM FACE.

BECAUSE OF THIS, QLOB AT THE DOWNSTREAM FACE DOES NOT REASONABLY AGREE WITH QWEIR OR QLOB AT THE UPSTREAM FACE. NOR DOES THE START STATION DOWNSTREAM AGREE WITH THE UPSTREAM VALUE. THE 26 CFS COMPUTED AS WEIR FLOW IS CONVEYED AS SHEET FLOW ACROSS THE LEFT OVERBANK AT A SLOPING, BUT HIGHER ELEVATION THAN IS COMPUTED WITHIN THE CHANNEL. ALTHOUGH THE RESULTS OF THIS MODEL WOULD INDICATE A FLOOD BOUNDARY AND FLOODWAY WITHIN THE CHANNEL AREA DOWNSTREAM, IT IS NECESSARY TO PLOT THE FLOOD BOUNDARY AND FLOODWAY IN A MANNER CONSISTENT WITH WEIR FLOW OVER THE ON-RAMP WELL TO THE WEST OF THE CULVERT WITH CORRESPONDING SHEET FLOW BACK TO THE MAIN CHANNEL.

Q BEFORE SPLIT 240 CFS
Q AFTER SPLIT 130 CFS

```
 QT        2        130        130
 ET                           4.1       9555      10005
 X1     2585         11       9995      10005        105        105        105
 X3       10                                                                          821        840
 GR    828.2       9550      827.0       9600      825.0       9919      823.1       9948      822.4
9975
 GR    820.4       9995      820.4      10005      822.5      10017      824.0      10056      827.1
10118
 GR    827.4      10178
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.641 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -0.2 TO MATCH CHANNEL THALWEG TO CHANNEL INVERT. DO NOT THEN USE THE GR DATA AT RM 2.641, INSTEAD REPEAT IT AGAIN AT THE DOWNSTREAM FACE OF THE CULVERT THROUGH BUSINESS ROUTE 8.

REVISE GR POINTS ON THE LEFT SIDE TO FOLLOW THE RAMP.

Q BEFORE SPLIT 220 CFS
Q AFTER SPLIT 110 CFS

```
 QT        2        110        110
 ET                          4.11       9555      10005
 SC    2.019        0.5          3          0          3          0        240        2.1      824.5
820.4
 X1     2632         13       9995      10005        260        240        250                  -0.2
 X2                              2                  828.7
 X3       10                                                                        828.2      840.3
 BT       -6       9450      829.4                  9550      828.8                  9600      828.2
 BT                9780      834.5                 10005      840.3                 10300      851.0
 GR    829.6     9450.0      829.0     9550.0      828.0     9600.0      834.5     9780.0      834.5
9900.0
 GR    828.8     9980.7      826.4     9993.0      824.7     9995.0      824.7    10005.0      827.1
10026.0
 GR    834.3    10055.7      843.1    10086.8      851.2    10300.0

 NC    0.035      0.035      0.035
```

BUSINESS ROUTE 8

REPEAT THE SECTION TAKEN BY AERIAL METHODS AT RM 2.641 AT THE DOWNSTREAM FACE OF THE CULVERT BENEATH BUSINESS ROUTE 8 (TWIN 36" CMP'S). USE PSXECE = 825.1 - 824.7 = 0.4 FT.

Q BEFORE SPLIT 220 CFS
Q AFTER SPLIT 110 CFS

```
 QT        2        110        110
 ET                           4.1       9995      10005
 X1     2649         12       9995      10005        100         85         91                  0.4
 X3       10                                                                          830        850
 GR    833.4       9780      833.3     9794.1      831.1     9815.9      830.9     9891.6      829.3
9961.4
```

```
 GR    828.8     9980.7      824.7     9995.0       824.7     10005.0       827.1     10026.0       834.3
10055.7
 GR    843.1    10086.8      851.2      10300
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.746 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.5 TO MATCH CHANNEL THALWEG TO CHANNEL INVERT. THEN USE THE GR DATA AGAIN AT RM 2.746 FOR CONTRACTION LOSSES.

USE TOPO DATA TO ADD THE DITCH ALONG I-8 FOR POSSIBLE WEIR FLOW. ADD 2.5 FT SO THAT IT WILL BE CORRECT WHEN 2.5 FT IS SUBTRACTED. ASSUME A DITCH 2.0 FT BELOW THE PAVEMENT.

ELTRD = 834.0 + 0.5 HV = 834.5

Q BEFORE SPLIT 200 CFS
Q AFTER SPLIT 90 CFS

```
 QT        2         90         90
 ET                            4.11       9995       10005
 SC    2.019        0.5          3          0           3           0         248         2.1       827.0
825.1
 X1     2698         17       9995      10005         258         258         258                    -2.5
 X2                              2                   834.5
 X3       10                                                                                 834       851.0
 BT       -4       9650        836                    9660         834                    9750       858.2
 BT             10195.9      851.0
 GR    838.5     9650.0      836.5     9660.0       838.5      9670.0       841.2      9882.3       832.4
9920.3
 GR    833.1     9973.7      831.8     9985.8       829.5      9995.0       829.5     10005.0       831.9
10016.0
 GR    831.7    10047.7      833.1    10080.7       832.5     10108.2       835.3     10134.2       835.1
10164.8
 GR    839.7    10191.9      841.4    10195.9
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA OF FREQUENT STRUCTURES.

Q BEFORE SPLIT 190 CFS
Q AFTER SPLIT 80 CFS

```
 QT        2         80         80
 NC    0.035      0.035       0.03
 ET                            4.1       9985       10015
 X1     2746         14     9973.7    10016.3       535.0       590.0       554.0
 GR    841.2     9882.3      832.4     9920.3       833.1      9973.7       831.8      9985.8       830.4
9997.7
 GR    829.5    10000.0      831.9    10016.3       831.7     10047.7       833.1     10080.7       832.5
10108.2
 GR    835.3    10134.2      835.1    10164.8       839.7     10191.9       841.4     10195.9
```

MAINLINE INTERSTATE 8

REPEAT GR DATA FROM SECTION 2746 AT THE DOWNSTREAM FACE OF THE TWIN 30" CULVERTS WHICH CONVEY UNNAMED WASH NO 1 BENEATH MAINLINE I-8 EASTBOUND AND WESTBOUND.

USE PSXECE = 829.5 - 829.5 = 0.0

Q BEFORE SPLIT 180 CFS
Q AFTER SPLIT 70 CFS

```
 QT        2         70         70
 ET                            4.1       9995       10005
 X1     2779         14       9995      10005         174         174         174
 X3       10                                                                                 837.3       837.3
 GR    841.2     9882.3      832.4     9920.3       833.1      9973.7       831.8      9985.8       829.5
9995
 GR    829.5      10005      831.9    10016.0       831.7     10047.7       833.1     10080.7       832.5
10108.2
 GR    835.3    10134.2      835.1    10164.8       839.7     10191.9       841.4     10195.9
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.936 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.1 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 2.936 FOR CONTRACTION LOSSES.

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 838.3

Q BEFORE SPLIT 170 CFS
Q AFTER SPLIT 60 CFS

```
 QT        2         60         60
 ET                            4.11       9995      10005
 SC    2.018        0.5          3        100        2.5          0        285        2.2      832.6
829.5
 X1     2835         18       9995      10005        295        295        295                  -2.1
 X2                               2                838.3
 X3       10                                                                          838.3      838.3
 GR    858.1       9690      838.1       9730      838.1       9770      841.0     9861.3      840.5
9902.5
 GR    837.3     9943.7      836.7     9975.5      834.7     9995.0      834.7    10005.0      836.5
10014.0
 GR    836.6    10043.6      836.2    10052.2      839.6    10082.6      840.6    10146.0      840.5
10203.1
 GR    842.6    10231.5      842.8    10242.2      842.1      10270
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA OF FREQUENT STRUCTURES.

ADD 45 CFS DIVERTED ALONG MAINLINE BACK IN. NOW SUBTRACT ONLY 65 CFS:

Q BEFORE SPLIT 140 CFS
Q AFTER SPLIT 75 CFS

```
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 QT        2         75         75
 NC    0.035      0.035      0.035
 ET                            4.1       9988      10014
 X1     2936         16       9988      10014        530        500        533
 GR    841.6     9754.7      839.9     9786.9      841.0     9861.3      840.5     9902.5      837.3
9943.7
 GR    836.7     9976.0      836.0     9988.0      834.7    10000.0      836.5    10014.0      836.6
10043.6
 GR    836.2    10052.2      839.6    10082.6      840.6    10146.0      840.5    10203.1      842.6
10231.5
 GR    842.8    10242.2
```

ON-RAMP TO EASTBOUND INTERSTATE 8

REPEAT GR DATA FROM SECTION 2936 AT THE DOWNSTREAM FACE OF THE SINGLE 36" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 835.9 - 834.7 = 1.2

Q BEFORE SPLIT 130 CFS
Q AFTER SPLIT 65 CFS

```
 QT        2         65         65
 ET                            4.1       9755      10003
 X1     2974         17       9997      10003        190        180        201                    1.2
 X3       10                                                                            839      843.3
 GR    841.6     9754.7      839.9     9786.9      841.0     9861.3      840.5     9902.5      837.3
9943.7
 GR    836.7     9975.5      836.0     9988.0      834.7       9997      834.7    10003.0      836.5
10014.0
 GR    836.6    10043.6      836.2    10052.2      839.6    10082.6      840.6    10146.0      840.5
10203.1
 GR    842.6    10231.5      842.8    10242.2
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 3.080 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -4.4 TO MATCH CHANNEL THALWEG TO CULVERT

INVERT. THEN USE THE GR DATA AGAIN AT RM 3.080 FOR CONTRACTION LOSSES.

ELTRD = 843.1 + 0.5 HV = 843.6

Q BEFORE SPLIT 120 CFS
Q AFTER SPLIT 55 CFS

```
 QT        2         55         55
 ET                            4.11       9600      10003
 SC    1.019        0.5          3          0          3          0        137        2.2      836.8
835.9
 X1     3002         16       9997      10003        147        147        147                  -4.4
 X2                              2                  843.6
 X3       10                                                                          843.1      844.3
 BT       -4       9100      846.3                   9610      843.1                  10000      844.3
 BT               10370      847.2
 GR    850.7       9100      847.5       9610      847.2     9795.4      847.3     9847.6      847.3
9900.4
 GR    846.6     9951.2      845.1     9980.1      841.2     9997.0      841.2    10003.0      844.0
10020.0
 GR    845.3    10052.5      845.0    10114.1      846.2    10185.2      847.5    10234.7      848.3
10273.2
 GR    851.6      10370
1
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```

```
 NC    0.035      0.035      0.045
```

Q BEFORE SPLIT 100 CFS
Q AFTER SPLIT 35 CFS

```
 QT        2         35         35
 ET                            4.1       9993      10020
 X1     3080         14       9993      10020        433        413        412
 GR    848.2     9770.5      847.2     9795.4      847.3     9847.6      847.3     9900.4      846.6
9951.2
 GR    845.1     9980.0      843.0     9993.0      841.2    10000.0      844.0    10020.0      845.3
10052.5
 GR    845.0    10114.1      846.2    10185.2      847.5    10234.7      848.3    10273.2
```

INTERSTATE 8 FRONTAGE ROAD

REPEAT GR DATA FROM SECTION 3080 AT THE DOWNSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 843.8 - 841.2 = 2.6 FT.

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
 QT        2         25         25
 ET                            4.1       9998      10002
 X1     3111         15       9998      10002        164        164        164                    2.6
 X3       10                                                                            847        850
 GR    848.2     9770.5      847.2     9795.4      847.3     9847.6      847.3     9900.4      846.6
9951.2
 GR    845.1     9980.1      843.0     9993.0      841.2     9998.0      841.2    10002.0      844.0
10020.0
 GR    845.3    10052.5      845.0    10114.1      846.2    10185.2      847.5    10234.7      848.3
10273.2
```

REPEAT GR DATA FROM SECT 3080 AGAIN AT THE UPSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 844.2 - 843.8 +2.6 = 3.0

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 850.7

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
 QT        2         25         25
 ET                            4.11       9998       10002
 SC    1.016        0.5          3        100           2           0          82         2.2       844.2
843.8
 X1     3129         16       9998      10002          92          92          92                     3.0
 X2                              2                  850.7
 X3       10                                                                                 850       850.7
 GR    850.6       9700      848.2     9770.5       847.2      9795.4       847.3      9847.6       847.3
9900.4
 GR    846.6     9951.2      845.1     9980.1       843.0      9993.0       841.2      9998.0       841.2
10002.0
1
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 GR    844.0    10020.0      845.3    10052.5       845.0     10114.1       846.2     10185.2       847.5
10234.7
 GR    848.3    10273.2
```

RETURN THE Q TO ITS FULL VALUE OF 80 CFS.

REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
REVISE THE RIGHT OVERBANK PER THE TOPO MAP.

```
 QT        2         80         80
 ET                            4.1       9993       10020
 X1     3148         14       9993      10020         100         100         100                     4.0
 GR    850.6       9700      848.2     9770.5       847.2      9795.4       847.3      9847.6       847.3
9900.4
 GR    846.6     9951.2      845.1     9980.0       843.0      9993.0       841.2     10000.0       844.0
10020.0
 GR    845.3    10052.5      845.0    10114.1       846.2     10185.2       850.6       10210
```

SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WHERE
THE STREAM CROSSES THE FRONTAGE ROAD AGAIN NEAR THE SECTION LINE.

```
 QT        2         50         50
 ET                            4.1       9992       10016
 X1     3260          9       9992      10016         600         550         591
 GR    856.5     9934.9      854.3     9968.6       852.6      9992.0       850.8     10000.0       853.3
10016.0
 GR    853.5    10049.2      854.4    10097.5       855.6     10160.4       857.0     10226.3
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 *PROF 1
0

 CCHV=     .100 CEHV=     .300
 *SECNO 61.000

 3265 DIVIDED FLOW

     61.000      4.28    742.28    742.27    742.28    743.07       .79       .00       .00    742.70
      900.0     141.5     758.5        .0      62.7      98.3        .0        .0        .0    745.90
        .00      2.26      7.71       .00      .060      .035      .000      .000    738.00   9899.58
    .009090        0.        0.        0.         0         4         0       .00    110.91  10021.69


 FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    742.28

 STA=    9900.    9906.    9917.    9934.    9948.    9960.    9969.    9974.   10028.
   PER Q=       .3      2.2      5.4      4.3      2.5      1.0       .1     84.3
```

```
   AREA=      2.0      9.5     18.9     15.7     10.6      5.3       .7     98.3
    VEL=      1.1      2.1      2.6      2.5      2.2      1.6       .6      7.7
  DEPTH=       .3       .8      1.1      1.1       .9       .6       .1      2.7

*SECNO 150.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.85

   150.000      5.41    744.21       .00       .00    744.29       .09      1.15       .07    744.60
     900.0     435.5     464.5        .0     412.6     146.6        .0       3.9       2.4    745.80
       .06      1.06      3.17       .00      .060      .035      .000      .000    738.80   9672.84
   .001118      472.      470.      470.         5         0         0       .00    341.47  10018.74


FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    744.21

STA=    9673.    9685.    9720.    9953.    9961.    9966.    9972.   10024.
  PER Q=       .0      4.4     40.0      1.8      1.8       .4     51.6
   AREA=      1.3     42.2    338.8     13.8     11.6      5.0    146.6
    VEL=       .2       .9      1.1      1.2      1.4       .7      3.2
  DEPTH=       .1      1.2      1.5      1.7      2.2       .8      3.5

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


*SECNO 337.000

3265 DIVIDED FLOW

   337.000      2.52    745.32       .00       .00    745.35       .02      1.04       .01    745.50
     900.0        .0     122.2     777.8        .0      77.4     667.7      17.8      11.5    746.20
       .27       .00      1.58      1.16      .000      .035      .060      .000    742.80   9957.79
   .001103      755.      987.     1010.         5         0         0       .00    517.23  10495.96


FLOW DISTRIBUTION FOR SECNO=    337.00          CWSEL=    745.32

STA=    9958.   10028.   10072.   10113.   10152.   10177.   10192.   10211.   10240.   10266.   10288.
10312.   10342.
  PER Q=     13.6      6.0      8.0     10.3      6.6      4.3      5.1      6.5      5.9      6.4      7.3
5.3
   AREA=     77.4     53.1     64.7     74.1     47.1     30.1     35.9     49.9     44.9     43.6     50.3
44.2
    VEL=      1.6      1.0      1.1      1.2      1.3      1.3      1.3      1.2      1.2      1.3      1.3
1.1
  DEPTH=      1.2      1.2      1.6      1.9      1.9      2.0      1.9      1.7      1.7      2.0      2.0
1.5

STA=   10342.   10370.   10398.   10422.   10496.
  PER Q=      4.7      5.6      3.7       .6
   AREA=     41.1     44.2     32.9     11.6
    VEL=      1.0      1.1      1.0       .4
  DEPTH=      1.4      1.6      1.4       .2

*SECNO 555.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   555.000      2.03    750.13    750.13       .00    750.56       .43      2.60       .12    751.30
     640.0        .0     640.0        .0        .0     122.0        .0      28.3      19.7    751.30
       .33       .00      5.24       .00      .000      .035      .000      .000    748.10   9873.75
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   .019948     1200.     1151.     1030.        20        15         0       .00    148.53  10035.89

 FLOW DISTRIBUTION FOR SECNO=    555.00          CWSEL=    750.13

 STA=    9874.   10041.
   PER Q=    100.0
    AREA=    122.0
     VEL=      5.2
   DEPTH=       .8

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

 *SECNO 769.000

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

   769.000      4.50    756.00       .00       .00    756.20       .19      5.61       .02    754.60
     640.0     153.2     472.8      14.0      72.1     121.4       7.9      32.4      23.2    754.30
       .42      2.12      3.89      1.78      .035      .035      .035      .000    751.50   9891.77
   .002230     1050.     1130.     1130.         8         0         0       .00    126.81  10018.59

 FLOW DISTRIBUTION FOR SECNO=    769.00          CWSEL=    756.00

 STA=    9892.    9930.    9965.   10009.   10019.
   PER Q=      5.7     18.2     73.9      2.2
    AREA=     24.5     47.6    121.4      7.9
     VEL=      1.5      2.4      3.9      1.8
   DEPTH=       .6      1.3      2.7       .8

 *SECNO 959.000

 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   959.000      2.28    761.38    761.38       .00    761.77       .39      5.01       .06    764.60
     640.0        .0     640.0        .0        .0     127.5        .0      36.2      26.5    762.90
       .48       .00      5.02       .00      .000      .035      .000      .000    759.10   9901.90
   .019468     1030.     1003.     1000.         4         8         0       .00    162.75  10073.16

 FLOW DISTRIBUTION FOR SECNO=    959.00          CWSEL=    761.38

 STA=    9902.   10098.
   PER Q=    100.0
    AREA=    127.5
     VEL=      5.0
   DEPTH=       .8

 *SECNO 1151.000
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 3265 DIVIDED FLOW

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.45
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  1151.000      2.63    768.33       .00       .00    768.42       .09      6.62       .03    768.00
     640.0     183.0     144.8     312.2      82.0      49.1     133.9      40.8      32.8    767.50
       .60      2.23      2.95      2.33      .030      .035      .030      .000    765.70   9847.51
   .003234     1040.     1014.     1000.         9         0         0       .00    379.77  10237.37


 FLOW DISTRIBUTION FOR SECNO=   1151.00          CWSEL=    768.33

 STA=    9848.    9873.    9913.    9957.    9978.   10014.   10038.   10070.   10119.   10188.   10215.
10237.
   PER Q=       .9      7.9     15.5      4.3     22.6     11.8     17.5      6.0      4.8      7.0      1.8
    AREA=      5.4     24.6     38.6     13.3     49.1     25.5     36.8     22.8     21.4     19.6      8.0
     VEL=      1.0      2.1      2.6      2.1      3.0      3.0      3.0      1.7      1.4      2.3      1.4
   DEPTH=       .2       .6       .9       .6      1.4      1.1      1.1       .5       .3       .7       .4

 *SECNO 1347.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .52

  1347.000      2.51    773.91       .00       .00    774.20       .28      5.72       .06    775.00
     640.0        .0     640.0        .0        .0     150.3        .0      45.7      39.3    774.60
       .66       .00      4.26       .00      .000      .035      .000      .000    771.40   9877.00
   .011741      960.     1035.     1050.         5         0         0       .00    168.24  10045.24


 FLOW DISTRIBUTION FOR SECNO=   1347.00          CWSEL=    773.91

 STA=    9877.   10064.
   PER Q=    100.0
    AREA=    150.3
     VEL=      4.3
   DEPTH=       .9

 *SECNO 1540.000
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 3265 DIVIDED FLOW


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

  1540.000      2.82    781.62       .00       .00    781.81       .19      7.60       .01    780.90
     620.0      64.0     501.1      54.9      26.8     134.6      23.1      49.6      43.5    780.90
       .74      2.39      3.72      2.37      .030      .035      .030      .000    778.80   9918.31
   .005117     1010.     1019.      985.         5         0         0       .00    195.80  10117.87


 FLOW DISTRIBUTION FOR SECNO=   1540.00          CWSEL=    781.62

 STA=    9918.    9924.    9969.   10071.   10102.   10118.
   PER Q=       .2     10.1     80.8      7.9      1.0
    AREA=      1.2     25.6    134.6     18.9      4.2
     VEL=      1.3      2.4      3.7      2.6      1.4
   DEPTH=       .2       .6      1.4       .6       .3

 *SECNO 1723.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59

  1723.000      2.09    788.29       .00       .00    788.60       .31      6.76       .04    789.20
     550.0        .0     379.4     170.6        .0      76.7      53.7      53.0      47.5    787.80
       .80       .00      4.95      3.18      .000      .035      .030      .000    786.20   9956.65
   .011415      960.      966.      850.         3         0         0       .00    184.86  10141.51


 FLOW DISTRIBUTION FOR SECNO=   1723.00          CWSEL=    788.29

 STA=    9957.   10024.   10072.   10135.   10142.
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  PER Q=      69.0      14.5      16.1       .4
   AREA=      76.7      23.9      28.5      1.3
    VEL=       4.9       3.3       3.1      1.8
  DEPTH=       1.1        .5        .4       .2

*SECNO 1921.000
  1921.000      4.47    795.87       .00       .00    796.27       .39      7.64       .02    795.50
     480.0        .5     479.5        .0        .4      95.2        .0      55.6      50.0    796.50
       .86      1.14      5.03       .00      .030      .035      .000      .000    791.40   9976.45
   .005109     1040.     1045.      840.         4         0         0       .00     45.94  10022.39


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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

 FLOW DISTRIBUTION FOR SECNO=   1921.00          CWSEL=    795.87

 STA=    9976.    9979.   10025.
  PER Q=       .1      99.9
   AREA=       .4      95.2
    VEL=      1.1       5.0
  DEPTH=       .2       2.2

 *SECNO 2127.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .55

  2127.000      2.62    803.62       .00       .00    804.08       .46      7.79       .02    806.00
     400.0        .0     400.0        .0        .0      73.2        .0      57.7      51.3    807.00
       .91       .00      5.47       .00      .000      .035      .000      .000    801.00   9978.19
   .011800     1070.     1088.     1020.         4         0         0       .00     56.44  10034.63


 FLOW DISTRIBUTION FOR SECNO=   2127.00          CWSEL=    803.62

 STA=    9978.   10089.
  PER Q=     100.0
   AREA=      73.2
    VEL=       5.5
  DEPTH=       1.3

 *SECNO 2337.000
  2337.000      2.20    812.80       .00       .00    812.99       .19      8.88       .03    813.70
     330.0        .0     205.3     124.7        .0      52.3      48.8      59.9      53.7    811.90
      1.01       .00      3.92      2.56      .000      .035      .030      .000    810.60   9994.63
   .005351     1070.     1109.     1160.         5         0         0       .00    125.88  10120.51


 FLOW DISTRIBUTION FOR SECNO=   2337.00          CWSEL=    812.80

 STA=    9995.   10031.   10057.   10104.   10121.
  PER Q=      62.2      17.3      18.7       1.8
   AREA=      52.3      19.1      25.5       4.2
    VEL=       3.9       3.0       2.4       1.4
  DEPTH=       1.4        .7        .5        .2

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


 *SECNO 2565.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .23
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  2565.000      1.66    821.16       .00       .00    821.54       .38      8.49       .06    821.50
     140.0        .0     140.0        .0        .0      28.2        .0      61.7      55.8    821.60
      1.07       .00      4.96       .00      .000      .035      .000      .000    819.50   9979.06
   .017695     1140.     1204.     1130.         3         0         0       .00     34.10  10013.16


FLOW DISTRIBUTION FOR SECNO=   2565.00          CWSEL=    821.16

STA=    9979.   10017.
  PER Q=    100.0
   AREA=     28.2
    VEL=      5.0
  DEPTH=       .8

*SECNO 2585.000

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       821.00 ELREA=       840.00

  2585.000      1.80    822.20       .00       .00    822.44       .24       .89       .01    820.40
     130.0      51.7      78.3        .0      16.2      18.0        .0      61.7      55.9    820.40
      1.08      3.19      4.35       .00      .030      .035      .000      .000    820.40   9976.99
   .004787      105.      105.      105.         2         0         0       .00     28.01  10005.00


FLOW DISTRIBUTION FOR SECNO=   2585.00          CWSEL=    822.20

STA=    9977.    9995.   10005.
  PER Q=     39.7     60.3
   AREA=     16.2     18.0
    VEL=      3.2      4.3
  DEPTH=       .9      1.8

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


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     2         .019       .50      3.00       .00      3.00       .00    240.00      2         1       824.50
820.40

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2632.000
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       134. DOES NOT EQUAL ACTUAL Q =       110.


SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    828.74

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.82

SPECIAL CULVERT

    EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   828.84    828.81      6.30       26.      108.     1.695      14.1    828.70       61.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       828.20 ELREA=       840.3(
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  2632.000      4.21    828.71       .00       .00    828.74       .03      6.30       .00    824.50
     110.0      38.6      71.4        .0      55.3      42.1        .0      62.1      56.2    824.50
      1.13       .70      1.70       .00      .030      .035      .000      .000    824.50   9554.36
   .000234      260.      250.      240.         2         0         0       .00     96.81  10005.00


 FLOW DISTRIBUTION FOR SECNO=   2632.00          CWSEL=    828.71

 STA=    9554.    9600.    9625.    9993.    9995.   10005.
   PER Q=      8.5      4.7     13.2      8.7     64.9
    AREA=     20.8     11.5     16.2      6.7     42.1
     VEL=       .4       .4       .9      1.4      1.7
   DEPTH=       .5       .5       .0      3.4      4.2

 *SECNO 2649.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49

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


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       830.00 ELREA=       850.00

  2649.000      3.57    828.67       .00       .00    828.82       .15       .04       .03    825.10
     110.0        .0     110.0        .0        .0      35.7        .0      62.3      56.4    825.10
      1.14       .00      3.08       .00      .000      .035      .000      .000    825.10   9995.00
   .000964      100.       91.       85.         2         0         0       .00     10.00  10005.00


 FLOW DISTRIBUTION FOR SECNO=   2649.00          CWSEL=    828.67

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     35.7
     VEL=      3.1
   DEPTH=      3.6


 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     2         .019      .50       3.00      .00       3.00      .00       248.00    2         1         827.00
825.10

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  1 - HEADWALL

 *SECNO 2698.000

 SPECIAL CULVERT OUTLET CONTROL
 EGIC =    830.629  EGOC =    832.026  PCWSE=    828.671  ELTRD=    834.500


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.74

 SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
    830.63    832.03     3.21        0.       90.    1.809      14.1    834.50        0.


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       834.00 ELREA=       851.00

  2698.000      4.98    831.98       .00       .00    832.03       .05      3.21       .00    827.00
     90.0        .0      90.0        .0        .0      49.8        .0      62.5      56.4    827.00
      1.18       .00      1.81       .00      .000      .035      .000      .000    827.00   9995.0(
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    .000214      258.      258.      258.         2         0         0       .00     10.00  10005.00


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


 FLOW DISTRIBUTION FOR SECNO=   2698.00          CWSEL=    831.98

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     49.8
     VEL=      1.8
   DEPTH=      5.0

 *SECNO 2746.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .46

   2746.000      2.69    832.19       .00       .00    832.23       .04       .20       .00    833.10
       80.0        .0      70.7       9.3        .0      43.1      15.1      63.2      57.0    831.90
       1.28       .00      1.64       .62      .000      .030      .035      .000    829.50   9982.16
    .000815      535.      554.      590.         2         0         0       .00     77.10  10059.27


 FLOW DISTRIBUTION FOR SECNO=   2746.00          CWSEL=    832.19

 STA=    9982.   10016.   10048.   10059.
   PER Q=     88.4      9.9      1.7
    AREA=     43.1     12.3      2.8
     VEL=      1.6       .6       .5
   DEPTH=      1.3       .4       .2

 *SECNO 2779.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.30 ELREA=       837.30

   2779.000      2.78    832.28       .00       .00    832.37       .10       .13       .02    829.50
       70.0        .0      70.0        .0        .0      27.8        .0      63.4      57.2    829.50
       1.30       .00      2.52       .00      .000      .030      .000      .000    829.50   9995.00
    .000661      174.      174.      174.         0         0         0       .00     10.00  10005.00


 FLOW DISTRIBUTION FOR SECNO=   2779.00          CWSEL=    832.28

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     27.8
     VEL=      2.5
   DEPTH=      2.8

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


 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU
ELCHD
      2          .018       .50       3.00     100.00      2.50       .00      285.00      2          2         832.60
829.50

 CHART  2 - CORRUGATED METAL PIPE CULVERT
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SCALE 2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT INLET CONTROL
EGIC = 836.163 EGOC = 836.068 PCWSE= 832.276 ELTRD= 838.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.48

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
836.16	836.07	3.79	0.	60.	1.705	9.8	838.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 838.30 ELREA= 838.30

2835.000	3.52	836.12	.00	.00	836.16	.05	3.79	.00	832.60
60.0	.0	60.0	.0	.0	35.2	.0	63.6	57.2	832.60
1.35	.00	1.71	.00	.000	.030	.000	.000	832.60	9995.00
.000222	295.	295.	295.	2	0	0	.00	10.00	10005.00

FLOW DISTRIBUTION FOR SECNO= 2835.00 CWSEL= 836.12

STA=	9995.	10005.
PER Q=	100.0	
AREA=	35.2	
VEL=	1.7	
DEPTH=	3.5	

*SECNO 2936.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .26

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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
2936.000	1.73	836.43	.00	.00	836.56	.13	.37	.03	836.00
75.0	1.8	72.6	.6	1.6	24.7	.8	64.0	57.5	836.50
1.40	1.09	2.94	.72	.035	.035	.035	.000	834.70	9980.54
.005028	530.	533.	500.	2	0	0	.00	40.12	10054.30

FLOW DISTRIBUTION FOR SECNO= 2936.00 CWSEL= 836.43

STA=	9981.	9988.	10014.	10052.	10054.
PER Q=	2.4	96.8	.6	.2	
AREA=	1.6	24.7	.6	.2	
VEL=	1.1	2.9	.7	.7	
DEPTH=	.2	1.0	.0	.1	

*SECNO 2974.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .54

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 839.00 ELREA= 843.30

2974.000	1.62	837.52	.00	.00	838.22	.69	1.48	.17	835.90
65.0	.0	65.0	.0	.0	9.7	.0	64.1	57.6	835.90
1.41	.00	6.67	.00	.000	.035	.000	.000	835.90	9997.0(

```
   .012945      190.      201.      180.        4         0         0       .00      6.00  10003.00

 FLOW DISTRIBUTION FOR SECNO=   2974.00          CWSEL=    837.52

 STA=    9997.   10003.
   PER Q=    100.0
    AREA=      9.7
     VEL=      6.7
   DEPTH=      1.6

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


 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU
ELCHD
      1          .019       .50       3.00        .00       3.00       .00      137.00      2          2         836.80
835.90

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  2 - MITERED TO CONFORM TO SLOPE

 5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
 *SECNO 3002.000

 SPECIAL CULVERT INLET CONTROL
 EGIC =    841.867  EGOC =    841.035  PCWSE=    837.524  ELTRD=    843.600


 3301 HV CHANGED MORE THAN HVINS


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.55

 SPECIAL CULVERT

      EGIC       EGOC        H4       QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
     841.87     841.04      3.65        0.        55.      1.828       7.1     843.60        0.


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

   3002.000      5.02     841.82       .00        .00     841.87       .05      3.65       .00     836.80
      55.0        .0       55.0        .0         .0       30.1        .0      64.1      57.7     836.80
      1.43       .00       1.83       .00       .000       .035      .000      .000    836.80    9997.00
    .000216      147.      147.      147.         2          0         0       .00      6.00   10003.00


 FLOW DISTRIBUTION FOR SECNO=   3002.00          CWSEL=    841.82

 STA=    9997.   10003.
   PER Q=    100.0
    AREA=     30.1
     VEL=      1.8
   DEPTH=      5.0

 *SECNO 3080.000
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
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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
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     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 3720 CRITICAL DEPTH ASSUMED
   3080.000      1.19     842.39     842.39       .00     842.70       .31       .22       .08     843.00
       35.0        .0       35.0        .0        .0       7.9        .0      64.3      57.7     844.00
       1.46       .00       4.44       .00      .000      .045      .000      .000    841.20    9995.35
    .036868      433.       412.      413.        20        17         0       .00     13.18   10008.53


 FLOW DISTRIBUTION FOR SECNO=   3080.00          CWSEL=    842.39

 STA=    9995.   10020.
   PER Q=    100.0
    AREA=      7.9
     VEL=      4.4
   DEPTH=       .6

 *SECNO 3111.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       847.00 ELREA=       850.00

   3111.000      1.54     845.34       .00       .00     845.59       .26      2.89       .00     843.80
       25.0        .0       25.0        .0        .0       6.1        .0      64.3      57.8     843.80
       1.47       .00       4.07       .00      .000      .045      .000      .000    843.80    9998.00
    .008572      164.       164.      164.         6         0         0       .00      4.00   10002.00


 FLOW DISTRIBUTION FOR SECNO=   3111.00          CWSEL=    845.34

 STA=    9998.   10002.
   PER Q=    100.0
    AREA=      6.1
     VEL=      4.1
   DEPTH=      1.5

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


 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU
ELCHD
      1          .016       .50       3.00     100.00       2.00       .00       82.00      2          2         844.20
843.80

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  2 - MITERED TO CONFORM TO SLOPE

 5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
 *SECNO 3129.000

 SPECIAL CULVERT INLET CONTROL
 EGIC =    848.639  EGOC =    847.709  PCWSE=    845.335  ELTRD=    850.700


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.80

 SPECIAL CULVERT

      EGIC       EGOC        H4       QWEIR      QCULV       VCH       ACULV      ELTRD     WEIRLN
     848.64     847.71      3.05        0.        25.       1.418       3.1      850.70       0.
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       850.00 ELREA=       850.70

  3129.000      4.41    848.61       .00       .00    848.64       .03      3.05       .00    844.20
      25.0        .0      25.0        .0        .0      17.6        .0      64.4      57.8    844.20
      1.49       .00      1.42       .00      .000      .045      .000      .000    844.20   9998.00
   .000255       92.       92.       92.         2         0         0       .00      4.00  10002.00


FLOW DISTRIBUTION FOR SECNO=   3129.00          CWSEL=    848.61

STA=    9998.   10002.
  PER Q=    100.0
   AREA=     17.6
    VEL=      1.4
  DEPTH=      4.4

*SECNO 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.35

  3148.000      3.46    848.66       .00       .00    848.68       .02       .04       .00    847.00
      80.0       6.9      70.7       2.4       8.5      59.1       5.4      64.5      57.9    848.00
      1.51       .81      1.20       .44      .035      .045      .035      .000    845.20   9982.73
   .000473      100.      100.      100.         2         0         0       .00     53.73  10036.46


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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


FLOW DISTRIBUTION FOR SECNO=   3148.00          CWSEL=    848.66

STA=    9983.    9993.   10020.   10036.
  PER Q=      8.6     88.4      3.0
   AREA=      8.5     59.1      5.4
    VEL=       .8      1.2       .4
  DEPTH=       .8      2.2       .3

*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3260.000      1.39    852.19    852.19       .00    852.54       .36       .64       .10    852.60
      50.0        .0      50.0        .0        .0      10.4        .0      65.0      58.3    853.30
      1.54       .00      4.79       .00      .000      .045      .000      .000    850.80   9993.84
   .035141      600.      591.      550.        20        18         0       .00     15.04  10008.88


FLOW DISTRIBUTION FOR SECNO=   3260.00          CWSEL=    852.19

STA=    9994.   10016.
  PER Q=    100.0
   AREA=     10.4
    VEL=      4.8
  DEPTH=       .7

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH N0. 1 FLOODWAY             J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 3                                                          743.28

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *PROF 2
0

 CCHV=     .100 CEHV=     .300
 *SECNO 61.000

 3470 ENCROACHMENT STATIONS=     9985.0   10022.0  TYPE=      1  TARGET=       37.000
     61.000       5.28     743.28       .00    742.28    743.97       .69       .00       .00 100000.00
      900.0         .0     900.0        .0        .0     135.2        .0        .0        .0 100000.00
        .00        .00      6.66       .00      .000      .035      .000      .000    738.00   9985.00
    .004852         0.        0.        0.         0         0         0       .00     37.00  10022.00

 FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    743.28

 STA=    9985.   10028.
   PER Q=    100.0
    AREA=    135.2
     VEL=      6.7
   DEPTH=      3.7

 *SECNO 150.000

 3301 HV CHANGED MORE THAN HVINS

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.85

 3470 ENCROACHMENT STATIONS=     9885.0   10015.0  TYPE=      1  TARGET=      130.000
    150.000       6.15     744.95       .00    744.21    745.14       .19      1.12       .05    744.60
      900.0      219.4      680.6        .0     159.1     173.8        .0       2.5        .9 100000.00
        .04       1.38       3.92       .00      .060      .035      .000      .000    738.80   9885.00
    .001413       472.       470.      470.         3         0         0       .00    130.00  10015.00

 FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    744.95

 STA=    9885.    9953.    9961.    9966.    9974.   10024.
   PER Q=     16.2      3.7      3.3      1.3     75.6
    AREA=    113.1     19.9     15.7     10.4    173.8
     VEL=      1.3      1.7      1.9      1.1      3.9
   DEPTH=      1.7      2.5      2.9      1.4      4.2
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *SECNO 337.000

 3470 ENCROACHMENT STATIONS=     9960.0   10195.0  TYPE=      1  TARGET=      235.000
    337.000       3.43     746.23       .00    745.32    746.28       .04      1.12       .01 100000.00
      900.0         .0      284.4     615.6        .0     136.6     425.7      12.4       4.8    746.20
        .20        .00       2.08      1.45      .000      .035      .060      .000    742.80   9960.00
    .000971       755.       987.     1010.         4         0         0       .00    235.00  10195.00

 FLOW DISTRIBUTION FOR SECNO=    337.00          CWSEL=    746.23
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STA=    9960.   10028.   10039.   10048.   10072.   10113.   10152.   10177.   10192.   10195.
  PER Q=     31.6      1.5      3.4      8.2     16.1     18.7     11.9      7.7       .9
   AREA=    136.6     15.1     21.6     54.6    102.3    110.2     69.4     44.1      8.5
    VEL=      2.1       .9      1.4      1.4      1.4      1.5      1.5      1.6      1.0
  DEPTH=      2.0      1.3      2.5      2.3      2.5      2.8      2.8      2.9      2.9

*SECNO 555.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=     9875.0   10035.0  TYPE=      1  TARGET=      160.000
   555.000      2.03    750.13    750.13    750.13    750.56       .43      2.36       .12 100000.00
     640.0        .0     640.0       .0        .0     121.1        .0      20.8       9.6 100000.00
       .26       .00      5.29       .00      .000      .035      .000      .000    748.10   9875.00
   .020055     1200.     1151.     1030.        20        14         0       .00    145.96  10035.00


FLOW DISTRIBUTION FOR SECNO=    555.00          CWSEL=    750.13

STA=    9875.   10041.
  PER Q=    100.0
   AREA=    121.1
    VEL=      5.3
  DEPTH=       .8

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


*SECNO 769.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.00


3470 ENCROACHMENT STATIONS=     9891.0   10018.0  TYPE=      1  TARGET=      127.000
   769.000      4.51    756.01       .00    756.00    756.20       .19      5.61       .02    754.60
     640.0     153.2     472.4      14.4      72.2     121.4       7.8      24.9      13.1    754.30
       .35      2.12      3.89      1.83      .035      .035      .035      .000    751.50   9891.76
   .002226     1050.     1130.     1130.         8         0         0       .00    126.24  10018.00


FLOW DISTRIBUTION FOR SECNO=    769.00          CWSEL=    756.01

STA=    9892.    9930.    9965.   10009.   10018.
  PER Q=      5.7     18.2     73.8      2.2
   AREA=     24.5     47.7    121.4      7.8
    VEL=      1.5      2.4      3.9      1.8
  DEPTH=       .6      1.3      2.7       .9

*SECNO 959.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9905.0   10070.0  TYPE=      1  TARGET=      165.000
   959.000      2.26    761.36    761.36    761.38    761.77       .41      4.97       .06 100000.00
     640.0        .0     640.0       .0        .0     125.1        .0      28.7      16.3 100000.00
       .41       .00      5.11       .00      .000      .035      .000      .000    759.10   9905.00
   .018965     1030.     1003.     1000.         4         8         0       .00    152.10  10070.00


FLOW DISTRIBUTION FOR SECNO=    959.00          CWSEL=    761.36

STA=    9905.   10098.
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  PER Q=     100.0
   AREA=     125.1
    VEL=       5.1
  DEPTH=        .8

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

 *SECNO 1151.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.35

 3470 ENCROACHMENT STATIONS=     9920.0   10100.0  TYPE=      1  TARGET=      180.000
   1151.000      2.79    768.49       .00    768.33    768.65       .15      6.85       .03    768.00
      640.0     155.0     180.7     304.3      55.3      55.0      95.8      32.6      20.2    767.50
        .50      2.80      3.28      3.17      .030      .035      .030      .000    765.70   9920.00
    .003432     1040.     1014.     1000.         6         0         0       .00    180.00  10100.00

 FLOW DISTRIBUTION FOR SECNO=   1151.00          CWSEL=    768.49

 STA=    9920.    9957.    9978.   10014.   10038.   10070.   10100.
   PER Q=     17.7      6.5     28.2     15.4     22.7      9.4
    AREA=     38.4     16.9     55.0     29.4     42.2     24.2
     VEL=      2.9      2.5      3.3      3.4      3.4      2.5
   DEPTH=      1.1       .8      1.5      1.2      1.3       .8

 *SECNO 1347.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60

 3470 ENCROACHMENT STATIONS=     9880.0   10045.0  TYPE=      1  TARGET=      165.000
   1347.000      2.56    773.96       .00    773.91    774.21       .25      5.53       .03 100000.00
      640.0        .0     640.0        .0        .0     158.5        .0      36.9      24.3 100000.00
        .57       .00      4.04       .00      .000      .035      .000      .000    771.40   9880.00
    .009598      960.     1035.     1050.         6         0         0       .00    165.00  10045.00

 FLOW DISTRIBUTION FOR SECNO=   1347.00          CWSEL=    773.96

 STA=    9880.   10064.
   PER Q=     100.0
    AREA=     158.5
     VEL=       4.0
   DEPTH=       1.0

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

 *SECNO 1540.000

 3470 ENCROACHMENT STATIONS=     9970.0   10070.0  TYPE=      1  TARGET=      100.000
   1540.000      2.96    781.76       .00    781.62    782.04       .28      7.82       .01 100000.00
      620.0        .0     620.0        .0        .0     146.0        .0      40.4      27.4 100000.00
        .63       .00      4.25       .00      .000      .035      .000      .000    778.80   9970.00
    .006240     1010.     1019.      985.         4         0         0       .00    100.00  10070.00

 FLOW DISTRIBUTION FOR SECNO=   1540.00          CWSEL=    781.76
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STA=    9970.   10071.
  PER Q=    100.0
   AREA=    146.0
    VEL=      4.2
  DEPTH=      1.5

*SECNO 1723.000

3470 ENCROACHMENT STATIONS=     9960.0   10020.0  TYPE=      1  TARGET=       60.000
  1723.000      2.53    788.73       .00    788.29    789.20       .47      7.10       .06 100000.00
     550.0        .0     550.0        .0        .0      99.5        .0      43.1      29.1 100000.00
       .68       .00      5.53       .00      .000      .035      .000      .000    786.20   9960.00
   .009007      960.      966.      850.         4         0         0       .00     60.00  10020.00


FLOW DISTRIBUTION FOR SECNO=   1723.00          CWSEL=    788.73

STA=    9960.   10024.
  PER Q=    100.0
   AREA=     99.5
    VEL=      5.5
  DEPTH=      1.7

*SECNO 1921.000

3470 ENCROACHMENT STATIONS=     9978.0   10020.0  TYPE=      1  TARGET=       42.000
  1921.000      4.45    795.85       .00    795.87    796.26       .41      7.05       .01    795.50
     480.0        .3     479.7        .0        .2      93.8        .0      45.5      30.4 100000.00
       .74      1.29      5.11       .00      .030      .035      .000      .000    791.40   9978.00
   .005059     1040.     1045.      840.         4         0         0       .00     42.00  10020.00


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


FLOW DISTRIBUTION FOR SECNO=   1921.00          CWSEL=    795.85

STA=    9978.    9979.   10025.
  PER Q=       .1     99.9
   AREA=       .2     93.8
    VEL=      1.3      5.1
  DEPTH=       .3      2.3

*SECNO 2127.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .54


3470 ENCROACHMENT STATIONS=     9978.0   10035.0  TYPE=      1  TARGET=       57.000
  2127.000      2.61    803.61       .00    803.62    804.08       .47      7.80       .02 100000.00
     400.0        .0     400.0        .0        .0      72.6        .0      47.5      31.6 100000.00
       .79       .00      5.51       .00      .000      .035      .000      .000    801.00   9978.28
   .012065     1070.     1088.     1020.         3         0         0       .00     56.19  10034.47


FLOW DISTRIBUTION FOR SECNO=   2127.00          CWSEL=    803.61

STA=    9978.   10089.
  PER Q=    100.0
   AREA=     72.6
    VEL=      5.5
  DEPTH=      1.3

*SECNO 2337.000

3470 ENCROACHMENT STATIONS=     9995.0   10030.0  TYPE=      1  TARGET=       35.000
  2337.000      2.65    813.25       .00    812.80    813.63       .37      9.54       .01 100000.00
     330.0        .0     330.0        .0        .0      67.2        .0      49.3      32.8 100000.00
       .86       .00      4.91       .00      .000      .035      .000      .000    810.60   9995.00
   .006088     1070.     1109.     1160.         4         0         0       .00     35.00  10030.0(
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 FLOW DISTRIBUTION FOR SECNO=   2337.00          CWSEL=    813.25

 STA=    9995.   10031.
   PER Q=    100.0
    AREA=     67.2
     VEL=      4.9
   DEPTH=      1.9

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

 *SECNO 2565.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

 3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=      1  TARGET=       30.000
   2565.000      1.90    821.40       .00    821.16    821.66       .27      8.02       .01 100000.00
      140.0        .0     140.0        .0        .0      33.9        .0      50.7      33.7 100000.00
        .94       .00      4.13       .00      .000      .035      .000      .000    819.50   9985.00
    .008382     1140.     1204.     1130.         4         0         0       .00     30.00  10015.00

 FLOW DISTRIBUTION FOR SECNO=   2565.00          CWSEL=    821.40

 STA=    9985.   10017.
   PER Q=    100.0
    AREA=     33.9
     VEL=      4.1
   DEPTH=      1.1

 *SECNO 2585.000

 3470 ENCROACHMENT STATIONS=     9555.0   10005.0  TYPE=      1  TARGET=      450.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       821.00 ELREA=       840.00

   2585.000      1.76    822.16       .00    822.20    822.41       .25       .75       .00    820.40
      130.0      54.2      75.8        .0      15.4      17.5        .0      50.8      33.7 100000.00
        .95      3.52      4.32       .00      .030      .035      .000      .000    820.40   9977.45
    .006064      105.      105.      105.         0         0         0       .00     27.55  10005.00

 FLOW DISTRIBUTION FOR SECNO=   2585.00          CWSEL=    822.16

 STA=    9977.    9995.   10005.
   PER Q=     41.7     58.3
    AREA=     15.4     17.5
     VEL=      3.5      4.3
   DEPTH=       .9      1.8

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

 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU
ELCHD
      2          .019       .50       3.00        .00       3.00        .00     240.00      2          1         824.5(
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820.40

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

*SECNO 2632.000
BTCARD, BRIDGE STENCL= 9555.00 STENCR= 10005.00
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV = 134. DOES NOT EQUAL ACTUAL Q = 110.

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 828.75

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.76

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
828.84	828.81	6.34	26.	108.	1.538	14.1	828.70	61.

3470 ENCROACHMENT STATIONS= 9555.0 10005.0 TYPE= 1 TARGET= 450.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 828.20 ELREA= 840.30

2632.000	4.22	828.72	.00	828.71	828.75	.03	6.34	.00	824.50
110.0	45.1	64.9	.0	56.1	42.2	.0	51.2	34.1	100000.00
1.00	.80	1.54	.00	.030	.035	.000	.000	824.50	9555.00
.000308	260.	250.	240.	2	0	0	.00	96.55	10005.00

FLOW DISTRIBUTION FOR SECNO= 2632.00 CWSEL= 828.72

STA=	9555.	9600.	9626.	9981.	9993.	9995.	10005.
PER Q=	10.2	5.5	.0	15.3	10.0	59.0	
AREA=	21.2	11.8	.1	16.3	6.7	42.2	
VEL=	.5	.5	.1	1.0	1.6	1.5	
DEPTH=	.5	.5	.0	1.3	3.4	4.2	

*SECNO 2649.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .46

3470 ENCROACHMENT STATIONS= 9995.0 10005.0 TYPE= 1 TARGET= 10.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 830.00 ELREA= 850.00

2649.000	3.59	828.69	.00	828.67	828.84	.15	.05	.04	825.10
110.0	.0	110.0	.0	.0	35.9	.0	51.3	34.2	100000.00
1.01	.00	3.06	.00	.000	.035	.000	.000	825.10	9995.00
.001424	100.	91.	85.	2	0	0	.00	10.00	10005.00

FLOW DISTRIBUTION FOR SECNO= 2649.00 CWSEL= 828.69

STA=	9995.	10005.
PER Q=	100.0	
AREA=	35.9	
VEL=	3.1	
DEPTH=	3.6	

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 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
      2         .019      .50       3.00      .00       3.00      .00       248.00    2         1         827.00
825.10

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  1 - HEADWALL

 *SECNO 2698.000
 BTCARD, BRIDGE STENCL=    9995.00   STENCR=   10005.00

 SPECIAL CULVERT OUTLET CONTROL
 EGIC =    830.629  EGOC =    832.047  PCWSE=    828.691  ELTRD=    854.082


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

 SPECIAL CULVERT

      EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
    830.63    832.05     3.21        0.       90.    1.802      14.1    854.08        0.


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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



 3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       834.00 ELREA=       851.00

   2698.000      5.00    832.00       .00    831.98    832.05       .05      3.21       .00    827.00
       90.0        .0      90.0        .0        .0      50.0        .0      51.6      34.3 100000.00
       1.05       .00      1.80       .00      .000      .035      .000      .000    827.00   9995.00
    .000362      258.      258.      258.         2         0         0       .00     10.00  10005.00


 FLOW DISTRIBUTION FOR SECNO=   2698.00          CWSEL=    832.00

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     50.0
     VEL=      1.8
   DEPTH=      5.0

 *SECNO 2746.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59


 3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=      1  TARGET=       30.000
   2746.000      2.78    832.28       .00    832.19    832.33       .05       .28       .00 100000.00
       80.0        .0      80.0        .0        .0      44.8        .0      52.2      34.5 100000.00
       1.14       .00      1.79       .00      .000      .030      .000      .000    829.50   9985.00
    .000808      535.      554.      590.         2         0         0       .00     30.00  10015.00


 FLOW DISTRIBUTION FOR SECNO=   2746.00          CWSEL=    832.28

 STA=    9985.   10016.
   PER Q=    100.0
    AREA=     44.8
     VEL=      1.8
   DEPTH=      1.5

 *SECNO 2779.000
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.30 ELREA=       837.30

   2779.000      2.89    832.39       .00    832.28    832.48       .09       .14       .01    829.50
       70.0        .0      70.0        .0        .0      28.8        .0      52.3      34.6 100000.00
       1.16       .00      2.43       .00      .000      .030      .000      .000    829.50   9995.00
    .000819      174.      174.      174.         1         0         0       .00     10.00  10005.00


 FLOW DISTRIBUTION FOR SECNO=   2779.00          CWSEL=    832.39

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     28.8
     VEL=      2.4
   DEPTH=      2.9


 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     2          .018      .50      3.00    100.00      2.50       .00    285.00      2         2       832.60
829.50

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  2 - MITERED TO CONFORM TO SLOPE

 *SECNO 2835.000

 SPECIAL CULVERT OUTLET CONTROL
 EGIC =    836.163  EGOC =    836.183  PCWSE=    832.390  ELTRD=    838.300

 SPECIAL CULVERT

      EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    836.16    836.18      3.70        0.       60.     1.696       9.8    838.30        0.


 3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.30 ELREA=       838.30

   2835.000      3.54    836.14       .00    836.12    836.18       .04      3.70       .00    832.60
       60.0        .0      60.0        .0        .0      35.4        .0      52.5      34.7 100000.00
       1.21       .00      1.70       .00      .000      .030      .000      .000    832.60   9995.00
    .000326      295.      295.      295.         2         0         0       .00     10.00  10005.00


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


 FLOW DISTRIBUTION FOR SECNO=   2835.00          CWSEL=    836.14

 STA=    9995.   10005.
   PER Q=    100.0
    AREA=     35.4
     VEL=      1.7
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  DEPTH=      3.5

*SECNO 2936.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .37


3470 ENCROACHMENT STATIONS=     9988.0   10014.0  TYPE=      1  TARGET=       26.000
  2936.000      1.86    836.56       .00    836.43    836.67       .11       .47       .02    836.00
      75.0        .0      75.0        .0        .0      28.1        .0      52.9      34.9 100000.00
      1.26       .00      2.67       .00      .000      .035      .000      .000    834.70   9988.00
   .003734      530.      533.      500.         2         0         0       .00     26.00  10014.00


FLOW DISTRIBUTION FOR SECNO=   2936.00          CWSEL=    836.56

STA=    9988.   10014.
  PER Q=    100.0
   AREA=     28.1
    VEL=      2.7
  DEPTH=      1.1

*SECNO 2974.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .39


3470 ENCROACHMENT STATIONS=     9755.0   10003.0  TYPE=      1  TARGET=      248.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       839.00 ELREA=       843.30

  2974.000      1.60    837.50       .00    837.52    838.21       .72      1.36       .18    835.90
      65.0        .0      65.0        .0        .0       9.6        .0      53.0      35.0 100000.00
      1.27       .00      6.79       .00      .000      .035      .000      .000    835.90   9997.00
   .018824      190.      201.      180.         4         0         0       .00      6.00  10003.00


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


FLOW DISTRIBUTION FOR SECNO=   2974.00          CWSEL=    837.50

STA=    9997.   10003.
  PER Q=    100.0
   AREA=      9.6
    VEL=      6.8
  DEPTH=      1.6


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     1         .019      .50      3.00       .00      3.00       .00    137.00      2         2       836.80
835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000
BTCARD, BRIDGE STENCL=    9600.00   STENCR=   10003.00

SPECIAL CULVERT INLET CONTROL
EGIC =    841.867  EGOC =    841.035  PCWSE=    837.498  ELTRD=    843.600
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3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.27

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   841.87    841.04      3.65        0.       55.     1.828       7.1    843.60        0.


3470 ENCROACHMENT STATIONS=     9600.0   10003.0  TYPE=      1  TARGET=      403.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

  3002.000      5.02    841.82       .00    841.82    841.87       .05      3.65       .00    836.80
      55.0        .0      55.0        .0        .0      30.1        .0      53.1      35.0 100000.00
      1.29       .00      1.83       .00      .000      .035      .000      .000    836.80   9997.00
   .000486      147.      147.      147.         2         0         0       .00      6.00  10003.00


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


FLOW DISTRIBUTION FOR SECNO=   3002.00          CWSEL=    841.82

STA=    9997.   10003.
  PER Q=    100.0
   AREA=     30.1
    VEL=      1.8
  DEPTH=      5.0

*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9993.0   10020.0  TYPE=      1  TARGET=       27.000
  3080.000      1.19    842.39    842.39    842.39    842.70       .31       .47       .08    843.00
      35.0        .0      35.0        .0        .0       7.9        .0      53.3      35.1 100000.00
      1.32       .00      4.45       .00      .000      .045      .000      .000    841.20   9995.36
   .036975      433.      412.      413.        20        17         0       .00     13.17  10008.53


FLOW DISTRIBUTION FOR SECNO=   3080.00          CWSEL=    842.39

STA=    9995.   10020.
  PER Q=    100.0
   AREA=      7.9
    VEL=      4.4
  DEPTH=       .6

*SECNO 3111.000

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


3470 ENCROACHMENT STATIONS=     9998.0   10002.0  TYPE=      1  TARGET=        4.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       847.00 ELREA=       850.00

  3111.000      1.73    845.53       .00    845.34    845.74       .20      3.02       .01    843.80
      25.0        .0      25.0        .0        .0       6.9        .0      53.3      35.1 100000.00
      1.33       .00      3.61       .00      .000      .045      .000      .000    843.80   9998.00
   .009254      164.      164.      164.         5         0         0       .00      4.00  10002.00


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

 FLOW DISTRIBUTION FOR SECNO=   3111.00          CWSEL=    845.53

 STA=    9998.   10002.
   PER Q=    100.0
    AREA=      6.9
     VEL=      3.6
   DEPTH=      1.7


 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU
ELCHD
      1          .016       .50        3.00     100.00      2.00       .00        82.00      2          2          844.20
843.80

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  2 - MITERED TO CONFORM TO SLOPE

 5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
 *SECNO 3129.000

 SPECIAL CULVERT INLET CONTROL
 EGIC =    848.639  EGOC =    847.709  PCWSE=    845.534  ELTRD=    850.700


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.67

 SPECIAL CULVERT

      EGIC       EGOC        H4       QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
     848.64     847.71      2.90        0.        25.      1.418       3.1     850.70        0.


 3470 ENCROACHMENT STATIONS=     9998.0   10002.0  TYPE=      1  TARGET=        4.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       850.00 ELREA=       850.70

   3129.000      4.41    848.61       .00    848.61    848.64       .03      2.90       .00    844.20
       25.0        .0      25.0        .0        .0      17.6        .0      53.3      35.1 100000.00
       1.35       .00      1.42       .00      .000      .045      .000      .000    844.20   9998.00
    .000687       92.       92.       92.         2         0         0       .00      4.00  10002.00


 FLOW DISTRIBUTION FOR SECNO=   3129.00          CWSEL=    848.61

 STA=    9998.   10002.
   PER Q=    100.0
    AREA=     17.6
     VEL=      1.4
   DEPTH=      4.4

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


 *SECNO 3148.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.27
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3470 ENCROACHMENT STATIONS=     9993.0   10020.0  TYPE=      1  TARGET=       27.000
  3148.000      3.48    848.68       .00    848.66    848.71       .03       .07       .00    847.00
      80.0        .0      80.0        .0        .0      59.5        .0      53.4      35.2 100000.00
      1.37       .00      1.34       .00      .000      .045      .000      .000    845.20   9993.00
   .000657      100.      100.      100.         2         0         0       .00     27.00  10020.00


FLOW DISTRIBUTION FOR SECNO=   3148.00          CWSEL=    848.68

STA=    9993.   10020.
  PER Q=    100.0
   AREA=     59.5
    VEL=      1.3
  DEPTH=      2.2

*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9992.0   10016.0  TYPE=      1  TARGET=       24.000
  3260.000      1.39    852.19    852.19    852.19    852.54       .36       .87       .10    852.60
      50.0        .0      50.0        .0        .0      10.4        .0      53.9      35.4 100000.00
      1.40       .00      4.79       .00      .000      .045      .000      .000    850.80   9993.84
   .035131      600.      591.      550.        20        18         0       .00     15.04  10008.88


FLOW DISTRIBUTION FOR SECNO=   3260.00          CWSEL=    852.19

STA=    9994.   10016.
  PER Q=    100.0
   AREA=     10.4
    VEL=      4.8
  DEPTH=       .7

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                                                                                THIS RUN EXECUTED 03OCT01
10:46:54
 ************************************
  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


 UNNAMED WASH N0. 1  FLOO

 SUMMARY PRINTOUT


       SECNO     ELMIN     CWSEL     SSTA      ENDST     DEPTH       Q        VCH       HV      DIFWSX     QWEIR
ELTRD     ELLC

       61.000    738.00    742.28   9899.58  10021.69      4.28    900.00      7.71      .79       .00
.00       .00       .00
       61.000    738.00    743.28   9985.00  10022.00      5.28    900.00      6.66      .69       .00
.00       .00       .00

 *    150.000    738.80    744.21   9672.84  10018.74      5.41    900.00      3.17      .09      1.93
.00       .00       .00
 *    150.000    738.80    744.95   9885.00  10015.00      6.15    900.00      3.92      .19      1.67
.00       .00       .00

      337.000    742.80    745.32   9957.79  10495.96      2.52    900.00      1.58      .02      1.12
.00       .00       .00
      337.000    742.80    746.23   9960.00  10195.00      3.43    900.00      2.08      .04      1.28
.00       .00       .00

 *    555.000    748.10    750.13   9873.75  10035.89      2.03    640.00      5.24      .43      4.81
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.00        .00       .00
 *    555.000    748.10    750.13   9875.00  10035.00      2.03    640.00      5.29       .43      3.89
.00        .00       .00

 *    769.000    751.50    756.00   9891.77  10018.59      4.50    640.00      3.89       .19      5.87
.00        .00       .00
 *    769.000    751.50    756.01   9891.76  10018.00      4.51    640.00      3.89       .19      5.88
.00        .00       .00

 *    959.000    759.10    761.38   9901.90  10073.16      2.28    640.00      5.02       .39      5.37
.00        .00       .00
 *    959.000    759.10    761.36   9905.00  10070.00      2.26    640.00      5.11       .41      5.36
.00        .00       .00

 *   1151.000    765.70    768.33   9847.51  10237.37      2.63    640.00      2.95       .09      6.95
.00        .00       .00
 *   1151.000    765.70    768.49   9920.00  10100.00      2.79    640.00      3.28       .15      7.13
.00        .00       .00

 *   1347.000    771.40    773.91   9877.00  10045.24      2.51    640.00      4.26       .28      5.59
.00        .00       .00
 *   1347.000    771.40    773.96   9880.00  10045.00      2.56    640.00      4.04       .25      5.46
.00        .00       .00

 *   1540.000    778.80    781.62   9918.31  10117.87      2.82    620.00      3.72       .19      7.70
.00        .00       .00
     1540.000    778.80    781.76   9970.00  10070.00      2.96    620.00      4.25       .28      7.80
.00        .00       .00

 *   1723.000    786.20    788.29   9956.65  10141.51      2.09    550.00      4.95       .31      6.68
.00        .00       .00
     1723.000    786.20    788.73   9960.00  10020.00      2.53    550.00      5.53       .47      6.97
.00        .00       .00

     1921.000    791.40    795.87   9976.45  10022.39      4.47    480.00      5.03       .39      7.58
.00        .00       .00
     1921.000    791.40    795.85   9978.00  10020.00      4.45    480.00      5.11       .41      7.12
.00        .00       .00

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       SECNO      ELMIN      CWSEL      SSTA      ENDST     DEPTH       Q       VCH       HV     DIFWSX     QWEIR
ELTRD      ELLC

 *   2127.000    801.00    803.62   9978.19  10034.63      2.62    400.00      5.47       .46      7.74
.00        .00       .00
 *   2127.000    801.00    803.61   9978.28  10034.47      2.61    400.00      5.51       .47      7.76
.00        .00       .00

     2337.000    810.60    812.80   9994.63  10120.51      2.20    330.00      3.92       .19      9.18
.00        .00       .00
     2337.000    810.60    813.25   9995.00  10030.00      2.65    330.00      4.91       .37      9.65
.00        .00       .00

 *   2565.000    819.50    821.16   9979.06  10013.16      1.66    140.00      4.96       .38      8.35
.00        .00       .00
 *   2565.000    819.50    821.40   9985.00  10015.00      1.90    140.00      4.13       .27      8.14
.00        .00       .00

 *   2585.000    820.40    822.20   9976.99  10005.00      1.80    130.00      4.35       .24      1.05
.00        .00       .00
     2585.000    820.40    822.16   9977.45  10005.00      1.76    130.00      4.32       .25       .77
.00        .00       .00

 *   2632.000    824.50    828.71   9554.36  10005.00      4.21    110.00      1.70       .03      6.51
25.94    828.70       .00
 *   2632.000    824.50    828.72   9555.00  10005.00      4.22    110.00      1.54       .03      6.56
26.48    828.70       .00

 *   2649.000    825.10    828.67   9995.00  10005.00      3.57    110.00      3.08       .15      -.04
.00        .00       .00
 *   2649.000    825.10    828.69   9995.00  10005.00      3.59    110.00      3.06       .15      -.03
.00        .00       .00

 *   2698.000    827.00    831.98   9995.00  10005.00      4.98     90.00      1.81       .05      3.3(
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.00    834.50      .00
 *   2698.000    827.00    832.00   9995.00  10005.00      5.00     90.00      1.80       .05      3.30
.00    854.08      .00

 *   2746.000    829.50    832.19   9982.16  10059.27      2.69     80.00      1.64       .04       .21
.00       .00      .00
 *   2746.000    829.50    832.28   9985.00  10015.00      2.78     80.00      1.79       .05       .28
.00       .00      .00

     2779.000    829.50    832.28   9995.00  10005.00      2.78     70.00      2.52       .10       .09
.00       .00      .00
     2779.000    829.50    832.39   9995.00  10005.00      2.89     70.00      2.43       .09       .11
.00       .00      .00

 *   2835.000    832.60    836.12   9995.00  10005.00      3.52     60.00      1.71       .05      3.84
.00    838.30      .00
     2835.000    832.60    836.14   9995.00  10005.00      3.54     60.00      1.70       .04      3.75
.00    838.30      .00

 *   2936.000    834.70    836.43   9980.54  10054.30      1.73     75.00      2.94       .13       .32
.00       .00      .00
 *   2936.000    834.70    836.56   9988.00  10014.00      1.86     75.00      2.67       .11       .42
.00       .00      .00

 *   2974.000    835.90    837.52   9997.00  10003.00      1.62     65.00      6.67       .69      1.09
.00       .00      .00
 *   2974.000    835.90    837.50   9997.00  10003.00      1.60     65.00      6.79       .72       .94
.00       .00      .00

 *   3002.000    836.80    841.82   9997.00  10003.00      5.02     55.00      1.83       .05      4.29
.00    843.60      .00
 *   3002.000    836.80    841.82   9997.00  10003.00      5.02     55.00      1.83       .05      4.32
.00    843.60      .00

 *   3080.000    841.20    842.39   9995.35  10008.53      1.19     35.00      4.44       .31       .58
.00       .00      .00
 *   3080.000    841.20    842.39   9995.36  10008.53      1.19     35.00      4.45       .31       .58
.00       .00      .00

 *   3111.000    843.80    845.34   9998.00  10002.00      1.54     25.00      4.07       .26      2.94
.00       .00      .00
 *   3111.000    843.80    845.53   9998.00  10002.00      1.73     25.00      3.61       .20      3.14
.00       .00      .00

 *   3129.000    844.20    848.61   9998.00  10002.00      4.41     25.00      1.42       .03      3.27
.00    850.70      .00
 *   3129.000    844.20    848.61   9998.00  10002.00      4.41     25.00      1.42       .03      3.07
.00    850.70      .00

 *   3148.000    845.20    848.66   9982.73  10036.46      3.46     80.00      1.20       .02       .05
.00       .00      .00
 *   3148.000    845.20    848.68   9993.00  10020.00      3.48     80.00      1.34       .03       .07
.00       .00      .00
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       SECNO     ELMIN     CWSEL     SSTA      ENDST     DEPTH      Q        VCH       HV      DIFWSX     QWEIR
ELTRD     ELLC

 *   3260.000    850.80    852.19   9993.84  10008.88      1.39     50.00      4.79       .36      3.53
.00       .00      .00
 *   3260.000    850.80    852.19   9993.84  10008.88      1.39     50.00      4.79       .36      3.51
.00       .00      .00
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UNNAMED WASH NO. 1  FLOO

SUMMARY PRINTOUT TABLE  110

       SECNO     CWSEL    DIFKWS      EG      TOPWID     QLOB       QCH      QROB     PERENC    STENCL     STCHI
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STCHR    STENCR

       61.000    742.28       .00    743.07    110.91    141.51    758.48       .00       .00       .00
9984.90  10028.40      .00
       61.000    743.28      1.00    743.97     37.00       .00    900.00       .00     37.00   9985.00
9984.90  10028.40 10022.00

 *    150.000    744.21       .00    744.29    341.47    435.51    464.49       .00       .00       .00
9973.90  10023.90      .00
 *    150.000    744.95       .75    745.14    130.00    219.41    680.59       .00    130.00   9885.00
9973.90  10023.90 10015.00

      337.000    745.32       .00    745.35    517.23       .00    122.22    777.78       .00       .00
9956.10  10027.60      .00
      337.000    746.23       .91    746.28    235.00       .00    284.41    615.59    235.00   9960.00
9956.10  10027.60 10195.00

 *    555.000    750.13       .00    750.56    148.53       .00    640.00       .00       .00       .00
9856.40  10040.60      .00
 *    555.000    750.13      -.01    750.56    145.96       .00    640.00       .00    160.00   9875.00
9856.40  10040.60 10035.00

 *    769.000    756.00       .00    756.20    126.81    153.22    472.79     13.99       .00       .00
9965.00  10009.30      .00
 *    769.000    756.01       .00    756.20    126.24    153.16    472.45     14.39    127.00   9891.00
9965.00  10009.30 10018.00

 *    959.000    761.38       .00    761.77    162.75       .00    640.00       .00       .00       .00
9775.30  10097.90      .00
 *    959.000    761.36      -.01    761.77    152.10       .00    640.00       .00    165.00   9905.00
9775.30  10097.90 10070.00

 *   1151.000    768.33       .00    768.42    379.77    182.99    144.82    312.19       .00       .00
9977.90  10013.80      .00
 *   1151.000    768.49       .17    768.65    180.00    155.00    180.71    304.29    180.00   9920.00
9977.90  10013.80 10100.00

 *   1347.000    773.91       .00    774.20    168.24       .00    640.00       .00       .00       .00
9838.60  10063.70      .00
 *   1347.000    773.96       .04    774.21    165.00       .00    640.00       .00    165.00   9880.00
9838.60  10063.70 10045.00

 *   1540.000    781.62       .00    781.81    195.80     64.01    501.06     54.93       .00       .00
9968.70  10071.20      .00
     1540.000    781.76       .14    782.04    100.00       .00    620.00       .00    100.00   9970.00
9968.70  10071.20 10070.00

 *   1723.000    788.29       .00    788.60    184.86       .00    379.40    170.60       .00       .00
9941.30  10023.90      .00
     1723.000    788.73       .43    789.20     60.00       .00    550.00       .00     60.00   9960.00
9941.30  10023.90 10020.00

     1921.000    795.87       .00    796.27     45.94       .49    479.51       .00       .00       .00
9978.80  10025.40      .00
     1921.000    795.85      -.02    796.26     42.00       .30    479.70       .00     42.00   9978.00
9978.80  10025.40 10020.00

 *   2127.000    803.62       .00    804.08     56.44       .00    400.00       .00       .00       .00
9957.60  10089.00      .00
 *   2127.000    803.61      -.01    804.08     56.19       .00    400.00       .00     57.00   9978.00
9957.60  10089.00 10035.00

     2337.000    812.80       .00    812.99    125.88       .00    205.29    124.71       .00       .00
9990.20  10031.30      .00
     2337.000    813.25       .45    813.63     35.00       .00    330.00       .00     35.00   9995.00
9990.20  10031.30 10030.00

 *   2565.000    821.16       .00    821.54     34.10       .00    140.00       .00       .00       .00
9974.70  10016.70      .00
 *   2565.000    821.40       .24    821.66     30.00       .00    140.00       .00     30.00   9985.00
9974.70  10016.70 10015.00

 *   2585.000    822.20       .00    822.44     28.01     51.67     78.33       .00       .00       .00
9995.00  10005.00      .00
     2585.000    822.16      -.04    822.41     27.55     54.24     75.76       .00    450.00   9555.00
9995.00  10005.00 10005.00

 *   2632.000    828.71       .00    828.74     96.81     38.58     71.42       .00       .00       .0(
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9995.00  10005.00       .00
 *   2632.000     828.72        .01     828.75      96.55      45.08      64.92        .00     450.00    9555.00
9995.00  10005.00 10005.00

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        SECNO      CWSEL     DIFKWS       EG       TOPWID      QLOB       QCH       QROB     PERENC    STENCL      STCHL
STCHR     STENCR

 *   2649.000     828.67        .00     828.82      10.00        .00     110.00        .00        .00       .00
9995.00  10005.00       .00
 *   2649.000     828.69        .02     828.84      10.00        .00     110.00        .00      10.00   9995.00
9995.00  10005.00 10005.00

 *   2698.000     831.98        .00     832.03      10.00        .00      90.00        .00        .00       .00
9995.00  10005.00       .00
 *   2698.000     832.00        .02     832.05      10.00        .00      90.00        .00      10.00   9995.00
9995.00  10005.00 10005.00

 *   2746.000     832.19        .00     832.23      77.10        .00      70.71       9.29        .00       .00
9973.70  10016.30       .00
 *   2746.000     832.28        .09     832.33      30.00        .00      80.00        .00      30.00   9985.00
9973.70  10016.30 10015.00

     2779.000     832.28        .00     832.37      10.00        .00      70.00        .00        .00       .00
9995.00  10005.00       .00
     2779.000     832.39        .11     832.48      10.00        .00      70.00        .00      10.00   9995.00
9995.00  10005.00 10005.00

 *   2835.000     836.12        .00     836.16      10.00        .00      60.00        .00        .00       .00
9995.00  10005.00       .00
     2835.000     836.14        .02     836.18      10.00        .00      60.00        .00      10.00   9995.00
9995.00  10005.00 10005.00

 *   2936.000     836.43        .00     836.56      40.12       1.77      72.62        .61        .00       .00
9988.00  10014.00       .00
 *   2936.000     836.56        .13     836.67      26.00        .00      75.00        .00      26.00   9988.00
9988.00  10014.00 10014.00

 *   2974.000     837.52        .00     838.22       6.00        .00      65.00        .00        .00       .00
9997.00  10003.00       .00
 *   2974.000     837.50       -.03     838.21       6.00        .00      65.00        .00     248.00   9755.00
9997.00  10003.00 10003.00

 *   3002.000     841.82        .00     841.87       6.00        .00      55.00        .00        .00       .00
9997.00  10003.00       .00
 *   3002.000     841.82        .00     841.87       6.00        .00      55.00        .00     403.00   9600.00
9997.00  10003.00 10003.00

 *   3080.000     842.39        .00     842.70      13.18        .00      35.00        .00        .00       .00
9993.00  10020.00       .00
 *   3080.000     842.39        .00     842.70      13.17        .00      35.00        .00      27.00   9993.00
9993.00  10020.00 10020.00

 *   3111.000     845.34        .00     845.59       4.00        .00      25.00        .00        .00       .00
9998.00  10002.00       .00
 *   3111.000     845.53        .20     845.74       4.00        .00      25.00        .00       4.00   9998.00
9998.00  10002.00 10002.00

 *   3129.000     848.61        .00     848.64       4.00        .00      25.00        .00        .00       .00
9998.00  10002.00       .00
 *   3129.000     848.61        .00     848.64       4.00        .00      25.00        .00       4.00   9998.00
9998.00  10002.00 10002.00

 *   3148.000     848.66        .00     848.68      53.73       6.88      70.74       2.38        .00       .00
9993.00  10020.00       .00
 *   3148.000     848.68        .02     848.71      27.00        .00      80.00        .00      27.00   9993.00
9993.00  10020.00 10020.00

 *   3260.000     852.19        .00     852.54      15.04        .00      50.00        .00        .00       .00
9992.00  10016.00       .00
 *   3260.000     852.19        .00     852.54      15.04        .00      50.00        .00      24.00   9992.00
9992.00  10016.00 10016.00

1
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SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=    150.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    150.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    555.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    555.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    555.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    555.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    555.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    555.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    769.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    769.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    959.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    959.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    959.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    959.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1151.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1151.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1347.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1347.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1540.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1723.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2127.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2127.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2565.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2565.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2585.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2632.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2632.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2649.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2649.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2698.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2698.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2746.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2746.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2835.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
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WARNING SECNO=   2936.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2974.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2974.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3002.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3002.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3080.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3080.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
```

```
CAUTION SECNO=   3080.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3111.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3111.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3148.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3148.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3260.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3260.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
```


FLOODWAY DATA, UNNAMED WASH NO. 1 FLOO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
61.000	37.	135.	6.7	743.3	742.3	1.0
150.000	130.	333.	2.7	744.9	744.2	.7
337.000	235.	562.	1.6	746.2	745.3	.9
555.000	160.	121.	5.3	750.1	750.1	.0
769.000	126.	201.	3.2	756.0	756.0	.0
959.000	165.	125.	5.1	761.4	761.4	.0
1151.000	180.	206.	3.1	768.5	768.3	.2
1347.000	165.	159.	4.0	773.9	773.9	.0
1540.000	100.	146.	4.2	781.7	781.6	.1
1723.000	60.	99.	5.5	788.7	788.3	.4
1921.000	42.	94.	5.1	795.9	795.9	.0
2127.000	56.	73.	5.5	803.6	803.6	.0
2337.000	35.	67.	4.9	813.3	812.8	.5
2565.000	30.	34.	4.1	821.4	821.2	.2
2585.000	28.	33.	3.9	822.2	822.2	.0
2632.000	450.	98.	1.1	828.7	828.7	.0
2649.000	10.	36.	3.1	828.7	828.7	.0
2698.000	10.	50.	1.8	832.0	832.0	.0
2746.000	30.	45.	1.8	832.3	832.2	.1
2779.000	10.	29.	2.4	832.4	832.3	.1
2835.000	10.	35.	1.7	836.1	836.1	.0
2936.000	26.	28.	2.7	836.5	836.4	.1
2974.000	6.	10.	6.8	837.5	837.5	.0
3002.000	6.	30.	1.8	841.8	841.8	.0
3080.000	13.	8.	4.4	842.4	842.4	.0
3111.000	4.	7.	3.6	845.5	845.3	.2
3129.000	4.	18.	1.4	848.6	848.6	.0
3148.000	27.	60.	1.3	848.7	848.7	.0
3260.000	15.	10.	4.8	852.2	852.2	.0

Appendix A.2

UNNAMED WASH NO. 2

ORIGINAL BURGESS & NIPLE HEC-2 MODELS

```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES            *                                                    *  U.S. ARMY CORPS
OF ENGINEERS        *
 *                                          *                                                    *  HYDROLOGIC
ENGINEERING CENTER       *
 *  Version   4.6.2;  May 1991              *                                                    *  609 SECOND
STREET, SUITE D          *
 *                                          *                                                    *  DAVIS,
CALIFORNIA 95616-4687        *
 *  RUN DATE    03OCT01    TIME   10:47:33  *                                                    *          (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
```

```
1
   03OCT01      10:47:33
PAGE    1
```

```
                                                                                THIS RUN EXECUTED 03OCT01
10:47:33
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      UNNAMED WASH N0.2 100 YR (NATURAL)      J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                                                         743.83

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1                                                                      15


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        53        54         8        43        26        10        51
      46        40        41         0       110         0       200
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 192 IS AT RIVER MILE 0.192 UPSTREAM OF THE CONFLUENCE WITH UNNAMED WASH NO. 1 AT THE UPSTREAM FACE OF THE GILA BEND CANAL.

SECTION 192 IS WITHIN THE CONFLUENCE AREA WITH UNNAMED WASH NO. 1.

THE CONFLUENCE OF UNNAMED WASH #1 WITH BENDER WASH OCCURS AT A LOCATION WHERE IT INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANK WASH.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANK WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH.

STARTING ELEVATIONS ARE OBTAINED FROM THE NATURAL PROFILE RUN.

BEGIN UNNAMED WASH NO 2 AT RM 0.000.
THE CONFLUENCE OCCURS AT UNNAMED WASH N0 1 RM 0.209.

```
 QT        2        670        670
 NC     0.07       0.07       0.07        0.1        0.3
 ET                           4.1       9734      10117
 X1      192         32     9725.4    10133.6
 GR    746.8     9725.4      743.7     9734.1      743.2     9739.1      743.3     9741.1      743.8
9770.3
 GR    743.4     9807.9      743.2     9848.1      743.1     9867.4      743.3     9878.5      742.7
9886.9
 GR    743.1     9903.2      743.4     9935.6      743.2     9966.6      743.0     9985.0      743.3
10000.0
 GR    743.6    10023.6      743.6    10047.6      743.4    10070.1      743.5    10098.7      743.7
10115.5
 GR    745.3    10133.6      745.6    10153.1      745.4    10183.1      745.6    10208.1      745.8
10233.2
 GR    746.2    10260.1      746.0    10282.4      745.6    10297.8      745.6    10305.7      746.2
10327.3
 GR    746.8    10346.8      747.6    10366.9

 ET                           4.1       9892      10173
 X1      385         20     9879.0    10277.6     1000.0     1000.0     1019.0
 GR    753.5     9716.1      753.3     9760.1      750.3     9810.7      749.0     9849.2      747.6
9879.0
 GR    745.1     9897.7      744.4     9938.9      743.5     9982.6      742.9    10000.0      743.4
10042.9
 GR    743.0    10113.1      742.1    10161.4      742.1    10190.7      741.9    10210.5      743.4
10246.6
 GR    746.3    10277.6      750.1    10291.1      752.0    10310.7      752.5    10323.2      753.8
10358.1

 NC     0.03       0.03      0.035
 ET                           4.1       9975      10080
 X1      618          9     9964.1    10050.2     1225.0     1150.0     1230.0
 GR    758.8     9920.8      757.8     9964.1      755.7     9986.4      754.5    10000.0      755.3
10033.6
 GR    756.0    10050.2      756.4    10062.4      756.9    10086.7      758.7    10135.0

 QT        2        700        700
 ET                           4.1       9970      10118
 X1      821         25     9952.9    10023.7     1130.0     1040.0     1072.0
 GR    769.6     9854.8      769.5     9913.8      768.3     9952.9      765.4     9983.9      764.3
9997.2
 GR    763.7    10000.0      765.3    10009.5      767.7    10023.7      767.1    10081.8      765.7
10132.9
 GR    766.5    10192.8      766.8    10259.7      766.9    10327.7      766.7    10399.0      767.0
10460.2
 GR    766.4    10527.0      766.2    10601.6      766.8    10657.7      766.8    10692.6      765.6
10701.0
 GR    765.8    10713.7      765.8    10726.7      767.1    10745.6      767.4    10770.5      769.4
10847.1

 ET                           4.1       9917      10025
 X1     1043         14     9977.4    10038.9     1100.0     1145.0     1172.(
```

```
 GR    779.7     9509.2      778.5     9576.5       776.6      9627.9       775.4      9662.7       777.1
9702.7
 GR    775.5     9756.0      776.4     9824.7       775.9      9907.2       776.8      9977.4       774.7
10000.0
 GR    775.9    10017.0      777.8    10038.9       777.7     10092.9       778.4     10159.1
1
    03OCT01      10:47:33
PAGE    3


 ET                            4.1       9981       10099
 X1     1240          22     9981.2    10016.6      1020.0       920.0      1040.0
 GR    788.5     9436.2      787.7     9484.6       787.0      9534.7       786.0      9602.3       784.0
9660.2
 GR    783.9     9722.2      784.6     9784.2       784.6      9825.2       783.6      9848.0       784.4
9897.4
 GR    784.6     9952.9      784.4     9981.2       782.7      9997.2       782.1     10000.0       783.8
10016.6
 GR    784.5    10051.6      784.0    10101.1       783.7     10146.5       783.9     10213.9       785.1
10270.7
 GR    786.5    10340.0      788.3    10398.1

 ET                            4.1       9982       10104
 X1     1453          21     9982.1    10019.6      1000.0      1210.0      1125.0
 GR    791.8     9503.6      790.4     9556.2       789.4      9606.1       788.2      9642.3       789.1
9693.3
 GR    788.9     9770.5      789.4     9845.7       790.3      9924.3       790.3      9963.0       789.9
9982.1
 GR    788.8     9991.6      787.4    10000.0       789.5     10019.6       789.1     10068.6       790.1
10122.1
 GR    790.3    10184.0      790.4    10260.4       792.4     10339.7       792.6     10402.1       793.0
10432.8
 GR    793.7    10446.0
```

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN APPROX STATION 10200
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE
AREA NON-EFFECTIVE.

GR POINTS FROM STA 10190 AND UP ARE FROM TOPO MAPPING. THEY WERE ADDED
TO MODEL THE WIER FLOW IN THE FAR RIGHT OVERBANK.

```
 QT        2        730        730
 ET                            4.1       9975       10658
 X1     1676          14     9968.9    10011.3      1280.0       480.0      1177.0
 GR    799.2     9968.9      798.1     9984.6       797.2      9992.4       796.5     10000.0       797.8
10011.3
 GR    798.1    10042.3      798.2    10096.8       798.3     10184.8         800       10190         800
10440
 GR    800.4      10600        798      10650         800       10670         801       10780
```

SPECIAL CULVERT MODEL FOR THE THREE BARREL CULVERT AT BUSINESS ROUTE 8.

AT THE TIME OF MAPPING, APPROXIMATELY 1.3 FEET OF SEDIMENT WAS FOUND IN
THE CULVERT.

SECTION 1710 GR POINTS ARE REPEATED FROM 1676 EXCEPT THAT CHANNEL
GEOMETRY HAS BEEN REVISED TO REFLECT THE CHANNEL AT THE CULVERT &
BT STATIONS HAVE BEEN ADDED. GEOMETRY AT THE ENDS MATCH THE BT CARDS.

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN THE RIGHT BANK STATION
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE
AREA NON-EFFECTIVE.

RAISE ELEVATIONS USING PSXECE = 797.8 - 796.5 = 1.3 FT
INCREASE EXPANSION & CONTRACTION COEFFICIENTS FOR THE CULVERT

```
1
    03OCT01      10:47:33
PAGE    4


 NC                                       0.3         0.5
 ET                            4.1       9984       10350
```

```
 X1     1710         16       9984      10016        250        200        180                   1.3
 X3       10                                                                          803.1      799.0
 GR    808.2       9450      802.2     9734.0      800.7     9792.8      799.7     9875.6      798.4
9916.7
 GR    798.7     9935.3      799.2     9968.9      798.1       9984      796.5       9985      796.5
10000.0
 GR    796.5      10015      797.8      10016      802.3      10017      800.1      10320      798.2
10450
 GR    800.0      10560

          REPEAT GR DATA FROM DOWNSTREAM FACE.  PSXECE = 798.0 - 797.8 + 1.3 = 1.5
          USE ELTRD = 800.0 + 0.1 HV = 800.1


 SC    3.014        0.4          3          0        4.7         10         41        8.1      798.0
797.8
 ET                             4.11       9984      10350
 X1     1720         16       9984      10016         51         51         51                   1.5
 X2                              2                  800.1
 X3       10                                                                          804.1      800.0
 BT       -5       9450      808.7                 10000      804.1                  10320      801.9
 BT              10450      800.0                 10560      801.8
 GR    808.2       9450      802.2     9734.0      800.7     9792.8      799.7     9875.6      798.4
9916.7
 GR    798.7     9935.3      799.2     9968.9      798.1       9984      796.5       9985      796.5
10000.0
 GR    796.5      10015      797.8      10016      802.3      10017      800.1      10320      798.2
10450
 GR    800.0      10560

 NC    0.035      0.035      0.035

          REPEAT SECTION 100 FEET UPSTREAM FOR CONTRACTION LOSSES
          ADJUST GR POINTS AT RIGHT END FROM TOPO MAPPINS

          USE PSXECE = 798.7 - 796.5 = 2.2 FT

 QT        2        710        710
 ET                             4.1       9984      10220
 X1     1739         17       9984      10016         50        230        100                   2.2
 GR    808.2       9450      802.2     9734.0      800.7     9792.8      799.7     9875.6      798.4
9916.7
 GR    798.7     9935.3      799.2     9968.9      798.1       9984      796.5       9985      796.5
10000.0
 GR    796.5      10015      797.8      10016      798.1    10042.3      798.2    10096.8      798.3
10184.8
 GR    797.9    10285.3      803.4      10350

          RETURN EXPANSION & CONTRACTION COEFFICIENTS TO TYPICAL VALUES


 QT        2        670        670
 NC                                       0.1        0.3
 ET                             4.1       9982      10065
 X1     1905         15     9970.8    10017.5        360        850        878
 GR    809.9     9928.8      809.1     9958.6      807.8     9970.8      804.9     9987.2      804.0
9994.2
 GR    803.5    10000.0      805.4    10017.5      805.7    10050.6      805.2    10117.9      804.6
10168.4
 GR    805.7    10208.8      805.7    10267.5      807.0    10312.2      807.5    10329.8      808.1
10338.1
1
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 QT        2        620        620
 ET                             4.1       9915      10028
 X1     2138         17     9964.8    10027.9     1020.0     1130.0     1230.0
 GR    816.9     9748.1      815.3     9792.4      814.0     9823.1      811.4     9837.8      811.0
9849.2
 GR    811.9     9866.1      812.4     9902.3      812.6     9964.8      812.2     9991.8      812.4
10000.0
 GR    813.0    10027.9      812.8    10072.4      813.5    10132.9      813.2    10181.7      812.0
10218.7
 GR    814.1    10269.4      816.6    10330.5
```

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 QT        2        570        570
 ET                 9.1        4.1       9975      10035                                          9841.7
10050.0
 X1     2335         16     9971.3    10034.9     1050.0      965.0     1040.0
 GR    824.7     9841.7      824.2     9896.1      822.4     9939.3      820.4     9971.3       818.8
9991.7
 GR    817.9    10000.0      819.7    10012.7      820.7    10034.9      820.2    10060.7       820.5
10111.7
 GR    819.8    10189.3      819.3    10278.6      819.8    10362.4      821.2    10451.9       824.0
10528.6
 GR    826.9    10587.4

 QT        2        520        520
 ET                           4.1       9983      10021
 X1     2534         12     9999.1    10012.9      900.0      890.0     1051.0
 GR    832.9     9783.0      832.8     9836.8      830.7     9877.6      828.2     9925.6       828.8
9943.8
 GR    827.9     9987.0      827.7     9999.1      825.2    10000.0      827.5    10012.9       827.8
10029.4
 GR    828.7    10052.8      833.3    10098.3

 QT        2        460        460
 NH        5      0.035     9937.6      0.04      9971.3      0.035    10016.8       0.04     10048.9
0.035
 NH    10163
 ET                           4.1       9971      10017
 X1     2776         10     9971.3    10016.8     1170.0      930.0     1278.0
 GR    842.0     9897.8      840.4     9937.6      838.3     9971.3      837.4     9992.7       836.3
10000.0
 GR    838.9    10016.8      838.0    10048.9      837.7    10072.2      838.4    10100.7       839.1
10163.0
1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 *PROF 1
0

 CCHV=      .100 CEHV=      .300
 *SECNO 192.000
    192.000      1.13    743.83       .00    743.83    744.05       .22       .00       .00    746.80
      670.0        .0     670.0        .0        .0     179.1        .0        .0        .0    745.30
        .00       .00      3.74       .00      .000      .070      .000      .000    742.70   9733.73
    .085720        0.        0.        0.         0         0         0       .00    383.24  10116.97


 FLOW DISTRIBUTION FOR SECNO=    192.00          CWSEL=    743.83

 STA=    9734.   10134.
   PER Q=    100.0
    AREA=    179.1
     VEL=      3.7
   DEPTH=       .5

 *SECNO 385.000
 3840 SECTION NOT HIGH ENOUGH   830.085   803.500   741.900   803.500      .000          2

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 14.14

    385.000      3.68    745.58    743.35       .00    745.59       .01      1.52       .02    747.60
      670.0        .0     670.0        .0        .0     870.9        .0      12.3       8.9    746.30
        .37       .00       .77       .00      .000      .070      .000      .000    741.90   9894.08
    .000429     1000.     1019.     1000.        10        11         0       .00    375.87  10269.95


 FLOW DISTRIBUTION FOR SECNO=    385.00          CWSEL=    745.58

 STA=    9894.   10278.
   PER Q=    100.0
    AREA=    870.9
     VEL=       .8
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  DEPTH=      2.3

 *SECNO 618.000
1
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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

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
    618.000      2.18     756.68     756.68       .00     757.27       .59      1.53       .17     757.80
      670.0        .0      646.1       23.9        .0      103.4       7.7      26.1      15.6     756.00
        .42       .00       6.25       3.09      .000       .035      .030      .000    754.50    9976.01
   .013947     1225.      1230.      1150.        20         14         0       .00     99.94   10075.94

 FLOW DISTRIBUTION FOR SECNO=    618.00          CWSEL=    756.68

 STA=    9976.   10050.   10062.   10076.
   PER Q=     96.4      3.1       .4
    AREA=    103.4      5.8      1.9
     VEL=      6.2      3.6      1.6
   DEPTH=      1.4       .5       .1

 *SECNO 821.000

 3265 DIVIDED FLOW


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

    821.000      3.04     766.74       .00       .00     766.92       .18      9.61       .04     768.30
      700.0        .0      300.5     399.5        .0       69.6     152.8      30.2      21.9     767.70
        .51       .00       4.31      2.62      .000       .035      .030      .000    763.70    9969.62
   .006431     1130.      1072.      1040.         5          0         0       .00    428.43   10740.31

 FLOW DISTRIBUTION FOR SECNO=    821.00          CWSEL=    766.74

 STA=    9970.   10024.   10133.   10193.   10245.   10406.   10527.   10602.   10652.   10701.   10714.
10727.   10740.
   PER Q=     42.9      7.2     16.0       .8        .0       1.1     10.6      3.2      1.7      7.6      6.6
2.2
    AREA=     69.6     19.6     38.1      6.2        .4       6.3     32.5     13.4      4.5     13.2     12.2
6.4
     VEL=      4.3      2.6      2.9      1.0        .3       1.2      2.3      1.7      2.7      4.1      3.8
2.4
   DEPTH=      1.4       .2       .6       .1        .0        .1       .4       .3       .1      1.0       .9
.5

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


 *SECNO 1043.000

 3265 DIVIDED FLOW

   1043.000      1.86     776.56       .00       .00     776.78       .23      9.85       .01     776.80
      700.0     507.8      192.2        .0     145.5       42.4        .0      35.5      31.9     777.80
        .60      3.49       4.54       .00      .030       .035      .000      .000    774.70    9629.1
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   .012270     1100.     1172.     1145.         4         0         0       .00    342.75  10024.56


FLOW DISTRIBUTION FOR SECNO=   1043.00          CWSEL=    776.56

STA=    9629.    9663.    9690.    9756.    9825.    9907.    9958.   10039.
  PER Q=     10.5      8.5      9.5     23.3     14.4      6.2     27.5
   AREA=     19.4     15.7     18.6     41.6     33.5     16.8     42.4
    VEL=      3.8      3.8      3.6      3.9      3.0      2.6      4.5
  DEPTH=       .6       .6       .3       .6       .4       .3      1.0

*SECNO 1240.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50

  1240.000      2.44    784.54       .00       .00    784.67       .13      7.87       .01    784.40
     700.0     216.7     183.5     299.8      98.3      48.0     117.6      40.7      41.8    783.80
       .70      2.20      3.82      2.55      .030      .035      .030      .000    782.10   9644.73
   .005441     1020.     1040.      920.         7         0         0       .00    523.39  10243.93


FLOW DISTRIBUTION FOR SECNO=   1240.00          CWSEL=    784.54

STA=    9645.    9722.    9778.    9848.    9897.    9981.   10017.   10052.   10101.   10147.   10214.
10244.
  PER Q=     14.1      4.3      3.1      9.1       .3     26.2      3.7      3.2     12.6     21.0      2.3
   AREA=     40.4     17.8     10.0     26.4      3.8     48.0     13.5     14.1     31.1     49.5      9.5
    VEL=      2.4      1.7      2.2      2.4       .6      3.8      1.9      1.6      2.8      3.0      1.7
  DEPTH=       .5       .3       .1       .5       .0      1.4       .4       .3       .7       .7       .3

*SECNO 1453.000
1
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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


3265 DIVIDED FLOW

  1453.000      2.31    789.71       .00       .00    789.83       .12      5.16       .00    789.90
     700.0     521.8     127.4      50.7     191.2      41.9      30.3      47.2      53.3    789.50
       .81      2.73      3.04      1.68      .030      .035      .030      .000    787.40   9590.50
   .004221     1000.     1125.     1210.         7         0         0       .00    400.15  10101.37


FLOW DISTRIBUTION FOR SECNO=   1453.00          CWSEL=    789.71

STA=    9591.    9606.    9642.    9693.    9771.    9846.    9873.   10020.   10069.   10101.
  PER Q=       .3     14.3     25.9     20.2     13.3       .6     18.2      5.2      2.1
   AREA=      2.4     33.0     54.2     55.0     42.3      4.3     41.9     20.2     10.0
    VEL=       .9      3.0      3.4      2.6      2.2       .9      3.0      1.8      1.5
  DEPTH=       .2       .9      1.1       .7       .6       .2      1.2       .4       .3

*SECNO 1676.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1676.000      2.27    798.77    798.77       .00    799.12       .36      6.88       .07    799.20
     730.0        .0     257.9     472.1        .0      44.7     113.5      52.0      60.0    797.80
       .86       .00      5.77      4.16      .000      .035      .030      .000    796.50   9975.10
   .014067     1280.     1177.      480.        11         5         0       .00    234.72  10657.65


FLOW DISTRIBUTION FOR SECNO=   1676.00          CWSEL=    798.77

STA=    9975.   10011.   10042.   10097.   10185.   10186.   10650.   10658.
  PER Q=     35.3     17.8     19.5     23.5       .1      2.6      1.2
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   AREA=     44.7     25.3     33.5     45.4       .3      6.1      2.9
    VEL=      5.8      5.1      4.3      3.8      2.1      3.1      3.1
  DEPTH=      1.2       .8       .6       .5       .2       .0       .4

 CCHV=     .300 CEHV=     .500
 *SECNO 1710.000
1
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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


 3265 DIVIDED FLOW

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       803.10 ELREA=       799.00

  1710.000      2.75    800.55    800.55       .00    801.04       .49      1.70       .07    799.40
     730.0        .0     547.4     182.6        .0      86.6      71.7      52.7      60.9    799.10
       .87       .00      6.32      2.55      .000      .035      .030      .000    797.80   9984.00
   .006263      250.      180.      200.         3         8         0       .00    168.39  10514.19


 FLOW DISTRIBUTION FOR SECNO=   1710.00          CWSEL=    800.55

 STA=    9984.   10016.   10016.   10450.   10514.
  PER Q=     75.0       .0     13.2     11.8
   AREA=     86.6       .2     37.7     33.7
    VEL=      6.3      1.1      2.6      2.6
  DEPTH=      2.7       .7       .1       .5


 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     3         .014      .40       3.00      .00       4.70      10.00     41.00     8         1         798.00
797.80

 CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
 SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

 *SECNO 1720.000

 SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    801.29

 3265 DIVIDED FLOW

 SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
    802.24    802.47      .25      261.      464.     5.108     141.0    800.10      168.


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       804.10 ELREA=       800.00

  1720.000      3.00    801.00       .00       .00    801.29       .29       .25       .00    799.60
     730.0        .0     483.4     246.6        .0      94.6     110.2      52.9      61.1    799.30
       .88       .00      5.11      2.24      .000      .035      .030      .000    798.00   9984.00
   .003629       51.       51.       51.         3         0         0       .00    201.09  10529.59


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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
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    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


FLOW DISTRIBUTION FOR SECNO=   1720.00          CWSEL=    801.00

STA=    9984.   10016.   10016.   10450.   10530.
  PER Q=     66.2       .0     17.8     15.9
   AREA=     94.6       .3     58.0     51.8
    VEL=      5.1      1.0      2.2      2.2
  DEPTH=      3.0       .9       .1       .7

*SECNO 1739.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  1739.000      2.86    801.56       .00       .00    801.61       .04       .24       .08    800.30
     710.0      45.7     206.7     457.6      54.6      90.2     341.1      54.4      62.4    800.00
       .90       .84      2.29      1.34      .035      .035      .035      .000    798.70   9886.21
   .000778       50.      100.      230.         2         0         0       .00    416.32  10302.53


FLOW DISTRIBUTION FOR SECNO=   1739.00          CWSEL=    801.56

STA=    9886.    9917.    9935.    9969.    9984.   10016.   10042.   10097.   10185.   10285.   10303.
  PER Q=      1.5      2.2      1.3      1.4     29.1      7.8     12.6     17.6     24.8      1.7
   AREA=     14.7     15.1     13.9     10.8     90.2     37.2     66.2     98.1    127.1     12.6
    VEL=       .7      1.0       .7       .9      2.3      1.5      1.3      1.3      1.4      1.0
  DEPTH=       .5       .8       .4       .7      2.8      1.4      1.2      1.1      1.3       .7

CCHV=     .100 CEHV=     .300
*SECNO 1905.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1905.000      2.36    805.86    805.86       .00    806.14       .28      1.58       .07    807.80
     670.0        .0     266.6     403.4        .0      49.3     124.0      60.5      68.8    805.40
       .96       .00      5.41      3.25      .000      .035      .035      .000    803.50   9981.79
   .010685      360.      878.      850.        20        14         0       .00    291.09  10272.88


FLOW DISTRIBUTION FOR SECNO=   1905.00          CWSEL=    805.86

STA=    9982.   10018.   10051.   10118.   10168.   10209.   10268.   10273.
  PER Q=     39.8      3.0      9.8     30.7     14.8      1.7       .1
   AREA=     49.3     10.1     27.4     48.3     28.5      9.2       .4
    VEL=      5.4      2.0      2.4      4.3      3.5      1.3       .8
  DEPTH=      1.4       .3       .4      1.0       .7       .2       .1

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


*SECNO 2138.000

3265 DIVIDED FLOW


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

  2138.000      2.18    813.18       .00       .00    813.30       .12      7.15       .02    812.60
     620.0     434.4      88.6      96.9     142.1      42.4      58.6      65.9      77.0    813.00
      1.08      3.06      2.09      1.65      .035      .035      .035      .000    811.00   9827.67
   .004122      1020.     1230.     1130.         7         0         0       .00    344.08  10247.47


FLOW DISTRIBUTION FOR SECNO=   2138.00          CWSEL=    813.18

STA=    9828.    9838.    9849.    9866.    9902.    9965.   10028.   10072.   10106.   10219.   10247.
  PER Q=      3.7     15.8     18.7     17.0     14.9     14.3      2.5      1.0      6.8      5.3
   AREA=      9.1     22.7     29.4     37.7     43.2     42.4     13.0      6.6     21.9     17.1
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    VEL=      2.5      4.3      3.9      2.8      2.1      2.1      1.2       .9      1.9      1.9
  DEPTH=       .9      2.0      1.7      1.0       .7       .7       .3       .2       .2       .6

*SECNO 2335.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9841.7   10050.0  TYPE=      1  TARGET=      208.300
  2335.000      2.98    820.88    820.88       .00    821.47       .60      7.02       .14    820.40
     570.0       3.6     555.0      11.5       1.8      88.5       4.9      69.9      82.0    820.70
      1.12      1.94      6.27      2.33      .035      .035      .035      .000    817.90   9963.64
   .014093     1050.     1040.      965.         2        11         0       .00     86.36  10050.00


FLOW DISTRIBUTION FOR SECNO=   2335.00          CWSEL=    820.88

STA=    9964.    9971.   10035.   10050.
  PER Q=       .6     97.4      2.0
   AREA=      1.8     88.5      4.9
    VEL=      1.9      6.3      2.3
  DEPTH=       .2      1.4       .3

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


*SECNO 2534.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56

  2534.000      3.91    829.11       .00       .00    829.36       .25      7.85       .03    827.70
     520.0     173.6     200.9     145.5      67.8      38.0      45.1      72.6      84.5    827.50
      1.20      2.56      5.29      3.23      .035      .035      .035      .000    825.20   9908.12
   .004794      900.     1051.      890.         8         0         0       .00    148.74  10056.86


FLOW DISTRIBUTION FOR SECNO=   2534.00          CWSEL=    829.11

STA=    9908.    9926.    9944.    9987.    9999.   10013.   10029.   10053.   10057.
  PER Q=      2.7      4.5     15.5     10.7     38.6     17.5     10.3       .2
   AREA=      8.0     11.1     32.8     15.9     38.0     24.1     20.1       .8
    VEL=      1.7      2.1      2.4      3.5      5.3      3.8      2.7      1.0
  DEPTH=       .5       .6       .8      1.3      2.8      1.5       .9       .2

1490 NH CARD USED
*SECNO 2776.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2776.000      2.40    838.70    838.70       .00    839.06       .36      8.44       .03    838.30
     460.0       1.9     274.3     183.7       1.3      50.3      51.0      75.9      88.3    838.90
      1.26      1.50      5.46      3.60      .040      .035      .036      .000    836.30   9964.89
   .014031     1170.     1278.      930.         4        14         0       .00    154.00  10127.35


FLOW DISTRIBUTION FOR SECNO=   2776.00          CWSEL=    838.70

STA=    9965.    9971.   10017.   10049.   10072.   10101.   10127.
  PER Q=       .4     59.6      4.1     19.4     15.2      1.2
   AREA=      1.3     50.3      8.7     19.8     18.5      4.0
    VEL=      1.5      5.5      2.2      4.5      3.8      1.4
  DEPTH=       .2      1.1       .3       .8       .6       .1

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
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T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH N0.2 100 YR (FLOODWAY)     J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                  744.83

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1                                                                     15

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

 *PROF 2
0

 CCHV=     .100 CEHV=     .300
 *SECNO 192.000

 3470 ENCROACHMENT STATIONS=     9734.0   10117.0  TYPE=      1  TARGET=      383.000
    192.000      2.13    744.83       .00    743.83    744.85       .02       .00       .00 100000.00
      670.0        .0     670.0        .0        .0     562.0        .0        .0        .0 100000.00
        .00       .00      1.19       .00      .000      .070      .000      .000    742.70   9734.00
    .001905        0.        0.        0.         0         0         0       .00    383.00  10117.00

 FLOW DISTRIBUTION FOR SECNO=    192.00          CWSEL=    744.83

 STA=    9734.   10134.
   PER Q=    100.0
    AREA=    562.0
     VEL=      1.2
   DEPTH=      1.5

 *SECNO 385.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73

 3470 ENCROACHMENT STATIONS=     9892.0   10173.0  TYPE=      1  TARGET=      281.000
    385.000      3.98    745.88       .00    745.58    745.90       .01      1.04       .00 100000.00
      670.0        .0     670.0        .0        .0     691.2        .0      14.7       7.8 100000.00
        .29       .00       .97       .00      .000      .070      .000      .000    741.90   9892.00
    .000639     1000.     1019.     1000.         3         0         0       .00    281.00  10173.00

 FLOW DISTRIBUTION FOR SECNO=    385.00          CWSEL=    745.88

 STA=    9892.   10278.
   PER Q=    100.0
    AREA=    691.2
     VEL=      1.0
   DEPTH=      2.5

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

 *SECNO 618.000

 3301 HV CHANGED MORE THAN HVINS
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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9975.0   10080.0  TYPE=      1  TARGET=      105.000
   618.000      2.19    756.69    756.69    756.68    757.27       .58      2.12       .17 100000.00
     670.0        .0     645.6      24.4        .0     104.0       7.9      26.0      13.1    756.00
       .35       .00      6.21      3.08      .000      .035      .030      .000    754.50   9975.92
   .013680     1225.     1230.     1150.        20        11         0       .00    100.41  10076.33


FLOW DISTRIBUTION FOR SECNO=    618.00          CWSEL=    756.69

STA=    9976.   10050.   10062.   10076.
  PER Q=     96.4      3.2       .5
   AREA=    104.0      5.9      2.0
    VEL=      6.2      3.6      1.6
  DEPTH=      1.4       .5       .1

*SECNO 821.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.40


3470 ENCROACHMENT STATIONS=     9970.0   10118.0  TYPE=      1  TARGET=      148.000
   821.000      3.70    767.40       .00    766.74    767.86       .46     10.58       .01 100000.00
     700.0        .0     590.3     109.7        .0     102.8      33.2      29.0      15.8    767.70
       .40       .00      5.74      3.30      .000      .035      .030      .000    763.70   9970.00
   .007575     1130.     1072.     1040.         5         0         0       .00    117.25  10118.00


FLOW DISTRIBUTION FOR SECNO=    821.00          CWSEL=    767.40

STA=    9970.   10024.   10082.   10118.
  PER Q=     84.3       .8     14.9
   AREA=    102.8      4.4     28.8
    VEL=      5.7      1.2      3.6
  DEPTH=      2.0       .1       .8

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


*SECNO 1043.000

3470 ENCROACHMENT STATIONS=     9917.0   10025.0  TYPE=      1  TARGET=      108.000
  1043.000      2.62    777.32       .00    776.56    777.76       .45      9.90       .00    776.80
     700.0     247.4     452.6        .0      54.8      78.4        .0      32.6      18.7 100000.00
       .46      4.52      5.77       .00      .030      .035      .000      .000    774.70   9917.00
   .009746     1100.     1172.     1145.         5         0         0       .00    108.00  10025.00


FLOW DISTRIBUTION FOR SECNO=   1043.00          CWSEL=    777.32

STA=    9917.    9977.   10039.
  PER Q=     35.3     64.7
   AREA=     54.8     78.4
    VEL=      4.5      5.8
  DEPTH=       .9      1.6

*SECNO 1240.000

3470 ENCROACHMENT STATIONS=     9981.0   10099.0  TYPE=      1  TARGET=      118.000
  1240.000      3.11    785.21       .00    784.54    785.55       .35      7.78       .01    784.40
     700.0        .2     384.1     315.8        .2      71.8      81.7      35.9      21.3    783.80
       .52      1.16      5.35      3.87      .030      .035      .030      .000    782.10   9981.00
   .006248     1020.     1040.      920.         5         0         0       .00    118.00  10099.00
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FLOW DISTRIBUTION FOR SECNO=   1240.00          CWSEL=    785.21

STA=    9981.    9981.   10017.   10052.   10099.
  PER Q=       .0     54.9     21.4     23.7
   AREA=       .2     71.8     36.9     44.8
    VEL=      1.2      5.4      4.1      3.7
  DEPTH=       .8      2.0      1.1       .9

*SECNO 1453.000

3470 ENCROACHMENT STATIONS=     9982.0   10104.0  TYPE=      1  TARGET=      122.000
  1453.000      3.27    790.67       .00    789.71    790.88       .22      5.32       .01    789.90
     700.0        .0     313.5     386.5        .1      77.6     111.0      40.5      24.6    789.50
       .61       .03      4.04      3.48      .030      .035      .030      .000    787.40   9982.00
   .003464     1000.     1125.     1210.         4         0         0       .00    122.00  10104.00


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


FLOW DISTRIBUTION FOR SECNO=   1453.00          CWSEL=    790.67

STA=    9982.    9982.   10020.   10069.   10104.
  PER Q=       .0     44.8     34.5     20.7
   AREA=       .1     77.6     67.1     43.9
    VEL=       .0      4.0      3.6      3.3
  DEPTH=       .8      2.1      1.4      1.2

*SECNO 1676.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=     9975.0   10658.0  TYPE=      1  TARGET=      683.000
  1676.000      2.31    798.81    798.81    798.77    799.12       .31      4.42       .03 100000.00
     730.0        .0     247.6     482.4        .0      46.3     122.4      43.5      27.1    797.80
       .66       .00      5.35      3.94      .000      .035      .030      .000    796.50   9975.00
   .011568     1280.     1177.      480.        20        14         0       .00    236.23  10658.00


FLOW DISTRIBUTION FOR SECNO=   1676.00          CWSEL=    798.81

STA=    9975.   10011.   10042.   10097.   10185.   10186.   10650.   10658.
  PER Q=     33.9     17.6     19.9     24.4       .1      2.7      1.3
   AREA=     46.3     26.7     36.0     49.3       .4      6.8      3.3
    VEL=      5.3      4.8      4.0      3.6      2.1      2.9      2.9
  DEPTH=      1.3       .9       .7       .6       .3       .0       .4

CCHV=     .300 CEHV=     .500
*SECNO 1710.000

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9984.0   10350.0  TYPE=      1  TARGET=      366.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       803.10 ELREA=       799.00

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

  1710.000     2.74    800.54       .00    800.55    801.65      1.11      2.13       .40    799.40
     730.0       .0     729.6        .4        .0      86.2        .2      44.0      27.7    799.10
       .66      .00      8.46      1.53      .000      .035      .030      .000    797.80   9984.00
   .011269     250.      180.      200.         3         0         0       .00     32.32  10016.32


 FLOW DISTRIBUTION FOR SECNO=   1710.00          CWSEL=    800.54

 STA=    9984.   10016.   10016.
   PER Q=    100.0       .0
    AREA=     86.2       .2
     VEL=      8.5      1.5
   DEPTH=      2.7       .7


 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU
ELCHD
     3          .014      .40      3.00       .00      4.70     10.00     41.00      8         1       798.00
797.80

 CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
 SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

 *SECNO 1720.000
 BTCARD, BRIDGE STENCL=    9984.00   STENCR=   10350.00

 SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    802.23

 3265 DIVIDED FLOW


 3301 HV CHANGED MORE THAN HVINS


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.63

 SPECIAL CULVERT

     EGIC      EGOC        H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
    802.24    802.47       .58       47.      677.    6.272      141.0    801.46       78.


 3470 ENCROACHMENT STATIONS=     9984.0   10350.0  TYPE=      1  TARGET=      366.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       804.10 ELREA=       800.00

  1720.000     3.63    801.63       .00    801.00    802.23       .60       .58       .00    799.60
     730.0       .0     719.7      10.3        .0     114.8       8.2      44.1      27.8    799.30
       .67      .00      6.27      1.26      .000      .035      .030      .000    798.00   9984.00
   .004230      51.       51.       51.         3         0         0       .00     66.84  10350.00


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


 FLOW DISTRIBUTION FOR SECNO=   1720.00          CWSEL=    801.63

 STA=    9984.   10016.   10017.   10350.
   PER Q=     98.6       .1      1.3
    AREA=    114.8       .6      7.6
     VEL=      6.3      1.3      1.3
   DEPTH=      3.6      1.2       .0

 *SECNO 1739.000
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3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.68

3470 ENCROACHMENT STATIONS=     9984.0   10220.0  TYPE=      1  TARGET=      236.000
  1739.000      3.79    802.49       .00    801.56    802.52       .03       .11       .17    800.30
     710.0        .0     196.1     513.9        .0     119.8     430.1      45.6      28.5    800.00
       .70       .00      1.64      1.19      .000      .035      .035      .000    798.70   9984.00
   .000296       50.      100.      230.         2         0         0       .00    236.00  10220.00


FLOW DISTRIBUTION FOR SECNO=   1739.00          CWSEL=    802.49

STA=    9984.   10016.   10042.   10097.   10185.   10220.
  PER Q=     27.6     11.2     19.9     29.7     11.6
   AREA=    119.8     61.5    116.6    179.5     72.5
    VEL=      1.6      1.3      1.2      1.2      1.1
  DEPTH=      3.7      2.3      2.1      2.0      2.1

CCHV=     .100 CEHV=     .300
*SECNO 1905.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9982.0   10065.0  TYPE=      1  TARGET=       83.000
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      KNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


  1905.000      3.01    806.51    806.51    805.86    807.10       .59       .72       .17 100000.00
     670.0        .0     491.1     178.8        .0      72.4      44.2      52.1      31.6    805.40
       .74       .00      6.78      4.05      .000      .035      .035      .000    803.50   9982.00
   .010209      360.      878.      850.        20        14         0       .00     83.00  10065.00


FLOW DISTRIBUTION FOR SECNO=   1905.00          CWSEL=    806.51

STA=    9982.   10018.   10051.   10065.
  PER Q=     73.3     19.8      6.9
   AREA=     72.4     31.8     12.4
    VEL=      6.8      4.2      3.7
  DEPTH=      2.0      1.0       .9

*SECNO 2138.000

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


3470 ENCROACHMENT STATIONS=     9915.0   10028.0  TYPE=      1  TARGET=      113.000
  2138.000      3.08    814.08       .00    813.18    814.27       .19      7.13       .04    812.60
     620.0     270.1     349.9        .1      77.4      98.1        .1      56.0      34.2    813.00
       .83      3.49      3.57       .54      .035      .035      .035      .000    811.00   9915.00
   .003923     1020.     1230.     1130.         6         0         0       .00    113.00  10028.00


FLOW DISTRIBUTION FOR SECNO=   2138.00          CWSEL=    814.08

STA=    9915.    9965.   10028.   10028.
  PER Q=     43.6     56.4       .0
   AREA=     77.4     98.1       .1
    VEL=      3.5      3.6       .5
  DEPTH=      1.6      1.6      1.1

*SECNO 2335.000
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3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .45

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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


3470 ENCROACHMENT STATIONS=     9975.0   10035.0  TYPE=      1  TARGET=       60.000
  2335.000      2.95    820.85    820.82    820.88    821.56       .70      7.13       .15 100000.00
     570.0        .0     570.0        .0        .0      84.7        .0      59.1      36.3    820.70
       .87       .00      6.73       .05      .000      .035      .035      .000    817.90   9975.00
   .016151     1050.     1040.      965.         7        11         0       .00     60.00  10035.00


FLOW DISTRIBUTION FOR SECNO=   2335.00          CWSEL=    820.85

STA=    9975.   10035.   10035.
  PER Q=    100.0       .0
   AREA=     84.7       .0
    VEL=      6.7       .1
  DEPTH=      1.4       .2

*SECNO 2534.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.63


3470 ENCROACHMENT STATIONS=     9983.0   10021.0  TYPE=      1  TARGET=       38.000
  2534.000      4.59    829.79       .00    829.11    830.28       .49      8.70       .02    827.70
     520.0     141.9     299.0      79.1      31.5      47.4      18.0      61.2      37.4    827.50
       .92      4.50      6.30      4.40      .035      .035      .035      .000    825.20   9983.00
   .005066      900.     1051.      890.         5         0         0       .00     38.00  10021.00


FLOW DISTRIBUTION FOR SECNO=   2534.00          CWSEL=    829.79

STA=    9983.    9987.    9999.   10013.   10021.
  PER Q=      5.1     22.2     57.5     15.2
   AREA=      7.4     24.1     47.4     18.0
    VEL=      3.6      4.8      6.3      4.4
  DEPTH=      1.9      2.0      3.4      2.2

1490 NH CARD USED
*SECNO 2776.000
3280 CROSS SECTION   2776.00 EXTENDED       .02 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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .53


3470 ENCROACHMENT STATIONS=     9971.0   10017.0  TYPE=      1  TARGET=       46.000
  2776.000      2.82    839.12       .00    838.70    839.80       .68      9.47       .06    838.30
     460.0        .4     459.6        .0        .2      69.5        .0      63.6      38.6    838.90
       .98      1.60      6.62       .04      .040      .035      .040      .000    836.30   9971.00
   .013942     1170.     1278.      930.         4         0         0       .00     46.00  10017.00
```

FLOW DISTRIBUTION FOR SECNO= 2776.00 CWSEL= 839.12

STA=	9971.	9971.	10017.	10017.
PER Q=	.1	99.9	.0	
AREA=	.2	69.5	.0	
VEL=	1.6	6.6	.0	
DEPTH=	.8	1.5	.2	

1
03OCT01 10:47:33
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THIS RUN EXECUTED 03OCT01

10:47:33
****
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

UNNAMED WASH N0.2 100 YR

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	192.000	742.70	743.83	9733.73	10116.97	1.13	670.00	3.74	.22	.00	.00	.00	.00
	192.000	742.70	744.83	9734.00	10117.00	2.13	670.00	1.19	.02	.00	.00	.00	.00
*	385.000	741.90	745.58	9894.08	10269.95	3.68	670.00	.77	.01	1.75	.00	.00	.00
*	385.000	741.90	745.88	9892.00	10173.00	3.98	670.00	.97	.01	1.05	.00	.00	.00
*	618.000	754.50	756.68	9976.01	10075.94	2.18	670.00	6.25	.59	11.10	.00	.00	.00
*	618.000	754.50	756.69	9975.92	10076.33	2.19	670.00	6.21	.58	10.80	.00	.00	.00
*	821.000	763.70	766.74	9969.62	10740.31	3.04	700.00	4.31	.18	10.06	.00	.00	.00
*	821.000	763.70	767.40	9970.00	10118.00	3.70	700.00	5.74	.46	10.72	.00	.00	.00
	1043.000	774.70	776.56	9629.18	10024.56	1.86	700.00	4.54	.23	9.82	.00	.00	.00
	1043.000	774.70	777.32	9917.00	10025.00	2.62	700.00	5.77	.45	9.92	.00	.00	.00
*	1240.000	782.10	784.54	9644.73	10243.93	2.44	700.00	3.82	.13	7.98	.00	.00	.00
	1240.000	782.10	785.21	9981.00	10099.00	3.11	700.00	5.35	.35	7.89	.00	.00	.00
	1453.000	787.40	789.71	9590.50	10101.37	2.31	700.00	3.04	.12	5.17	.00	.00	.00
	1453.000	787.40	790.67	9982.00	10104.00	3.27	700.00	4.04	.22	5.46	.00	.00	.00
*	1676.000	796.50	798.77	9975.10	10657.65	2.27	730.00	5.77	.36	9.06	.00	.00	.00
*	1676.000	796.50	798.81	9975.00	10658.00	2.31	730.00	5.35	.31	8.14	.00	.00	.00
*	1710.000	797.80	800.55	9984.00	10514.19	2.75	730.00	6.32	.49	1.79	.00	.00	.00

```
     1710.000    797.80    800.54   9984.00  10016.32      2.74    730.00      8.46      1.11      1.73
.00       .00       .00

     1720.000    798.00    801.00   9984.00  10529.59      3.00    730.00      5.11       .29       .45
261.26    800.10       .00
 *   1720.000    798.00    801.63   9984.00  10350.00      3.63    730.00      6.27       .60      1.09
46.86    801.46       .00

 *   1739.000    798.70    801.56   9886.21  10302.53      2.86    710.00      2.29       .04       .57
.00       .00       .00
 *   1739.000    798.70    802.49   9984.00  10220.00      3.79    710.00      1.64       .03       .86
.00       .00       .00

1
    03OCT01      10:47:33
PAGE   25

       SECNO     ELMIN     CWSEL     SSTA     ENDST     DEPTH       Q       VCH       HV    DIFWSX    QWEIR
ELTRD     ELLC

 *   1905.000    803.50    805.86   9981.79  10272.88      2.36    670.00      5.41       .28      4.29
.00       .00       .00
 *   1905.000    803.50    806.51   9982.00  10065.00      3.01    670.00      6.78       .59      4.02
.00       .00       .00

 *   2138.000    811.00    813.18   9827.67  10247.47      2.18    620.00      2.09       .12      7.33
.00       .00       .00
 *   2138.000    811.00    814.08   9915.00  10028.00      3.08    620.00      3.57       .19      7.57
.00       .00       .00

 *   2335.000    817.90    820.88   9963.64  10050.00      2.98    570.00      6.27       .60      7.70
.00       .00       .00
 *   2335.000    817.90    820.85   9975.00  10035.00      2.95    570.00      6.73       .70      6.78
.00       .00       .00

 *   2534.000    825.20    829.11   9908.12  10056.86      3.91    520.00      5.29       .25      8.23
.00       .00       .00
 *   2534.000    825.20    829.79   9983.00  10021.00      4.59    520.00      6.30       .49      8.94
.00       .00       .00

 *   2776.000    836.30    838.70   9964.89  10127.35      2.40    460.00      5.46       .36      9.59
.00       .00       .00
 *   2776.000    836.30    839.12   9971.00  10017.00      2.82    460.00      6.62       .68      9.33
.00       .00       .00

1
    03OCT01      10:47:33
PAGE   26

 UNNAMED WASH N0.2 100 YR

 SUMMARY PRINTOUT TABLE  110

       SECNO     CWSEL    DIFKWS       EG     TOPWID      QLOB       QCH      QROB    PERENC    STENCL    STCHL
STCHR    STENCR

     192.000    743.83       .00   744.05     383.24       .00    670.00       .00       .00       .00
9725.40  10133.60       .00
     192.000    744.83      1.00   744.85     383.00       .00    670.00       .00    383.00   9734.00
9725.40  10133.60 10117.00

 *    385.000    745.58       .00   745.59     375.87       .00    670.00       .00       .00       .00
9879.00  10277.60       .00
 *    385.000    745.88       .30   745.90     281.00       .00    670.00       .00    281.00   9892.00
9879.00  10277.60 10173.00

 *    618.000    756.68       .00   757.27      99.94       .00    646.13     23.86       .00       .00
9964.10  10050.20       .00
 *    618.000    756.69       .01   757.27     100.41       .00    645.55     24.44    105.00   9975.00
9964.10  10050.20 10080.00

 *    821.000    766.74       .00   766.92     428.43       .00    300.47    399.53       .00       .00
9952.90  10023.70       .00
 *    821.000    767.40       .67   767.86     117.25       .00    590.31    109.69    148.00   9970.00
9952.90  10023.70 10118.00
```

```
     1043.000    776.56       .00    776.78    342.75    507.79    192.20       .00       .00       .00
9977.40  10038.90      .00
     1043.000    777.32       .76    777.76    108.00    247.43    452.57       .00    108.00   9917.00
9977.40  10038.90 10025.00

 *   1240.000    784.54       .00    784.67    523.39    216.74    183.50    299.76       .00       .00
9981.20  10016.60      .00
     1240.000    785.21       .66    785.55    118.00       .19    384.06    315.75    118.00   9981.00
9981.20  10016.60 10099.00

     1453.000    789.71       .00    789.83    400.15    521.82    127.44     50.73       .00       .00
9982.10  10019.60      .00
     1453.000    790.67       .96    790.88    122.00       .00    313.54    386.46    122.00   9982.00
9982.10  10019.60 10104.00

 *   1676.000    798.77       .00    799.12    234.72       .00    257.94    472.06       .00       .00
9968.90  10011.30      .00
 *   1676.000    798.81       .04    799.12    236.23       .00    247.57    482.42    683.00   9975.00
9968.90  10011.30 10658.00

 *   1710.000    800.55       .00    801.04    168.39       .00    547.40    182.60       .00       .00
9984.00  10016.00      .00
     1710.000    800.54      -.01    801.65     32.32       .00    729.65       .35    366.00   9984.00
9984.00  10016.00 10350.00

     1720.000    801.00       .00    801.29    201.09       .00    483.40    246.60       .00       .00
9984.00  10016.00      .00
 *   1720.000    801.63       .63    802.23     66.84       .00    719.69     10.31    366.00   9984.00
9984.00  10016.00 10350.00

 *   1739.000    801.56       .00    801.61    416.32     45.70    206.68    457.62       .00       .00
9984.00  10016.00      .00
 *   1739.000    802.49       .92    802.52    236.00       .00    196.13    513.87    236.00   9984.00
9984.00  10016.00 10220.00

 *   1905.000    805.86       .00    806.14    291.09       .00    266.63    403.37       .00       .00
9970.80  10017.50      .00
 *   1905.000    806.51       .65    807.10     83.00       .00    491.15    178.85     83.00   9982.00
9970.80  10017.50 10065.00

 *   2138.000    813.18       .00    813.30    344.08    434.43     88.64     96.93       .00       .00
9964.80  10027.90      .00
 *   2138.000    814.08       .90    814.27    113.00    270.08    349.86       .06    113.00   9915.00
9964.80  10027.90 10028.00

 *   2335.000    820.88       .00    821.47     86.36      3.56    554.98     11.46    208.30   9841.70
9971.30  10034.90 10050.00
 *   2335.000    820.85      -.03    821.56     60.00       .00    570.00       .00     60.00   9975.00
9971.30  10034.90 10035.00

 *   2534.000    829.11       .00    829.36    148.74    173.56    200.91    145.53       .00       .00
9999.10  10012.90      .00
 *   2534.000    829.79       .68    830.28     38.00    141.91    298.98     79.10     38.00   9983.00
9999.10  10012.90 10021.00

 *   2776.000    838.70       .00    839.06    154.00      1.92    274.33    183.75       .00       .00
9971.30  10016.80      .00
 *   2776.000    839.12       .42    839.80     46.00       .39    459.61       .00     46.00   9971.00
9971.30  10016.80 10017.00

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    03OCT01       10:47:33
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  SUMMARY OF ERRORS AND SPECIAL NOTES


 WARNING SECNO=     385.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=     385.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=     618.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=     618.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=     618.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=     618.000  PROFILE=  2  CRITICAL DEPTH ASSUMEI
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CAUTION SECNO=    618.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    618.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    821.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    821.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1240.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1676.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1676.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1676.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1676.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1676.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1710.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1710.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1720.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1739.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1739.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1905.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1905.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1905.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   1905.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1905.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1905.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   2138.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2138.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2335.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2335.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=   2335.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2534.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2534.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2776.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2776.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=   2776.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```


FLOODWAY DATA, UNNAMED WASH N0.2 100 YR
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
192.000	383.	562.	1.2	744.8	743.8	1.0
385.000	281.	691.	1.0	745.9	745.6	.3
618.000	100.	112.	6.0	756.7	756.7	.0
821.000	148.	136.	5.1	767.4	766.7	.7
1043.000	108.	133.	5.3	777.4	776.6	.8
1240.000	118.	154.	4.6	785.2	784.5	.7
1453.000	122.	189.	3.7	790.7	789.7	1.0
1676.000	683.	169.	4.3	798.8	798.8	.0
1710.000	32.	86.	8.4	800.6	800.6	.0
1720.000	366.	123.	5.9	801.6	801.0	.6
1739.000	236.	550.	1.3	802.5	801.6	.9
1905.000	83.	117.	5.7	806.6	805.9	.7
2138.000	113.	176.	3.5	814.1	813.2	.9
2335.000	60.	85.	6.7	820.9	820.9	.0
2534.000	38.	97.	5.4	829.8	829.1	.7
2776.000	46.	70.	6.6	839.1	838.7	.4

Appendix B

NEW HEC-RAS MODELS

Appendix B.1

UNNAMED WASH NO. 1

HEC-RAS Version 3.0.1 Mar 2001
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Unnamed Wash No. 1
Project File : Unnamed1.prj
Run Date and Time: 1/17/02 1:27:04 PM

Project in English units

Project Description:
ORIGINAL STUDY [HEC-2]

FLOOD CONTROL DISTRICT OF MARICOPA
COUNTY - CONTRACT FCD 90-67
GILA BEND AREA FLOODPLAIN DELINEATION
STUDY
BY BURGESS & NIPLE
UNNAMED WASH N0. 1 J. MISCHLER
- (602) 244-8100
River id/1000 = River Miles {Example: 1.047/1000
=1.047}

LETTER OF MAP REVISION (LOMR)

REVISED FOR LOMR -
OCTOBER 2001, BY EEC, UNDER CONTRACT FCD 99-18
L. VICK (602) 248-7702

PLAN DATA

Plan Title: Imported Plan 01
Plan File : q:\99541.01\HEC-RAS\UNNAMED 1\Unnamed1.p01

Geometry Title: Imported Geom 01
Geometry File : q:\99541.01\HEC-RAS\UNNAMED 1\Unnamed1.g01

Flow Title : Imported Flow 01
Flow File : q:\99541.01\HEC-RAS\UNNAMED 1\Unnamed1.f01

Plan Summary Information:
Number of: Cross Sections = 34 Mulitple Openings = 0
Culverts = 6 Inline Weirs = 0
Bridges = 0

Computational Information
Water surface calculation tolerance = 0.003
Critical depth calculaton tolerance = 0.003
Maximum number of interations = 20
Maximum difference tolerance = 0.1
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

Encroachment Data
Equal Conveyance = True
Left Offset = 0
Right Offset = 0

River = RIVER-1 Reach = Reach-1

RS	Profile	Method	Value1	Value2
3260	PF 2	1	9992	10016
3148	PF 2	1	9993	10020
3129	PF 2	1	9998	10002
3120	PF 2	1	9998	10002
3111	PF 2	1	9998	10002
3080	PF 2	1	9993	10020
3002	PF 2	1	9600	10003
2988	PF 2	1	9600	10003
2974	PF 2	1	9755	10003
2936	PF 2	1	9988	10014
2835	PF 2	1	9995	10005
2807	PF 2	1	9995	10005
2779	PF 2	1	9995	10005
2746	PF 2	1	9985	10015
2698	PF 2	1	9995	10005
2673.5	PF 2	1	9995	10005
2649	PF 2	1	9995	10005
2632	PF 2	1	9555	10005
2608.5	PF 2	1	9555	10005
2585	PF 2	1	9555	10005
2565	PF 2	1	9985	10015
2337	PF 2	1	9995	10030
2127	PF 2	1	9978	10035
1921	PF 2	1	9978	10020
1723	PF 2	1	9960	10020
1540	PF 2	1	9970	10070
1347	PF 2	1	9880	10045
1151	PF 2	1	9920	10100
959	PF 2	1	9905	10065
769	PF 2	1	9950	10080
730	PF 2	1	9950	10050
674	PF 2	1	9980	10025
654	PF 2	1	9980	10025
610	PF 2	1	9970	10050
559	PF 2	1	9960	10050
417	PF 2	1	9940	10080
337	PF 2	1	9960	10195
150	PF 2	1	9885	10015
61	PF 2	1	9985	10022

FLOW DATA

Flow Title: Imported Flow 01
Flow File : q:\99541.01\HEC-RAS\UNNAMED 1\Unnamed1.f01

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2
RIVER-1	Reach-1	3260	50	50
RIVER-1	Reach-1	3148	80	80
RIVER-1	Reach-1	3129	25	25
RIVER-1	Reach-1	3111	25	25
RIVER-1	Reach-1	3080	35	35
RIVER-1	Reach-1	3002	55	55
RIVER-1	Reach-1	2974	65	65
RIVER-1	Reach-1	2936	75	75
RIVER-1	Reach-1	2835	60	60
RIVER-1	Reach-1	2779	70	70
RIVER-1	Reach-1	2746	80	80
RIVER-1	Reach-1	2698	90	90
RIVER-1	Reach-1	2649	110	110
RIVER-1	Reach-1	2632	110	110
RIVER-1	Reach-1	2585	130	130
RIVER-1	Reach-1	2565	140	140
RIVER-1	Reach-1	2337	330	330
RIVER-1	Reach-1	2127	400	400
RIVER-1	Reach-1	1921	480	480
RIVER-1	Reach-1	1723	550	550

RIVER-1	Reach-1	1540	620	620
RIVER-1	Reach-1	1347	640	640
RIVER-1	Reach-1	610	730	730
RIVER-1	Reach-1	417	730	730
RIVER-1	Reach-1	337	900	900

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 742.28
RIVER-1	Reach-1	PF 2		Known WS = 743.28

GEOMETRY DATA

Geometry Title: Imported Geom 01
Geometry File : q:\99541.01\HEC-RAS\UNNAMED 1\Unnamed1.g01

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 3260

INPUT
Description: SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WHERE
THE STREAM CROSSES THE FRONTAGE ROAD AGAIN NEAR THE SECTION LINE.

Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9934.9	856.5	9968.6	854.3	9992	852.6	10000	850.8	10016	853.3
10049.2	853.5	10097.5	854.4	10160.4	855.6	10226.3	857		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9934.9	.035	9992	.045	10016	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992	10016	600	591	550	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 3148

INPUT
Description: RETURN THE Q TO ITS FULL VALUE OF 80 CFS.
REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
REVISE THE RIGHT OVERBANK PER THE TOPO MAP.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9700	854.6	9770.5	852.2	9795.4	851.2	9847.6	851.3	9900.4	851.3
9951.2	850.6	9980	849.1	9993	847	10000	845.2	10020	848
10052.5	849.3	10114.1	849	10185.2	850.2	10210	854.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9700	.035	9993	.045	10020	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993	10020	100	100	100	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 3129

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9700	853.6	9770.5	851.2	9795.4	850.2	9847.6	850.3	9900.4	850.3

```
  9951.2   849.6  9980.1   848.1    9993     846    9998   844.2   10002   844.2
   10020     847 10052.5   848.3 10114.1     848 10185.2   849.2 10234.7   850.5
 10273.2   851.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9700    .035    9998    .045   10002    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9998   10002               92      92      92             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                 RIVER: RIVER-1
REACH: Reach-1             RS: 3120

INPUT
Description: Culvert #5 (1 2' Pipe)
REPEAT GR DATA FROM SECT 3080 AGAIN AT THE
             UPSTREAM FACE OF THE SINGLE
24" CULVERT WHICH CONVEYS UNNAMED
             WASH NO 1 BENEATH THE FRONTAGE ROAD
SOUTH OF THE EASTBOUND I-8
             ON-RAMP.
USE PSXECE = 844.2 - 843.8 +2.6 = 3.0
WEIR FLOW NOT
             ANTICIPATED. USE SC.4 = 100 FT.
ELTRD =  850.7
Q BEFORE SPLIT
             90 CFS
Q AFTER SPLIT     25 CFS

Distance from Upstream XS =       5
Deck/Roadway Width        =      82
Weir Coefficient          =       3
Upstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9700   850.7   843.8    9998   850.7   843.8    9998   850.7   843.8
   10002   850.7   843.8   10002   850.7   843.8 10273.2   850.7   843.8

Upstream Bridge Cross Section Data
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9700   853.6  9770.5   851.2  9795.4   850.2  9847.6   850.3  9900.4   850.3
  9951.2   849.6  9980.1   848.1    9993     846    9998   844.2   10002   844.2
   10020     847 10052.5   848.3 10114.1     848 10185.2   849.2 10234.7   850.5
 10273.2   851.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9700    .035    9998    .045   10002    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9998   10002             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9700   850.7   843.8    9998   850.7   843.8    9998   850.7   843.8
   10002   850.7   843.8   10002   850.7   843.8 10273.2   850.7   843.8

Downstream Bridge Cross Section Data
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9770.5   850.8  9795.4   849.8  9847.6   849.9  9900.4   849.9  9951.2   849.2
  9980.1   847.7    9993   845.6    9998   843.8   10002   843.8   10020   846.6
 10052.5   847.9 10114.1   847.6 10185.2   848.8 10234.7   850.1 10273.2   850.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9770.5    .035    9998    .045   10002    .035
```

```
Bank Sta: Left   Right    Coeff Contr.   Expan.
          9998   10002            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Upstream Embankment side slope                =       0 horiz. to 1.0 vertical
Downstream Embankment side slope              =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins           =   850.7
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Pipe5           Circular       2       2
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 2 - Mitered to conform to slope
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5      82       .016                   .5                1
Upstream   Elevation =  844.2
           Centerline Station =  10000
Downstream Elevation =  843.8
           Centerline Station =  10000

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 3111

INPUT
Description: ***INTERSTATE 8 FRONTAGE ROAD***
REPEAT GR DATA FROM SECTION 3080
            AT THE DOWNSTREAM FACE OF THE SINGLE
24" CULVERT WHICH CONVEYS
            UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD
SOUTH OF THE
            EASTBOUND I-8 ON-RAMP.
USE PSXECE = 843.8 - 841.2 = 2.6 FT.
Q
            BEFORE SPLIT    90 CFS
Q AFTER SPLIT     25 CFS

Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9770.5   850.8  9795.4   849.8  9847.6   849.9  9900.4   849.9  9951.2   849.2
  9980.1   847.7    9993   845.6    9998   843.8   10002   843.8   10020   846.6
 10052.5   847.9 10114.1   847.6 10185.2   848.8 10234.7   850.1 10273.2   850.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9770.5    .035    9998    .045   10002    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9998   10002              164     164     164              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 3080

INPUT
Description: Q BEFORE SPLIT   100 CFS
Q AFTER SPLIT     35 CFS

Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9770.5   848.2  9795.4   847.2  9847.6   847.3  9900.4   847.3  9951.2   846.6
    9980   845.1    9993     843   10000   841.2   10020     844 10052.5   845.3
 10114.1     845 10185.2   846.2 10234.7   847.5 10273.2   848.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
  9770.5    .035    9993    .045   10020    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9993   10020              433     412     413             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 3002

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9100   846.3    9610   843.1  9795.4   842.8  9847.6   842.9  9900.4   842.9
  9951.2   842.2  9980.1   840.7    9997   836.8   10003   836.8   10020   839.6
 10052.5   840.9 10114.1   840.6 10185.2   841.8 10234.7   843.1 10273.2   843.9
   10370   847.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9100    .035    9997    .035   10003    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9997   10003              147     147     147             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                RIVER: RIVER-1
REACH: Reach-1            RS: 2988

INPUT
Description: Culvert #4 (1 3' Pipe)
USE GR DATA FROM AERIAL SURVEY SECTION AT
             RM 3.080 AT THE UPSTREAM END
OF THE CULVERT.  USE PSXECE = -4.4
             TO MATCH CHANNEL THALWEG TO CULVERT
INVERT.  THEN USE THE GR DATA
             AGAIN AT RM 3.080 FOR CONTRACTION LOSSES.
ELTRD = 843.1 + 0.5 HV
             = 843.6
Q BEFORE SPLIT   120 CFS
Q AFTER SPLIT     55 CFS

Distance from Upstream XS =       5
Deck/Roadway Width        =     137
Weir Coefficient          =       3
Upstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9100   846.3   835.9    9610   843.1   835.9    9997844.2908   835.9
    9997844.2908   835.9   10000   844.3   835.9   10003844.3235   835.9
   10003844.3235   835.9   10370   847.2   835.9

Upstream Bridge Cross Section Data
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9100   846.3    9610   843.1  9795.4   842.8  9847.6   842.9  9900.4   842.9
  9951.2   842.2  9980.1   840.7    9997   836.8   10003   836.8   10020   839.6
 10052.5   840.9 10114.1   840.6 10185.2   841.8 10234.7   843.1 10273.2   843.9
   10370   847.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9100    .035    9997    .035   10003    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9997   10003             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Downstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9100   846.3   835.9    9610   843.1   835.9    9997844.2908   835.9
    9997844.2908   835.9   10000   844.3   835.9   10003844.3235   835.9
```

```
   10003844.3235   835.9   10370   847.2   835.9

Downstream Bridge Cross Section Data
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9754.7   842.8  9786.9   841.1  9861.3   842.2  9902.5   841.7  9943.7   838.5
  9975.5   837.9    9988   837.2    9997   835.9   10003   835.9   10014   837.7
 10043.6   837.8 10052.2   837.4 10082.6   840.8   10146   841.8 10203.1   841.7
 10231.5   843.8 10242.2     844

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9754.7    .035    9997    .035   10003    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9997   10003              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =   843.6
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Pipe4           Circular       3       3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 2 - Mitered to conform to slope
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5     137       .019                   .5                1
Upstream   Elevation =  836.8
           Centerline Station =  10000
Downstream Elevation =  835.9
           Centerline Station =  10000

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2974

INPUT
Description: ***ON-RAMP TO EASTBOUND INTERSTATE 8***
REPEAT GR DATA FROM
             SECTION 2936 AT THE DOWNSTREAM FACE OF THE SINGLE
36" CULVERT
             WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE EASTBOUND
             I-8
ON-RAMP.
USE PSXECE = 835.9 - 834.7 = 1.2
Q BEFORE SPLIT
             130 CFS
Q AFTER SPLIT     65 CFS

Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9754.7   842.8  9786.9   841.1  9861.3   842.2  9902.5   841.7  9943.7   838.5
  9975.5   837.9    9988   837.2    9997   835.9   10003   835.9   10014   837.7
 10043.6   837.8 10052.2   837.4 10082.6   840.8   10146   841.8 10203.1   841.7
 10231.5   843.8 10242.2     844

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9754.7    .035    9997    .035   10003    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9997   10003              190     201     180              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION          RIVER: RIVER-1
```

REACH: Reach-1 RS: 2936

INPUT
Description: KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
OF
FREQUENT STRUCTURES.
ADD 45 CFS DIVERTED ALONG MAINLINE BACK IN.
NOW SUBTRACT ONLY 65 CFS:
Q BEFORE SPLIT 140 CFS
Q AFTER SPLIT
75 CFS

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9754.7	841.6	9786.9	839.9	9861.3	841	9902.5	840.5	9943.7	837.3
9976	836.7	9988	836	10000	834.7	10014	836.5	10043.6	836.6
10052.2	836.2	10082.6	839.6	10146	840.6	10203.1	840.5	10231.5	842.6
10242.2	842.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9754.7	.035	9988	.035	10014	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988	10014	530	533	500	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 2835

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9690	856	9730	836	9770	836	9861.3	838.9	9902.5	838.4
9943.7	835.2	9975.5	834.6	9995	832.6	10005	832.6	10014	834.4
10043.6	834.5	10052.2	834.1	10082.6	837.5	10146	838.5	10203.1	838.4
10231.5	840.5	10242.2	840.7	10270	840				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9690	.035	9995	.03	10005	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995	10005	295	295	295	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888		F	
888		F	

CULVERT RIVER: RIVER-1
REACH: Reach-1 RS: 2807

INPUT
Description: Culvert #3 (2 2.5' Pipes)
USE GR DATA FROM AERIAL SURVEY SECTION
AT RM 2.936 AT THE UPSTREAM END
OF THE CULVERT. USE PSXECE =
-2.1 TO MATCH CHANNEL THALWEG TO CULVERT
INVERT. THEN USE THE GR
DATA AGAIN AT RM 2.936 FOR CONTRACTION LOSSES.
WEIR FLOW NOT
ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 838.3
Q BEFORE SPLIT
170 CFS
Q AFTER SPLIT 60 CFS

Distance from Upstream XS = 5
Deck/Roadway Width = 285
Weir Coefficient = 3
Upstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9690	838.3	829.5	9995	838.3	829.5	9995	838.3	829.5
10005	838.3	829.5	10005	838.3	829.5	10270	838.3	829.5

Upstream Bridge Cross Section Data
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9690	856	9730	836	9770	836	9861.3	838.9	9902.5	838.4
9943.7	835.2	9975.5	834.6	9995	832.6	10005	832.6	10014	834.4
10043.6	834.5	10052.2	834.1	10082.6	837.5	10146	838.5	10203.1	838.4
10231.5	840.5	10242.2	840.7	10270	840				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9690	.035	9995	.03	10005	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
9995	10005	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

Downstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9690	838.3	829.5	9995	838.3	829.5	9995	838.3	829.5
10005	838.3	829.5	10005	838.3	829.5	10270	838.3	829.5

Downstream Bridge Cross Section Data
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9882.3	841.2	9920.3	832.4	9973.7	833.1	9985.8	831.8	9995	829.5
10005	829.5	10016	831.9	10047.7	831.7	10080.7	833.1	10108.2	832.5
10134.2	835.3	10164.8	835.1	10191.9	839.7	10195.9	841.4		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9882.3	.035	9995	.03	10005	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
9995	10005	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 838.3
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Pipe3	Circular	2.5	2.5

FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 2 - Mitered to conform to slope
Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
5	285	.018	.5	1

Number of Barrels = 2
Upstream Elevation = 832.6
Centerline Stations

Sta.	Sta.
9998.75	10001.25

Downstream Elevation = 829.5
Centerline Stations

Sta.	Sta.
9998.75	10001.25

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 2779

INPUT
Description: ***MAINLINE INTERSTATE 8***
REPEAT GR DATA FROM SECTION 2746 AT
THE DOWNSTREAM FACE OF THE TWIN
30" CULVERTS WHICH CONVEY UNNAMED
WASH NO 1 BENEATH MAINLINE I-8
EASTBOUND AND WESTBOUND.

```
USE
            PSXECE = 829.5 - 829.5 = 0.0
Q BEFORE SPLIT   180 CFS
Q AFTER
            SPLIT     70 CFS

Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9882.3   841.2  9920.3   832.4  9973.7   833.1  9985.8   831.8    9995   829.5
   10005   829.5   10016   831.9 10047.7   831.7 10080.7   833.1 10108.2   832.5
 10134.2   835.3 10164.8   835.1 10191.9   839.7 10195.9   841.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9882.3    .035    9995     .03   10005    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9995   10005              174     174     174              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2746

INPUT
Description: KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
OF
            FREQUENT STRUCTURES.
Q BEFORE SPLIT   190 CFS
Q AFTER SPLIT
            80 CFS

Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9882.3   841.2  9920.3   832.4  9973.7   833.1  9985.8   831.8  9997.7   830.4
   10000   829.5 10016.3   831.9 10047.7   831.7 10080.7   833.1 10108.2   832.5
 10134.2   835.3 10164.8   835.1 10191.9   839.7 10195.9   841.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9882.3    .035  9973.7     .03 10016.3    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9973.7 10016.3              535     554     590              .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2698

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9650     836    9660     834    9670     836  9882.3   838.7  9920.3   829.9
  9973.7   830.6  9985.8   829.3    9995     827   10005     827   10016   829.4
 10047.7   829.2 10080.7   830.6 10108.2     830 10134.2   832.8 10164.8   832.6
 10191.9   837.2 10195.9   838.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9650    .035    9995    .035   10005    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9995   10005              258     258     258              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                RIVER: RIVER-1
REACH: Reach-1            RS: 2673.5

INPUT
Description: Culvert #2 (2 3' Pipes)
USE GR DATA FROM AERIAL SURVEY SECTION AT
            RM 2.746 AT THE UPSTREAM END
OF THE CULVERT.  USE PSXECE = -2.5
```

```
            TO MATCH CHANNEL THALWEG TO CHANNEL
INVERT.  THEN USE THE GR DATA
            AGAIN AT RM 2.746 FOR CONTRACTION LOSSES.
USE TOPO DATA TO ADD
            THE DITCH ALONG  I-8 FOR POSSIBLE WEIR FLOW.
ADD 2.5 FT SO THAT
            IT WILL BE CORRECT WHEN 2.5 FT IS SUBTRACTED.
ASSUME A DITCH 2.0
            FT BELOW THE PAVEMENT.
ELTRD = 834.0 + 0.5 HV = 834.5
Q BEFORE
            SPLIT   200 CFS
Q AFTER SPLIT     90 CFS

Distance from Upstream XS =       5
Deck/Roadway Width        =     248
Weir Coefficient          =       3
Upstream  Deck/Roadway Coordinates
    num=        8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9650     836   825.1    9660     834   825.1    9750   858.2   825.1
    9995 854.244   825.1    9995 854.244   825.1   10005854.0825   825.1
   10005854.0825   825.1 10195.9     851   825.1

Upstream Bridge Cross Section Data
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9650     836    9660     834    9670     836  9882.3   838.7  9920.3   829.9
  9973.7   830.6  9985.8   829.3    9995     827   10005     827   10016   829.4
 10047.7   829.2 10080.7   830.6 10108.2     830 10134.2   832.8 10164.8   832.6
 10191.9   837.2 10195.9   838.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9650    .035    9995    .035   10005    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9995   10005             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888       F
888       F

Downstream  Deck/Roadway Coordinates
    num=        8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9650     836   825.1    9660     834   825.1    9750   858.2   825.1
    9995 854.244   825.1    9995 854.244   825.1   10005854.0825   825.1
   10005854.0825   825.1 10195.9     851   825.1

Downstream Bridge Cross Section Data
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9780   833.8  9794.1   833.7  9815.9   831.5  9891.6   831.3  9961.4   829.7
  9980.7   829.2    9995   825.1   10005   825.1   10026   827.5 10055.7   834.7
 10086.8   843.5   10300   851.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9780    .035    9995    .035   10005    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9995   10005             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888       F
888       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =   834.5
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1
```

```
Culvert Name      Shape       Rise    Span
Pipe2            Circular       3       3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 1 - Headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5     248       .019                   .5                1
Number of Barrels =  2
Upstream   Elevation =  827
Centerline Stations
    Sta.    Sta.
  9998.5 10001.5
Downstream Elevation =  825.1
Centerline Stations
    Sta.    Sta.
  9998.5 10001.5

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2649

INPUT
Description: ***BUSINESS ROUTE 8***
REPEAT THE SECTION TAKEN BY AERIAL METHODS
             AT RM 2.641 AT THE
DOWNSTREAM FACE OF THE CULVERT BENEATH
             BUSINESS ROUTE 8  (TWIN 36"
CMP'S).  USE PSXECE = 825.1 - 824.7 =
             0.4 FT.
Q BEFORE SPLIT   220 CFS
Q AFTER SPLIT    110 CFS

Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9780   833.8  9794.1   833.7  9815.9   831.5  9891.6   831.3  9961.4   829.7
  9980.7   829.2    9995   825.1   10005   825.1   10026   827.5 10055.7   834.7
 10086.8   843.5   10300   851.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9780    .035    9995    .035   10005    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9995   10005              100      91      85              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2632

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   829.4    9550   828.8    9600   827.8    9780   834.3    9900   834.3
  9980.7   828.6    9993   826.2    9995   824.5   10005   824.5   10026   826.9
 10055.7   834.1 10086.8   842.9   10300     851

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9995    .035   10005     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9995   10005              260     250     240              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                RIVER: RIVER-1
REACH: Reach-1            RS: 2608.5

INPUT
Description: Culvert #1 (2 3' Pipes)
USE GR DATA FROM AERIAL SURVEY SECTION AT
             RM 2.641 AT THE UPSTREAM END
OF THE CULVERT.  USE PSXECE = -0.2
```

```
            TO MATCH CHANNEL THALWEG TO CHANNEL
INVERT.  DO NOT THEN USE THE
            GR DATA AT RM 2.641, INSTEAD REPEAT IT
AGAIN AT THE DOWNSTREAM
            FACE OF THE CULVERT THROUGH BUSINESS ROUTE 8.
REVISE GR POINTS ON
            THE LEFT SIDE TO FOLLOW THE RAMP.
Q BEFORE SPLIT   220 CFS
Q
            AFTER SPLIT    110 CFS

Distance from Upstream XS =       5
Deck/Roadway Width        =     240
Weir Coefficient          =       3
Upstream  Deck/Roadway Coordinates
    num=       9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9450   829.4   820.4    9550   828.8   820.4    9600   828.2   820.4
    9780   834.5   820.4    9995840.0422   820.4    9995840.0422   820.4
   10005   840.3   820.4   10005   840.3   820.4   10300     851   820.4

Upstream Bridge Cross Section Data
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   829.4    9550   828.8    9600   827.8    9780   834.3    9900   834.3
  9980.7   828.6    9993   826.2    9995   824.5   10005   824.5   10026   826.9
 10055.7   834.1 10086.8   842.9   10300     851

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9995    .035   10005     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9995   10005             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888       F
888       F

Downstream  Deck/Roadway Coordinates
    num=       9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9450   829.4   820.4    9550   828.8   820.4    9600   828.2   820.4
    9780   834.5   820.4    9995840.0422   820.4    9995840.0422   820.4
   10005   840.3   820.4   10005   840.3   820.4   10300     851   820.4

Downstream Bridge Cross Section Data
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9550   828.2    9600     827    9919     825    9948   823.1    9975   822.4
    9995   820.4   10005   820.4   10017   822.5   10056     824   10118   827.1
   10178   827.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9550     .03    9995    .035   10005     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9995   10005             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888       F
888       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =   828.7
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Pipe1           Circular       3       3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 1 - Headwall
```

```
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5     240       .019                   .5                1
Number of Barrels =  2
Upstream   Elevation =  824.5
Centerline Stations
    Sta.    Sta.
  9998.5 10001.5
Downstream Elevation =  820.4
Centerline Stations
    Sta.    Sta.
  9998.5 10001.5

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2585

INPUT
Description: THE FOLLOWING 5 BRIDGE MODELS ARE BASED ON AS BUILT PLANS
             OBTAINED
FROM THE ARIZONA DEPARTMENT OF TRANSPORTATION WITH
             INVERTS SURVEYED
USING FIELD METHODS AND LOCAL TBM'S ESTABLISHED
             USING SPOT ELEVATIONS
FROM AERIAL TOPO MAPPING.
***ON RAMP TO
             WESTBOUND INTERSTATE 8***
REPEAT CHANNEL POINTS AND RIGHT
             OVERBANK DATA OF SECTION 2565 AT THE
DOWNSTREAM FACE OF THE TWIN
             CMP'S THROUGH RAMP C (WESTBOUND ON-RAMP
TO INTERSTATE 8).
RAISE
             CHANNEL AND RIGHT OVERBANK ELEVATIONS BY = 820.4 - 819.5 = 0.9
             FT.
ADD LEFT OVERBANK DATA FROM TOPO MAP.
AT THIS SECTION, HEC-2
             COMPUTES A RELATIVELY LOW DEPTH AT THE
DOWNSTREAM FACE OF THE
             CULVERT, BUT BECAUSE OF THE HEAD LOSS THROUGH
THE CULVERT, A
             GREATER DEPTH IS COMPUTED AT THE UPSTREAM FACE.
BECAUSE OF THIS,
             QLOB AT THE DOWNSTREAM FACE DOES NOT REASONABLY
AGREE WITH QWEIR
             OR QLOB AT THE UPSTREAM FACE.  NOR DOES THE START
STATION
             DOWNSTREAM AGREE WITH THE UPSTREAM VALUE.  THE 26 CFS COMPUTED
AS
             WEIR FLOW IS CONVEYED AS SHEET FLOW ACROSS THE LEFT OVERBANK AT
             A
SLOPING, BUT HIGHER ELEVATION THAN IS COMPUTED WITHIN THE
             CHANNEL.
ALTHOUGH THE RESULTS OF THIS MODEL WOULD INDICATE A
             FLOOD BOUNDARY
AND FLOODWAY WITHIN THE CHANNEL AREA DOWNSTREAM,
             IT IS NECESSARY
TO PLOT THE FLOOD BOUNDARY AND FLOODWAY IN A
             MANNER CONSISTENT WITH
WEIR FLOW OVER THE ON-RAMP WELL TO THE
             WEST OF THE CULVERT WITH
CORRESPONDING SHEET FLOW BACK TO THE
             MAIN CHANNEL.
Q BEFORE SPLIT   240 CFS
Q AFTER SPLIT    130 CFS

Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9550   828.2    9600     827    9919     825    9948   823.1    9975   822.4
    9995   820.4   10005   820.4   10017   822.5   10056     824   10118   827.1
   10178   827.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9550     .03    9995    .035   10005     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9995   10005              105     105     105              .1       .3
Ineffective Flow     num=       2
```

```
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 2565

INPUT
Description: A FLOW SPLIT OF 65 CFS OCCURS UPSTREAM OF THE I-8 FRONTAGE
             ROAD.
A FLOW SPLIT OF 45 CFS OCCURS UPSTREAM OF THE I-8
             MAINLINE.
THIS FLOW RE-ENTERS UNNAMED WASH NO. 1 BETWEEN SECTIONS
             2337 AND 2565.
FLOWS ARE THEREFORE REDUCED BY 110 CFS THROUGH THE
             INTERSTATE AREA.
Q BEFORE SPLIT   250 CFS
Q AFTER SPLIT    140
             CFS
ADD THE 45 CFS BACK IN UPSTREAM OF THE I-8 MAINLINE AT
             SECTION 2936.
ADD THE 65 CFS BACK IN UPSTREAM OF THE FRONTAGE
             ROAD AT SECTION 3148.
LEFT OVERBANK GEOMETRY IS REVISED FROM
             AERIAL DATA TO REFLECT
FLOW OVER THE WESTBOUND ON-RAMP IN THE FAR
             LEFT OVERBANK.

Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9610   828.2    9700     824    9800     827  9918.7   824.1  9947.9   822.2
  9974.7   821.5   10000   819.5 10016.7   821.6 10056.3   823.1   10118   826.2
 10178.2   826.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9610     .03  9974.7    .035 10016.7     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9974.7 10016.7             1140    1204    1130             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 2337

INPUT
Description:
Station Elevation Data     num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9852.3   818.7  9880.6   815.9  9892.4   815.3  9917.9   816.7  9956.3   816.3
  9990.2   813.7   10000   811.7   10010   810.6 10031.3   811.9 10056.9   812.2
 10103.6   812.3 10154.7   813.8   10203   816.7 10264.9   817.6 10334.4   818.1

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9852.3     .03  9990.2    .035 10031.3     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9990.2 10031.3             1070    1109    1160             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 2127

INPUT
Description:
Station Elevation Data     num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9848   812.3  9864.5   811.1  9890.5   805.2    9905   804.2  9921.3   808.5
  9957.6     806  9986.1   802.7  9996.7   801.3   10000     801 10020.4   802.6
 10048.4   804.6   10089     807 10137.9   808.5 10184.8   809.3

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9848     .03  9957.6     .035   10089     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9957.6   10089             1070    1088    1020             .1       .3

CROSS SECTION           RIVER: RIVER-1
```

REACH: Reach-1 RS: 1921

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9925.7	802.4	9938.7	801.8	9978.8	795.5	9993.3	793.6	9997.4	791.8
10000	791.4	10005.4	792.3	10025.4	796.5	10061.9	797.8	10090.5	797.8
10111.5	795.9	10141.3	798.1	10163.5	798.7	10196.9	799.3	10241.2	800.1
10280	800.3	10327.4	800.9	10339.3	801.1				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9925.7	.03	9978.8	.035	10025.4	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.8	10025.4	1040	1045	840	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1723

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9627.3	794.5	9689.1	794	9757	794	9794.2	792.8	9851.6	788.4
9899.2	788.9	9941.3	789.2	9973.7	787.3	9989.9	786.9	10000	786.2
10023.9	787.8	10071.8	787.8	10135.1	787.9	10173.6	790.3	10209.4	791.8
10240.4	788.6	10260.6	790.3	10307.2	792.8	10372.4	793.9	10403.3	794.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9627.3	.03	9941.3	.035	10023.9	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9941.3	10023.9	960	966	850	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1540

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9662.5	787.7	9707	786.1	9742.4	783.7	9766.1	782.1	9810.2	784.5
9850.4	784.9	9892.1	783.6	9923.9	781.2	9968.7	780.9	9983.4	779.6
9994.3	779.2	10000	779.7	10017.9	781.7	10037.5	781.2	10049.8	778.8
10071.2	780.9	10101.6	781.1	10135.9	782.2	10176.8	785.8	10223.2	787.6
10269.6	787.3	10295.9	787.9	10348.2	788.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9662.5	.03	9968.7	.035	10071.2	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.7	10071.2	1010	1019	985	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1347

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9707.6	780	9750.3	776.9	9799.9	777.3	9838.6	775	9891.3	773.5
9912.4	773	9918.5	771.6	9927.2	771.9	9936.8	772.9	9948.8	773.3
9978.1	773.9	9992.7	773.3	10000	771.8	10011.9	771.4	10026.4	773.2
10063.7	774.6	10121	778.1	10154.5	778.4				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9707.6	.03	9838.6	.035	10063.7	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9838.6	10063.7	960	1035	1050	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1151

```
INPUT
Description:
Station Elevation Data     num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9536.3     774    9612   772.5  9662.7   772.2  9717.7   771.6  9753.3   770.1
  9818.9   768.8  9873.1   767.9  9912.5   767.5  9956.6   767.4  9977.9     768
  9991.1   767.1  9999.2   766.3   10000   765.7 10013.8   767.5 10037.5     767
 10070.2   767.4 10123.4   768.4 10188.4   767.6 10215.4   767.6 10254.8   768.9
 10291.1   770.4 10325.9   773.1 10369.5   773.2

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9536.3     .03  9977.9    .035 10013.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9977.9 10013.8             1040    1014    1000             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 959

INPUT
Description:
Station Elevation Data     num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9775.3   764.6  9814.9   764.5  9850.6   762.9  9881.7   761.9  9908.7   761.2
  9917.8   760.6  9926.6   759.5  9948.6   761.4  9983.2   761.3  9993.9   759.9
   10000   759.1 10015.8   760.9   10045   760.6 10052.4   759.4 10070.3   761.2
 10097.9   762.9 10130.5   765.2 10165.1   766.8

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9775.3     .03  9775.3    .035 10097.9     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9775.3 10097.9             1030    1003    1000             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 769

INPUT
Description: MAIN STREET CROSSES AT RM 0.666  (LOW CROSSING - NO STRUCTURE)
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9805.1   758.2    9870     758  9893.7   757.3  9929.6   754.7    9965   754.6
  9993.2   752.7   10000   751.5 10009.3   754.3 10020.8   756.4 10066.8   756.1
 10109.1   757.7 10150.7   759.6   10169   760.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9805.1    .035    9965    .035 10009.3    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9965 10009.3               200     206     205             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 730

INPUT
Description: new-xsection
Station Elevation Data     num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9710   758.3    9775     758    9815     756    9845   755.5    9885     756
    9903   756.8    9918     756    9991  754.53    9996  751.61   10000  751.68
   10003  751.77   10010   754.7   10070  755.28   10133     756   10151     758
   10166     760

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9710    .035    9991    .035   10010    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9991   10010               305     296     270             .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 674

INPUT
```

```
Description: new-xsection
Station Elevation Data     num=       10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9720  757.45    9840     756    9909  755.15    9984  752.49    9996  751.25
   10000  751.29   10008  751.33   10019  752.88   10227  756.43   10300     758

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
    9720    .035    9984    .035   10019    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9984   10019               115     106      80              .3       .5
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                  RIVER: RIVER-1
REACH: Reach-1              RS: 672

INPUT
Description: Culvert at Main Street
Distance from Upstream XS =        5
Deck/Roadway Width        =       65
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=        9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9700  758.05            9752  758.03            9827   757.8
    9933  757.49           10000  757.61           10040  757.73
   10145  758.36           10237  759.04           10300  759.41

Upstream Bridge Cross Section Data
Station Elevation Data     num=       10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9720  757.45    9840     756    9909  755.15    9984  752.49    9996  751.25
   10000  751.29   10008  751.33   10019  752.88   10227  756.43   10300     758

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
    9720    .035    9984    .035   10019    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9984   10019              .3       .5
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Downstream  Deck/Roadway Coordinates
    num=        9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9700  758.05            9752  758.03            9827   757.8
    9933  757.49           10000  757.61           10040  757.73
   10145  758.36           10237  759.04           10300  759.41

Downstream Bridge Cross Section Data
Station Elevation Data     num=        7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9869  754.53    9972   753.4    9980  749.45   10000  749.35   10020  749.25
   10029  752.79   10194  755.77

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
    9869    .035    9972    .035   10029    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9972   10029              .3       .5

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1
```

```
Culvert Name      Shape      Rise    Span
Culvert #1          Box       4       6
FHWA Chart # 10- 90 degree headwall; Chamfered or beveled inlet
FHWA Scale # 1 - Inlet edges chamfered 3/4 inch
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5   90.55       .013                   .4                1
Number of Barrels =  3
Upstream   Elevation =  751.29
Centerline Stations
    Sta.    Sta.    Sta.
    9993   10000   10007
Downstream Elevation =  749.35
Centerline Stations
    Sta.    Sta.    Sta.
    9993   10000   10007

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 654

INPUT
Description: new-xsection
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9869  754.53    9972   753.4    9980  749.45   10000  749.35   10020  749.25
   10029  752.79   10194  755.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9869    .035    9972    .035   10029    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9972   10029              215     179     230              .3       .5

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 610

INPUT
Description: new-xsection
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9865   755.2    9901     754    9945     752    9988  751.47    9995  749.33
   10000  749.14   10005  748.96   10010   750.6   10086  752.27   10145     754

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9865    .035    9988    .035   10010    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9988   10010              250     269     270              .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 559

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9430     756    9484     756    9559     754    9611     752    9628     752
    9680   752.3    9723     752    9765   751.5    9803     752    9828   752.1
    9850     752    9910     750   10000   749.8   10024     750   10033   749.9
   10042     750   10066     752   10173   753.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9430    .035    9910    .035   10042    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9910   10042              770  749.76     760              .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 417

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

9610	750.68	9673	750	9720	748	9738	747.91	9750	748
9806	748.12	9831	748	9862	746	9950	745.8	10000	745.9
10014	746	10030	746.15	10060	746.05	10230	747.8	10260	747.71
10310	747.49	10351	748	10385	748.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9610	.035	9862	.035	10030	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9862	10030	400	422.4	440	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 337

INPUT
Description: SECTION 337 IS IN THE CONFLUENCE AREA WITH UNNAMED WASH NO 2.
THE
CONFLUENCE OCCURS AT RM 0.209 (UNNAMED WASH NO 2 RM 0.000).

Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9644.3	748.3	9675.1	748.1	9712.7	748	9747.4	747.4	9760.9	746.8
9771.4	746.1	9785.1	746.5	9816.3	747.2	9851.3	747.7	9879.7	747.2
9895.1	746.2	9902.8	745.6	9922.8	746.9	9938.2	746.9	9956.1	745.5
9969.3	744.1	9985.5	744.5	9992	744.4	9995.4	743.6	10000	742.8
10005.3	743.2	10014.8	744	10020.9	745	10027.6	746.2	10039.4	743.7
10048.1	743.8	10071.5	744	10112.7	743.5	10152.3	743.4	10176.8	743.4
10192.1	743.3	10210.8	743.5	10239.8	743.7	10265.9	743.5	10287.5	743.1
10312.4	743.5	10341.5	744.1	10370.4	743.7	10397.7	743.7	10421.7	744.2
10437.8	745.4	10465	745.2	10495.3	745.3	10524.5	746.2	10549.9	746.6
10574.3	746.7	10590.4	746.3	10606.4	745.6	10626.6	746.5	10655.8	747.4
10678.2	747.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9644.3	.06	9956.1	.035	10027.6	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9956.1	10027.6	755	987	1010	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 150

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9620	745.1	9685	744	9720	742	9952.7	743.5	9960.8	741.5
9966.2	742.6	9973.9	744.6	9976.5	744.3	9986	741.4	9993.2	739.1
10000	738.8	10010	739.5	10017.1	743.7	10023.9	745.8	10032.1	746.2
10034.2	746.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9620	.06	9973.9	.035	10023.9	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973.9	10023.9	472	470	470	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 61

INPUT
Description: SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 IS
AT
A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER
WASH.
THE CONFLUENCE WITH BENDER WASH OCCURS AT A LOCATION WHERE
BENDER WASH
INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A
SMALL DRAINAGE
STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED
WEST TO SAND TANK
WASH.
WHEN THE GILA BEND CANAL WAS
CONSTRUCTED, A 3-BARREL CONCRETE BOX
CULVERT WAS CONSTRUCTED TO

CONVEY BENDER WASH BENEATH THE IRRIGATION
CANAL. WHEN THE CANAL
BANKS WERE RAISED AND THE CANAL EMBANKMENT
WAS THEREFORE WIDENED
AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED
BY INSERTING
SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.
THE CULVERT
WAS EXTENDED IN THE UPSTREAM DIRECTION.
FLOW THROUGH THE CULVERT
IS CONTROLLED BY INLET CONDITIONS, AND IN
FACT, THE THREE PIPES
HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS
AT THE TIME OF THE
FIELD RECONNAISSANCE OF 10/4/91.
A DITCH HAS BEEN CONSTRUCTED
UPSTREAM OF THE GILA BEND CANAL TO DIVERT
WATER FROM BENDER WASH,
AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO
SAND TANK WASH JUST
UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE
GILA BEND CANAL
BENEATH SAND TANK WASH.
ELEVATIONS UPSTREAM OF THE GILA BEND
CANAL WILL THEREFORE BE CONTROLLED
BY THIS DIVERSION DITCH.
STARTING ELEVATIONS WERE DETERMINED BY THE
NATURAL PROFILE RUN.

Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9560	746	9800	744	9883.3	743.1	9893.2	743	9905.6	741.6
9917.1	741.3	9933.8	741	9948.3	741.4	9960.3	741.4	9969.4	742
9978.5	742.5	9984.9	742.7	9991.4	739.3	9997	738.5	10000	738
10005.6	738.8	10015	739.7	10022	742.4	10028.4	745.9	10038.5	746.5
10046.9	746.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9560	.06	9984.9	.035	10028.4	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.9	10028.4	0	0	0	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	3260	50.00	850.80	852.19	852.19	852.54	0.03	4.78	10.47	15.07	1
Reach-1	3260	50.00	850.80	852.19	852.19	852.54	0.03	4.78	10.47	15.07	1
Reach-1	3148	80.00	845.20	848.72		848.74	0.00	1.15	76.27	55.59	0
Reach-1	3148	80.00	845.20	848.78		848.80	0.00	1.28	62.29	27.00	0
Reach-1	3129	25.00	844.20	848.67	845.26	848.70	0.00	1.40	17.88	184.76	0
Reach-1	3129	25.00	844.20	848.71	845.27	848.74	0.00	1.39	18.03	4.00	0
Reach-1	3120	Culvert									
Reach-1	3111	25.00	843.80	845.33	844.86	845.59	0.01	4.09	6.11	18.07	1
Reach-1	3111	25.00	843.80	845.71	844.86	845.87	0.01	3.28	7.62	4.00	0
Reach-1	3080	35.00	841.20	842.40	842.40	842.70	0.04	4.40	7.95	13.25	1
Reach-1	3080	35.00	841.20	842.40	842.40	842.70	0.04	4.40	7.95	13.25	1

Reach-1	3002		55.00	836.80	841.94	838.18	841.99	0.00	1.78	30.83	234.27	0
Reach-1	3002		55.00	836.80	841.94	838.17	841.99	0.00	1.78	30.83	46.77	0
Reach-1	2988	Culvert										
Reach-1	2974		65.00	835.90	837.72	837.43	838.27	0.01	5.94	10.94	52.03	1
Reach-1	2974		65.00	835.90	837.44	837.44	838.21	0.02	7.03	9.25	19.32	1
Reach-1	2936		75.00	834.70	836.30	836.06	836.49	0.01	3.45	22.40	32.83	1
Reach-1	2936		75.00	834.70	836.63		836.73	0.00	2.52	29.82	26.00	0
Reach-1	2835		60.00	832.60	835.92	833.63	835.97	0.00	1.81	33.17	133.98	0
Reach-1	2835		60.00	832.60	836.11	833.64	836.15	0.00	1.71	35.07	10.00	0
Reach-1	2807	Culvert										
Reach-1	2779		70.00	829.50	832.17	830.65	832.28	0.00	2.62	26.75	76.58	0
Reach-1	2779		70.00	829.50	832.36	830.65	832.45	0.00	2.45	28.60	10.00	0
Reach-1	2746		80.00	829.50	832.04		832.09	0.00	1.98	46.69	72.00	0
Reach-1	2746		80.00	829.50	832.21		832.27	0.00	1.87	42.84	30.00	0
Reach-1	2698		90.00	827.00	831.78	828.36	831.84	0.00	1.88	47.84	212.60	0
Reach-1	2698		90.00	827.00	831.81	828.35	831.87	0.00	1.87	48.13	10.00	0
Reach-1	2673.5	Culvert										
Reach-1	2649		110.00	825.10	828.48	826.65	828.65	0.00	3.25	33.84	46.86	0
Reach-1	2649		110.00	825.10	828.51	826.65	828.67	0.00	3.22	34.12	10.00	0
Reach-1	2632		110.00	824.50	828.51	826.05	828.56	0.00	1.96	79.83	106.81	0
Reach-1	2632		110.00	824.50	828.52	826.05	828.56	0.00	1.82	80.33	79.68	0
Reach-1	2608.5	Culvert										
Reach-1	2585		130.00	820.40	822.19	821.79	822.43	0.00	4.40	33.85	38.09	1
Reach-1	2585		130.00	820.40	822.16	821.78	822.41	0.01	4.29	33.13	27.61	1
Reach-1	2565		140.00	819.50	821.18	821.13	821.54	0.02	4.79	29.20	34.69	1
Reach-1	2565		140.00	819.50	821.39	821.11	821.66	0.01	4.15	33.70	30.00	1
Reach-1	2337		330.00	810.60	812.80	812.63	812.99	0.01	3.98	101.55	126.00	1
Reach-1	2337		330.00	810.60	813.26		813.63	0.01	4.90	67.29	35.00	1
Reach-1	2127		400.00	801.00	803.63	803.44	804.08	0.01	5.40	74.07	56.80	1
Reach-1	2127		400.00	801.00	803.60	803.44	804.08	0.01	5.53	72.31	56.09	1
Reach-1	1921		480.00	791.40	795.85	795.10	796.25	0.01	5.07	94.93	45.76	1
Reach-1	1921		480.00	791.40	795.85	795.10	796.26	0.01	5.10	94.25	42.00	1

Reach-1	1723		550.00	786.20	788.31	788.29	788.61	0.01	4.89	132.26	185.20	1
Reach-1	1723		550.00	786.20	788.72	788.45	789.20	0.01	5.54	99.21	60.00	1
Reach-1	1540		620.00	778.80	781.62		781.81	0.01	3.76	184.48	195.75	1
Reach-1	1540		620.00	778.80	781.76		782.04	0.01	4.24	146.34	100.00	1
Reach-1	1347		640.00	771.40	773.91	773.73	774.19	0.01	4.22	151.49	168.68	1
Reach-1	1347		640.00	771.40	773.96	773.73	774.21	0.01	4.05	158.08	165.00	1
Reach-1	1151		640.00	765.70	768.36	768.03	768.44	0.00	3.00	276.43	386.53	0
Reach-1	1151		640.00	765.70	768.50	768.10	768.65	0.00	3.29	208.29	180.00	0
Reach-1	959		640.00	759.10	761.38	761.38	761.77	0.02	5.03	127.33	162.40	1
Reach-1	959		640.00	759.10	761.37	761.37	761.78	0.02	5.15	124.22	150.25	1
Reach-1	769		640.00	751.50	757.52		757.56	0.00	1.93	456.27	218.17	0
Reach-1	769		640.00	751.50	757.36		757.44	0.00	2.57	310.34	130.00	0
Reach-1	730		640.00	751.61	757.49		757.51	0.00	1.49	713.17	361.34	0
Reach-1	730		640.00	751.61	757.21		757.31	0.00	3.11	272.53	100.00	0
Reach-1	674		640.00	751.25	757.24	753.93	757.41	0.00	3.33	192.17	527.01	0
Reach-1	674		640.00	751.25	756.87	753.93	757.06	0.00	3.57	179.13	45.00	0
Reach-1	672		Culvert									
Reach-1	654		640.00	749.25	753.28		753.45	0.00	3.31	199.08	83.92	0
Reach-1	654		640.00	749.25	753.47		753.67	0.00	3.54	181.03	45.00	0
Reach-1	610		730.00	748.96	752.41	752.37	752.87	0.01	6.75	165.38	154.86	1
Reach-1	610		730.00	748.96	752.87	752.32	753.21	0.00	5.50	166.42	80.00	1
Reach-1	559		730.00	749.80	751.46	750.86	751.60	0.00	3.14	250.30	193.43	0
Reach-1	559		730.00	749.80	752.01	751.20	752.25	0.00	3.95	187.96	90.00	0
Reach-1	417		730.00	745.80	746.67	746.67	746.99	0.02	4.78	166.92	268.32	1
Reach-1	417		730.00	745.80	746.93	746.93	747.40	0.02	5.75	133.06	140.00	1
Reach-1	337		900.00	742.80	745.34		745.37	0.00	1.59	756.40	521.61	0
Reach-1	337		900.00	742.80	746.25		746.29	0.00	2.10	565.64	235.00	0
Reach-1	150		900.00	738.80	744.23	743.14	744.32	0.00	3.17	567.91	343.23	0
Reach-1	150		900.00	738.80	744.96		745.15	0.00	3.93	333.33	130.00	0
Reach-1	61		900.00	738.00	742.29	742.29	743.10	0.01	7.77	161.81	111.13	1
Reach-1	61		900.00	738.00	743.28	742.22	743.97	0.00	6.66	135.20	37.00	1

Profile Output Table - Standard Table 2

Reach	River Sta	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	3260	852.54	852.19	0.35	0.58	0.10		50.00	15.07	
Reach-1	3260	852.54	852.19	0.35	0.76	0.10		50.00	15.07	
Reach-1	3148	848.74	848.72	0.02	0.04	0.00	7.15	70.01	2.84	55.59
Reach-1	3148	848.80	848.78	0.03	0.07	0.00		80.00	27.00	
Reach-1	3129	848.70	848.67	0.03				25.00	184.76	
Reach-1	3129	848.74	848.71	0.03				25.00	4.00	
Reach-1	3120	Culvert								
Reach-1	3111	845.59	845.33	0.26	2.88	0.00		25.00	18.07	
Reach-1	3111	845.87	845.71	0.17	3.16	0.01		25.00	4.00	
Reach-1	3080	842.70	842.40	0.30	0.20	0.08		35.00	13.25	
Reach-1	3080	842.70	842.40	0.30	0.44	0.08		35.00	13.25	
Reach-1	3002	841.99	841.94	0.05				55.00	234.27	
Reach-1	3002	841.99	841.94	0.05				55.00	46.77	
Reach-1	2988	Culvert								
Reach-1	2974	838.27	837.72	0.55	1.68	0.11		65.00	52.03	
Reach-1	2974	838.21	837.44	0.77	1.21	0.20		65.00	19.32	
Reach-1	2936	836.49	836.30	0.18	0.48	0.04	0.85	74.06	0.09	32.83
Reach-1	2936	836.73	836.63	0.10	0.56	0.02		75.00	26.00	
Reach-1	2835	835.97	835.92	0.05				60.00	133.98	
Reach-1	2835	836.15	836.11	0.05				60.00	10.00	
Reach-1	2807	Culvert								
Reach-1	2779	832.28	832.17	0.11	0.17	0.01		70.00	76.58	
Reach-1	2779	832.45	832.36	0.09	0.18	0.01		70.00	10.00	
Reach-1	2746	832.09	832.04	0.06	0.25	0.00		75.05	4.95	72.00
Reach-1	2746	832.27	832.21	0.05	0.40	0.00		80.00	30.00	
Reach-1	2698	831.84	831.78	0.05				90.00	212.60	
Reach-1	2698	831.87	831.81	0.05				90.00	10.00	
Reach-1	2673.5	Culvert								
Reach-1	2649	828.65	828.48	0.16	0.05	0.04		110.00	46.86	
Reach-1	2649	828.67	828.51	0.16	0.08	0.04		110.0(		

10.00

Reach-1	2632		828.56	828.51	0.05			31.27	78.73	106.81
Reach-1	2632		828.56	828.52	0.04			36.75	73.25	79.68
Reach-1	2608.5		Culvert							
Reach-1	2585		822.43	822.19	0.25	0.88	0.01	51.43	78.57	38.09
Reach-1	2585		822.41	822.16	0.25	0.75	0.00	54.37	75.63	27.61
Reach-1	2565		821.54	821.18	0.36	8.50	0.05		140.00	34.69
Reach-1	2565		821.66	821.39	0.27	8.02	0.01		140.00	30.00
Reach-1	2337		812.99	812.80	0.19	8.88	0.03		208.94	121.06 126.00
Reach-1	2337		813.63	813.26	0.37	9.55	0.01		330.00	35.00
Reach-1	2127		804.08	803.63	0.45	7.82	0.02		400.00	56.80
Reach-1	2127		804.08	803.60	0.48	7.80	0.02		400.00	56.09
Reach-1	1921		796.25	795.85	0.40	7.61	0.03	0.44	479.56	45.76
Reach-1	1921		796.26	795.85	0.40	7.05	0.01	0.30	479.70	42.00
Reach-1	1723		788.61	788.31	0.30	6.76	0.03		378.22	171.78 185.20
Reach-1	1723		789.20	788.72	0.48	7.10	0.06		550.00	60.00
Reach-1	1540		781.81	781.62	0.19	7.62	0.01	62.78	505.44	51.78 195.75
Reach-1	1540		782.04	781.76	0.28	7.82	0.01		620.00	100.00
Reach-1	1347		774.19	773.91	0.28	5.69	0.06		640.00	168.68
Reach-1	1347		774.21	773.96	0.25	5.53	0.03		640.00	165.00
Reach-1	1151		768.44	768.36	0.09	6.65	0.03	181.91	150.49	307.60 386.53
Reach-1	1151		768.65	768.50	0.15	6.84	0.03	156.35	182.33	301.32 180.00
Reach-1	959		761.77	761.38	0.39	0.97	0.11		640.00	162.40
Reach-1	959		761.78	761.37	0.41	1.66	0.10		640.00	150.25
Reach-1	769		757.56	757.52	0.04	0.04	0.01	184.41	365.60	89.99 218.17
Reach-1	769		757.44	757.36	0.08	0.13	0.00	72.63	466.55	100.82 130.00
Reach-1	730		757.51	757.49	0.02	0.08	0.02	261.51	137.74	240.75 361.34
Reach-1	730		757.31	757.21	0.10	0.23	0.01	183.64	271.52	184.83 100.00
Reach-1	674		757.41	757.24	0.17				640.00	527.01
Reach-1	674		757.06	756.87	0.20				640.00	45.00
Reach-1	672		Culvert							
Reach-1	654		753.45	753.28	0.17	0.49	0.09		636.11	3.89 83.92

Reach-1	654	753.67	753.47	0.19	0.41	0.05		640.00	45.00
Reach-1	610	752.87	752.41	0.46	1.17	0.10	77.00	404.37	248.63 154.86
Reach-1	610	753.21	752.87	0.34	0.93	0.03	68.12	384.95	276.93 80.00
Reach-1	559	751.60	751.46	0.14	4.60	0.02	60.89	644.80	24.31 193.43
Reach-1	559	752.25	752.01	0.24	4.82	0.02		688.59	41.41 90.00
Reach-1	417	746.99	746.67	0.32	1.08	0.09	9.50	610.94	109.57 268.32
Reach-1	417	747.40	746.93	0.47	0.98	0.13		532.13	197.87 140.00
Reach-1	337	745.37	745.34	0.02	1.04	0.01		125.16	774.84 521.61
Reach-1	337	746.29	746.25	0.04	1.13	0.01		288.42	611.58 235.00
Reach-1	150	744.32	744.23	0.09	1.15	0.07	432.62	467.38	343.23
Reach-1	150	745.15	744.96	0.19	1.13	0.05	215.75	684.25	130.00
Reach-1	61	743.10	742.29	0.81			133.81	766.19	111.13
Reach-1	61	743.97	743.28	0.69				900.00	37.00

HEC-RAS Plan: Imported Pla River: RIVER-1 Reach: Reach-1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	3260	50.00	850.80	852.19	852.19	852.54	0.03	4.78	10.47	15.07	1
Reach-1	3260	50.00	850.80	852.19	852.19	852.54	0.03	4.78	10.47	15.07	1
Reach-1	3148	80.00	845.20	848.72		848.74	0.00	1.15	76.27	55.59	0
Reach-1	3148	80.00	845.20	848.78		848.80	0.00	1.28	62.29	27.00	0
Reach-1	3129	25.00	844.20	848.67	845.26	848.70	0.00	1.40	17.88	184.76	0
Reach-1	3129	25.00	844.20	848.71	845.27	848.74	0.00	1.39	18.03	4.00	0
Reach-1	3120	Culvert									
Reach-1	3111	25.00	843.80	845.33	844.86	845.59	0.01	4.09	6.11	18.07	1
Reach-1	3111	25.00	843.80	845.71	844.86	845.87	0.01	3.28	7.62	4.00	0
Reach-1	3080	35.00	841.20	842.40	842.40	842.70	0.04	4.40	7.95	13.25	1
Reach-1	3080	35.00	841.20	842.40	842.40	842.70	0.04	4.40	7.95	13.25	1
Reach-1	3002	55.00	836.80	841.94	838.18	841.99	0.00	1.78	30.83	234.27	0
Reach-1	3002	55.00	836.80	841.94	838.17	841.99	0.00	1.78	30.83	46.77	0
Reach-1	2988	Culvert									
Reach-1	2974	65.00	835.90	837.72	837.43	838.27	0.01	5.94	10.94	52.03	1
Reach-1	2974	65.00	835.90	837.44	837.44	838.21	0.02	7.03	9.25	19.32	1
Reach-1	2936	75.00	834.70	836.30	836.06	836.49	0.01	3.45	22.40	32.83	1
Reach-1	2936	75.00	834.70	836.63		836.73	0.00	2.52	29.82	26.00	0
Reach-1	2835	60.00	832.60	835.92	833.63	835.97	0.00	1.81	33.17	133.98	0
Reach-1	2835	60.00	832.60	836.11	833.64	836.15	0.00	1.71	35.07	10.00	0
Reach-1	2807	Culvert									
Reach-1	2779	70.00	829.50	832.17	830.65	832.28	0.00	2.62	26.75	76.58	0
Reach-1	2779	70.00	829.50	832.36	830.65	832.45	0.00	2.45	28.60	10.00	0
Reach-1	2746	80.00	829.50	832.04		832.09	0.00	1.98	46.69	72.00	0
Reach-1	2746	80.00	829.50	832.21		832.27	0.00	1.87	42.84	30.00	0
Reach-1	2698	90.00	827.00	831.78	828.36	831.84	0.00	1.88	47.84	212.60	0
Reach-1	2698	90.00	827.00	831.81	828.35	831.87	0.00	1.87	48.13	10.00	0
Reach-1	2673.5	Culvert									
Reach-1	2649	110.00	825.10	828.48	826.65	828.65	0.00	3.25	33.84	46.86	0
Reach-1	2649	110.00	825.10	828.51	826.65	828.67	0.00	3.22	34.12	10.00	0
Reach-1	2632	110.00	824.50	828.51	826.05	828.56	0.00	1.96	79.83	106.81	0
Reach-1	2632	110.00	824.50	828.52	826.05	828.56	0.00	1.82	80.33	79.68	0
Reach-1	2608.5	Culvert									
Reach-1	2585	130.00	820.40	822.19	821.79	822.43	0.00	4.40	33.85	38.09	1
Reach-1	2585	130.00	820.40	822.16	821.78	822.41	0.01	4.29	33.13	27.61	1
Reach-1	2565	140.00	819.50	821.18	821.13	821.54	0.02	4.79	29.20	34.69	1
Reach-1	2565	140.00	819.50	821.39	821.11	821.66	0.01	4.15	33.70	30.00	1
Reach-1	2337	330.00	810.60	812.80	812.63	812.99	0.01	3.98	101.55	126.00	1
Reach-1	2337	330.00	810.60	813.26		813.63	0.01	4.90	67.29	35.00	1
Reach-1	2127	400.00	801.00	803.63	803.44	804.08	0.01	5.40	74.07	56.80	1
Reach-1	2127	400.00	801.00	803.60	803.44	804.08	0.01	5.53	72.31	56.09	1
Reach-1	1921	480.00	791.40	795.85	795.10	796.25	0.01	5.07	94.93	45.76	1
Reach-1	1921	480.00	791.40	795.85	795.10	796.26	0.01	5.10	94.25	42.00	1
Reach-1	1723	550.00	786.20	788.31	788.29	788.61	0.01	4.89	132.26	185.20	1
Reach-1	1723	550.00	786.20	788.72	788.45	789.20	0.01	5.54	99.21	60.00	1
Reach-1	1540	620.00	778.80	781.62		781.81	0.01	3.76	184.48	195.75	1
Reach-1	1540	620.00	778.80	781.76		782.04	0.01	4.24	146.34	100.00	1
Reach-1	1347	640.00	771.40	773.91	773.73	774.19	0.01	4.22	151.49	168.68	1

HEC-RAS Plan: Imported Pla River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	1347	640.00	771.40	773.96	773.73	774.21	0.01	4.05	158.08	165.00	1
Reach-1	1151	640.00	765.70	768.36	768.03	768.44	0.00	3.00	276.43	386.53	0
Reach-1	1151	640.00	765.70	768.50	768.10	768.65	0.00	3.29	208.29	180.00	0
Reach-1	959	640.00	759.10	761.38	761.38	761.77	0.02	5.03	127.33	162.40	1
Reach-1	959	640.00	759.10	761.37	761.37	761.78	0.02	5.15	124.22	150.25	1
Reach-1	769	640.00	751.50	757.52		757.56	0.00	1.93	456.27	218.17	0
Reach-1	769	640.00	751.50	757.36		757.44	0.00	2.57	310.34	130.00	0
Reach-1	730	640.00	751.61	757.49		757.51	0.00	1.49	713.17	361.34	0
Reach-1	730	640.00	751.61	757.21		757.31	0.00	3.11	272.53	100.00	0
Reach-1	674	640.00	751.25	757.24	753.93	757.41	0.00	3.33	192.17	527.01	0
Reach-1	674	640.00	751.25	756.87	753.93	757.06	0.00	3.57	179.13	45.00	0
Reach-1	672	Culvert									
Reach-1	654	640.00	749.25	753.28		753.45	0.00	3.31	199.08	83.92	0
Reach-1	654	640.00	749.25	753.47		753.67	0.00	3.54	181.03	45.00	0
Reach-1	610	730.00	748.96	752.41	752.37	752.87	0.01	6.75	165.38	154.86	1
Reach-1	610	730.00	748.96	752.87	752.32	753.21	0.00	5.50	166.42	80.00	1
Reach-1	559	730.00	749.80	751.46	750.86	751.60	0.00	3.14	250.30	193.43	0
Reach-1	559	730.00	749.80	752.01	751.20	752.25	0.00	3.95	187.96	90.00	0
Reach-1	417	730.00	745.80	746.67	746.67	746.99	0.02	4.78	166.92	268.32	1
Reach-1	417	730.00	745.80	746.93	746.93	747.40	0.02	5.75	133.06	140.00	1
Reach-1	337	900.00	742.80	745.34		745.37	0.00	1.59	756.40	521.61	0
Reach-1	337	900.00	742.80	746.25		746.29	0.00	2.10	565.64	235.00	0
Reach-1	150	900.00	738.80	744.23	743.14	744.32	0.00	3.17	567.91	343.23	0
Reach-1	150	900.00	738.80	744.96		745.15	0.00	3.93	333.33	130.00	0
Reach-1	61	900.00	738.00	742.29	742.29	743.10	0.01	7.77	161.81	111.13	1
Reach-1	61	900.00	738.00	743.28	742.22	743.97	0.00	6.66	135.20	37.00	1

HEC-RAS Plan: Imported Pla River: RIVER-1 Reach: Reach-1

Reach	River Sta	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
		(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Reach-1	3260	852.54	852.19	0.35	0.58	0.10		50.00		15.07
Reach-1	3260	852.54	852.19	0.35	0.76	0.10		50.00		15.07
Reach-1	3148	848.74	848.72	0.02	0.04	0.00	7.15	70.01	2.84	55.59
Reach-1	3148	848.80	848.78	0.03	0.07	0.00		80.00		27.00
Reach-1	3129	848.70	848.67	0.03				25.00		184.76
Reach-1	3129	848.74	848.71	0.03				25.00		4.00
Reach-1	3120	Culvert								
Reach-1	3111	845.59	845.33	0.26	2.88	0.00		25.00		18.07
Reach-1	3111	845.87	845.71	0.17	3.16	0.01		25.00		4.00
Reach-1	3080	842.70	842.40	0.30	0.20	0.08		35.00		13.25
Reach-1	3080	842.70	842.40	0.30	0.44	0.08		35.00		13.25
Reach-1	3002	841.99	841.94	0.05				55.00		234.27
Reach-1	3002	841.99	841.94	0.05				55.00		46.77
Reach-1	2988	Culvert								
Reach-1	2974	838.27	837.72	0.55	1.68	0.11		65.00		52.03
Reach-1	2974	838.21	837.44	0.77	1.21	0.20		65.00		19.32
Reach-1	2936	836.49	836.30	0.18	0.48	0.04	0.85	74.06	0.09	32.83
Reach-1	2936	836.73	836.63	0.10	0.56	0.02		75.00		26.00
Reach-1	2835	835.97	835.92	0.05				60.00		133.98
Reach-1	2835	836.15	836.11	0.05				60.00		10.00
Reach-1	2807	Culvert								
Reach-1	2779	832.28	832.17	0.11	0.17	0.01		70.00		76.58
Reach-1	2779	832.45	832.36	0.09	0.18	0.01		70.00		10.00
Reach-1	2746	832.09	832.04	0.06	0.25	0.00		75.05	4.95	72.00
Reach-1	2746	832.27	832.21	0.05	0.40	0.00		80.00		30.00
Reach-1	2698	831.84	831.78	0.05				90.00		212.60
Reach-1	2698	831.87	831.81	0.05				90.00		10.00
Reach-1	2673.5	Culvert								
Reach-1	2649	828.65	828.48	0.16	0.05	0.04		110.00		46.86
Reach-1	2649	828.67	828.51	0.16	0.08	0.04		110.00		10.00
Reach-1	2632	828.56	828.51	0.05			31.27	78.73		106.81
Reach-1	2632	828.56	828.52	0.04			36.75	73.25		79.68
Reach-1	2608.5	Culvert								
Reach-1	2585	822.43	822.19	0.25	0.88	0.01	51.43	78.57		38.09
Reach-1	2585	822.41	822.16	0.25	0.75	0.00	54.37	75.63		27.61
Reach-1	2565	821.54	821.18	0.36	8.50	0.05		140.00		34.69
Reach-1	2565	821.66	821.39	0.27	8.02	0.01		140.00		30.00
Reach-1	2337	812.99	812.80	0.19	8.88	0.03		208.94	121.06	126.00
Reach-1	2337	813.63	813.26	0.37	9.55	0.01		330.00		35.00
Reach-1	2127	804.08	803.63	0.45	7.82	0.02		400.00		56.80
Reach-1	2127	804.08	803.60	0.48	7.80	0.02		400.00		56.09

HEC-RAS Plan: Imported Pla River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
		(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Reach-1	1921	796.25	795.85	0.40	7.61	0.03	0.44	479.56		45.76
Reach-1	1921	796.26	795.85	0.40	7.05	0.01	0.30	479.70		42.00
Reach-1	1723	788.61	788.31	0.30	6.76	0.03		378.22	171.78	185.20
Reach-1	1723	789.20	788.72	0.48	7.10	0.06		550.00		60.00
Reach-1	1540	781.81	781.62	0.19	7.62	0.01	62.78	505.44	51.78	195.75
Reach-1	1540	782.04	781.76	0.28	7.82	0.01		620.00		100.00
Reach-1	1347	774.19	773.91	0.28	5.69	0.06		640.00		168.68
Reach-1	1347	774.21	773.96	0.25	5.53	0.03		640.00		165.00
Reach-1	1151	768.44	768.36	0.09	6.65	0.03	181.91	150.49	307.60	386.53
Reach-1	1151	768.65	768.50	0.15	6.84	0.03	156.35	182.33	301.32	180.00
Reach-1	959	761.77	761.38	0.39	0.97	0.11		640.00		162.40
Reach-1	959	761.78	761.37	0.41	1.66	0.10		640.00		150.25
Reach-1	769	757.56	757.52	0.04	0.04	0.01	184.41	365.60	89.99	218.17
Reach-1	769	757.44	757.36	0.08	0.13	0.00	72.63	466.55	100.82	130.00
Reach-1	730	757.51	757.49	0.02	0.08	0.02	261.51	137.74	240.75	361.34
Reach-1	730	757.31	757.21	0.10	0.23	0.01	183.64	271.52	184.83	100.00
Reach-1	674	757.41	757.24	0.17				640.00		527.01
Reach-1	674	757.06	756.87	0.20				640.00		45.00
Reach-1	672	Culvert								
Reach-1	654	753.45	753.28	0.17	0.49	0.09		636.11	3.89	83.92
Reach-1	654	753.67	753.47	0.19	0.41	0.05		640.00		45.00
Reach-1	610	752.87	752.41	0.46	1.17	0.10	77.00	404.37	248.63	154.86
Reach-1	610	753.21	752.87	0.34	0.93	0.03	68.12	384.95	276.93	80.00
Reach-1	559	751.60	751.46	0.14	4.60	0.02	60.89	644.80	24.31	193.43
Reach-1	559	752.25	752.01	0.24	4.82	0.02		688.59	41.41	90.00
Reach-1	417	746.99	746.67	0.32	1.08	0.09	9.50	610.94	109.57	268.32
Reach-1	417	747.40	746.93	0.47	0.98	0.13		532.13	197.87	140.00
Reach-1	337	745.37	745.34	0.02	1.04	0.01		125.16	774.84	521.61
Reach-1	337	746.29	746.25	0.04	1.13	0.01		288.42	611.58	235.00
Reach-1	150	744.32	744.23	0.09	1.15	0.07	432.62	467.38		343.23
Reach-1	150	745.15	744.96	0.19	1.13	0.05	215.75	684.25		130.00
Reach-1	61	743.10	742.29	0.81			133.81	766.19		111.13
Reach-1	61	743.97	743.28	0.69				900.00		37.00

Appendix B.2

UNNAMED WASH NO. 2

HEC-RAS Version 3.0.1 Mar 2001
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Unnamed Wash No. 2
Project File : UNNAMED2.prj
Run Date and Time: 1/17/02 9:19:01 AM

Project in English units

Project Description:
ORIGINAL STUDY [HEC-2]

FLOOD CONTROL DISTRICT OF MARICOPA
COUNTY - CONTRACT FCD 90-67
GILA BEND AREA FLOODPLAIN DELINEATION STUDY
BY BURGESS & NIPLE
UNNAMED WASH N0.2 100 YR (NATURAL) J. MISCHLER -
(602) 244-8100
River ID/1000 = River Miles {Example: 1047/1000 =
1.047}

LETTER OF MAP REVISION (LOMR) [HEC-RAS]

LAST REVISED IN
JANUARY 2002, BY EEC, CONTRACT FCD 99-18

PLAN DATA

Plan Title: Plan 02
Plan File : q:\99541.01\HEC-RAS\UNNAMED 2\UNNAMED2.p02

Geometry Title: Imported Geom 01
Geometry File : q:\99541.01\HEC-RAS\UNNAMED 2\UNNAMED2.g01

Flow Title : Imported Flow 01
Flow File : q:\99541.01\HEC-RAS\UNNAMED 2\UNNAMED2.f01

Plan Summary Information:

Number of:	Cross Sections	= 21	Mulitple Openings	=	0
	Culverts	= 2	Inline Weirs	=	0
	Bridges	= 0			

Computational Information

Water surface calculation tolerance	=	0.003
Critical depth calculaton tolerance	=	0.003
Maximum number of interations	=	20
Maximum difference tolerance	=	0.1
Flow tolerance factor	=	0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

Encroachment Data
Equal Conveyance = True

Left Offset = 0
Right Offset = 0

River = RIVER-1 Reach = Reach-1

RS	Profile	Method	Value1	Value2
2780	PF 2	1	9971	10017
2539	PF 2	1	9983	10021
2339	PF 2	1	9970	10040
2142	PF 2	1	9915	10028
1909	PF 2	1	9982	10065
1743	PF 2	1	9984	10220
1724	PF 2	1	9984	10350
1714	PF 2	1	9984	10350
1680	PF 2	1	9975	10658
1457	PF 2	1	9982	10104
1244	PF 2	1	9981	10099
1047	PF 2	1	9894	10025
844	PF 2	1	9975	10070
676	PF 2	1	9950	10025
628	PF 2	1	9935	10025
577	PF 2	1	9960	10030
560	PF 2	1	9980	10020
479	PF 2	1	9985	10050
385	PF 2	1	9930	10070
267	PF 2	1	9935	10065
192	PF 2	1	9880	10130

FLOW DATA

Flow Title: Imported Flow 01
Flow File : q:\99541.01\HEC-RAS\UNNAMED 2\UNNAMED2.f01

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2
RIVER-1	Reach-1	2780	460	460
RIVER-1	Reach-1	2539	520	520
RIVER-1	Reach-1	2339	570	570
RIVER-1	Reach-1	2142	620	620
RIVER-1	Reach-1	1909	670	670
RIVER-1	Reach-1	1743	710	710
RIVER-1	Reach-1	1724	730	730
RIVER-1	Reach-1	1457	700	700
RIVER-1	Reach-1	676	670	670
RIVER-1	Reach-1	560	580	670
RIVER-1	Reach-1	192	900	900

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 745.34
RIVER-1	Reach-1	PF 2		Known WS = 746.25

GEOMETRY DATA

Geometry Title: Imported Geom 01
Geometry File : q:\99541.01\HEC-RAS\UNNAMED 2\UNNAMED2.g01

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 2780

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9897.8	842	9937.6	840.4	9971.3	838.3	9992.7	837.4	10000	836.3
10016.8	838.9	10048.9	838	10072.2	837.7	10100.7	838.4	10163	839.1

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

```
  9897.8    .035  9937.6     .04  9971.3    .035 10016.8     .04 10048.9    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9971.3 10016.8             1170    1278     930             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2539

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9783   832.9  9836.8   832.8  9877.6   830.7  9925.6   828.2  9943.8   828.8
    9987   827.9  9999.1   827.7   10000   825.2 10012.9   827.5 10029.4   827.8
 10052.8   828.7 10098.3   833.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9783    .035  9999.1    .035 10012.9    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9999.1 10012.9              900    1051     890             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2339

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9841.7   824.7  9896.1   824.2  9939.3   822.4  9971.3   820.4  9991.7   818.8
   10000   817.9 10012.7   819.7 10034.9   820.7 10060.7   820.2 10111.7   820.5
 10189.3   819.8 10278.6   819.3 10362.4   819.8 10451.9   821.2 10528.6     824
 10587.4   826.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9841.7    .035  9971.3    .035 10034.9    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9971.3 10034.9             1050    1040     965             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 2142

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9748.1   816.9  9792.4   815.3  9823.1     814  9837.8   811.4  9849.2     811
  9866.1   811.9  9902.3   812.4  9964.8   812.6  9991.8   812.2   10000   812.4
 10027.9     813 10072.4   812.8 10132.9   813.5 10181.7   813.2 10218.7     812
 10269.4   814.1 10330.5   816.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9748.1    .035  9964.8    .035 10027.9    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9964.8 10027.9             1020    1230    1130             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1909

INPUT
Description: RETURN EXPANSION & CONTRACTION COEFFICIENTS TO TYPICAL VALUES

Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9928.8   809.9  9958.6   809.1  9970.8   807.8  9987.2   804.9  9994.2     804
   10000   803.5 10017.5   805.4 10050.6   805.7 10117.9   805.2 10168.4   804.6
 10208.8   805.7 10267.5   805.7 10312.2     807 10329.8   807.5 10338.1   808.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9928.8    .035  9970.8    .035 10017.5    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
        9970.8 10017.5              360     878     850             .1       .3

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1743

INPUT
Description: REPEAT SECTION 100 FEET UPSTREAM FOR CONTRACTION LOSSES
ADJUST GR
             POINTS AT RIGHT END FROM TOPO MAPPINS
USE PSXECE = 798.7 - 796.5
             = 2.2 FT

Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   810.4    9734   804.4  9792.8   802.9  9875.6   801.9  9916.7   800.6
  9935.3   800.9  9968.9   801.4    9984   800.3    9985   798.7   10000   798.7
   10015   798.7   10016     800 10042.3   800.3 10096.8   800.4 10184.8   800.5
 10285.3   800.1   10350   805.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450    .035    9984    .035   10016    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9984   10016                50     100     230             .3       .5

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1724

INPUT
Description: SPECIAL CULVERT MODEL FOR THE THREE BARREL CULVERT AT BUSINESS
             ROUTE 8.
AT THE TIME OF MAPPING, APPROXIMATELY 1.3 FEET OF
             SEDIMENT WAS FOUND IN
THE CULVERT.
SECTION 1710 GR POINTS ARE
             REPEATED FROM 1676 EXCEPT THAT CHANNEL
GEOMETRY HAS BEEN REVISED
             TO REFLECT THE CHANNEL AT THE CULVERT &
BT STATIONS HAVE BEEN
             ADDED.    GEOMETRY AT THE ENDS MATCH THE BT CARDS.
WIER FLOW OVER
             BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW
             IS EFFECTIVE THERE, BUT NOT BETWEEN THE RIGHT BANK STATION
AND
             THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE
             THE
AREA NON-EFFECTIVE.
RAISE ELEVATIONS USING PSXECE = 797.8 -
             796.5 = 1.3 FT
INCREASE EXPANSION & CONTRACTION COEFFICIENTS FOR
             THE CULVERT

Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   809.5    9734   803.5  9792.8     802  9875.6     801  9916.7   799.7
  9935.3     800  9968.9   800.5    9984   799.4    9985   797.8   10000   797.8
   10015   797.8   10016   799.1   10017   803.6   10320   801.4   10450   799.5
   10560   801.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9984    .035   10016     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9984   10016                250     180     200             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CULVERT                RIVER: RIVER-1
REACH: Reach-1            RS: 1715

INPUT
Description: Culvert #1 (3 10' x 4.7' Boxes)
REPEAT GR DATA FROM DOWNSTREAM
```

```
            FACE.  PSXECE = 798.0 - 797.8 + 1.3 = 1.5
USE ELTRD = 800.0 + 0.1
            HV = 800.1

Distance from Upstream XS =        5
Deck/Roadway Width        =       41
Weir Coefficient          =        3
Upstream  Deck/Roadway Coordinates
    num=        9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9450   808.7   797.8    9984804.2338   797.8    9984804.2338   797.8
   10000   804.1   797.8   10016  803.99   797.8   10016  803.99   797.8
   10320   801.9   797.8   10450     800   797.8   10560   801.8   797.8

Upstream Bridge Cross Section Data
Station Elevation Data    num=       16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   809.5    9734   803.5  9792.8     802  9875.6     801  9916.7   799.7
  9935.3     800  9968.9   800.5    9984   799.4    9985   797.8   10000   797.8
   10015   797.8   10016   799.1   10017   803.6   10320   801.4   10450   799.5
   10560   801.3

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9984    .035   10016     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9984   10016              .3       .5
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Downstream  Deck/Roadway Coordinates
    num=        9
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9450   808.7   797.8    9984804.2338   797.8    9984804.2338   797.8
   10000   804.1   797.8   10016  803.99   797.8   10016  803.99   797.8
   10320   801.9   797.8   10450     800   797.8   10560   801.8   797.8

Downstream Bridge Cross Section Data
Station Elevation Data    num=       16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   809.7    9734   803.7  9792.8   802.2  9875.6   801.2  9916.7   799.9
  9935.3   800.2  9968.9   800.7    9984   799.6    9985     798   10000     798
   10015     798   10016   799.3   10017   803.8   10320   801.6   10450   799.7
   10560   801.5

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9984    .035   10016     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9984   10016              .3       .5
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =   800.1
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Box1                Box      4.7      10
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5      41       .014                   .4                1
Number of Barrels =  3
Upstream   Elevation =  798
```

```
Centerline Stations
    Sta.    Sta.    Sta.
    9990   10000   10010
Downstream Elevation =  797.8
Centerline Stations
    Sta.    Sta.    Sta.
    9990   10000   10010

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 1714

INPUT
Description:
Station Elevation Data     num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9450   809.7    9734   803.7  9792.8   802.2  9875.6   801.2  9916.7   799.9
  9935.3   800.2  9968.9   800.7    9984   799.6    9985     798   10000     798
   10015     798   10016   799.3   10017   803.8   10320   801.6   10450   799.7
   10560   801.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9450     .03    9984    .035   10016     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9984   10016               51      51      51              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 1680

INPUT
Description: WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT
             OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN APPROX
             STATION 10200
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN
             REVISED TO MAKE THE
AREA NON-EFFECTIVE.
GR POINTS FROM STA 10190
             AND UP ARE FROM TOPO MAPPING.  THEY WERE ADDED
TO MODEL THE WIER
             FLOW IN THE FAR RIGHT OVERBANK.

Station Elevation Data     num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9968.9   799.2  9984.6   798.1  9992.4   797.2   10000   796.5 10011.3   797.8
 10042.3   798.1 10096.8   798.2 10184.8   798.3   10190     800   10440     800
   10600   800.4   10650     798   10670     800   10780     801

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9968.9     .03  9968.9    .035 10011.3     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9968.9 10011.3              1280    1177     480              .1       .3

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 1457

INPUT
Description:
Station Elevation Data     num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9503.6   791.8  9556.2   790.4  9606.1   789.4  9642.3   788.2  9693.3   789.1
  9770.5   788.9  9845.7   789.4  9924.3   790.3    9963   790.3  9982.1   789.9
  9991.6   788.8   10000   787.4 10019.6   789.5 10068.6   789.1 10122.1   790.1
   10184   790.3 10260.4   790.4 10339.7   792.4 10402.1   792.6 10432.8     793
   10446   793.7

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9503.6     .03  9982.1    .035 10019.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

9982.1	10019.6	1000	1125	1210	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1244

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9436.2	788.5	9484.6	787.7	9534.7	787	9602.3	786	9660.2	784
9722.2	783.9	9784.2	784.6	9825.2	784.6	9848	783.6	9897.4	784.4
9952.9	784.6	9981.2	784.4	9997.2	782.7	10000	782.1	10016.6	783.8
10051.6	784.5	10101.1	784	10146.5	783.7	10213.9	783.9	10270.7	785.1
10340	786.5	10398.1	788.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9436.2	.03	9981.2	.035	10016.6	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.2	10016.6	1020	1040	920	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1047

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9509.2	779.7	9576.5	778.5	9627.9	776.6	9662.7	775.4	9702.7	777.1
9756	775.5	9824.7	776.4	9907.2	775.9	9977.4	776.8	10000	774.7
10017	775.9	10038.9	777.8	10092.9	777.7	10159.1	778.4		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9509.2	.03	9977.4	.035	10038.9	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.4	10038.9	1010	1071	1010	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 844

INPUT
Description: revised x-sect. 821, for reach length and updated mapping
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9752	770.7	9845	770	9990	768	10000	767.6	10010	768
10074	768.1	10210	770	10235	770.1	10250	770	10320	768
10440	768	10542	770						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9752	.03	9990	.035	10010	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990	10010	900	887	725	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 676

INPUT
Description: new x-sect
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9720	762.9	9780	762	9815	761.1	9910	762	9970	761.4
9985	760.75	10000	760.5	10015	760.88	10021	761.62	10084	762.05
10120	762.3	10260	762.25						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9720	.03	9970	.035	10021	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970	10021	252	254	287	.3	.5

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 628

```
INPUT
Description: new x-section
Station Elevation Data     num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9625  761.55    9772  760.59    9850  759.51    9854  757.93    9861  757.82
    9866   759.5    9902  760.45    9913  760.58    9963  759.26    9980  757.09
   10000  757.15   10019  757.22   10035  762.03   10038  761.85

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9625     .03    9963    .035   10035     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9963   10035               340     269     200              .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
888        F

CROSS SECTION           RIVER: RIVER-1
REACH: Reach-1             RS: 577

INPUT
Description: new x-section
Station Elevation Data     num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9615   761.1    9767  758.55    9796     758    9803  757.85    9862  757.45
    9919  758.25    9969   759.8    9988  754.86   10000  754.81   10012  754.76
   10038  760.56   10058   761.1   10116  761.23   10179  761.79

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9615     .03    9969    .035   10038     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9969   10038                95      90      90              .3       .5

CULVERT                 RIVER: RIVER-1
REACH: Reach-1             RS: 575

INPUT
Description: 3-6'x4' CBC
Distance from Upstream XS =      15
Deck/Roadway Width        =      48
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9517  758.36            9607  759.04            9767  759.84
    9790  760.13            9894  760.74           10000  761.53
   10035  761.72           10071  762.06           10101  762.36
   10136  762.63           10170  762.99

Upstream Bridge Cross Section Data
Station Elevation Data     num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9615   761.1    9767  758.55    9796     758    9803  757.85    9862  757.45
    9919  758.25    9969   759.8    9988  754.86   10000  754.81   10012  754.76
   10038  760.56   10058   761.1   10116  761.23   10179  761.79

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9615     .03    9969    .035   10038     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9969   10038              .3       .5

Downstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9517  758.36            9607  759.04            9767  759.84
    9790  760.13            9894  760.74           10000  761.53
   10035  761.72           10071  762.06           10101  762.36
   10136  762.63           10170  762.99

Downstream Bridge Cross Section Data
Station Elevation Data     num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
    9761   757.4    9884  757.65    9934   757.4    9978  756.47    9986  753.46
   10000  753.45   10014  753.58   10027  757.82   10159  758.45

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    9761     .03     9978    .035   10027     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9978   10027              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1           Box       4       6
FHWA Chart # 9 - flared wingwalls and Inlet top edge bevel
FHWA Scale # 1 - Wingwall flared 45 deg.; inlet top edge bevel=0.43D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5   69.55       .013                   .4                1
Number of Barrels =  3
Upstream   Elevation =  754.81
Centerline Stations
    Sta.    Sta.    Sta.
    9993   10000   10007
Downstream Elevation =  753.45
Centerline Stations
    Sta.    Sta.    Sta.
    9993   10000   10007

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 560

INPUT
Description: new x-section
Station Elevation Data     num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9761   757.4    9884  757.65    9934   757.4    9978  756.47    9986  753.46
   10000  753.45   10014  753.58   10027  757.82   10159  758.45

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    9761     .03     9978    .035   10027     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9978   10027              400     428     440              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
888        F
888        F

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 479

INPUT
Description: new x-section
Station Elevation Data     num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9854  753.76    9925  753.99    9970     752    9985  750.71   10000  750.33
   10022  750.86   10111   751.2   10175     752   10230     754   10261  754.89

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
    9854     .03     9985    .035   10022     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9985   10022              510     496     525              .1       .3
```

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 385

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9745	753.3	9803	752	9845	750	9899	748	9966	746
10093	746	10147	745.9	10186	746	10240	748	10256	750
10275	748	10295	748	10325	750	10340	752	10357	754
10400	755.3								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9745	.07	9899	.07	10240	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9899	10240	640	623.04	625	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 267

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9773	748	9851	747.1	9912	748	9937	747.2	9973	746.6
10000	746.08	10033	746.5	10063	747.1	10101	748	10113	750

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9773	.07	9973	.07	10033	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973	10033	418	404	422	.1	.3

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 192

INPUT
Description: SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 192 IS
AT
RIVER MILE 0.192 UPSTREAM OF THE CONFLUENCE WITH UNNAMED WASH
NO. 1
AT THE UPSTREAM FACE OF THE GILA BEND CANAL.
SECTION 192
IS WITHIN THE CONFLUENCE AREA WITH UNNAMED WASH NO. 1.
THE
CONFLUENCE OF UNNAMED WASH #1 WITH BENDER WASH OCCURS AT A
LOCATION
WHERE IT INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF
A SMALL DRAINAGE
STRUCTURE THROUGH THE CANAL, MOST FLOW IS
DIVERTED WEST TO SAND TANK
WASH.
WHEN THE GILA BEND CANAL WAS
CONSTR
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9356.8	748.3	9387.6	748.1	9425.2	748	9459.9	747.4	9473.4	746.8
9483.9	746.1	9497.6	746.5	9528.8	747.2	9563.8	747.7	9592.2	747.2
9607.6	746.2	9615.3	745.6	9635.3	746.9	9650.7	746.9	9668.6	745.5
9681.8	744.1	9698	744.5	9704.5	744.4	9707.9	743.6	9712.5	742.8
9717.8	743.2	9727.3	744	9733.4	745	9740.1	746.2	9751.9	743.7
9760.6	743.8	9784	744	9825.2	743.5	9864.8	743.4	9889.3	743.4
9904.6	743.3	9923.3	743.5	9952.3	743.7	9978.4	743.5	10000	743.1
10024.9	743.5	10054	744.1	10082.9	743.7	10110.2	743.7	10134.2	744.2
10150.3	745.4	10177.5	745.2	10207.8	745.3	10237	746.2	10262.4	746.6
10286.8	746.7	10302.9	746.3	10318.9	745.6	10339.1	746.5	10368.3	747.4
10390.7	747.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9356.8	.07	9952.3	.07	10054	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9952.3	10054	0	0	0	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	2780	460.00	836.30	838.75	838.73	839.08	0.01	5.36	111.05	161.91	1
Reach-1	2780	460.00	836.30	839.15	839.07	839.81	0.01	6.51	70.92	46.00	1
Reach-1	2539	520.00	825.20	829.05	828.96	829.35	0.01	5.92	141.19	146.84	1
Reach-1	2539	520.00	825.20	829.77	829.17	830.27	0.01	6.39	96.19	38.00	1
Reach-1	2339	570.00	817.90	820.13		820.37	0.01	4.98	154.52	277.99	1
Reach-1	2339	570.00	817.90	820.86	820.86	821.51	0.02	6.49	88.95	70.00	1
Reach-1	2142	620.00	812.20	813.23	812.89	813.33	0.00	2.16	255.56	352.90	0
Reach-1	2142	620.00	812.20	814.10	813.50	814.29	0.00	3.51	178.29	113.00	0
Reach-1	1909	670.00	803.50	805.91	805.91	806.17	0.01	5.48	187.46	293.04	1
Reach-1	1909	670.00	803.50	806.47	806.47	807.10	0.01	6.98	113.59	83.00	1
Reach-1	1743	710.00	798.70	801.56		801.60	0.00	2.32	484.13	416.13	0
Reach-1	1743	710.00	798.70	802.19		802.23	0.00	1.94	480.23	236.00	0
Reach-1	1724	730.00	797.80	801.29	800.54	801.41	0.00	3.45	317.87	396.43	0
Reach-1	1724	730.00	797.80	801.06	800.37	801.84	0.01	7.08	103.76	39.40	1
Reach-1	1715	Culvert									
Reach-1	1714	730.00	798.00	800.75	800.75	801.24	0.01	6.34	157.80	262.13	1
Reach-1	1714	730.00	798.00	800.58	800.58	801.84	0.01	8.99	81.31	32.28	1
Reach-1	1680	730.00	796.50	798.80	798.80	799.12	0.01	5.44	167.09	236.54	1
Reach-1	1680	730.00	796.50	798.80	798.80	799.12	0.01	5.54	165.40	235.86	1
Reach-1	1457	700.00	787.40	789.78		789.88	0.00	2.90	292.73	414.51	0
Reach-1	1457	700.00	787.40	790.67		790.89	0.00	4.05	188.46	122.00	0
Reach-1	1244	700.00	782.10	784.52	784.40	784.66	0.01	4.21	256.39	514.54	1
Reach-1	1244	700.00	782.10	785.21	785.02	785.56	0.01	5.34	154.15	118.00	1
Reach-1	1047	700.00	774.70	776.62	776.52	776.80	0.01	4.03	209.88	354.48	1
Reach-1	1047	700.00	774.70	777.13	777.06	777.53	0.01	5.55	139.42	131.00	1
Reach-1	844	700.00	767.60	768.82	768.64	768.96	0.01	3.45	239.76	385.41	1
Reach-1	844	700.00	767.60	769.58		769.92	0.01	4.58	149.85	95.00	1
Reach-1	676	670.00	760.50	762.11	762.11	762.38	0.01	5.04	180.27	320.38	1
Reach-1	676	670.00	760.50	762.44	762.44	763.11	0.01	6.8			

103.16	75.00	1									
Reach-1	628		670.00	757.09	760.24	758.97	760.38	0.00	3.27	248.80	199.73
0											
Reach-1	628		670.00	757.09	760.36	759.04	760.56	0.00	3.60	196.59	90.00
0											
Reach-1	577		670.00	754.76	760.21	757.29	760.23	0.00	1.13	750.43	368.46
0											
Reach-1	577		670.00	754.76	760.10	757.29	760.22	0.00	2.78	243.74	70.00
0											
Reach-1	575		Culvert								
Reach-1	560		580.00	753.45	756.08	755.68	756.71	0.01	6.35	91.41	42.63
1											
Reach-1	560		670.00	753.45	756.45	755.87	757.08	0.01	6.35	105.56	40.00
1											
Reach-1	479		580.00	750.33	751.76	751.76	752.11	0.01	5.52	128.99	183.43
1											
Reach-1	479		670.00	750.33	752.20	752.20	752.95	0.01	6.98	96.35	65.00
1											
Reach-1	385		580.00	745.90	748.68		748.69	0.00	0.72	826.82	401.75
0											
Reach-1	385		670.00	746.00	749.67		749.70	0.00	1.35	495.08	140.00
0											
Reach-1	267		580.00	746.08	747.55	747.55	747.89	0.05	5.32	141.63	225.09
1											
Reach-1	267		670.00	746.08	747.60	747.60	748.07	0.06	5.98	128.31	130.00
1											
Reach-1	192		900.00	743.10	745.34	744.15	745.36	0.00	1.29	755.26	521.17
0											
Reach-1	192		900.00	743.10	746.25	744.35	746.28	0.00	1.40	662.59	250.00
0											

Profile Output Table - Standard Table 2

Reach	River Sta	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	2780	839.08	838.75	0.33	9.72	0.01	2.58	282.49	174.93	161.91
Reach-1	2780	839.81	839.15	0.66	9.49	0.05	0.39	459.56	0.05	46.00
Reach-1	2539	829.35	829.05	0.31	8.96	0.02	161.53	219.71	138.77	146.84
Reach-1	2539	830.27	829.77	0.50	8.75	0.02	139.19	301.39	79.42	38.00
Reach-1	2339	820.37	820.13	0.25	7.00	0.04		223.86	346.14	277.99
Reach-1	2339	821.51	820.86	0.65	6.78	0.14	1.35	566.73	1.92	70.00
Reach-1	2142	813.33	813.23	0.10	7.14	0.02	418.75	96.56	104.69	352.90
Reach-1	2142	814.29	814.10	0.19	7.14	0.04	270.03	349.91	0.06	113.00
Reach-1	1909	806.17	805.91	0.27	1.61	0.07		279.57	390.43	293.04
Reach-1	1909	807.10	806.47	0.63	1.05	0.18		496.32	173.68	83.00
Reach-1	1743	801.60	801.56	0.04	0.18	0.02	43.84	208.95	457.21	416.13
Reach-1	1743	802.23	802.19	0.04	0.17	0.22		213.73	496.27	236.00
Reach-1	1724	801.41	801.29	0.12				379.8		

									350.18	396.43
Reach-1	1724		801.84	801.06	0.78				729.19	0.81
									39.40	
Reach-1	1715		Culvert							
Reach-1	1714		801.24	800.75	0.49	0.44	0.09		548.12	181.88
									262.13	
Reach-1	1714		801.84	800.58	1.26	0.68	0.46		729.71	0.29
									32.28	
Reach-1	1680		799.12	798.80	0.32	5.85	0.07		250.69	479.31
									236.54	
Reach-1	1680		799.12	798.80	0.33	4.59	0.03		253.49	476.51
									235.86	
Reach-1	1457		789.88	789.78	0.09	5.21	0.01	509.89	129.08	61.03
									414.51	
Reach-1	1457		790.89	790.67	0.22	5.32	0.01	0.04	314.05	385.91
									122.00	
Reach-1	1244		784.66	784.52	0.14	7.86	0.00	206.36	199.99	293.65
									514.54	
Reach-1	1244		785.56	785.21	0.35	8.02	0.01	0.19	383.83	315.99
									118.00	
Reach-1	1047		776.80	776.62	0.18	7.83	0.01	517.70	182.30	354.48
Reach-1	1047		777.53	777.13	0.40	7.59	0.02	315.91	384.09	131.00
Reach-1	844		768.96	768.82	0.14	6.56	0.01	53.47	70.44	576.09
									385.41	
Reach-1	844		769.92	769.58	0.34	6.77	0.03	98.66	163.11	438.23
									95.00	
Reach-1	676		762.38	762.11	0.27	0.87	0.06	310.54	324.35	35.11
									320.38	
Reach-1	676		763.11	762.44	0.67	1.01	0.24	102.62	552.90	14.48
									75.00	
Reach-1	628		760.38	760.24	0.14	0.09	0.07	111.73	558.27	199.73
Reach-1	628		760.56	760.36	0.19	0.30	0.04	35.52	634.48	90.00
Reach-1	577		760.23	760.21	0.01			387.43	282.57	368.46
Reach-1	577		760.22	760.10	0.12			2.97	667.03	70.00
Reach-1	575		Culvert							
Reach-1	560		756.71	756.08	0.63	4.46	0.14		580.00	42.63
Reach-1	560		757.08	756.45	0.63	4.09	0.04		670.00	40.00
Reach-1	479		752.11	751.76	0.34	0.54	0.10	24.02	245.14	310.84
									183.43	
Reach-1	479		752.95	752.20	0.75	1.06	0.22		421.35	248.65
									65.00	
Reach-1	385		748.69	748.68	0.01	0.77	0.03	1.26	573.21	5.53
									401.75	
Reach-1	385		749.70	749.67	0.03	1.60	0.04		670.00	140.00
Reach-1	267		747.89	747.55	0.34	1.48	0.09	103.55	394.17	82.28
									225.09	
Reach-1	267		748.07	747.60	0.46	1.17	0.13	101.29	462.62	106.08
									130.00	
Reach-1	192		745.36	745.34	0.02			524.38	239.24	136.38
									521.17	
Reach-1	192		746.28	746.25	0.03			277.76	388.85	233.39
									250.00	

HEC-RAS Plan: plan 1 River: RIVER-1 Reach: Reach-1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	2780	460.00	836.30	838.75	838.73	839.08	0.01	5.36	111.05	161.91	1
Reach-1	2780	460.00	836.30	839.15	839.07	839.81	0.01	6.51	70.92	46.00	1
Reach-1	2539	520.00	825.20	829.05	828.96	829.35	0.01	5.92	141.19	146.84	1
Reach-1	2539	520.00	825.20	829.77	829.17	830.27	0.01	6.39	96.19	38.00	1
Reach-1	2339	570.00	817.90	820.13		820.37	0.01	4.98	154.52	277.99	1
Reach-1	2339	570.00	817.90	820.86	820.86	821.51	0.02	6.49	88.95	70.00	1
Reach-1	2142	620.00	812.20	813.23	812.89	813.33	0.00	2.16	255.56	352.90	0
Reach-1	2142	620.00	812.20	814.10	813.50	814.29	0.00	3.51	178.29	113.00	0
Reach-1	1909	670.00	803.50	805.91	805.91	806.17	0.01	5.48	187.46	293.04	1
Reach-1	1909	670.00	803.50	806.47	806.47	807.10	0.01	6.98	113.59	83.00	1
Reach-1	1743	710.00	798.70	801.56		801.60	0.00	2.32	484.13	416.13	0
Reach-1	1743	710.00	798.70	802.19		802.23	0.00	1.94	480.23	236.00	0
Reach-1	1724	730.00	797.80	801.29	800.54	801.41	0.00	3.45	317.87	396.43	0
Reach-1	1724	730.00	797.80	801.06	800.37	801.84	0.01	7.08	103.76	39.40	1
Reach-1	1715	Culvert									
Reach-1	1714	730.00	798.00	800.75	800.75	801.24	0.01	6.34	157.80	262.13	1
Reach-1	1714	730.00	798.00	800.58	800.58	801.84	0.01	8.99	81.31	32.28	1
Reach-1	1680	730.00	796.50	798.80	798.80	799.12	0.01	5.44	167.09	236.54	1
Reach-1	1680	730.00	796.50	798.80	798.80	799.12	0.01	5.54	165.40	235.86	1
Reach-1	1457	700.00	787.40	789.78		789.88	0.00	2.90	292.73	414.51	0
Reach-1	1457	700.00	787.40	790.67		790.89	0.00	4.05	188.46	122.00	0
Reach-1	1244	700.00	782.10	784.52	784.40	784.66	0.01	4.21	256.39	514.54	1
Reach-1	1244	700.00	782.10	785.21	785.02	785.56	0.01	5.34	154.15	118.00	1
Reach-1	1047	700.00	774.70	776.62	776.52	776.80	0.01	4.03	209.88	354.48	1
Reach-1	1047	700.00	774.70	777.13	777.06	777.53	0.01	5.55	139.42	131.00	1
Reach-1	844	700.00	767.60	768.82	768.64	768.96	0.01	3.45	239.76	385.41	1
Reach-1	844	700.00	767.60	769.58		769.92	0.01	4.58	149.85	95.00	1
Reach-1	676	670.00	760.50	762.11	762.11	762.38	0.01	5.04	180.27	320.38	1
Reach-1	676	670.00	760.50	762.44	762.44	763.11	0.01	6.82	103.16	75.00	1
Reach-1	628	670.00	757.09	760.24	758.97	760.38	0.00	3.27	248.80	199.73	0
Reach-1	628	670.00	757.09	760.36	759.04	760.56	0.00	3.60	196.59	90.00	0
Reach-1	577	670.00	754.76	760.21	757.29	760.23	0.00	1.13	750.43	368.46	0
Reach-1	577	670.00	754.76	760.10	757.29	760.22	0.00	2.78	243.74	70.00	0
Reach-1	575	Culvert									
Reach-1	560	580.00	753.45	756.08	755.68	756.71	0.01	6.35	91.41	42.63	1
Reach-1	560	670.00	753.45	756.45	755.87	757.08	0.01	6.35	105.56	40.00	1
Reach-1	479	580.00	750.33	751.76	751.76	752.11	0.01	5.52	128.99	183.43	1
Reach-1	479	670.00	750.33	752.20	752.20	752.95	0.01	6.98	96.35	65.00	1
Reach-1	385	580.00	745.90	748.68		748.69	0.00	0.72	826.82	401.75	0
Reach-1	385	670.00	746.00	749.67		749.70	0.00	1.35	495.08	140.00	0
Reach-1	267	580.00	746.08	747.55	747.55	747.89	0.05	5.32	141.63	225.09	1
Reach-1	267	670.00	746.08	747.60	747.60	748.07	0.06	5.98	128.31	130.00	1
Reach-1	192	900.00	743.10	745.34	744.15	745.36	0.00	1.29	755.26	521.17	0
Reach-1	192	900.00	743.10	746.25	744.35	746.28	0.00	1.40	662.59	250.00	0

HEC-RAS Plan: plan 1 River: RIVER-1 Reach: Reach-1

Reach	River Sta	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
		(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Reach-1	2780	839.08	838.75	0.33	9.72	0.01	2.58	282.49	174.93	161.91
Reach-1	2780	839.81	839.15	0.66	9.49	0.05	0.39	459.56	0.05	46.00
Reach-1	2539	829.35	829.05	0.31	8.96	0.02	161.53	219.71	138.77	146.84
Reach-1	2539	830.27	829.77	0.50	8.75	0.02	139.19	301.39	79.42	38.00
Reach-1	2339	820.37	820.13	0.25	7.00	0.04		223.86	346.14	277.99
Reach-1	2339	821.51	820.86	0.65	6.78	0.14	1.35	566.73	1.92	70.00
Reach-1	2142	813.33	813.23	0.10	7.14	0.02	418.75	96.56	104.69	352.90
Reach-1	2142	814.29	814.10	0.19	7.14	0.04	270.03	349.91	0.06	113.00
Reach-1	1909	806.17	805.91	0.27	1.61	0.07		279.57	390.43	293.04
Reach-1	1909	807.10	806.47	0.63	1.05	0.18		496.32	173.68	83.00
Reach-1	1743	801.60	801.56	0.04	0.18	0.02	43.84	208.95	457.21	416.13
Reach-1	1743	802.23	802.19	0.04	0.17	0.22		213.73	496.27	236.00
Reach-1	1724	801.41	801.29	0.12				379.82	350.18	396.43
Reach-1	1724	801.84	801.06	0.78				729.19	0.81	39.40
Reach-1	1715	Culvert								
Reach-1	1714	801.24	800.75	0.49	0.44	0.09		548.12	181.88	262.13
Reach-1	1714	801.84	800.58	1.26	0.68	0.46		729.71	0.29	32.28
Reach-1	1680	799.12	798.80	0.32	5.85	0.07		250.69	479.31	236.54
Reach-1	1680	799.12	798.80	0.33	4.59	0.03		253.49	476.51	235.86
Reach-1	1457	789.88	789.78	0.09	5.21	0.01	509.89	129.08	61.03	414.51
Reach-1	1457	790.89	790.67	0.22	5.32	0.01	0.04	314.05	385.91	122.00
Reach-1	1244	784.66	784.52	0.14	7.86	0.00	206.36	199.99	293.65	514.54
Reach-1	1244	785.56	785.21	0.35	8.02	0.01	0.19	383.83	315.99	118.00
Reach-1	1047	776.80	776.62	0.18	7.83	0.01	517.70	182.30		354.48
Reach-1	1047	777.53	777.13	0.40	7.59	0.02	315.91	384.09		131.00
Reach-1	844	768.96	768.82	0.14	6.56	0.01	53.47	70.44	576.09	385.41
Reach-1	844	769.92	769.58	0.34	6.77	0.03	98.66	163.11	438.23	95.00
Reach-1	676	762.38	762.11	0.27	0.87	0.06	310.54	324.35	35.11	320.38
Reach-1	676	763.11	762.44	0.67	1.01	0.24	102.62	552.90	14.48	75.00
Reach-1	628	760.38	760.24	0.14	0.09	0.07	111.73	558.27		199.73
Reach-1	628	760.56	760.36	0.19	0.30	0.04	35.52	634.48		90.00
Reach-1	577	760.23	760.21	0.01			387.43	282.57		368.46
Reach-1	577	760.22	760.10	0.12			2.97	667.03		70.00
Reach-1	575	Culvert								
Reach-1	560	756.71	756.08	0.63	4.46	0.14		580.00		42.63
Reach-1	560	757.08	756.45	0.63	4.09	0.04		670.00		40.00
Reach-1	479	752.11	751.76	0.34	0.54	0.10	24.02	245.14	310.84	183.43
Reach-1	479	752.95	752.20	0.75	1.06	0.22		421.35	248.65	65.00
Reach-1	385	748.69	748.68	0.01	0.77	0.03	1.26	573.21	5.53	401.75
Reach-1	385	749.70	749.67	0.03	1.60	0.04		670.00		140.00
Reach-1	267	747.89	747.55	0.34	1.48	0.09	103.55	394.17	82.28	225.09
Reach-1	267	748.07	747.60	0.46	1.17	0.13	101.29	462.62	106.08	130.00

HEC-RAS Plan: plan 1 River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
		(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Reach-1	192	745.36	745.34	0.02			524.38	239.24	136.38	521.17
Reach-1	192	746.28	746.25	0.03			277.76	388.85	233.39	250.00

Appendix C

SPLITFLOW & CONVEYANCE FROM UNNAMED WASH NO. 2

River Mile 0.575
UNNAMED WASH No 2

Plan: plan 1 RIVER-1 Reach-1 RS: 575 Profile: PF 1 Culvert ID: Culvert #1

Culvert Table

Culv Q (cfs)	580.67	Culv Ful Lngh (ft)	
# Barrels	3	Culv Vel US (ft/s)	10.13
Q Barrel (cfs)	193.56	Culv Vel DS (ft/s)	14.56
E.G. US. (ft)	760.23	Culv Inv El Up (ft)	754.81
W.S. US. (ft)	760.21	Culv Inv El Dn (ft)	753.45
E.G. DS (ft)	756.71	Culv Frctn Ls (ft)	0.63
W.S. DS (ft)	756.08	Culv Ext Lss (ft)	2.25
Delta EG (ft)	3.52	Culv Ent Lss (ft)	0.64
Delta WS (ft)	4.13	Q Weir (cfs)	89.33
E.G. IC (ft)	760.02	Weir Sta Lft (ft)	9666.97
E.G. OC (ft)	760.23	Weir Sta Rgt (ft)	9806.72
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	758.00	Weir Max Depth (ft)	0.68
Culv WS Outlet (ft)	755.67	Weir Avg Depth (ft)	0.37
Culv Nml Depth (ft)	1.84	Wr Flw Area (sq ft)	52.13
Culv Crt Depth (ft)	3.19	Min El Weir Flow (ft)	759.82

← weir flow

Splitflow from Unnamed Wash No 2 to Unnamed Wash No 1
Worksheet for Irregular Channel

Project Description	
Worksheet	Irregular Channel - 1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010000	ft/ft
Discharge	90.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	754.64	ft
Elevation Range	752.93 to 758.20	
Flow Area	23.6	ft²
Wetted Perimeter	27.76	ft
Top Width	27.55	ft
Actual Depth	1.71	ft
Critical Elevation	754.44	ft
Critical Slope	0.019816	ft/ft
Velocity	3.81	ft/s
Velocity Head	0.23	ft
Specific Energy	754.87	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+24	0.016
0+24	0+85	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	758.20
0+24	757.50
0+64	752.93
0+85	755.80

Appendix D
FEMA FORMS

Appendix D.1

UNNAMED WASH NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

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.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☐ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).

☒ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe: _____

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data ☐ Floodway Revision

☐ Other Describe: _____

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Unnamed Wash No 1

3. Project Name/Identifier: Gila Bend ADMP

4. FEMA zone designations affected: Zone AE and Zone X
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
040043	Gila Bend, Town of	AZ	04013C	3480G	07/19/01
040037	Maricopa County Unincorporated Areas	AZ	04013C	3480G	07/19/01

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☒ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☐ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☐ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

unnamed wash No 1
LOMR

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
☒ Yes ☐ 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.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☐ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☐ Yes ☐ No

If the answer to either items is Yes, please attach 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.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☒ performing ☐ overseeing compliance with the maintenance and operation plans of the Main Street Culvert
(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.

Operation and maintenance plans are attached. ☐ Yes ☒ No ☐ N/A

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☐ Yes Fee amount: $_____

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is 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; thus the project is fee exempt. ☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

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

Tim Murphy
Signature of Revision Requester

Tim Murphy, Delineation Branch Manager
Printed Name and Title of Revision Requester

Flood Control District of Maricopa County
Company Name

Telephone No.: 602-506-1501 Date: 4-8-02

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

Signature of Community Official

Shane Dille, Town Manager
Printed Name and Title of Community Official

Town of Gila Bend
Community Name

Telephone No.: 928-683-2255 Date: _____

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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

Mark T. Gavan
Signature

Mark T. Gavan, P.E., Project Manager
Printed Name and Title of Revision Requester

Registr No. 15594 Expires (Date) _____ State Arizona

Type of License/Expertise: Civil Engineering

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ **Hydrologic** (3)	new or revised discharges
☐ **Hydraulic** (4)	new or revised water-surface elevations
☐ **Mapping** (5)	floodplain/floodway changes
☐ **Channelization** (6)	channel is modified
☒ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☐ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

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.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Gila Bend

Flooding Source: Unnamed Wash No. 1

Project Name/Identifier: Gila Bend ADMP, LOMR Application

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Main Street

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   River Mile 0.637

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

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

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

   HEC-RAS Bridge 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)*

   Justification attached ☒ **Yes** ☐ **No** ☐ **N/A**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☒ Dimensions (height, width, span, radius, length)
- ☒ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☒ Wing Wall Angle
- ☒ Low Chord Elevations - Upstream and Downstream
- ☒ Top of Road Elevations - Upstream and Downstream
- ☒ Structure Invert Elevations - Upstream and Downstream
- ☒ Stream Invert Elevations - Upstream and Downstream
- ☒ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☒ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information **(Check the box if provided):**

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEMA Form 7

Section 1-4

Justification for changing the modeling program to analyze the Culvert Structure.

- The original hydraulic modeling software used to analyze the flooding source was HEC-2
- As part of the agreement with the owning agency (Maricopa County), the HEC-2 model was converted to HEC-RAS before inclusion of the new culvert structure.

Appendix D.2

UNNAMED WASH NO. 2

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

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.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☐ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).

☒ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe: _____

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data ☐ Floodway Revision

☐ Other Describe: _____

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Unnamed Wash No 2

3. Project Name/Identifier: Gila Bend ADMP

4. FEMA zone designations affected: Zone AE and Zone X
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
040043	Gila Bend, Town of	AZ	04013C	3480G	07/19/01
040037	Maricopa County Unincorporated Areas	AZ	04013C	3480G	07/19/01

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☒ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☐ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☐ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

unnamed Wash No 2
LOMR

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
☒ Yes ☐ 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.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☐ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☐ Yes ☐ No

If the answer to either items is Yes, please attach 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.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☒ performing ☐ overseeing compliance with the maintenance and operation plans of the Main Street Culvert
(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.

Operation and maintenance plans are attached. ☐ **Yes** ☒ **No** ☐ **N/A**

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☐ Yes Fee amount: $_____

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is 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; thus the project is fee exempt. ☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

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

Tim Murphy
Signature of Revision Requester

Tim Murphy, Delineation Branch Manager
Printed Name and Title of Revision Requester

Flood Control District of Maricopa County
Company Name

Telephone No.: 602-506-1501 Date: 4-8-02

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

Signature of Community Official

Shane Dille, Town Manager
Printed Name and Title of Community Official

Town of Gila Bend
Community Name

Telephone No.: 928-683-2255 Date: _____

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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

Signature

Mark T. Gavan, P.E., Project Manager
Printed Name and Title of Revision Requester

Registr No. 15594 Expires (Date) _____ State Arizona

Type of License/Expertise: Civil Engineering

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ Hydrologic (3)	new or revised discharges
☐ Hydraulic (4)	new or revised water-surface elevations
☐ Mapping (5)	floodplain/floodway changes
☐ Channelization (6)	channel is modified
☒ Bridge/Culvert (7)	addition/revision of bridge/culvert
☐ Levee/Floodwall (8)	addition/revision of levee/floodwall
☐ Coastal (9)	new or revised coastal elevations
☐ Coastal Structures (10)	addition/revision of coastal structure
☐ Dam (11)	addition/revision of dam
☐ Alluvial Fan (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

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.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Gila Bend

Flooding Source: Unnamed Wash No 2

Project Name/Identifier: Gila Bend ADMP, LOMR Request

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Main Street

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   0.570

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

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

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

   HEC-RAS

   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)*

   Justification attached ☒ **Yes** ☐ **No** ☐ **N/A**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☒ Dimensions (height, width, span, radius, length)
- ☒ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☒ Wing Wall Angle
- ☒ Low Chord Elevations - Upstream and Downstream
- ☒ Top of Road Elevations - Upstream and Downstream
- ☒ Structure Invert Elevations - Upstream and Downstream
- ☒ Stream Invert Elevations - Upstream and Downstream
- ☒ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☒ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information **(Check the box if provided):**

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEMA Form 7

Section 1-4

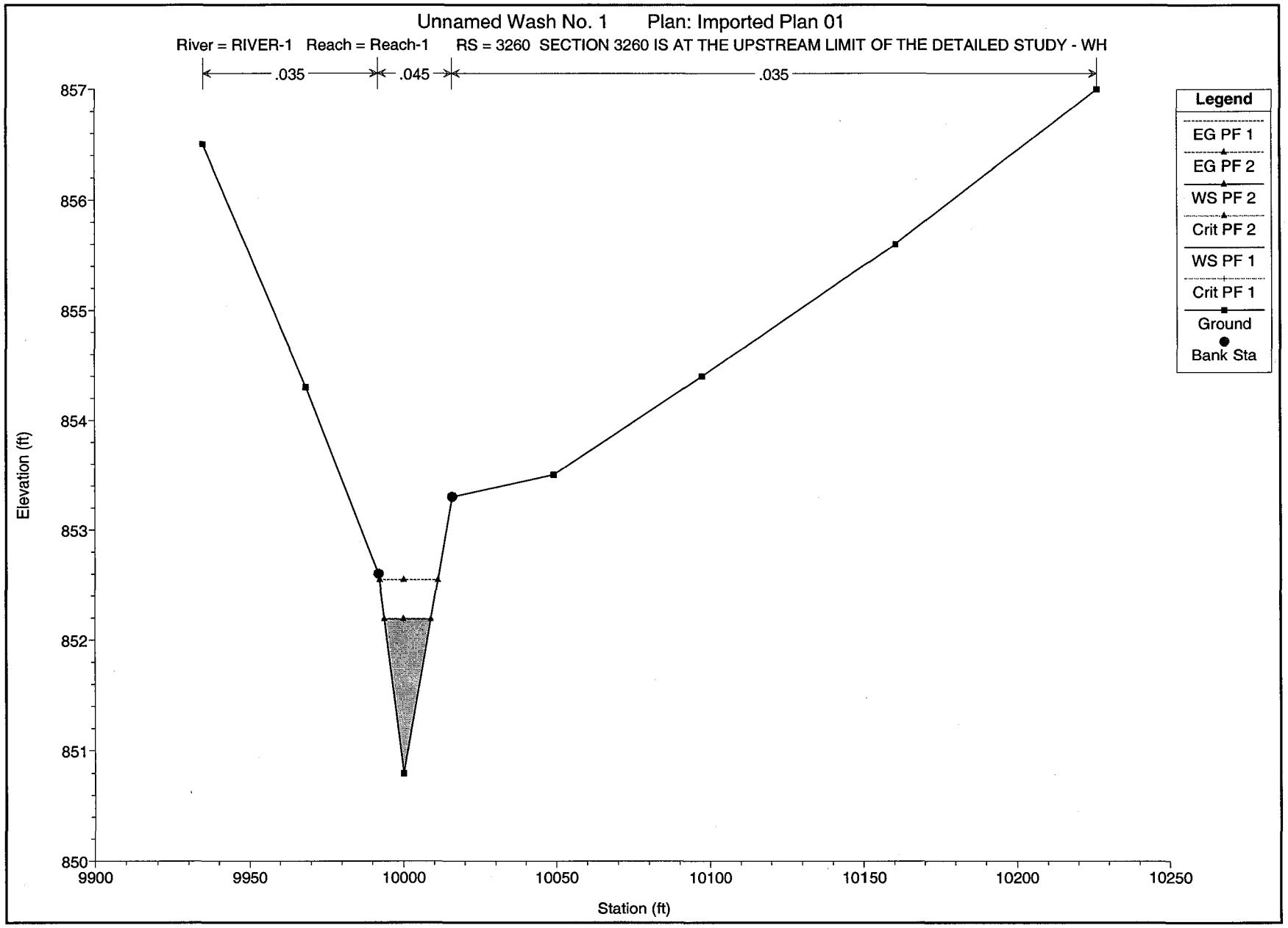
Justification for changing the modeling program to analyze the Culvert Structure.

- The original hydraulic modeling software used to analyze the flooding source was HEC-2
- As part of the agreement with the owning agency (Maricopa County), the HEC-2 model was converted to HEC-RAS before inclusion of the new culvert structure.

Appendix E
WASH CROSS SECTIONS

Appendix E.1

UNNAMED WASH NO. 1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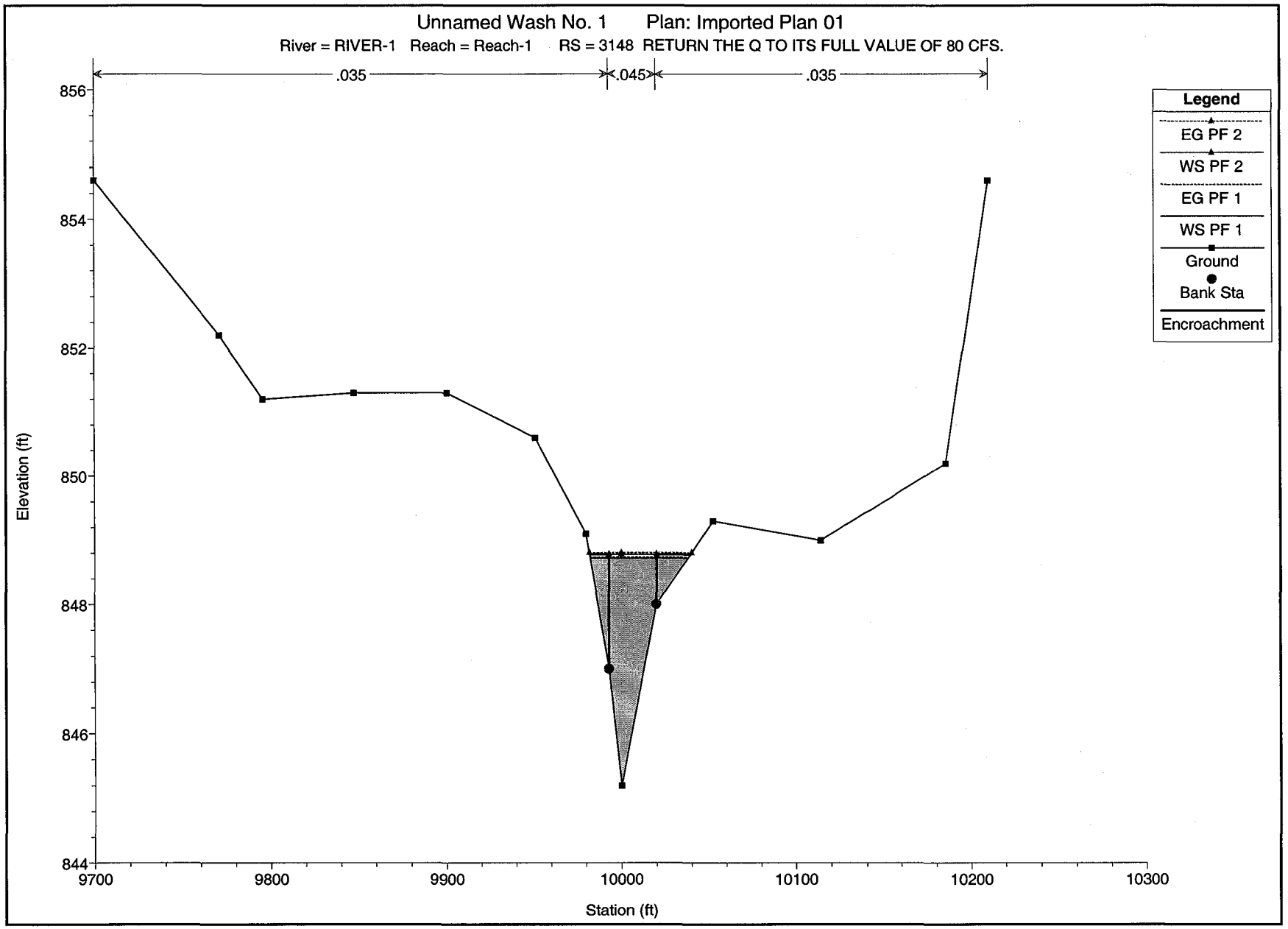
River = RIVER-1 Reach = Reach-1 RS = 3260 SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WH
.035
.045
.035
Legend
EG PF 1
EG PF 2
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
857
856
855
854
853
852
851
850
9900
9950
10000
10050
10100
10150
10200
10250
Station (ft)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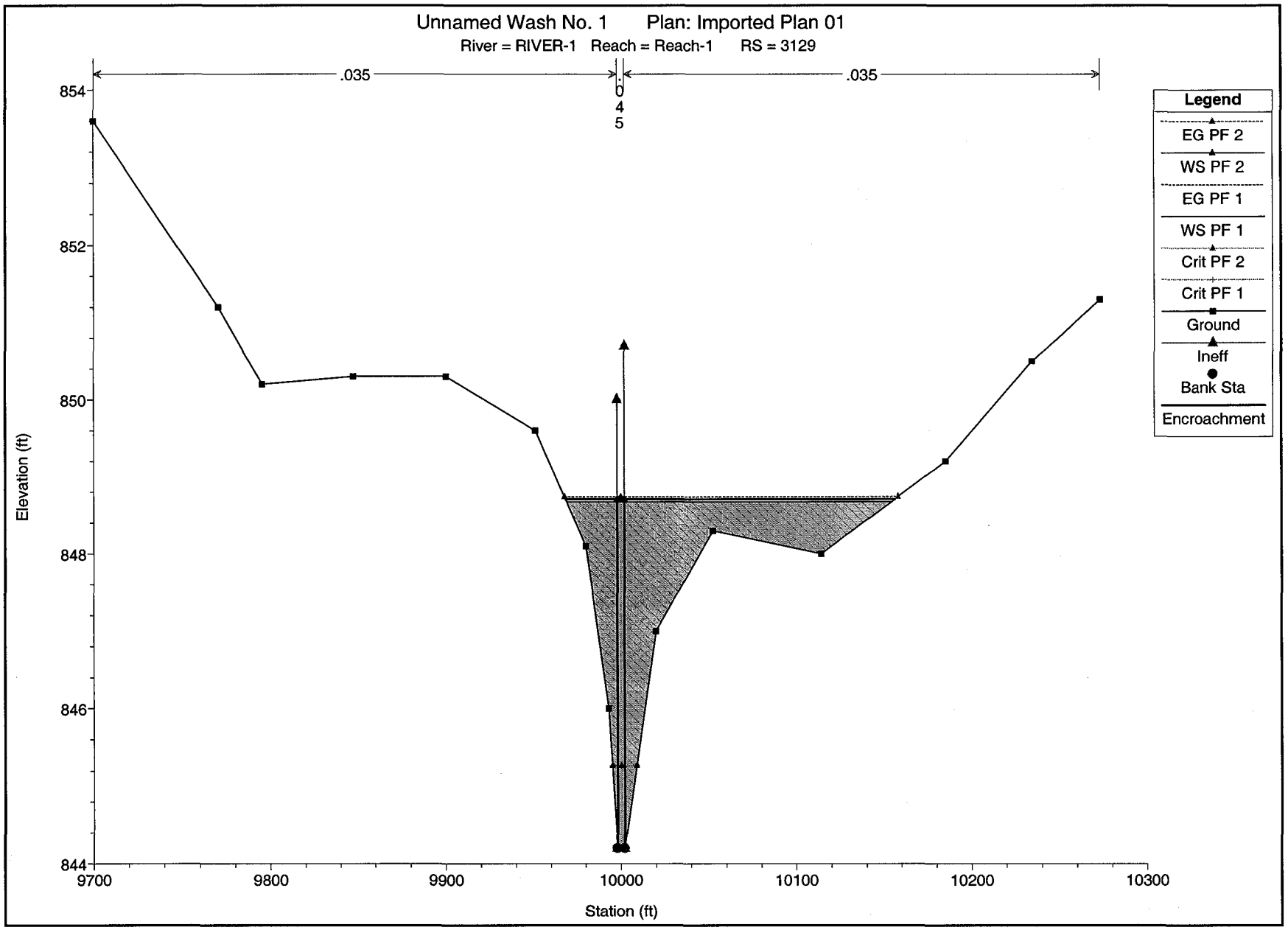
River = RIVER-1 Reach = Reach-1 RS = 3148 RETURN THE Q TO ITS FULL VALUE OF 80 CFS.
.035
.045
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
856
854
852
850
848
846
844
9700
9800
9900
10000
10100
10200
10300
Station (ft)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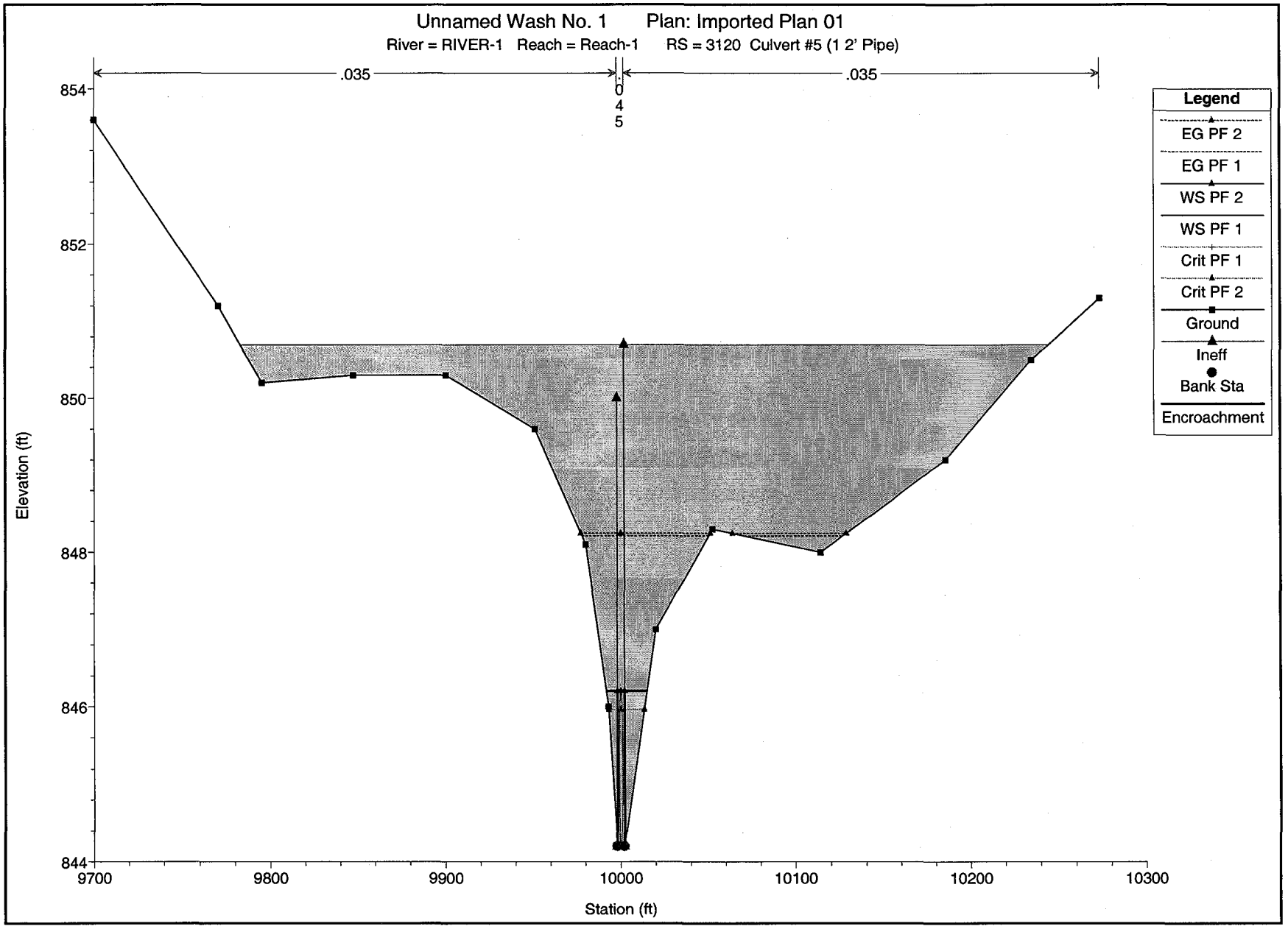
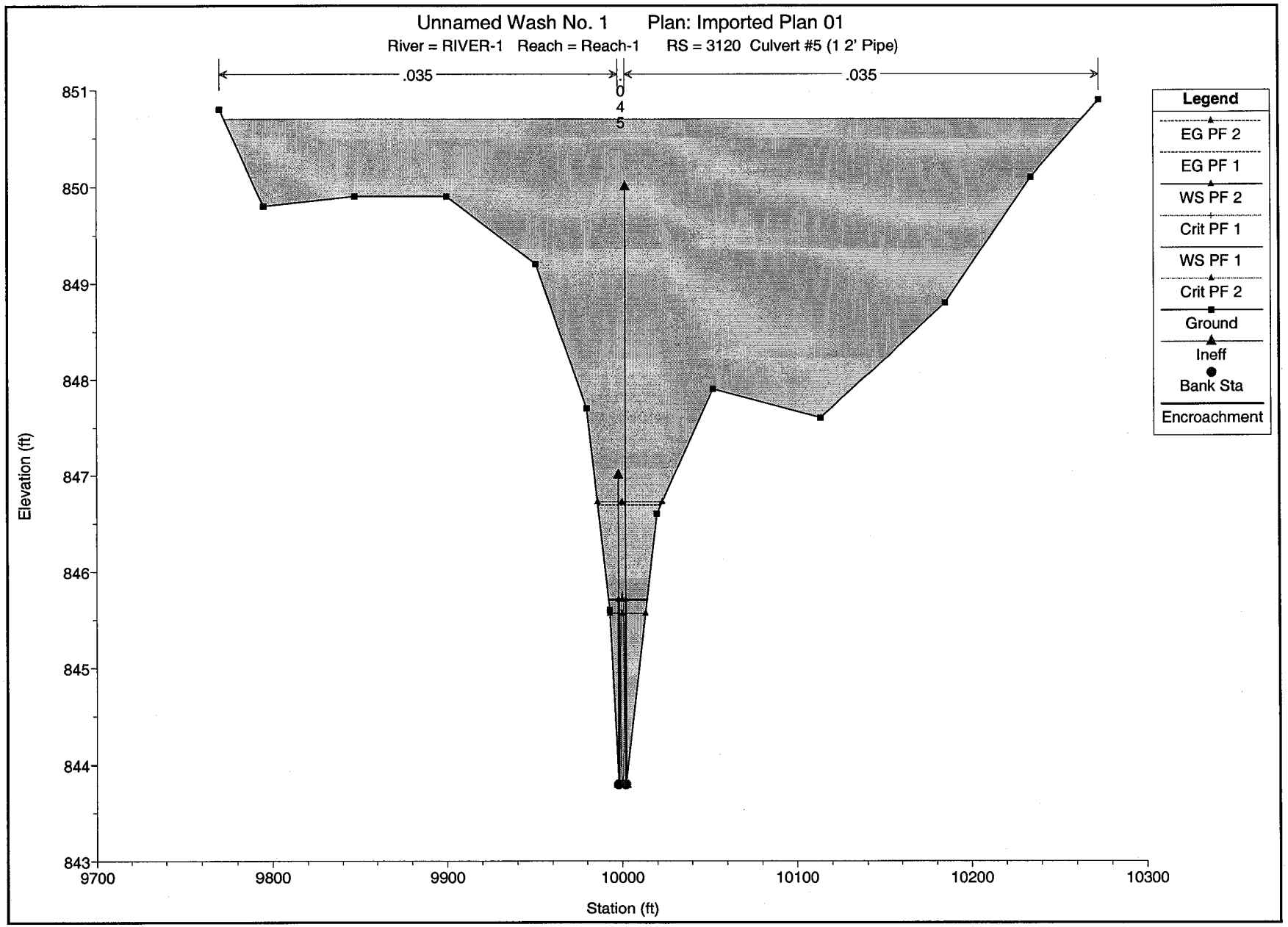
River = RIVER-1 Reach = Reach-1 RS = 3129
.035
.045
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 2
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
854
852
850
848
846
844
9700
9800
9900
10000
10100
10200
10300
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 3120 Culvert #5 (1 2' Pipe)
.035
.045
.035
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
854
852
850
848
846
844
9700
9800
9900
10000
10100
10200
10300
Station (ft)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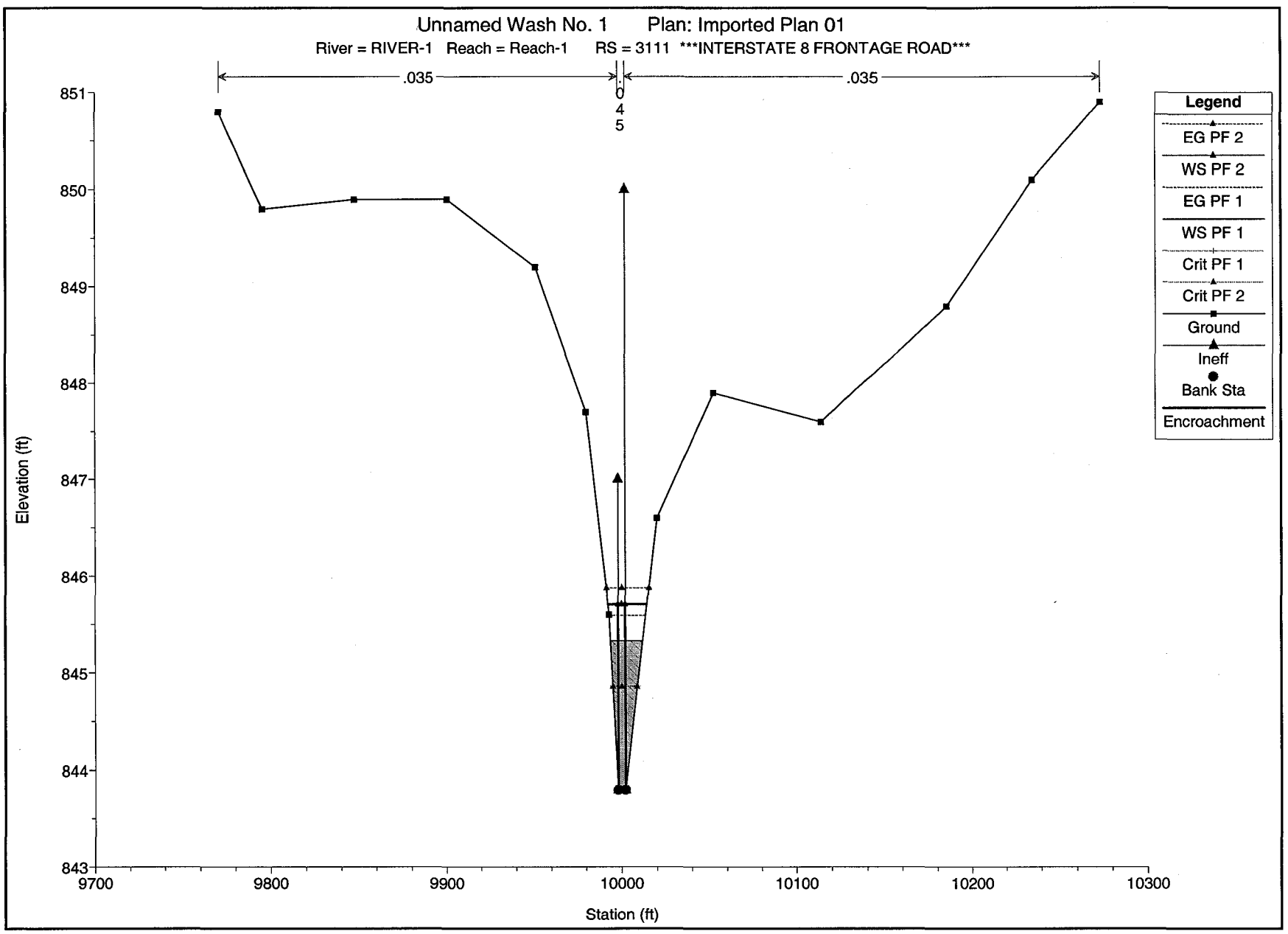
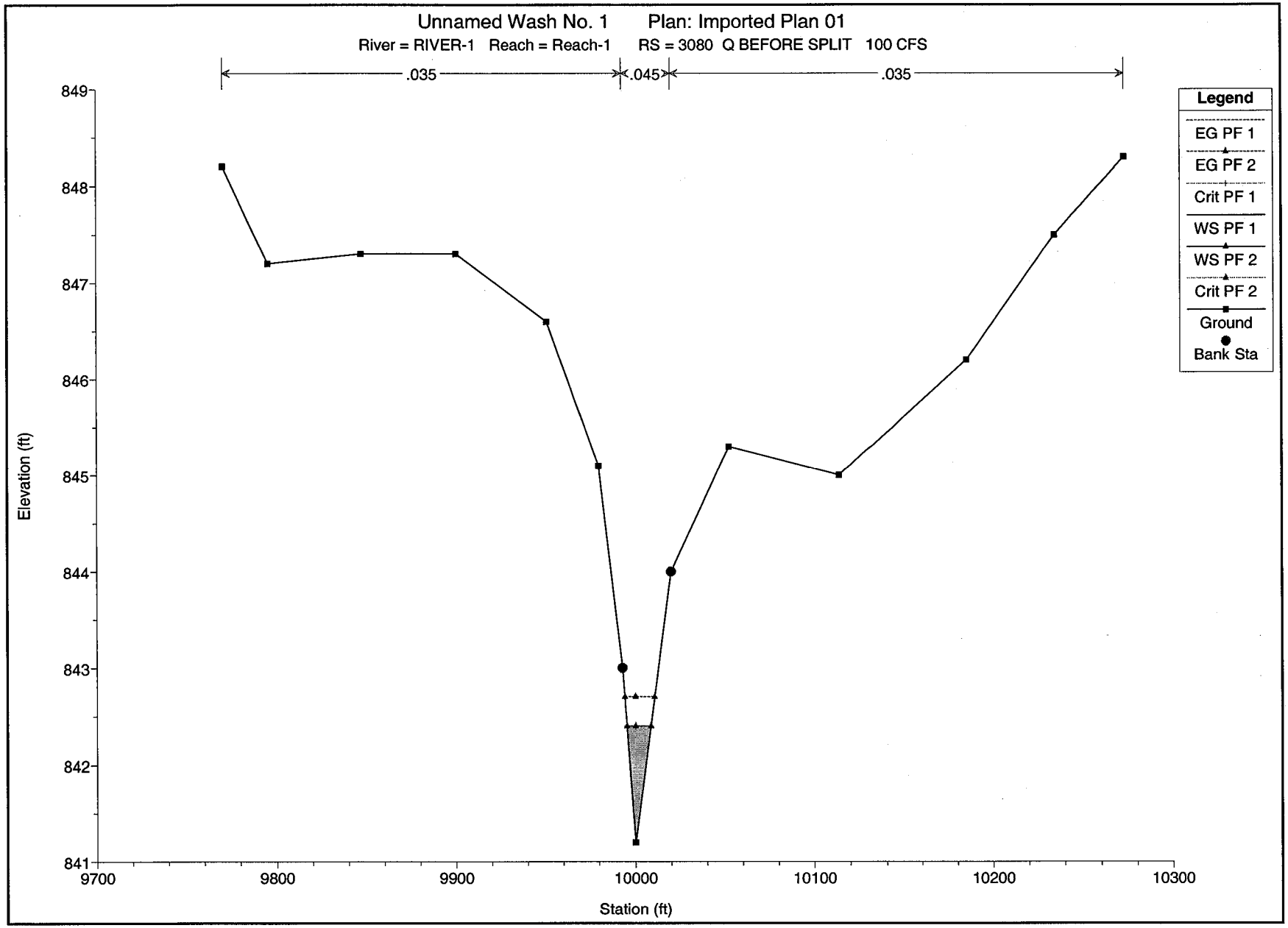
River = RIVER-1 Reach = Reach-1 RS = 3120 Culvert #5 (1 2' Pipe)
.035
.035
0
4
5
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 1
WS PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
851
850
849
848
847
846
845
844
843
9700
9800
9900
10000
10100
10200
10300
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 3111 ***INTERSTATE 8 FRONTAGE ROAD***
.035
.045
.035
Elevation (ft)
851
850
849
848
847
846
845
844
843
9700
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment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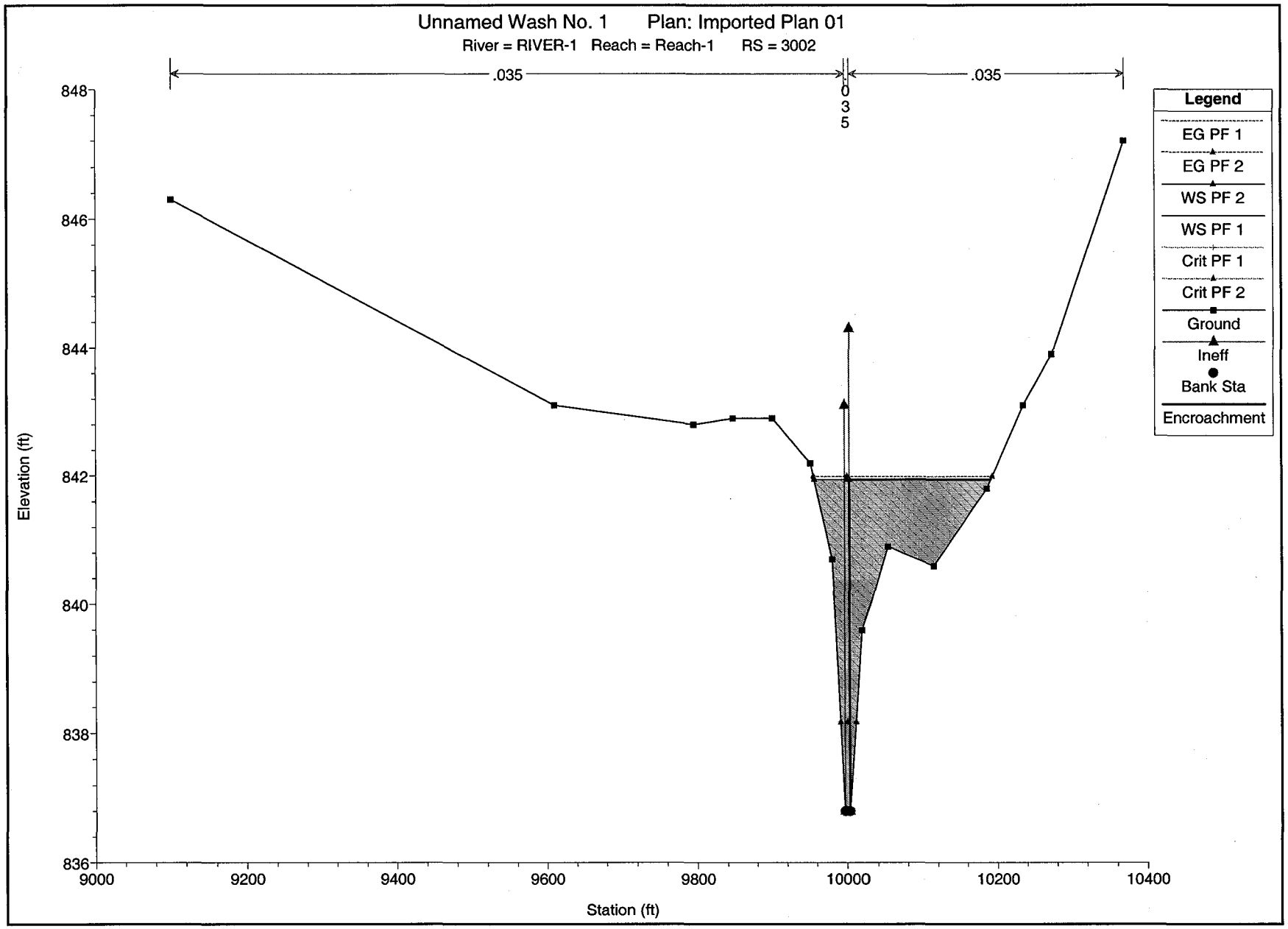
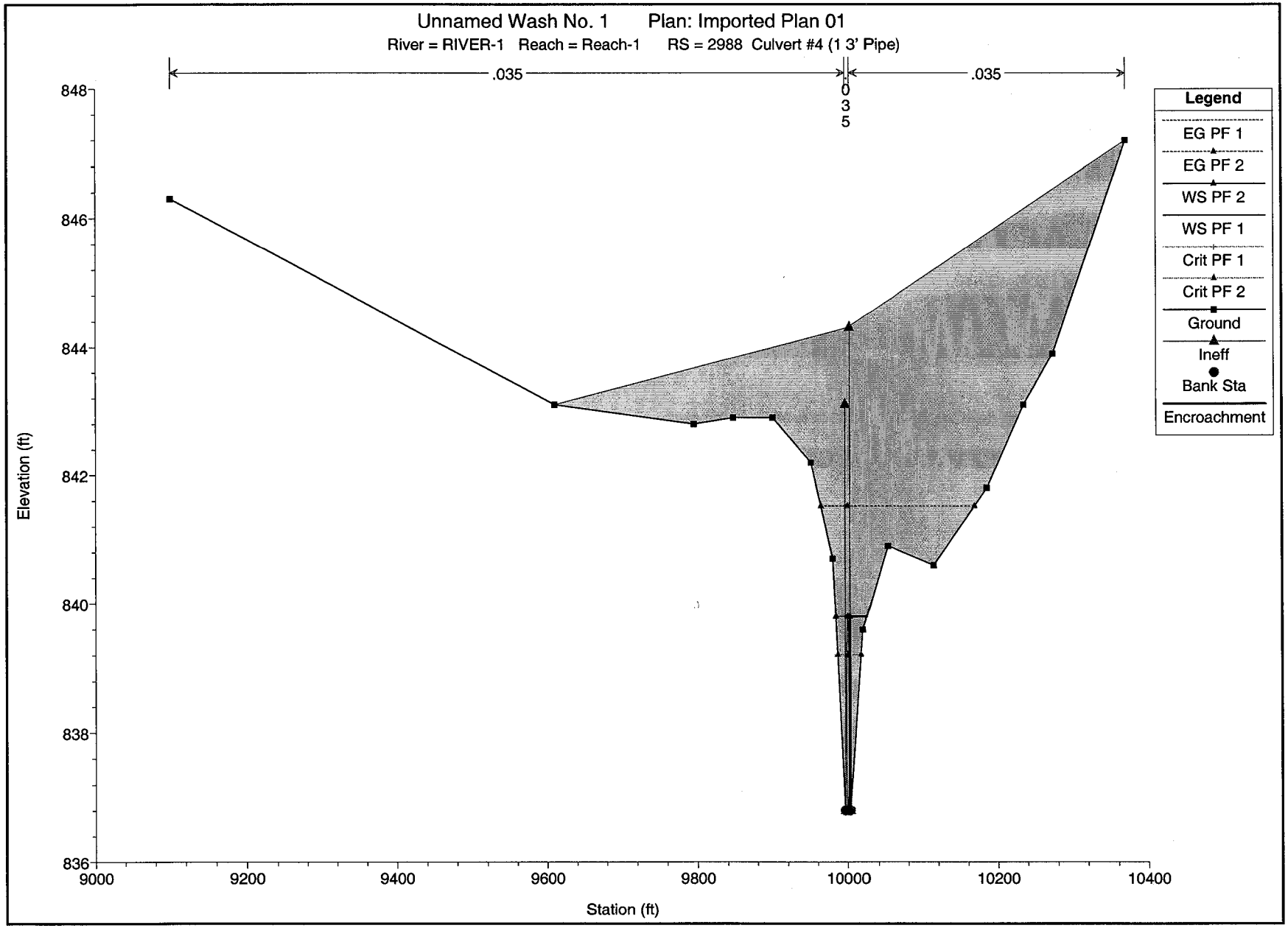
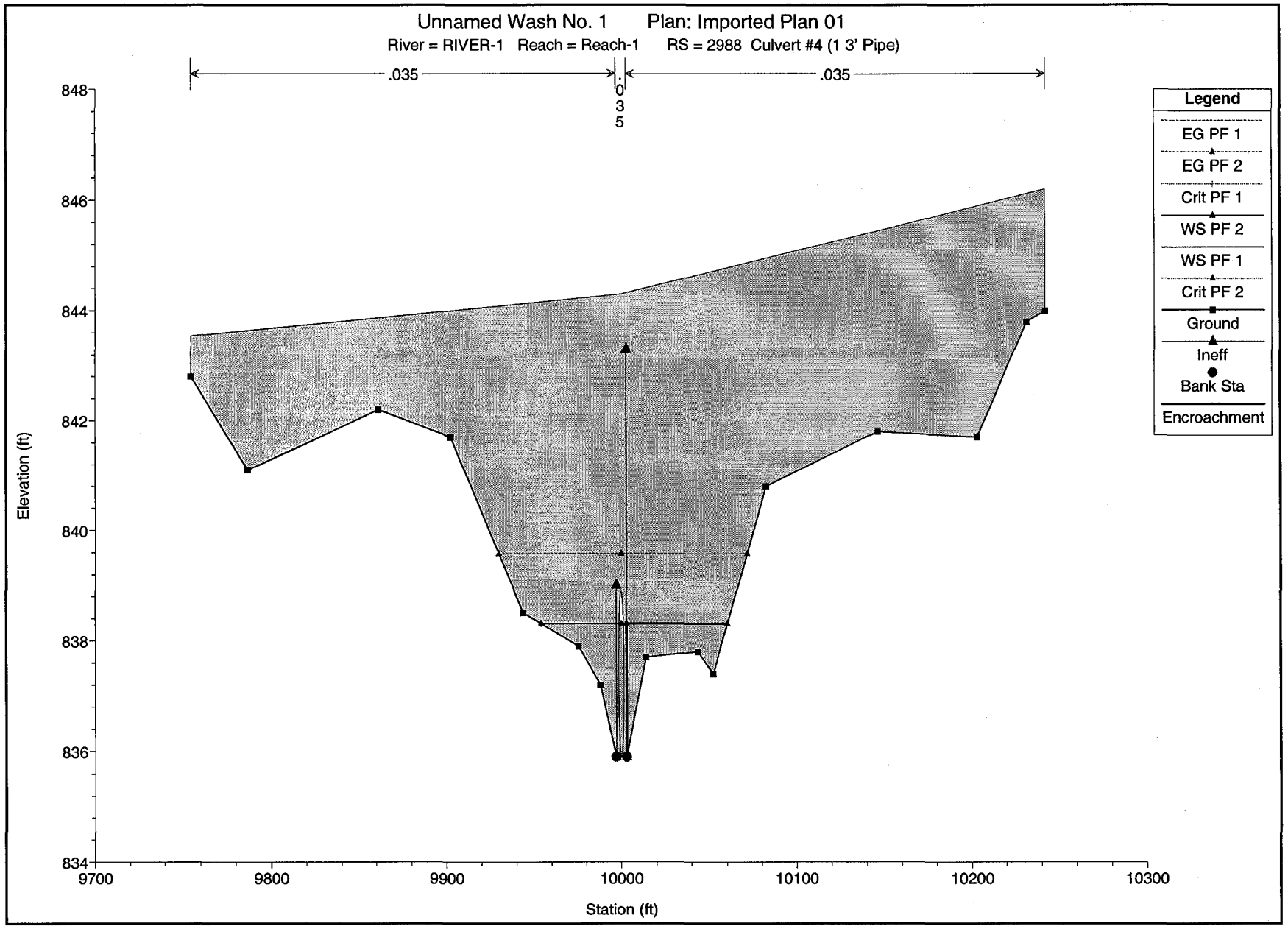
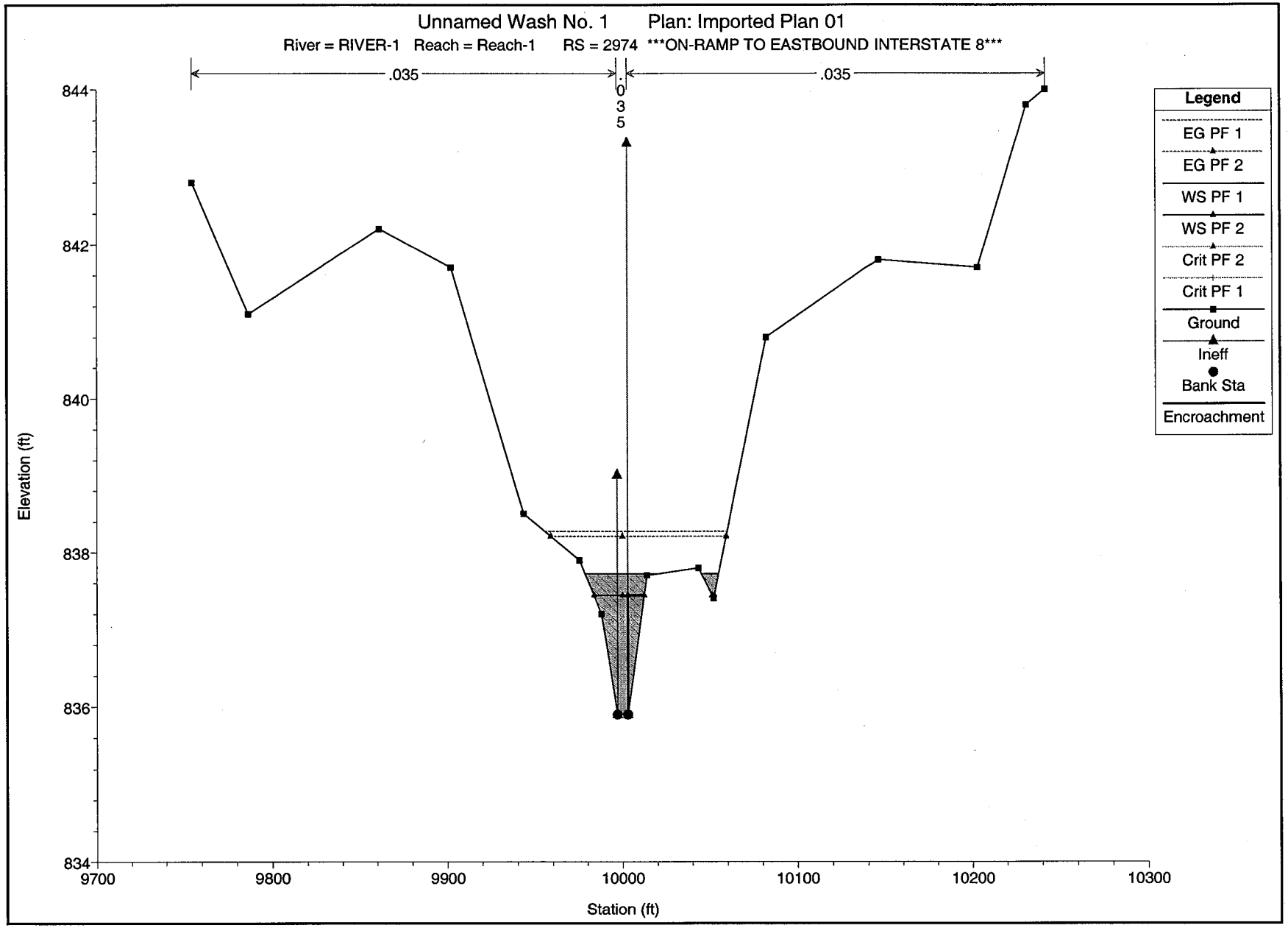
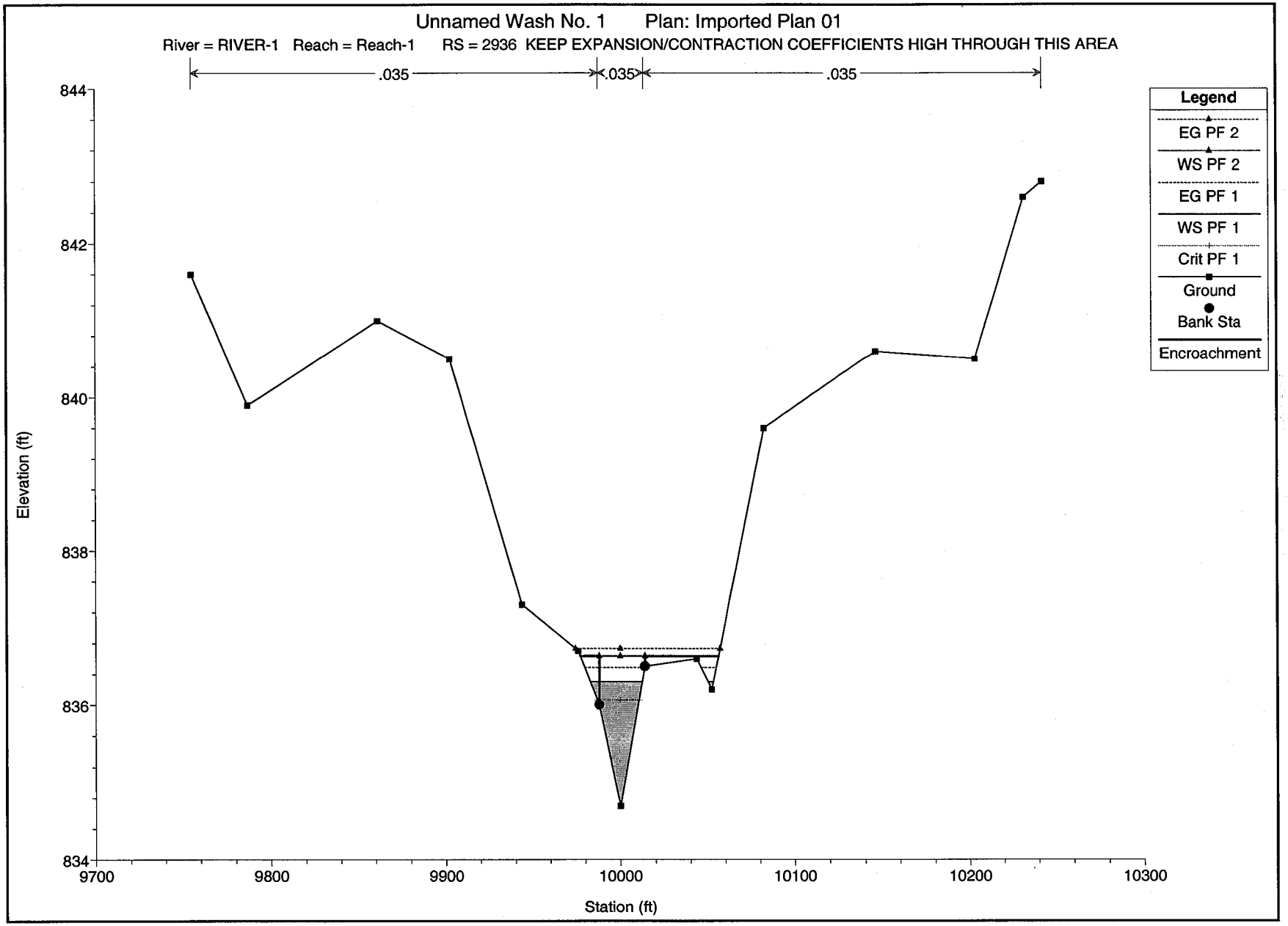
River = RIVER-1 Reach = Reach-1 RS = 3080 Q BEFORE SPLIT 100 CFS
.035
.045
.035
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Elevation (ft)
849
848
847
846
845
844
843
842
841
9700
9800
9900
10000
10100
10200
10300
Station (ft)

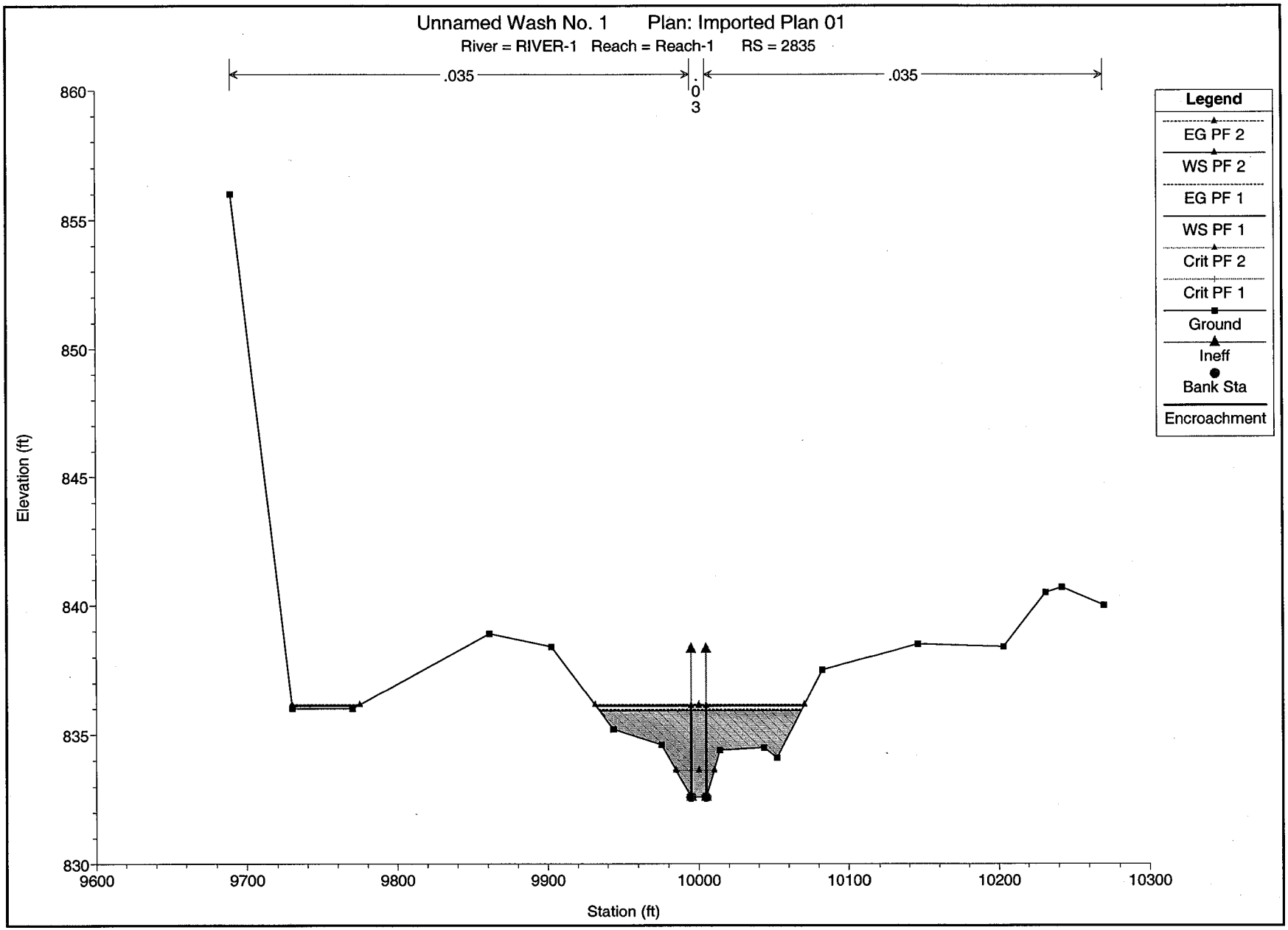

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 3002
.035
.035
035
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
848
846
844
842
840
838
836
9000
9200
9400
9600
9800
10000
10200
10400
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2988 Culvert #4 (1 3' Pipe)
.035
.035
0
3
5
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
848
846
844
842
840
838
836
9000
9200
9400
9600
9800
10000
10200
10400
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2988 Culvert #4 (1 3' Pipe)
.035
.035
.035
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
848
846
844
842
840
838
836
834
9700
9800
9900
10000
10100
10200
10300
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2974 ***ON-RAMP TO EASTBOUND INTERSTATE 8***
.035
.035
.035
Elevation (ft)
844
842
840
838
836
834
9700
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 2
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2936 KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
844
842
840
838
836
834
9700
9800
9900
10000
10100
10200
10300
Station (ft)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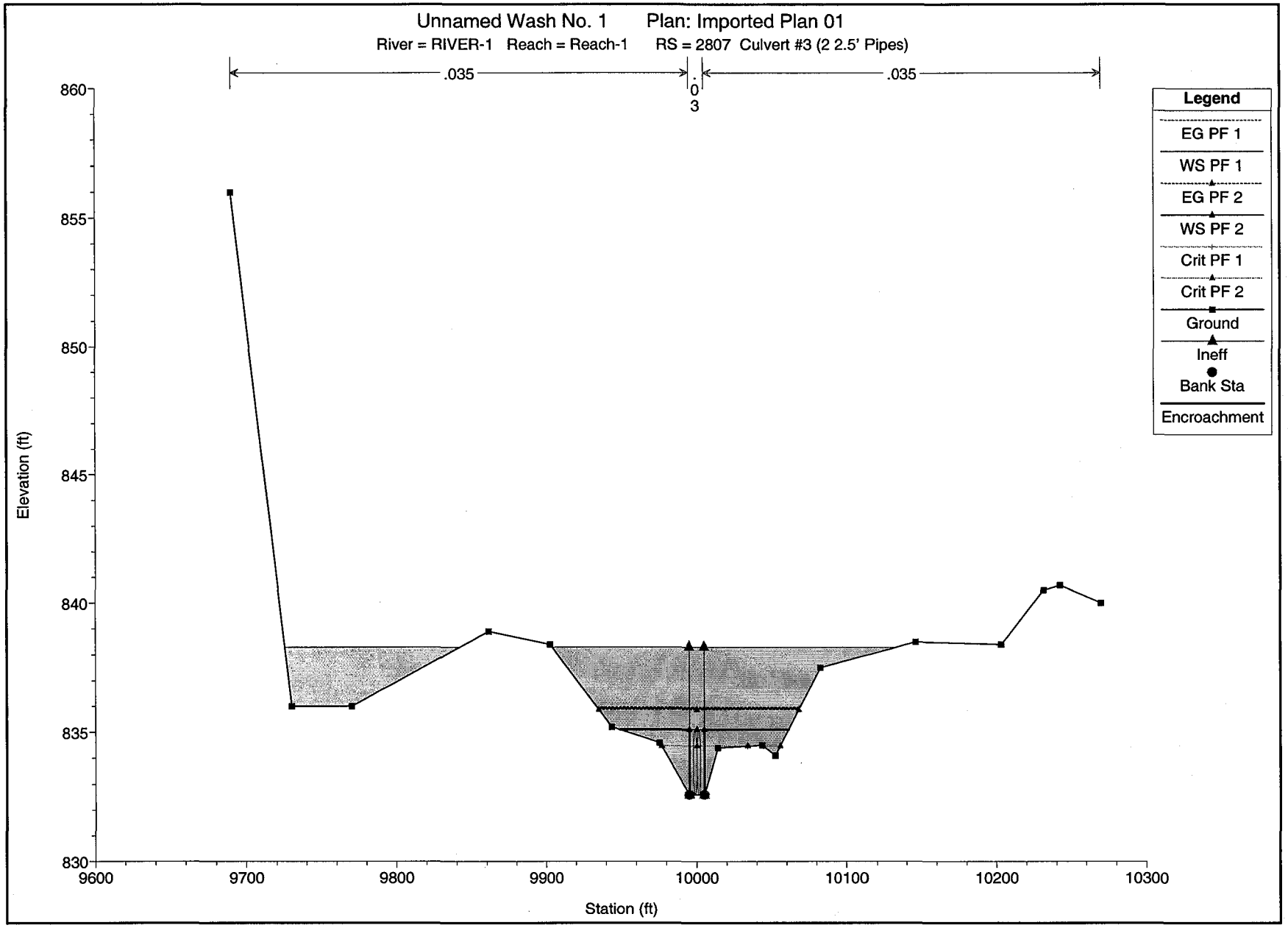
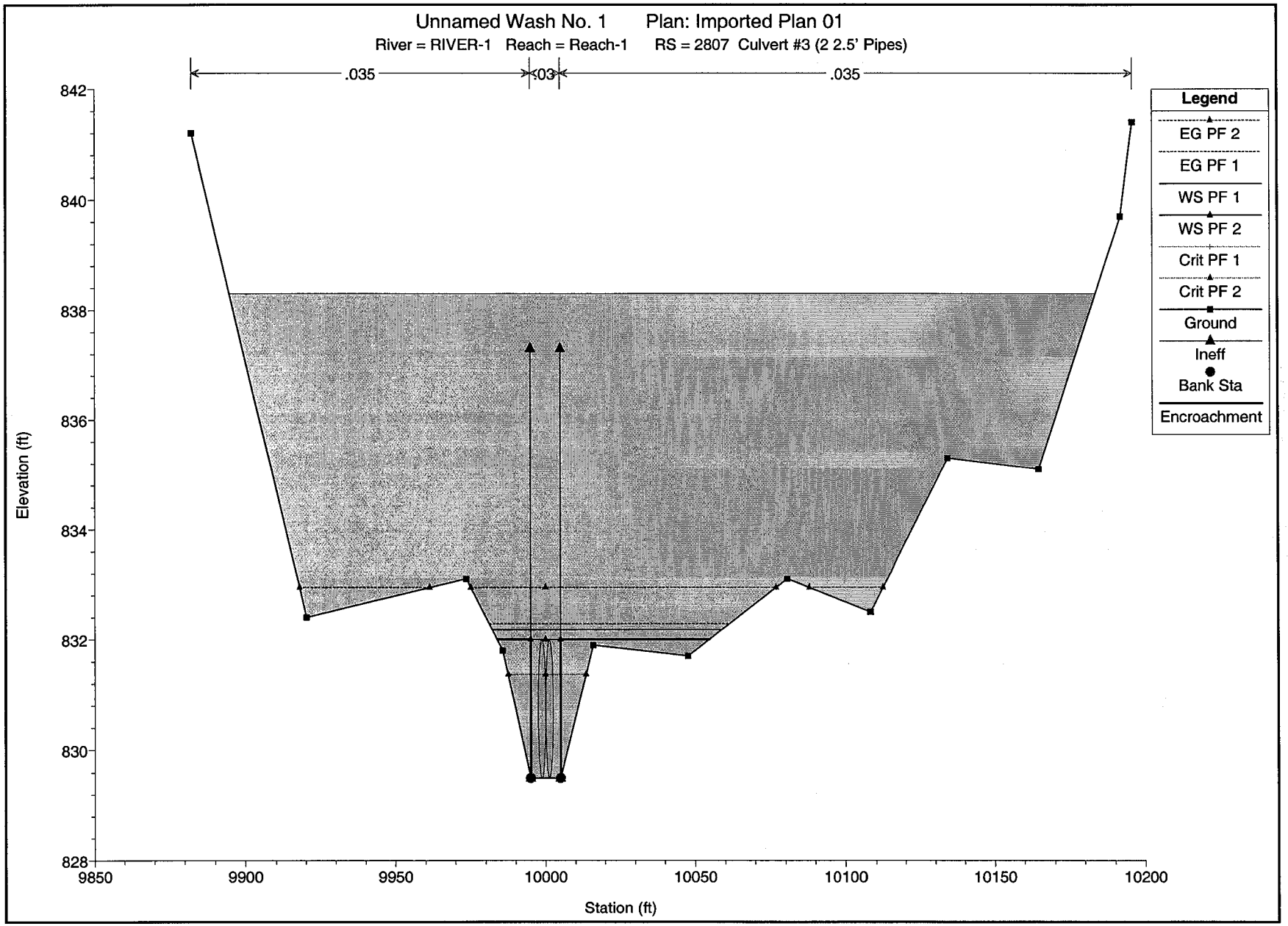
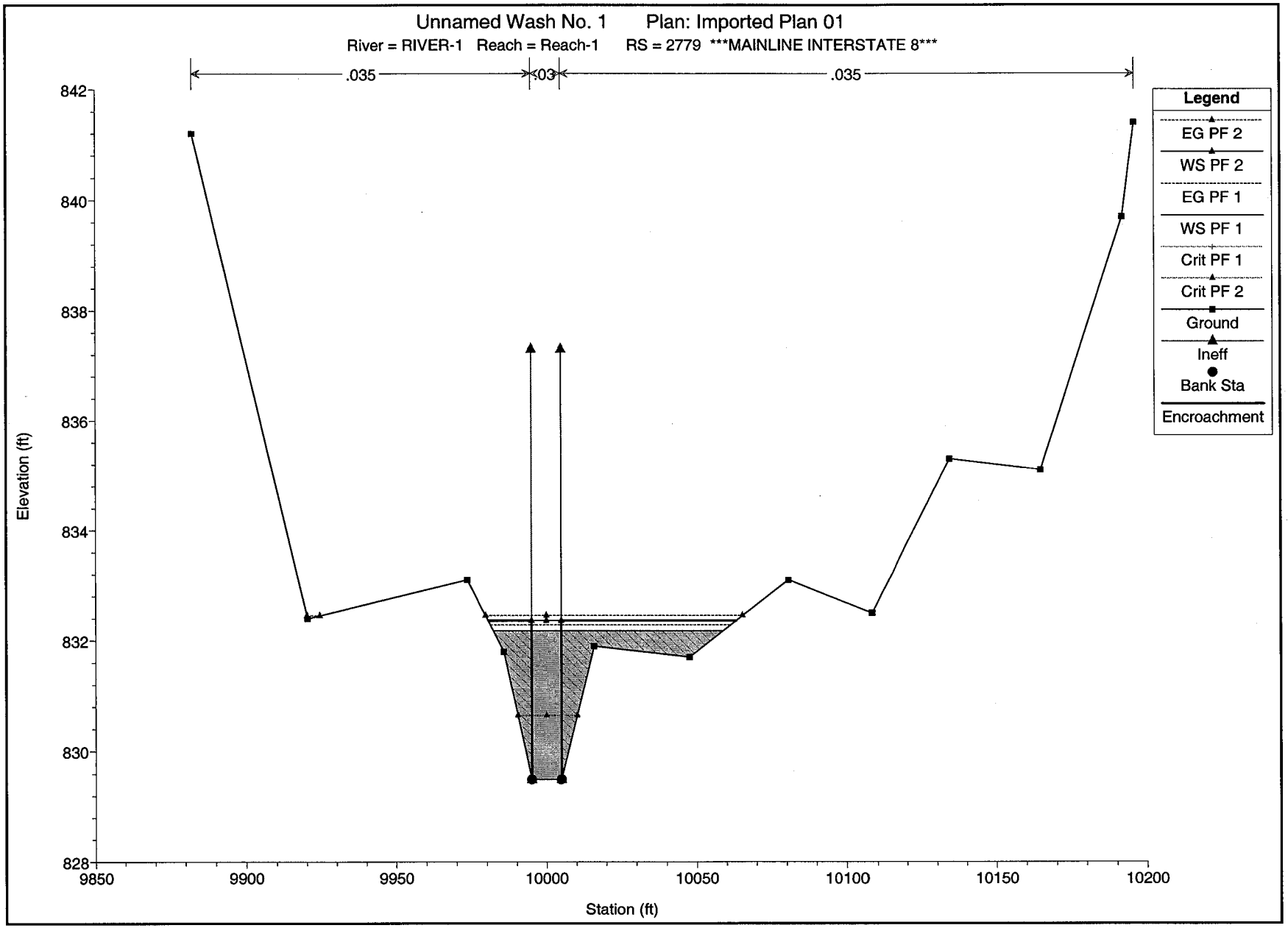
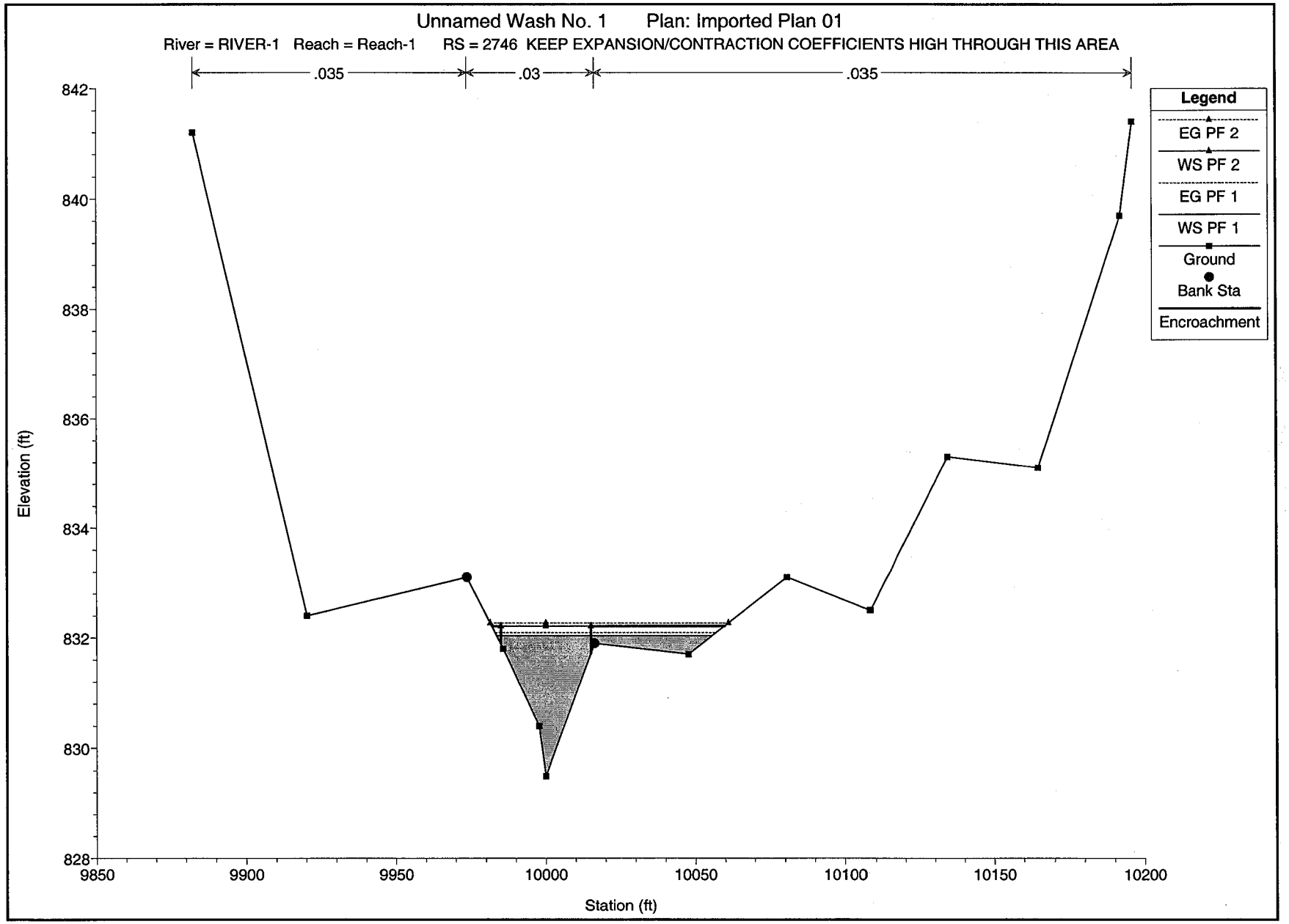
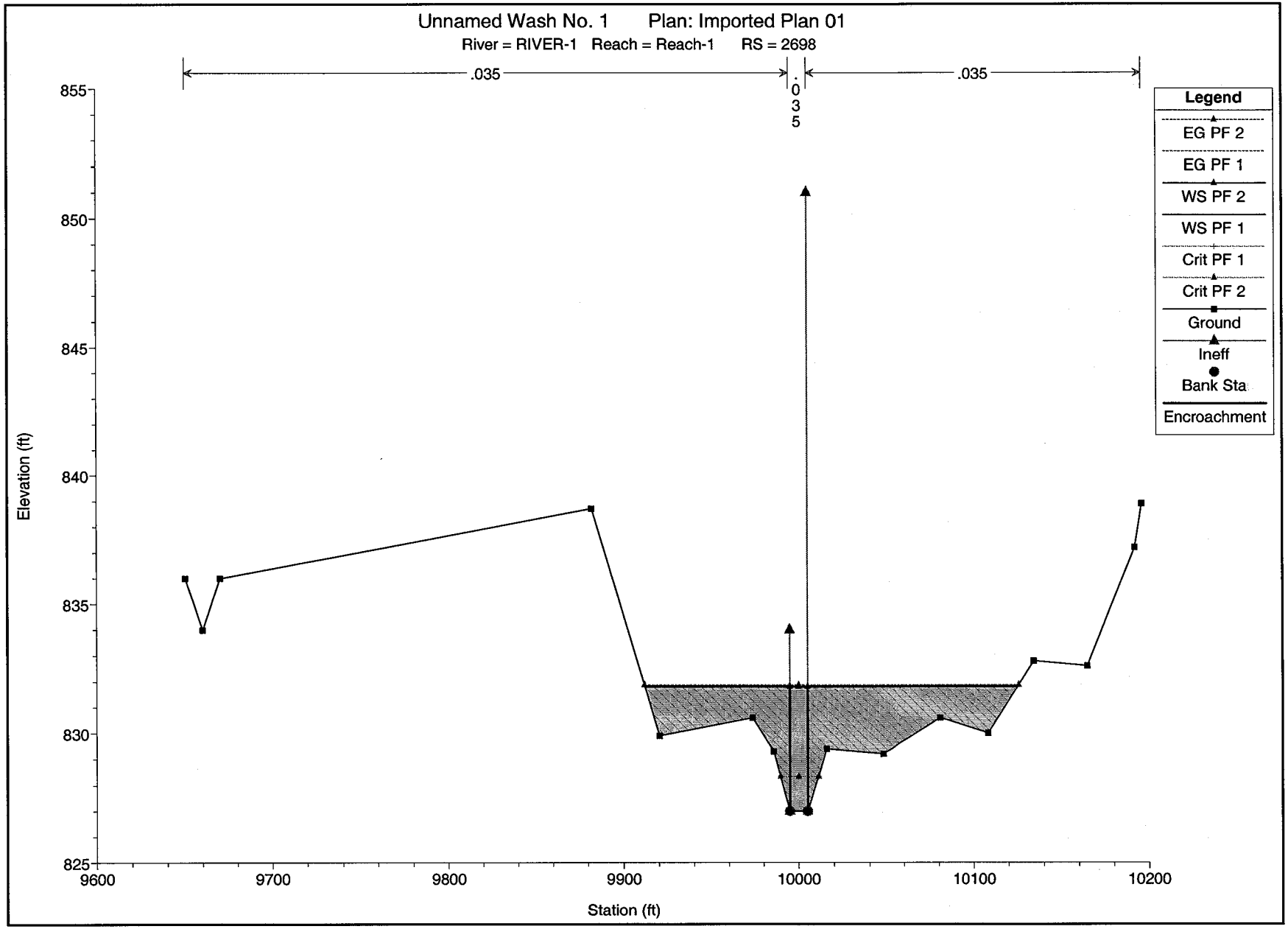
River = RIVER-1 Reach = Reach-1 RS = 2835
.035
.03
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 2
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
860
855
850
845
840
835
830
9600
9700
9800
9900
10000
10100
10200
10300
Station (ft)

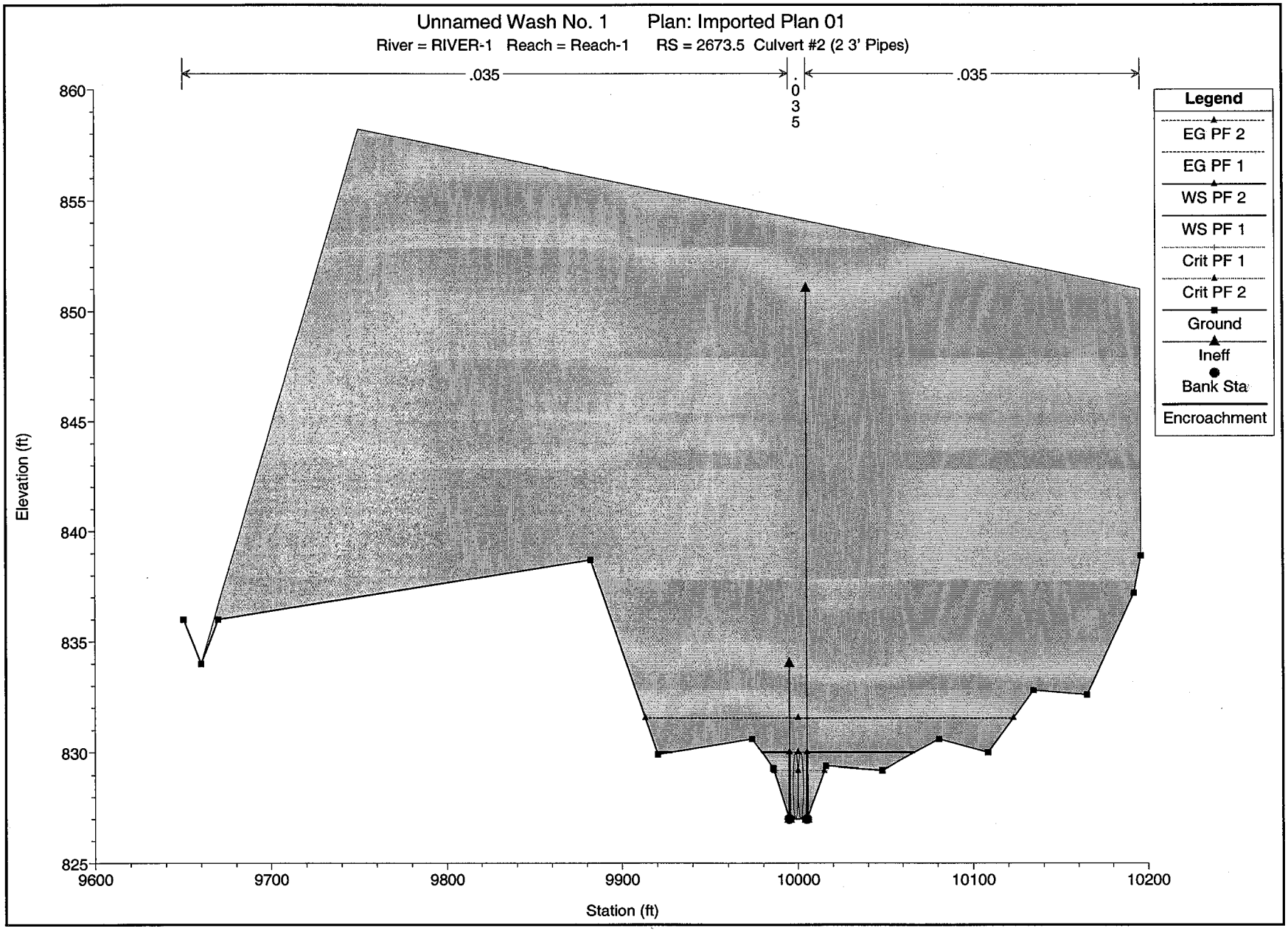

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2807 Culvert #3 (2 2.5' Pipes)
.035
.035
0.03
Legend
EG PF 1
WS PF 1
EG PF 2
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
860
855
850
845
840
835
830
9600
9700
9800
9900
10000
10100
10200
10300
Station (ft)

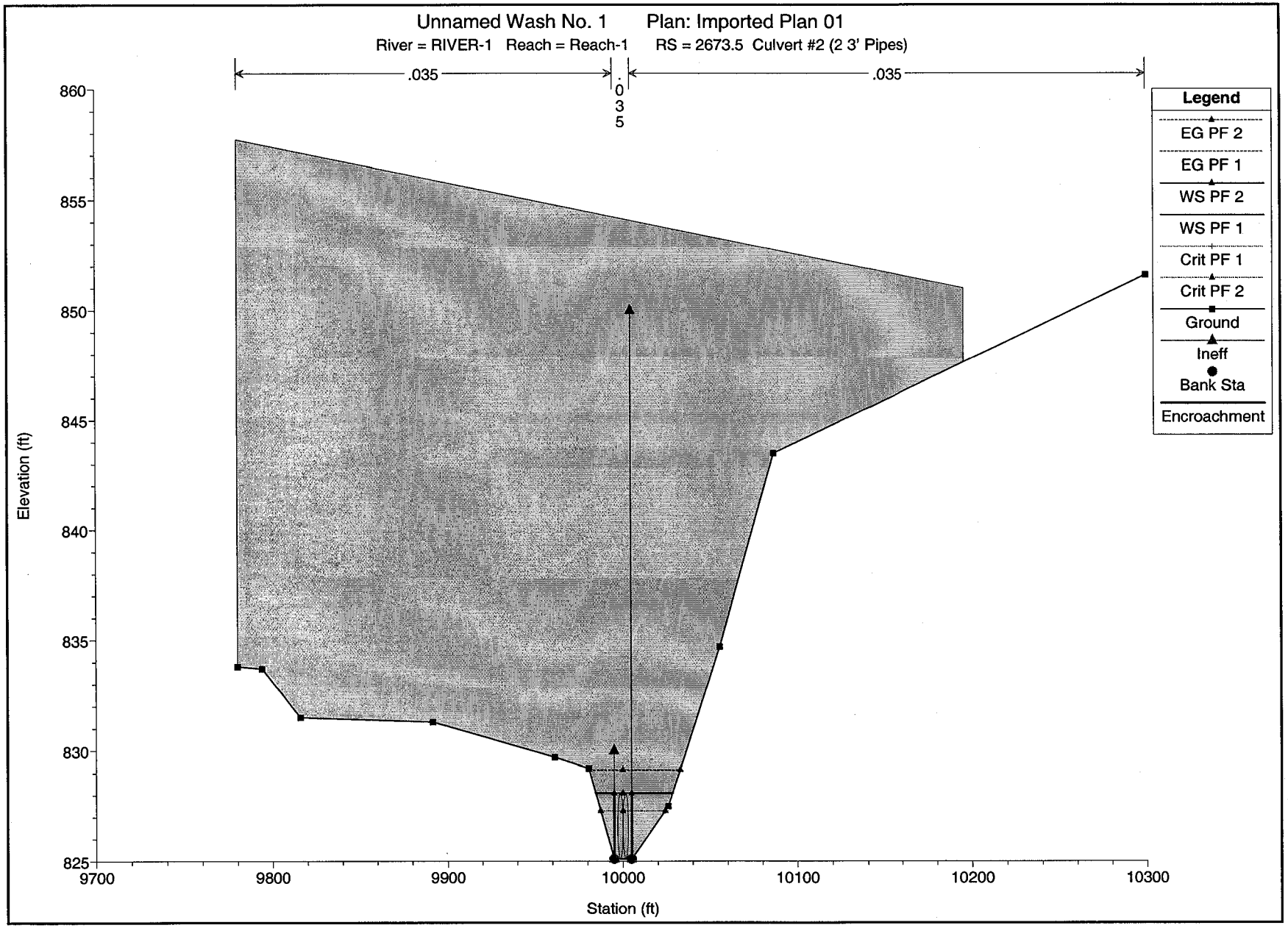

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2807 Culvert #3 (2 2.5' Pipes)
.035
.03
.035
Legend
EG PF 2
EG PF 1
WS PF 1
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
842
840
838
836
834
832
830
828
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

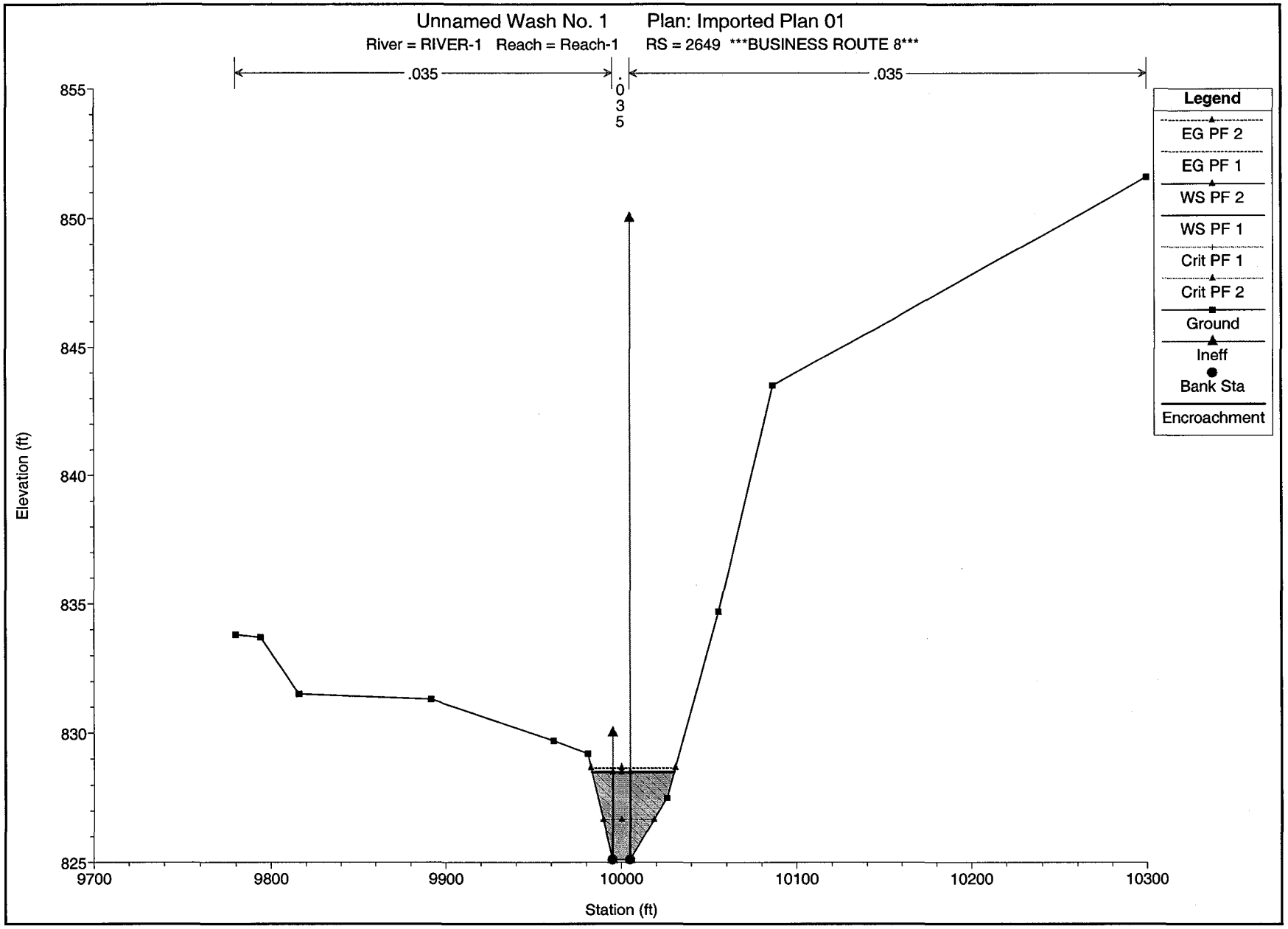

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2779 ***MAINLINE INTERSTATE 8***
.035
.03
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
842
840
838
836
834
832
830
828
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

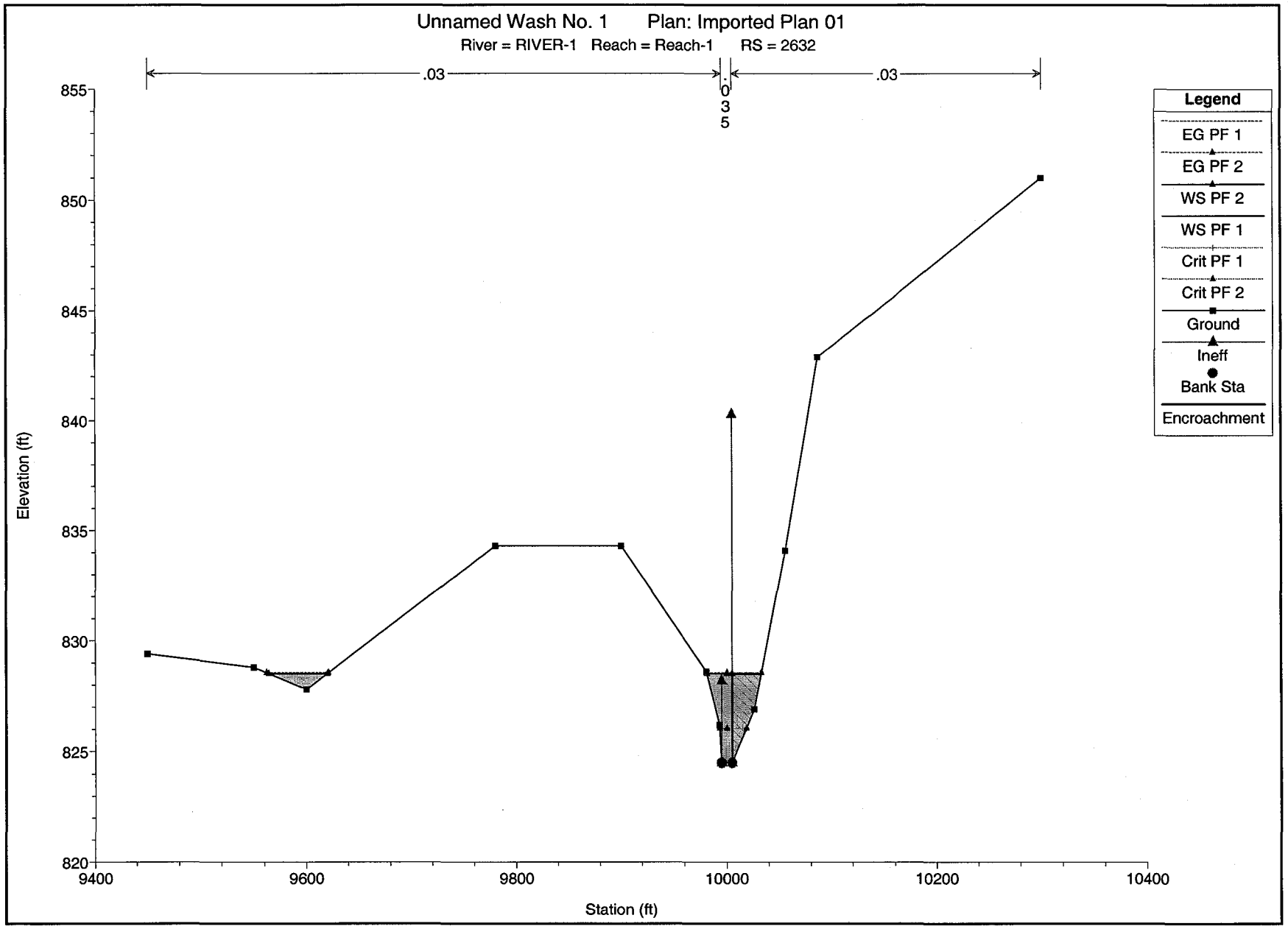

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2746 KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
.035
.03
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
842
840
838
836
834
832
830
828
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

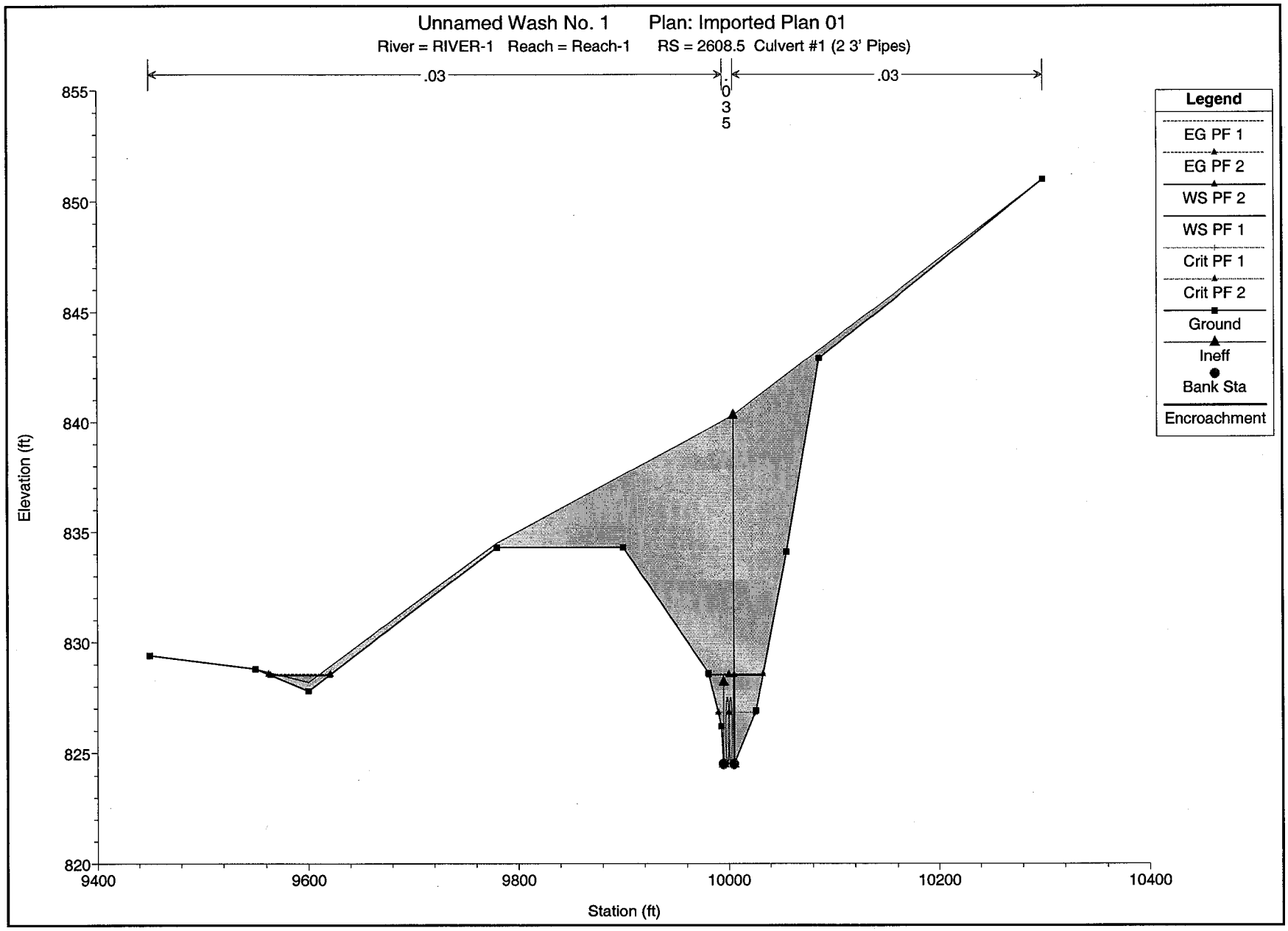

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2698
.035
.035
.035
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
855
850
845
840
835
830
825
9600
9700
9800
9900
10000
10100
10200
Station (ft)

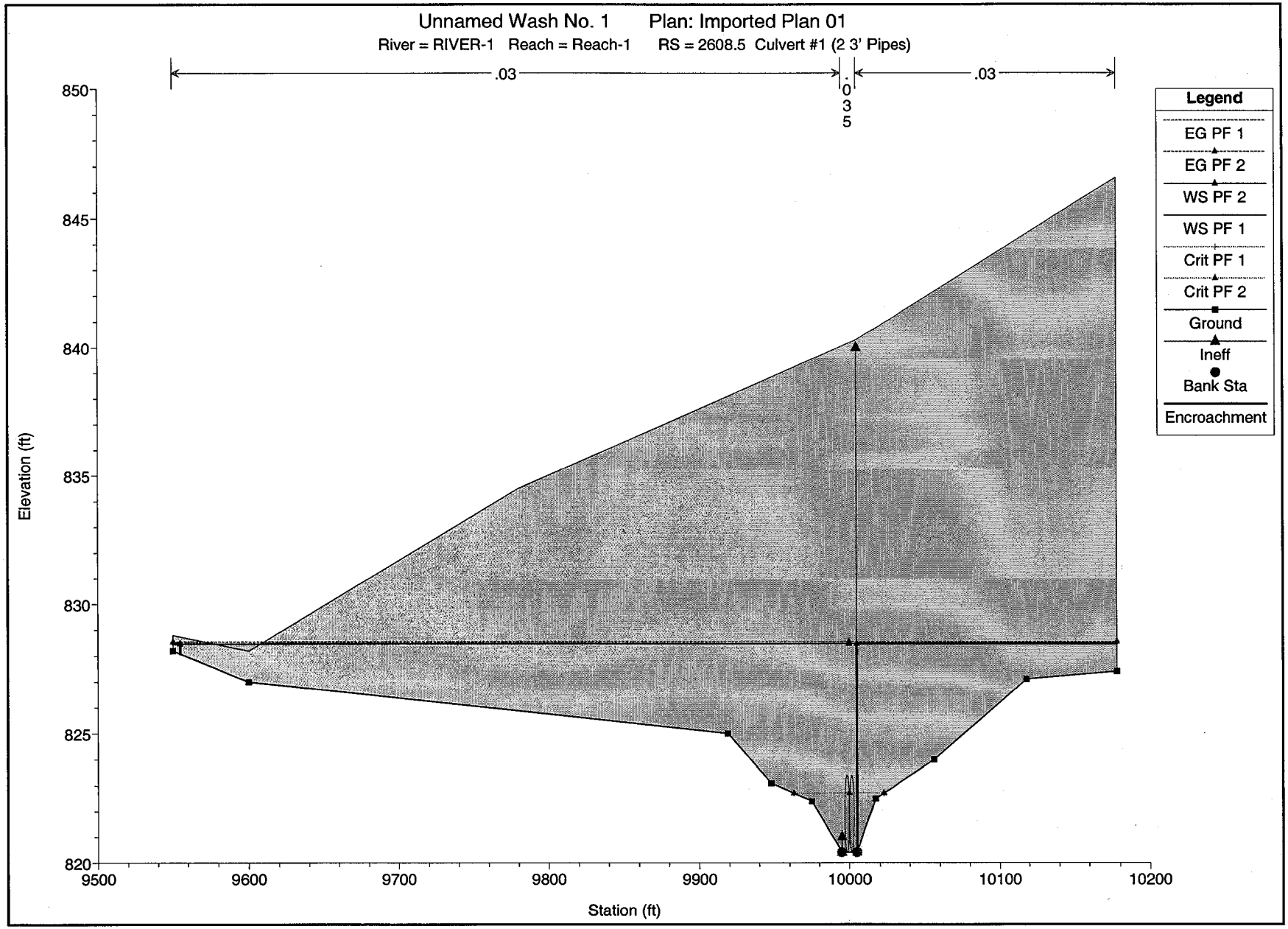

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2673.5 Culvert #2 (2 3' Pipes)
.035
.035
.035
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
860
855
850
845
840
835
830
825
9600
9700
9800
9900
10000
10100
10200
Station (ft)

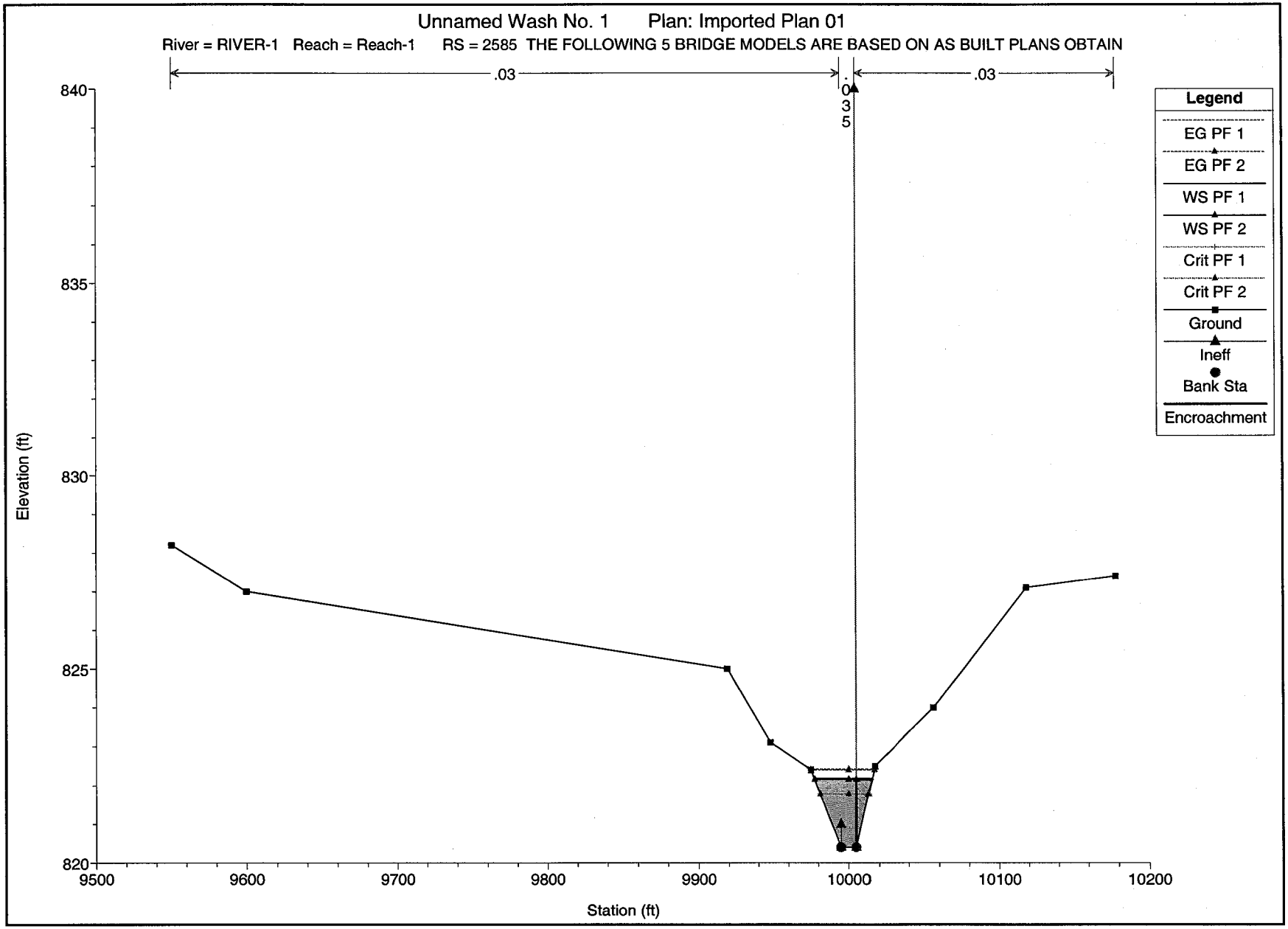

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2673.5 Culvert #2 (2 3' Pipes)
.035
.035
.035
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
860
855
850
845
840
835
830
825
9700
9800
9900
10000
10100
10200
10300
Station (ft)

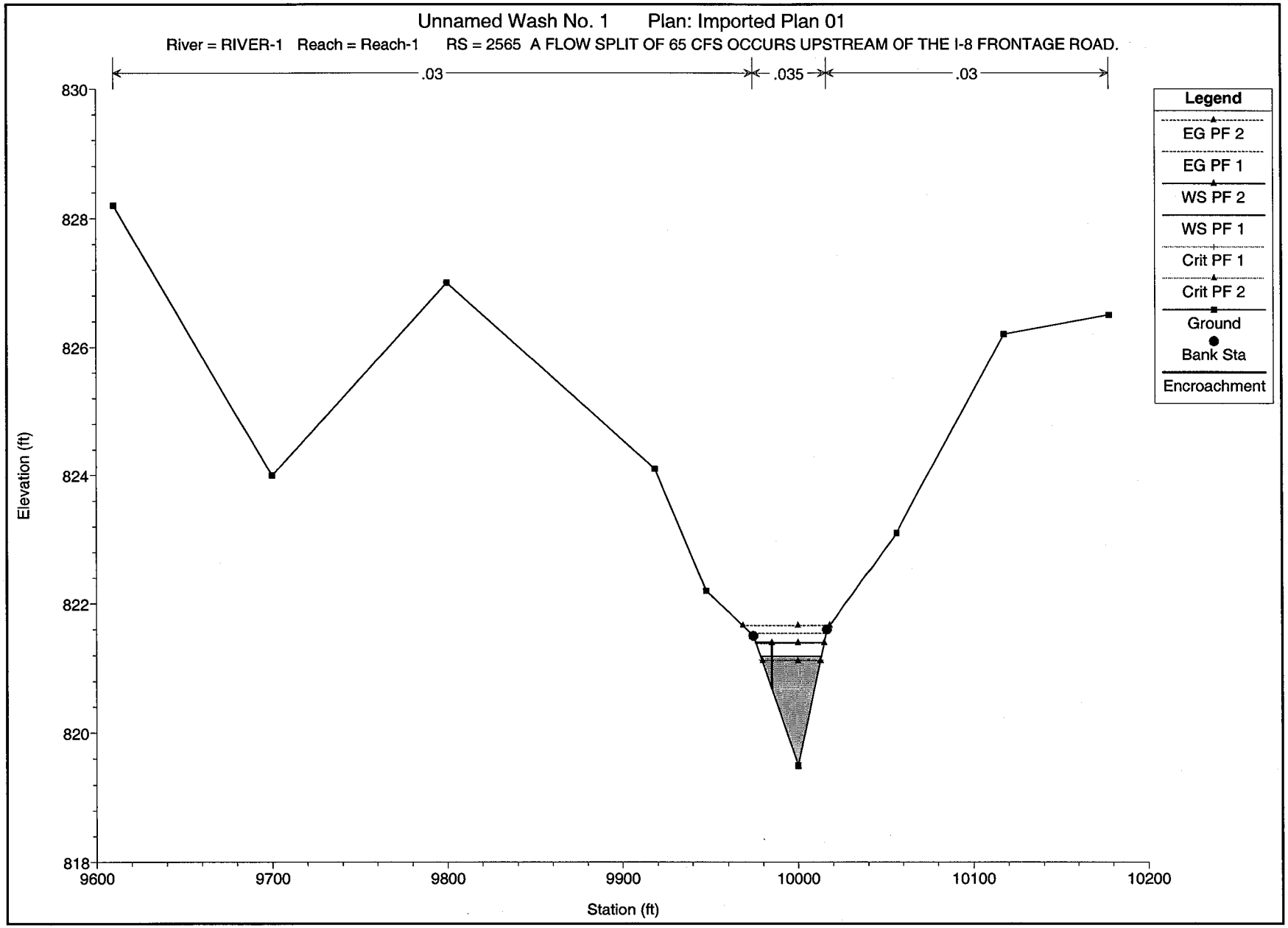

Unnamed Wash No. 1
Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1
RS = 2649 ***BUSINESS ROUTE 8***
.035
.035
.035
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
855
850
845
840
835
830
825
9700
9800
9900
10000
10100
10200
10300
Station (ft)

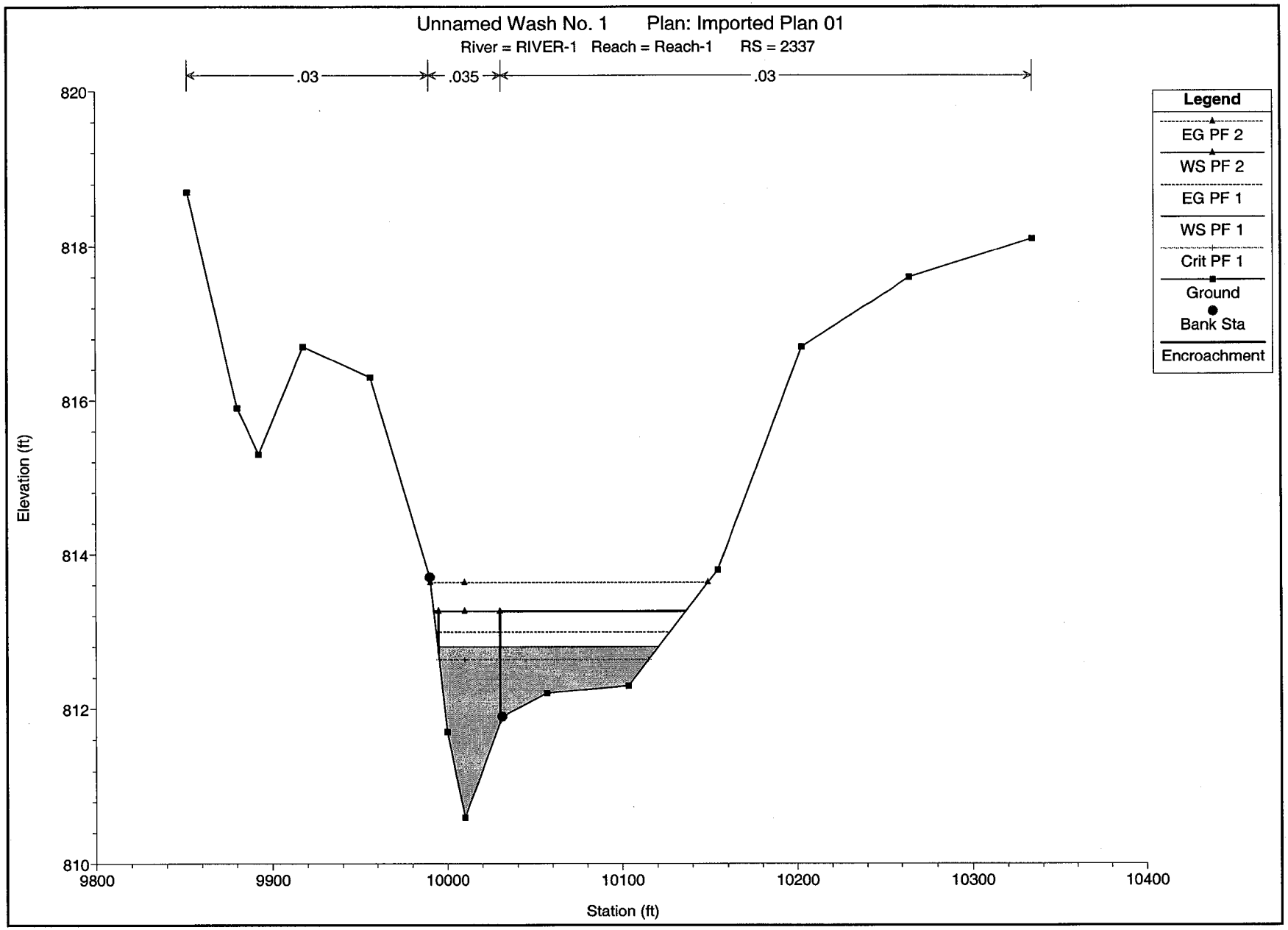

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2632
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
855
850
845
840
835
830
825
820
9400
9600
9800
10000
10200
10400
Station (ft)

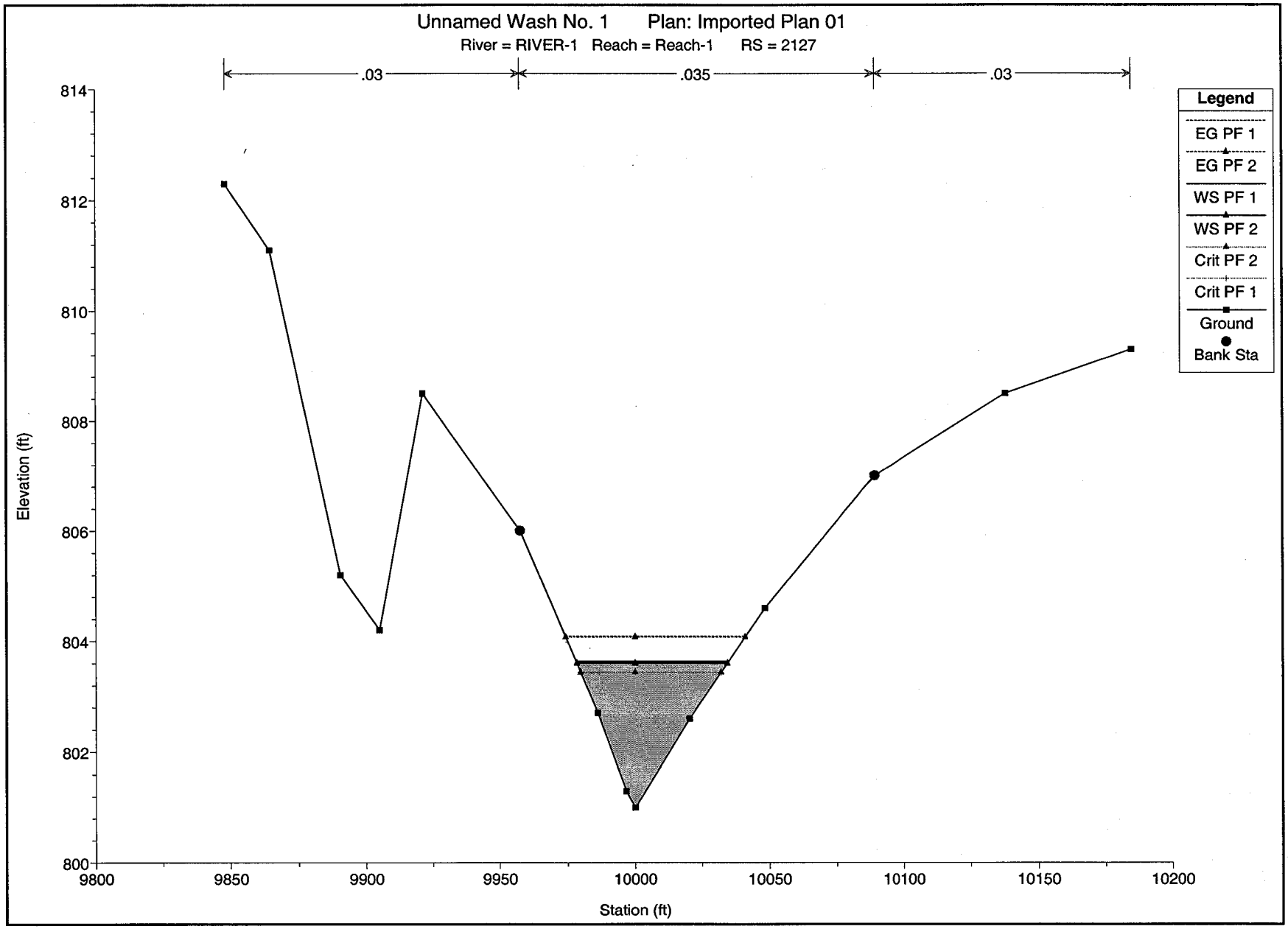

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2608.5 Culvert #1 (2 3' Pipes)
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
855
850
845
840
835
830
825
820
9400
9600
9800
10000
10200
10400
Station (ft)

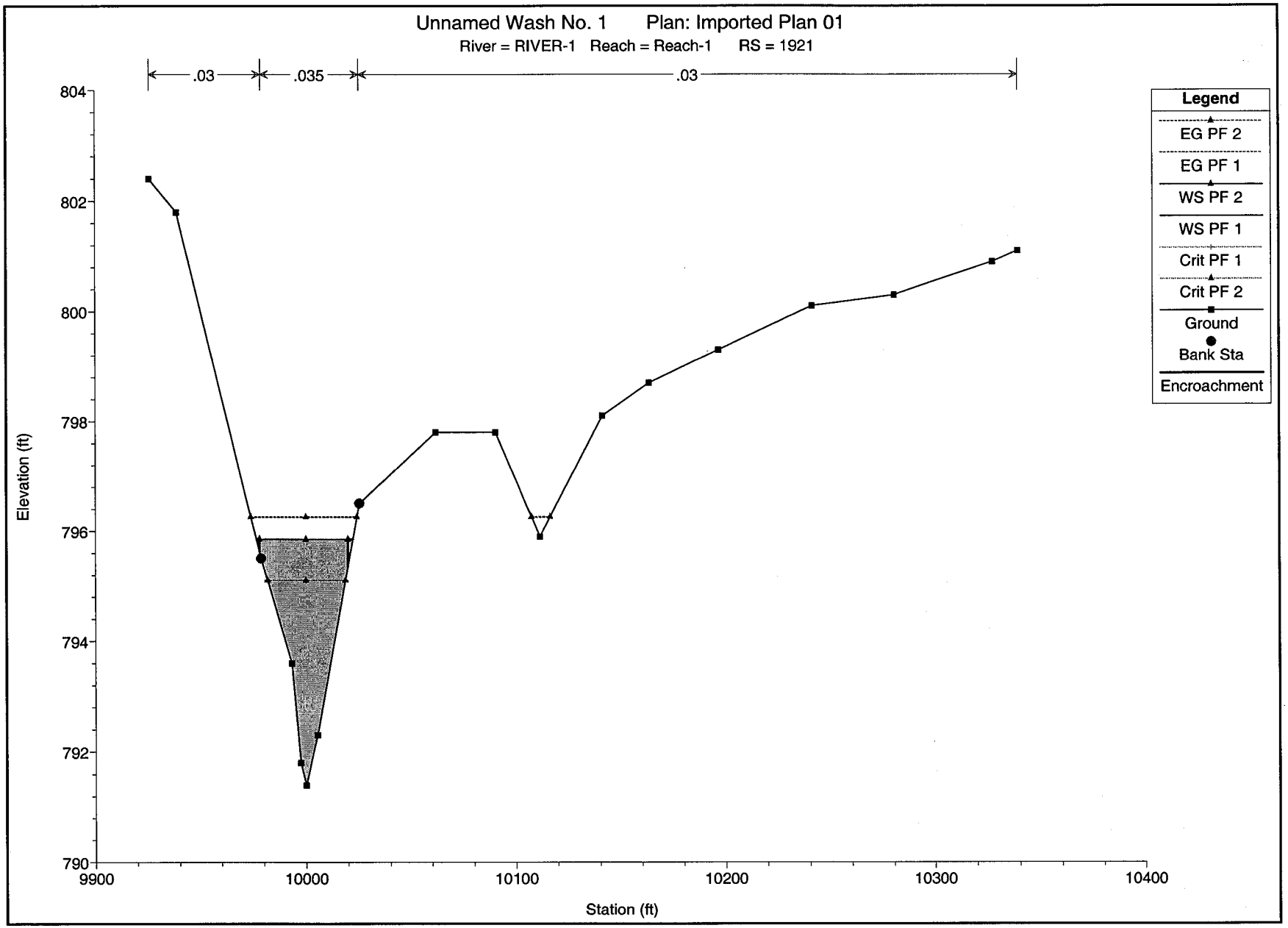

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2608.5 Culvert #1 (2 3' Pipes)
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
850
845
840
835
830
825
820
9500
9600
9700
9800
9900
10000
10100
10200
Station (ft)

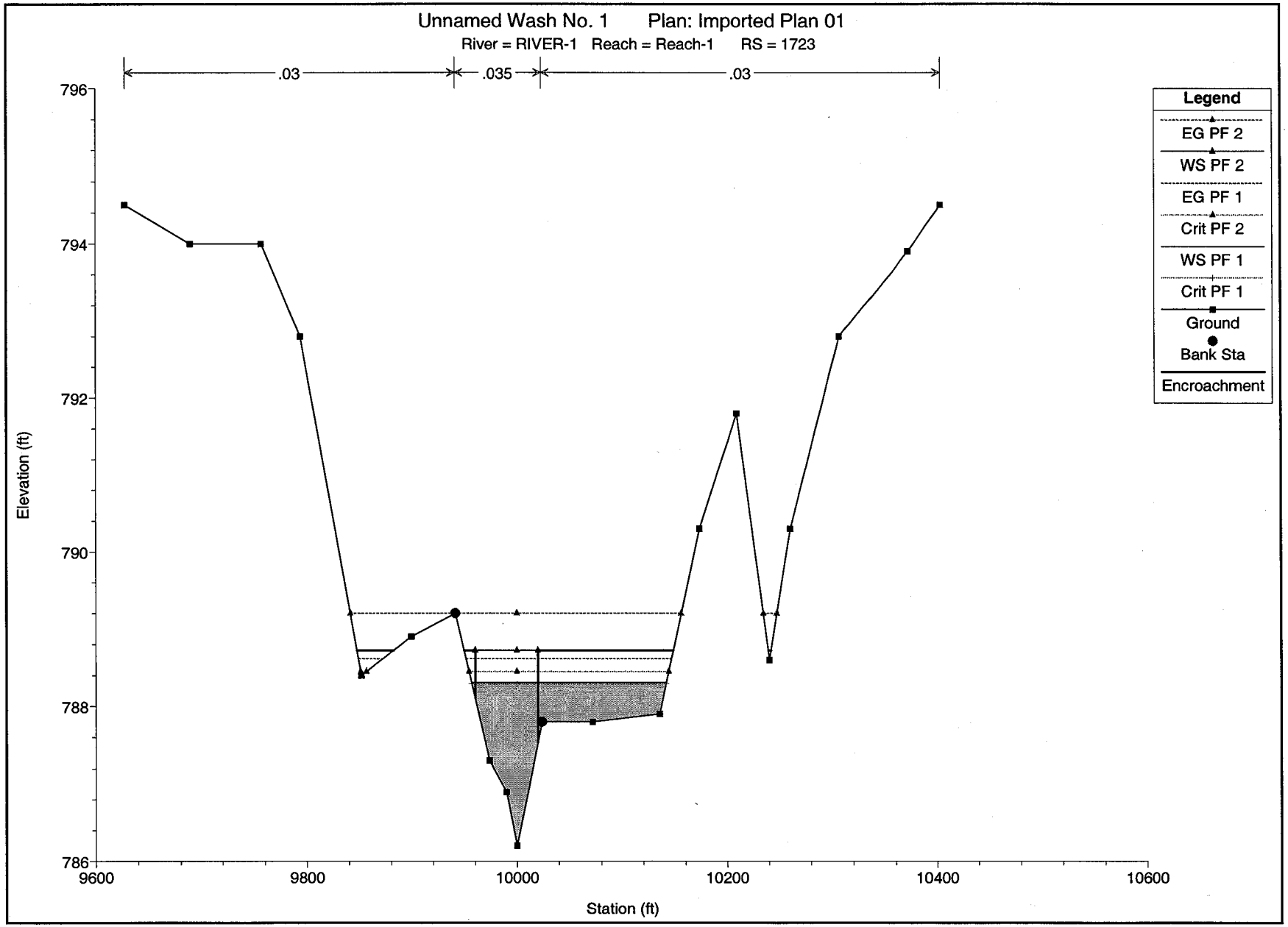

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2585 THE FOLLOWING 5 BRIDGE MODELS ARE BASED ON AS BUILT PLANS OBTAIN
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
840
835
830
825
820
9500
9600
9700
9800
9900
10000
10100
10200
Station (ft)

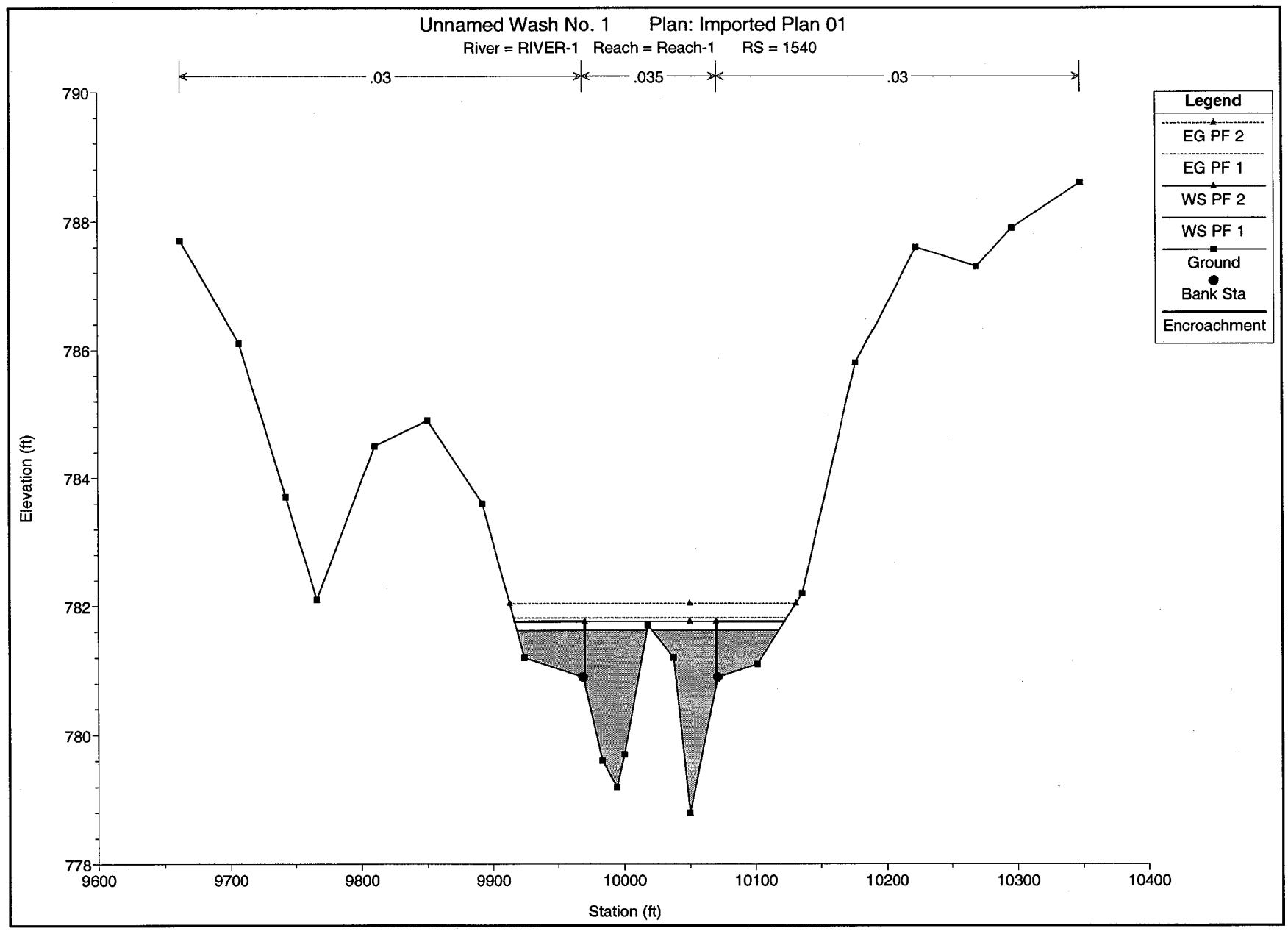

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2565 A FLOW SPLIT OF 65 CFS OCCURS UPSTREAM OF THE I-8 FRONTAGE ROAD.
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
830
828
826
824
822
820
818
9600
9700
9800
9900
10000
10100
10200
Station (ft)

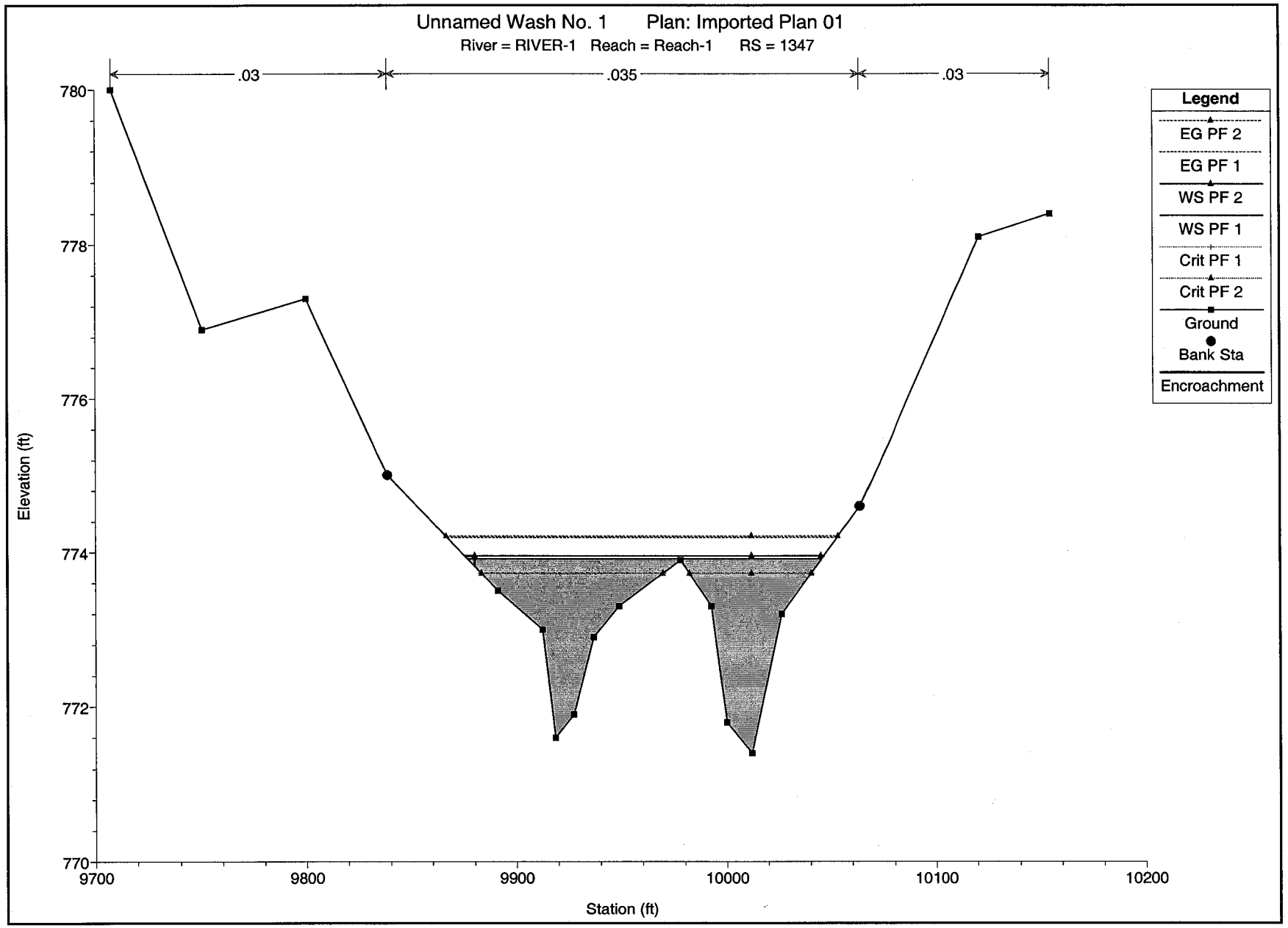

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2337
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
820
818
816
814
812
810
9800
9900
10000
10100
10200
10300
10400
Station (ft)

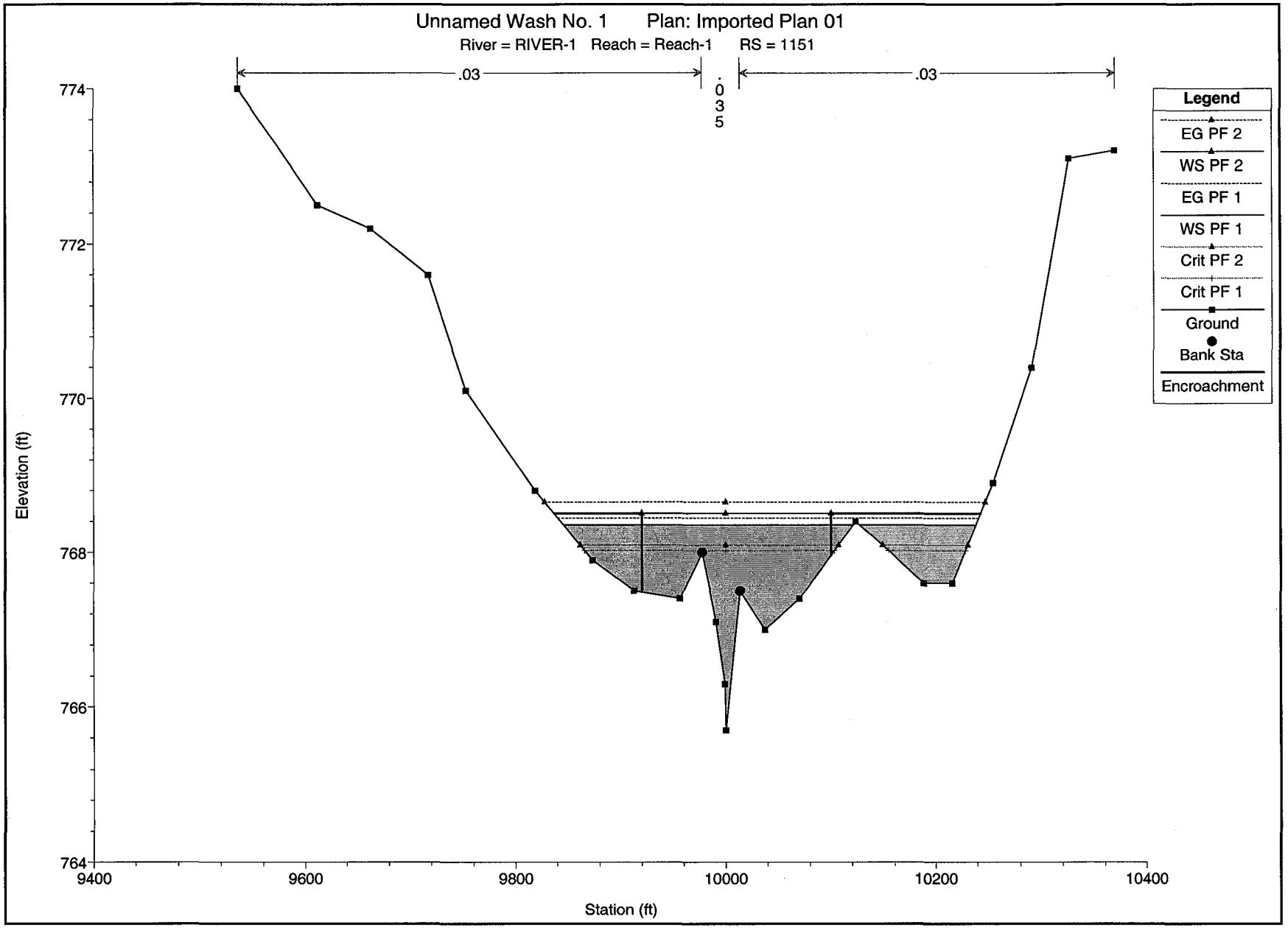

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 2127
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 2
Crit PF 1
Ground
Bank Sta
Elevation (ft)
814
812
810
808
806
804
802
800
9800
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

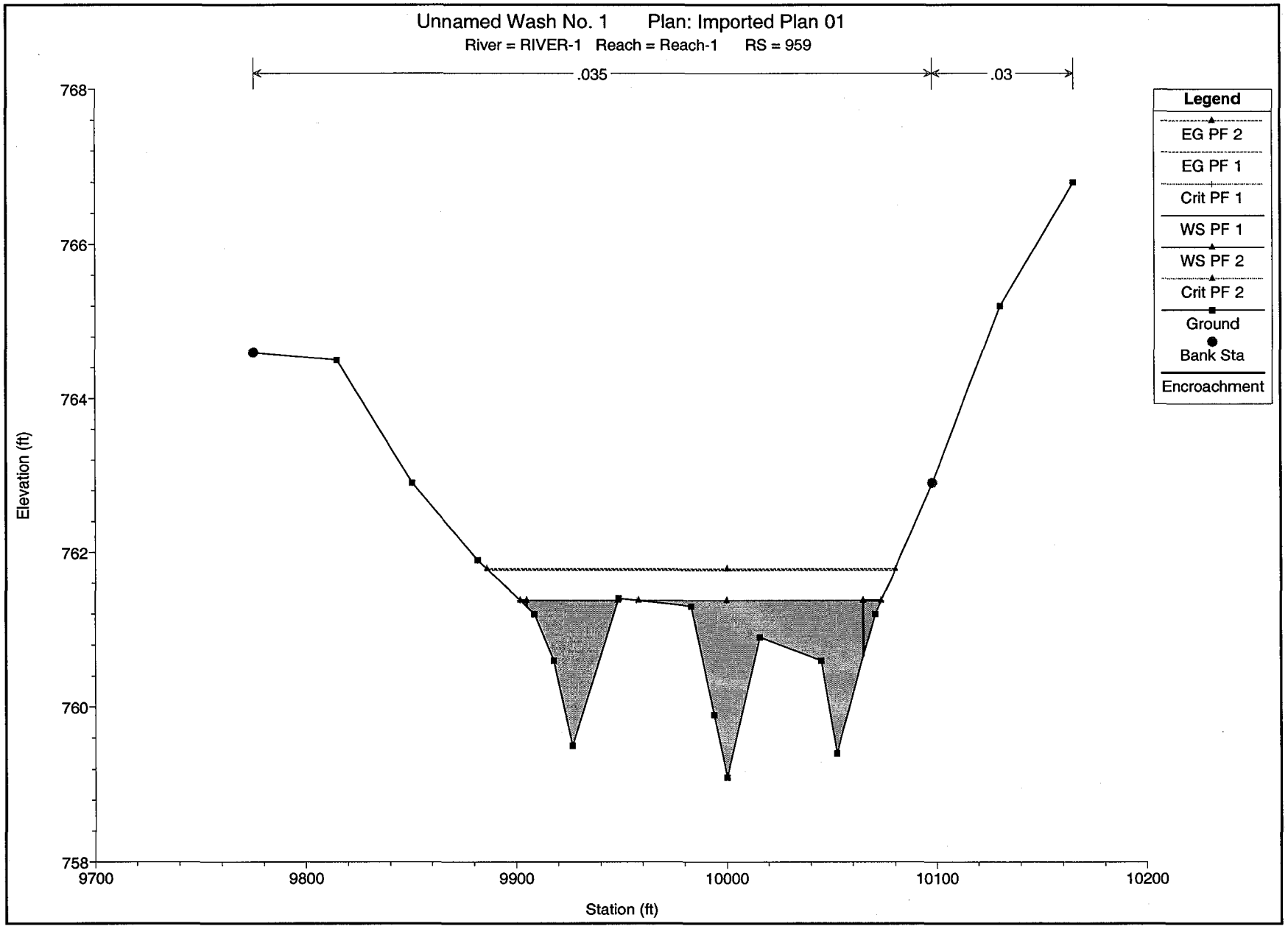

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 1921
.03
.035
.03
Elevation (ft)
804
802
800
798
796
794
792
790
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Bank Sta
Encroachment

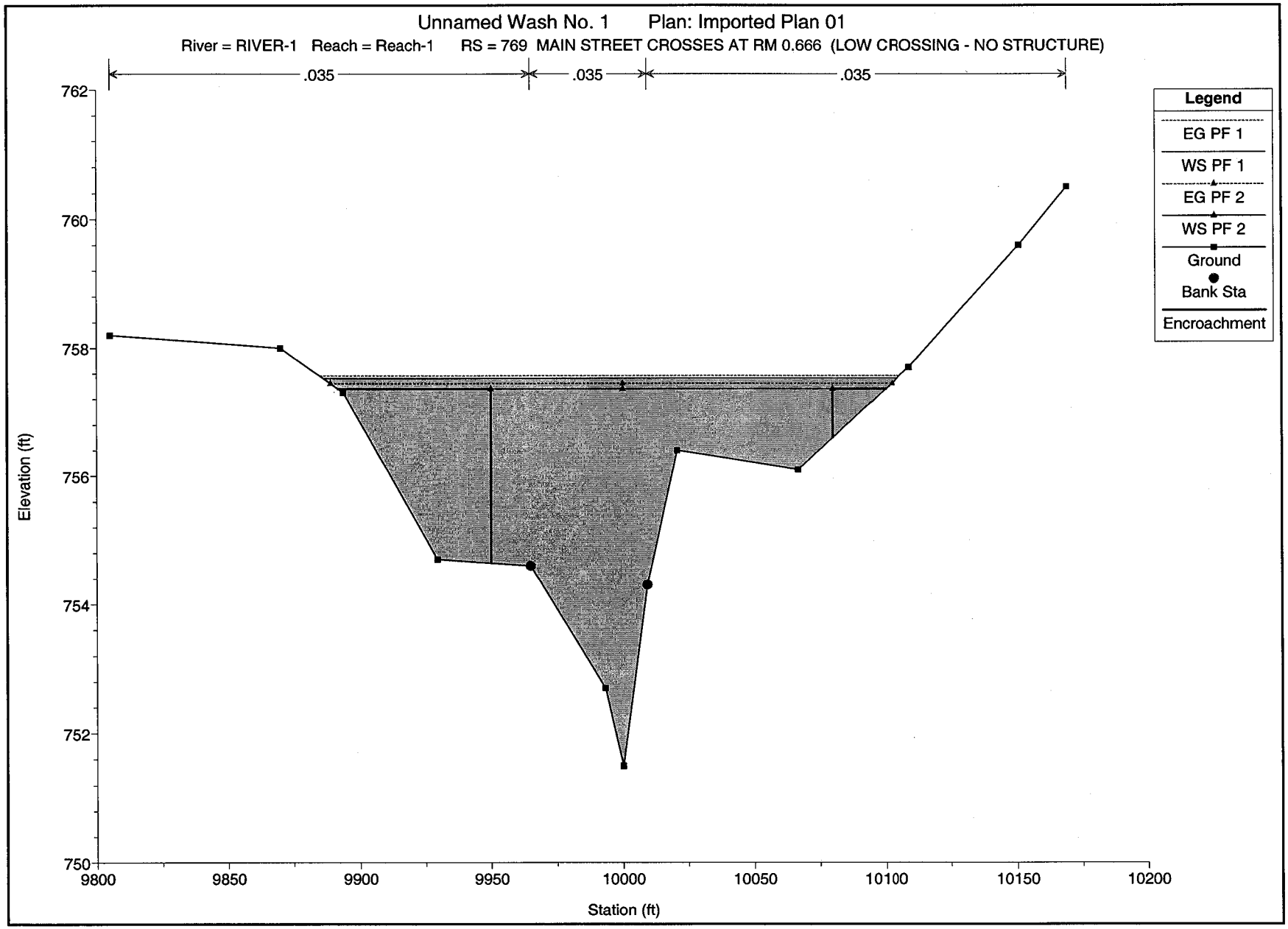

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 1723
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
796
794
792
790
788
786
9600
9800
10000
10200
10400
10600
Station (ft)

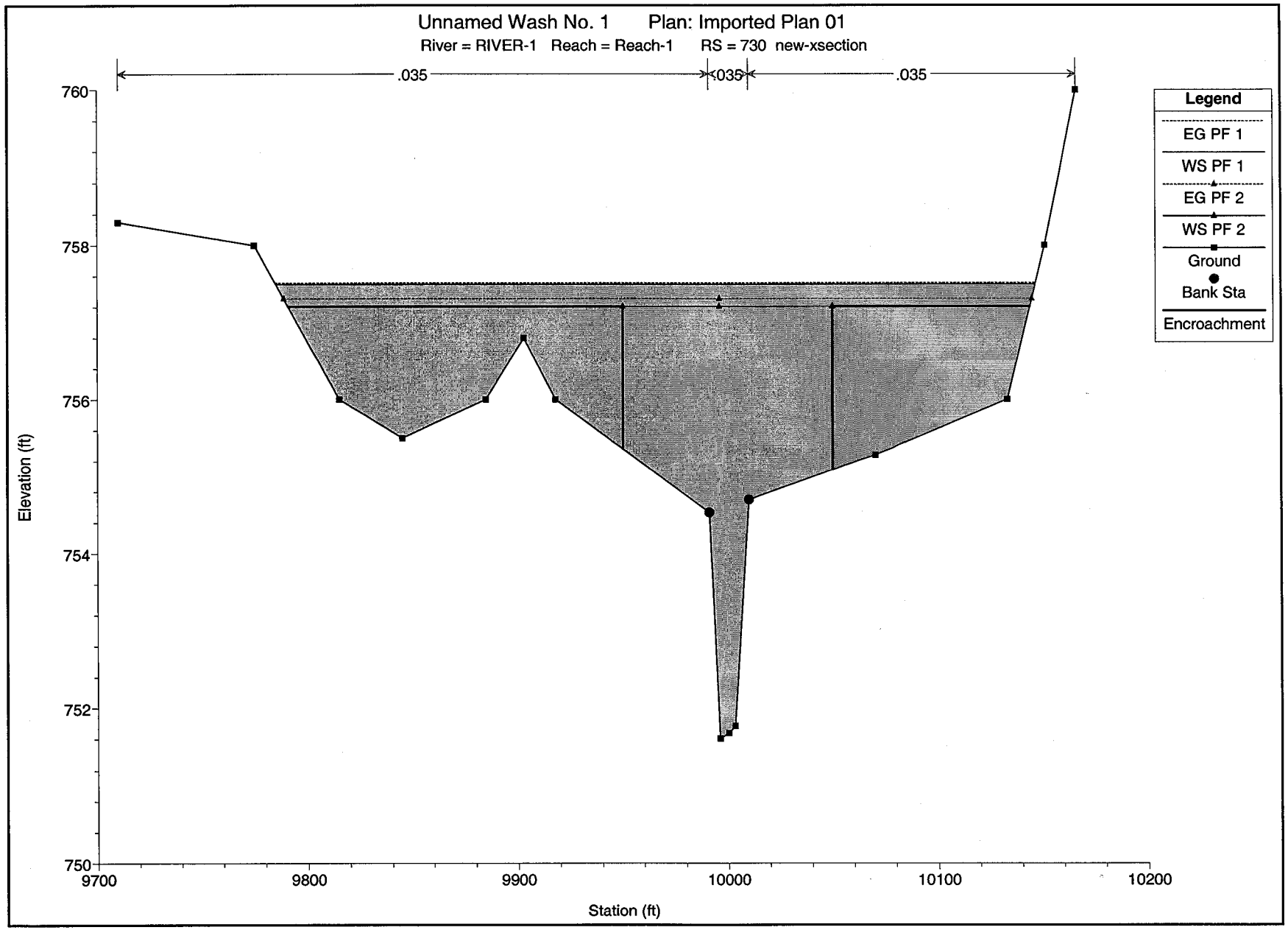

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 1540
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
790
788
786
784
782
780
778
9600
9700
9800
9900
10000
10100
10200
10300
10400
Station (ft)

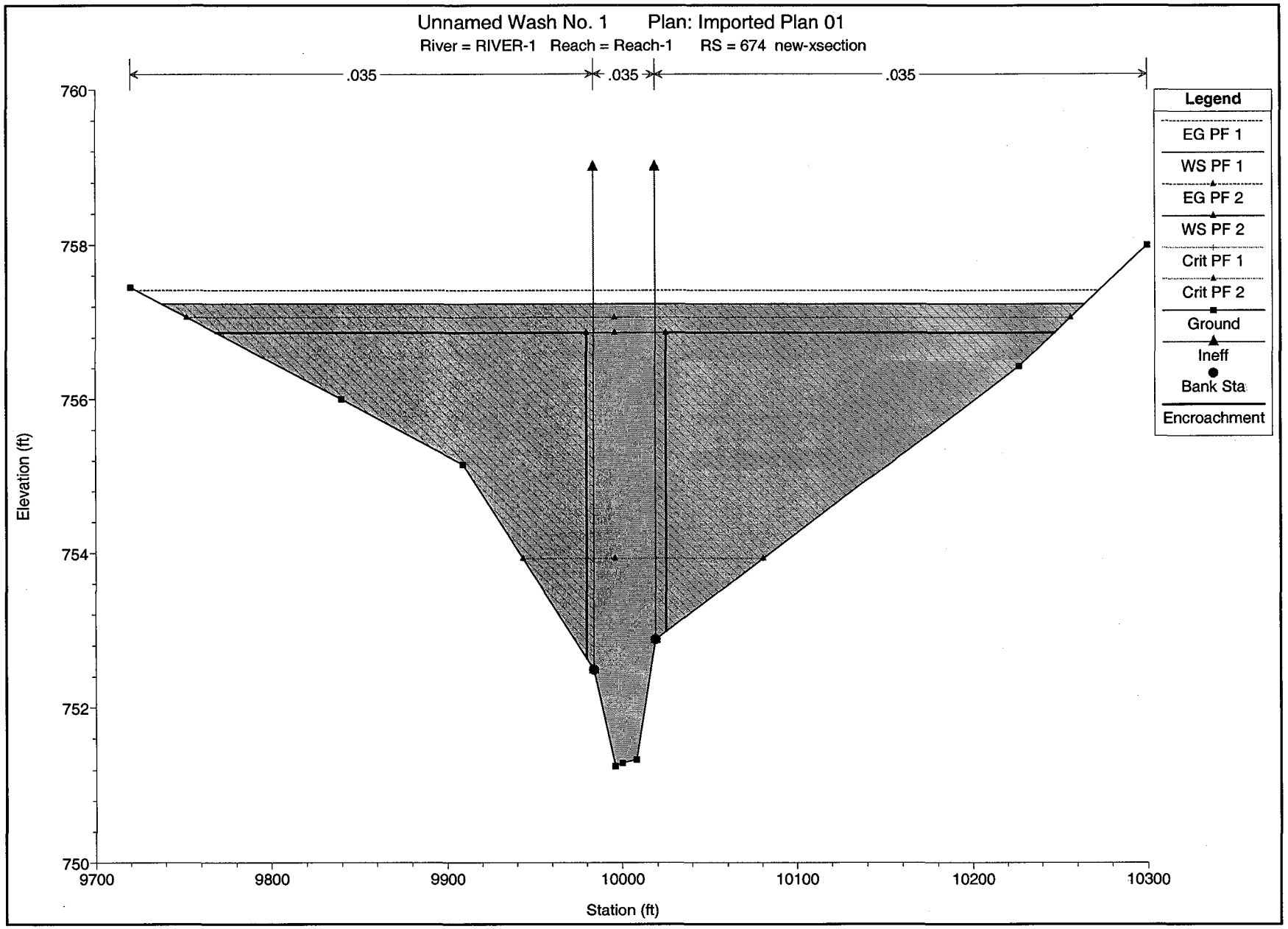

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 1347
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
780
778
776
774
772
770
9700
9800
9900
10000
10100
10200
Station (ft)

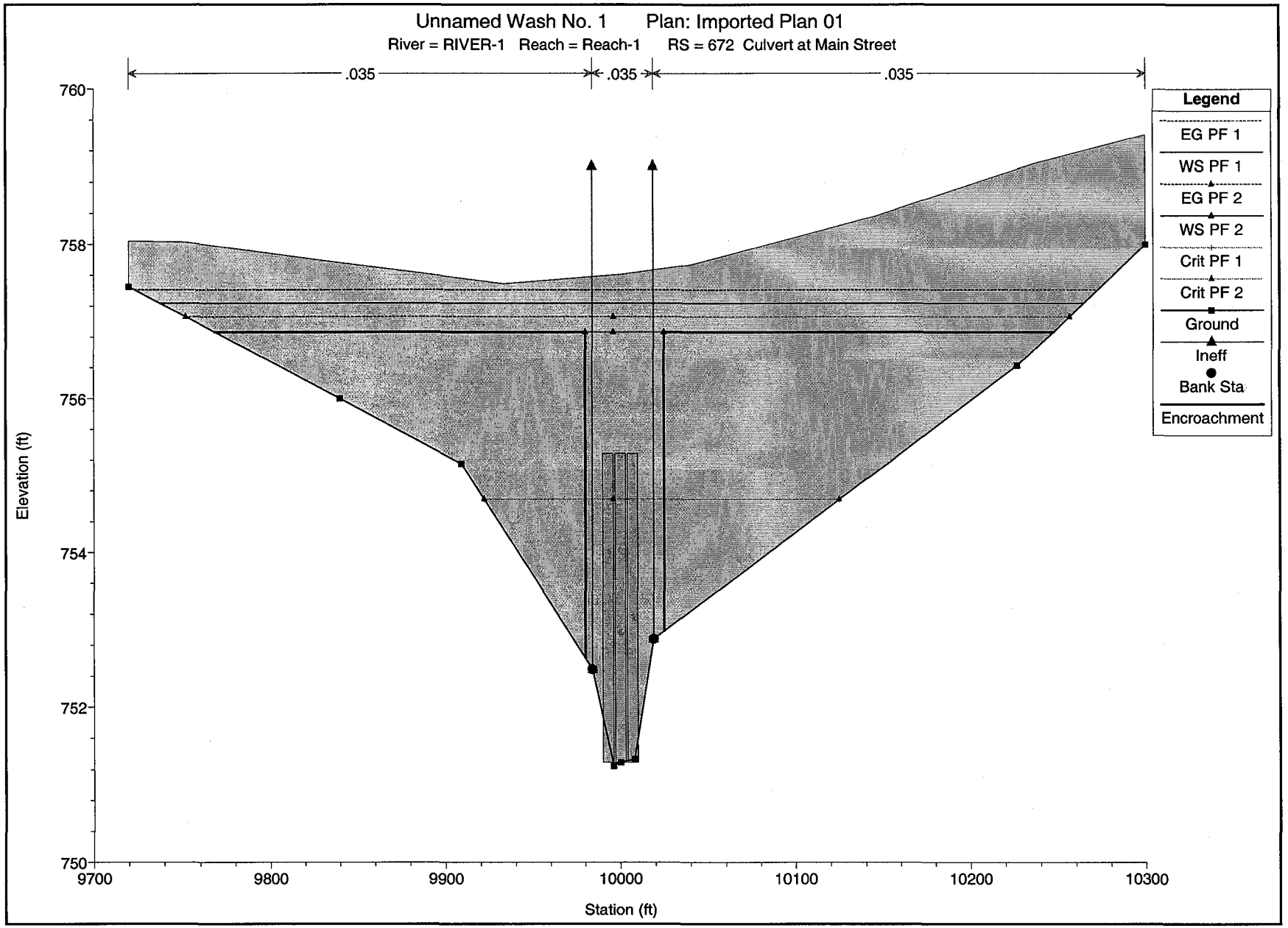

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 1151
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 2
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
774
772
770
768
766
764
9400
9600
9800
10000
10200
10400
Station (ft)

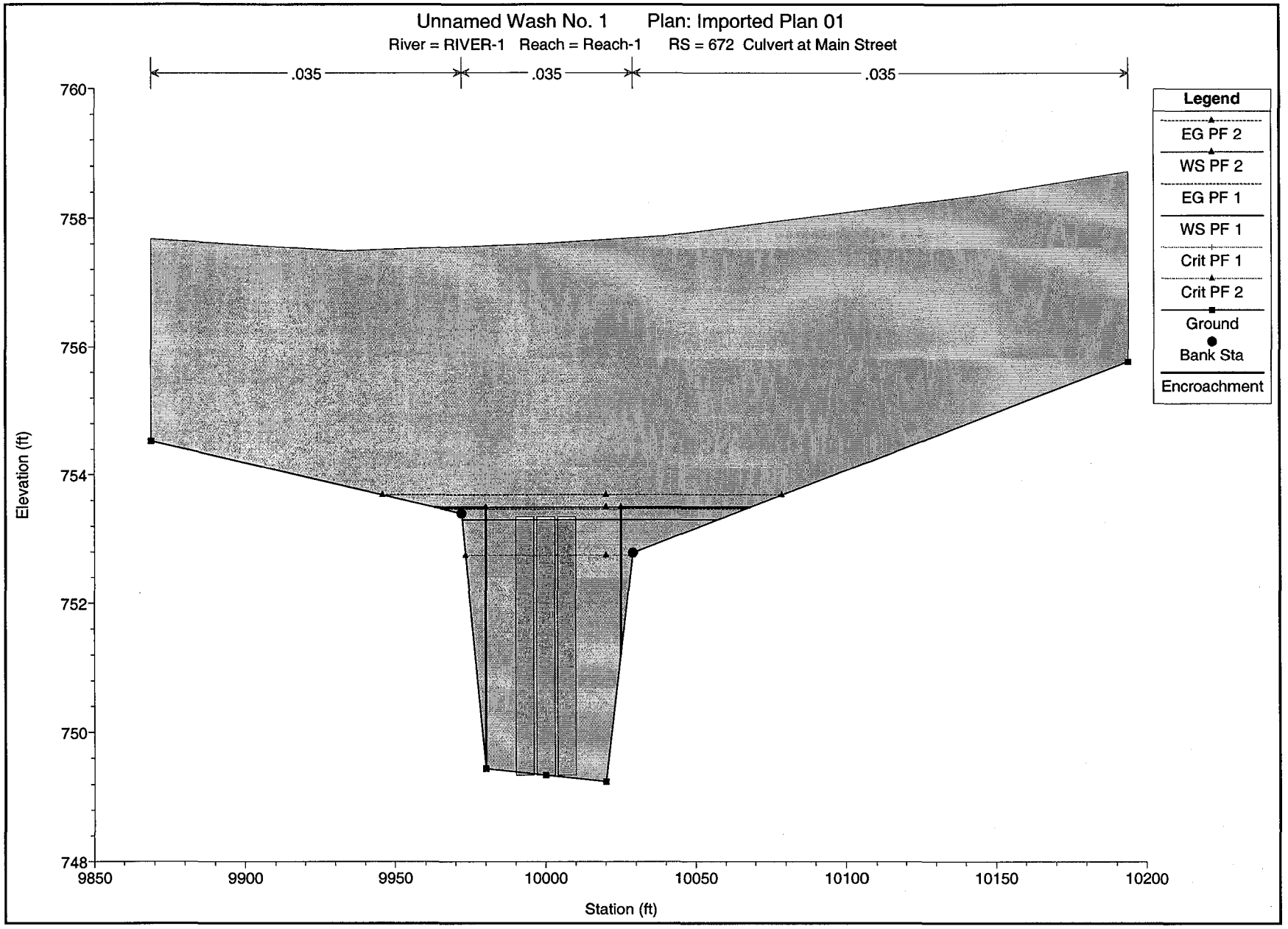

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 959
.035
.03
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
768
766
764
762
760
758
9700
9800
9900
10000
10100
10200
Station (ft)

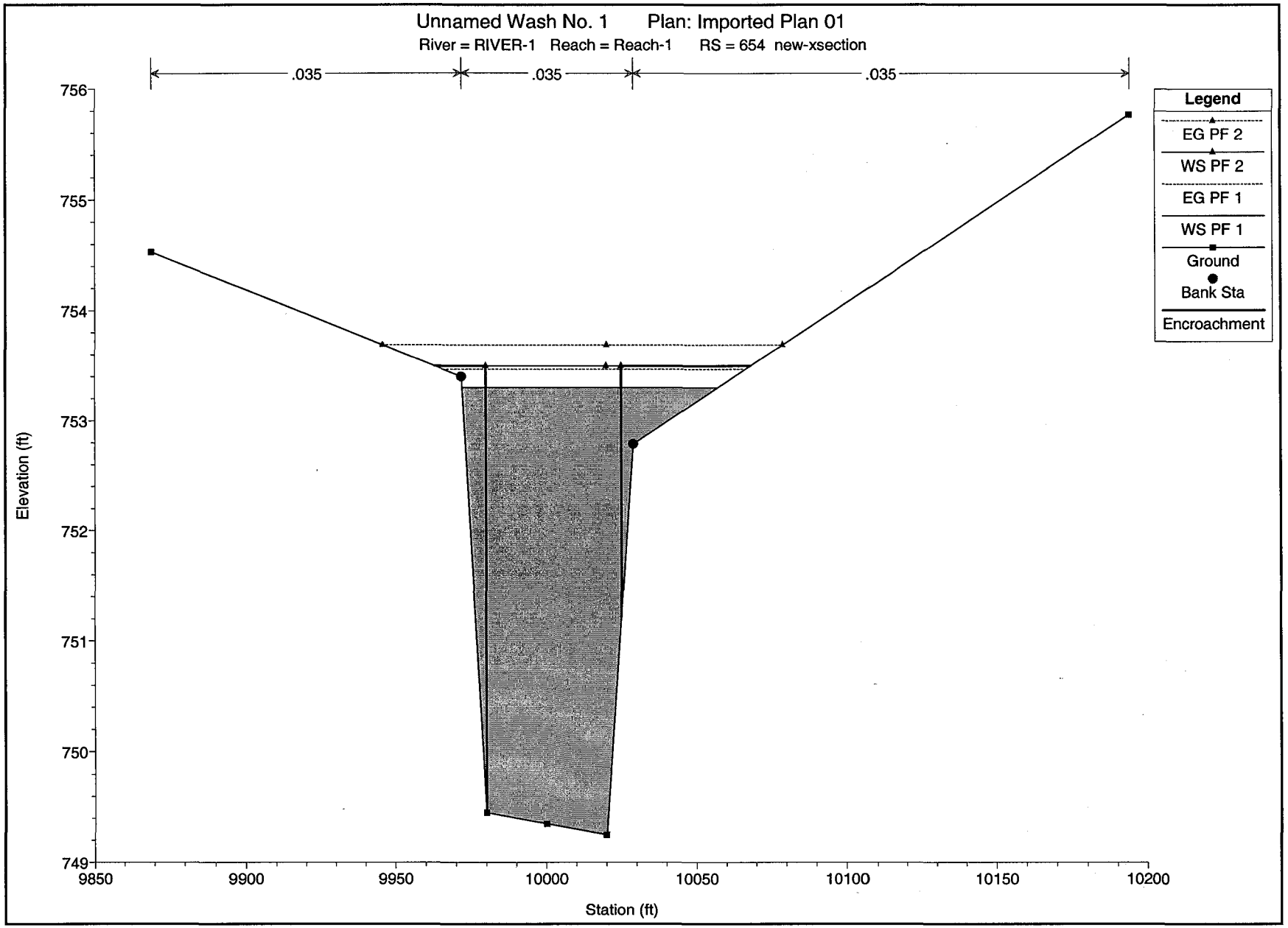

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 769 MAIN STREET CROSSES AT RM 0.666 (LOW CROSSING - NO STRUCTURE)
.035
.035
.035
Legend
EG PF 1
WS PF 1
EG PF 2
WS PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
762
760
758
756
754
752
750
9800
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

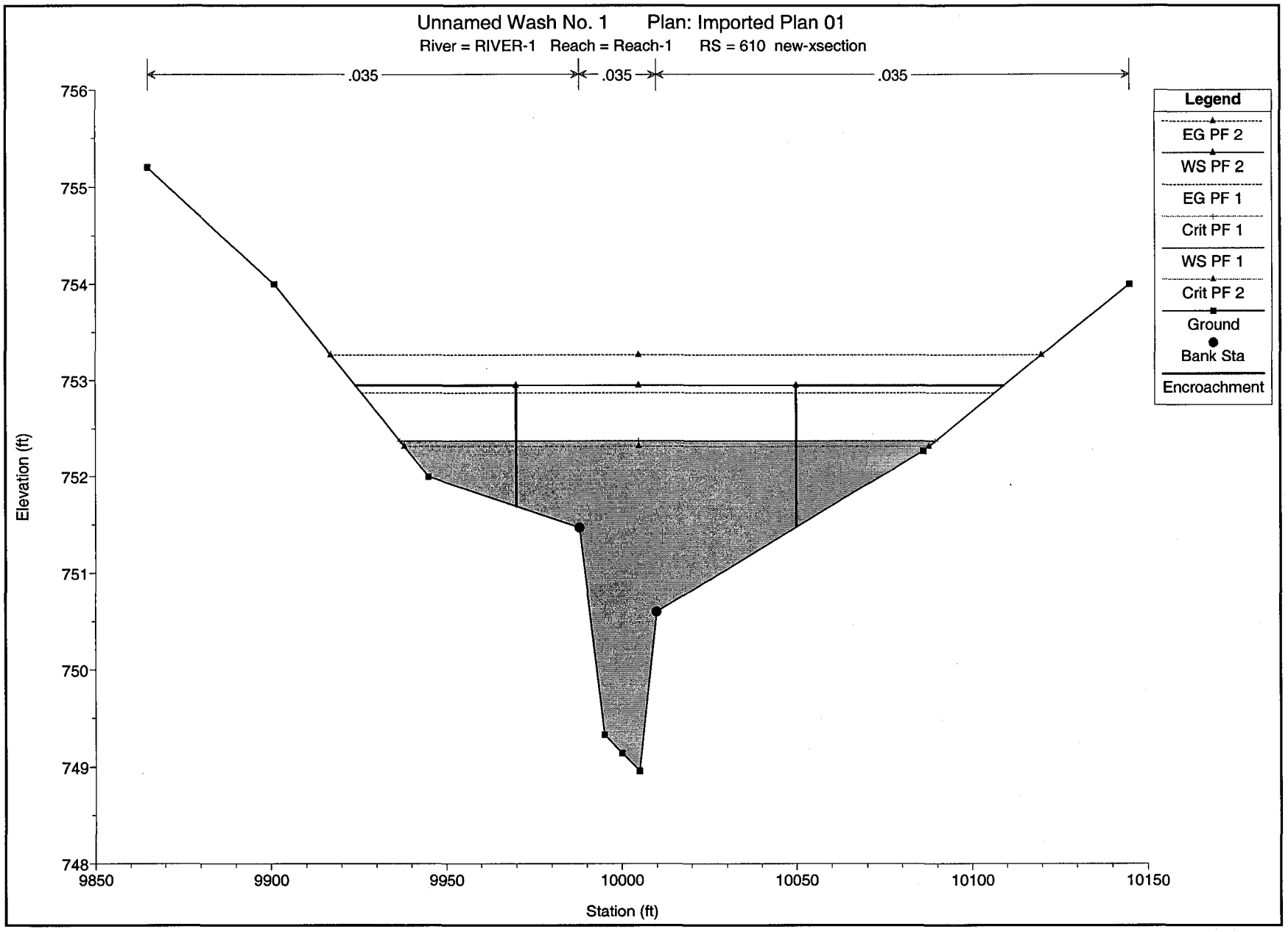

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 730 new-xsection
.035
.035
.035
Legend
EG PF 1
WS PF 1
EG PF 2
WS PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
760
758
756
754
752
750
9700
9800
9900
10000
10100
10200
Station (ft)

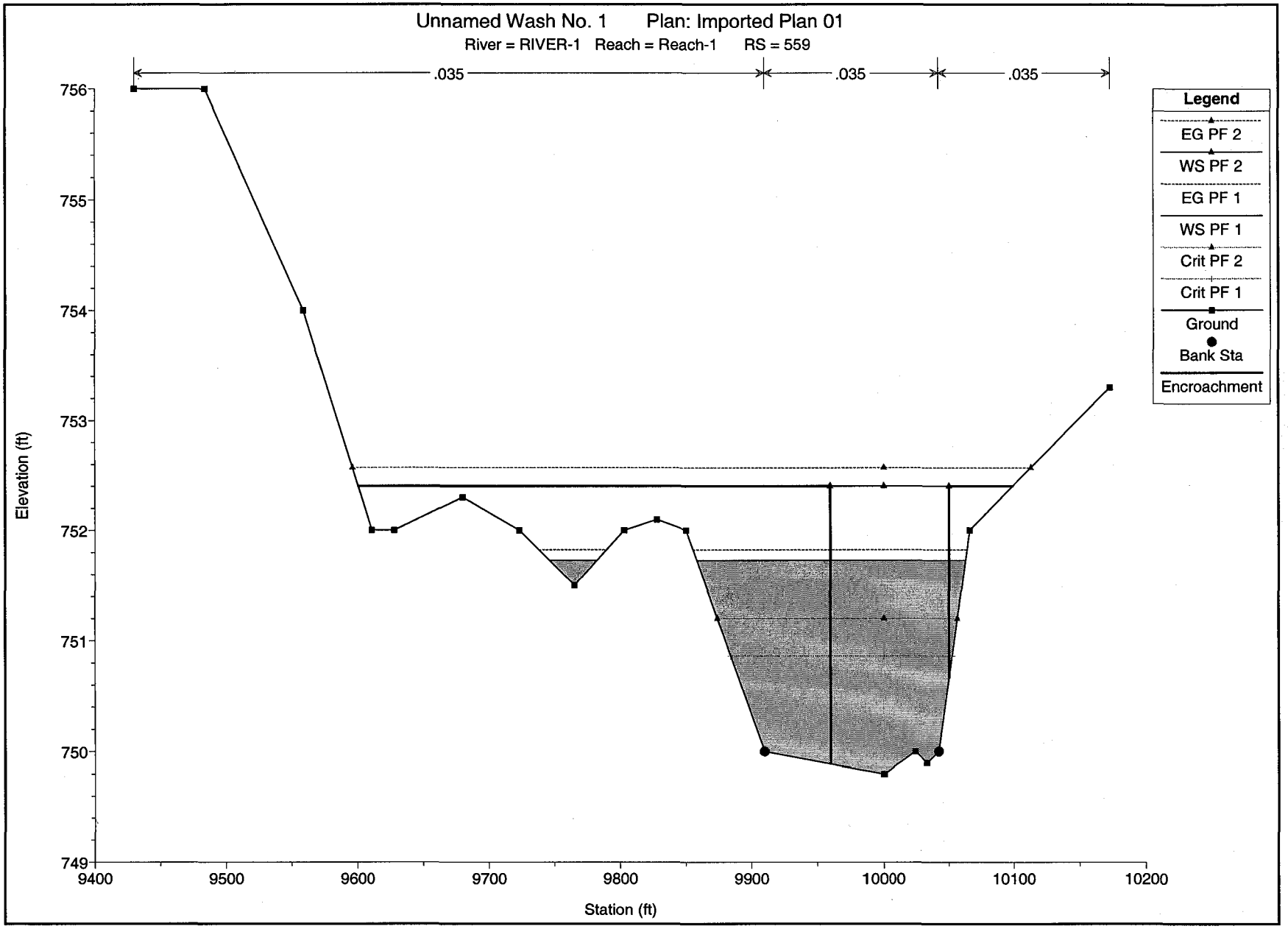

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 674 new-xsection
.035
.035
.035
Legend
EG PF 1
WS PF 1
EG PF 2
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
760
758
756
754
752
750
9700
9800
9900
10000
10100
10200
10300
Station (ft)

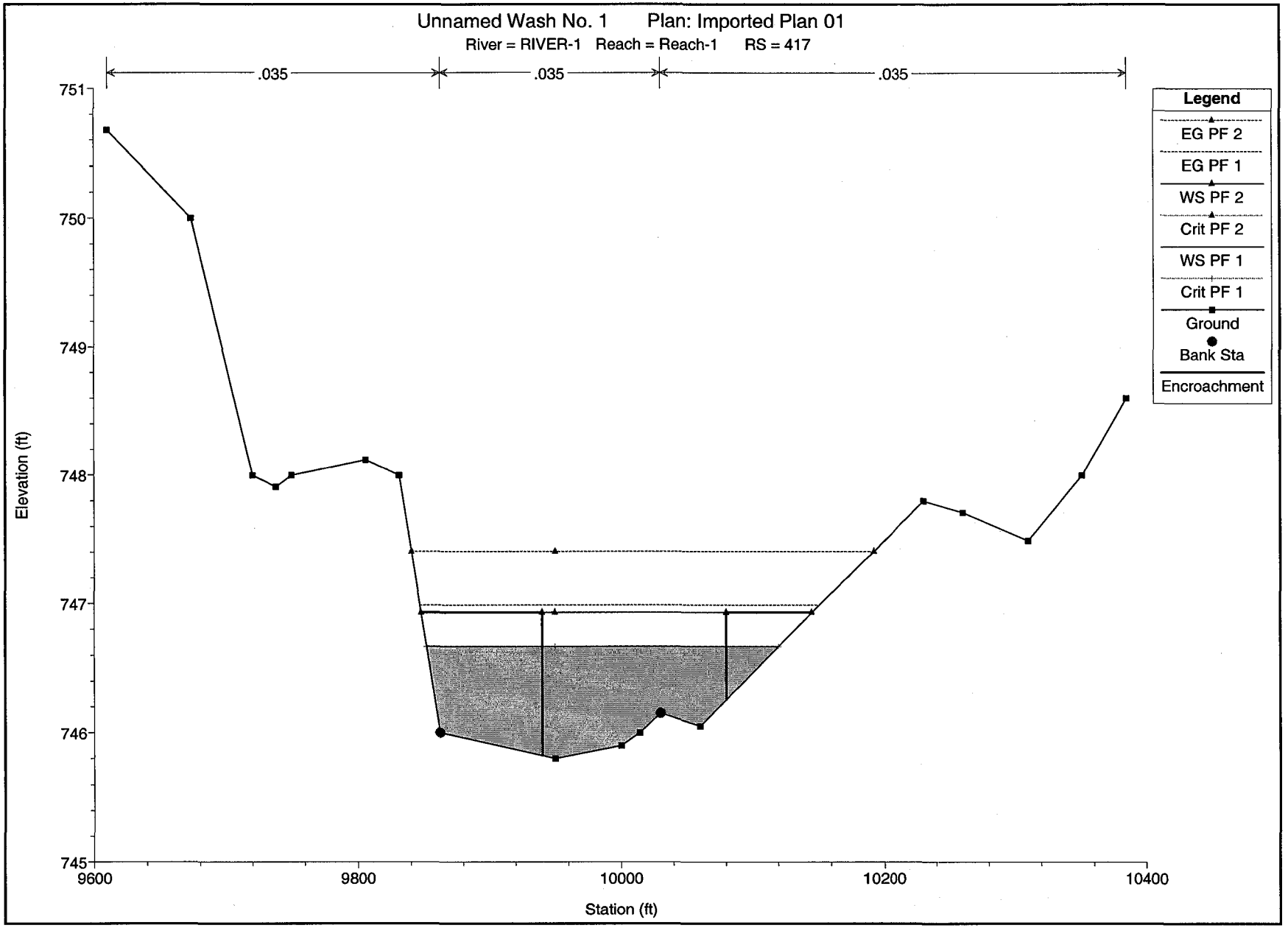

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 672 Culvert at Main Street
.035
.035
.035
Legend
EG PF 1
WS PF 1
EG PF 2
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
760
758
756
754
752
750
9700
9800
9900
10000
10100
10200
10300
Station (ft)

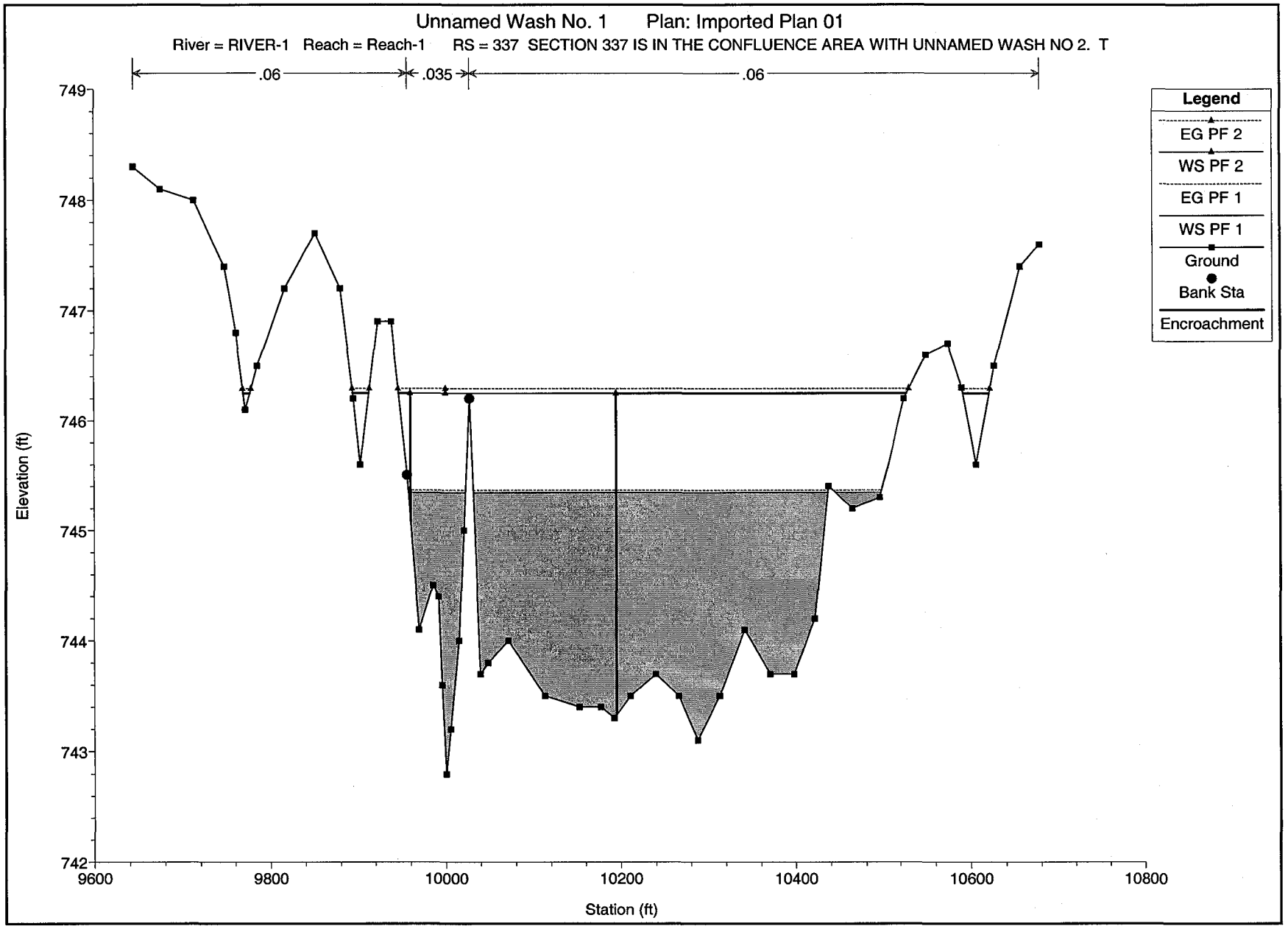

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 672 Culvert at Main Street
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
760
758
756
754
752
750
748
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

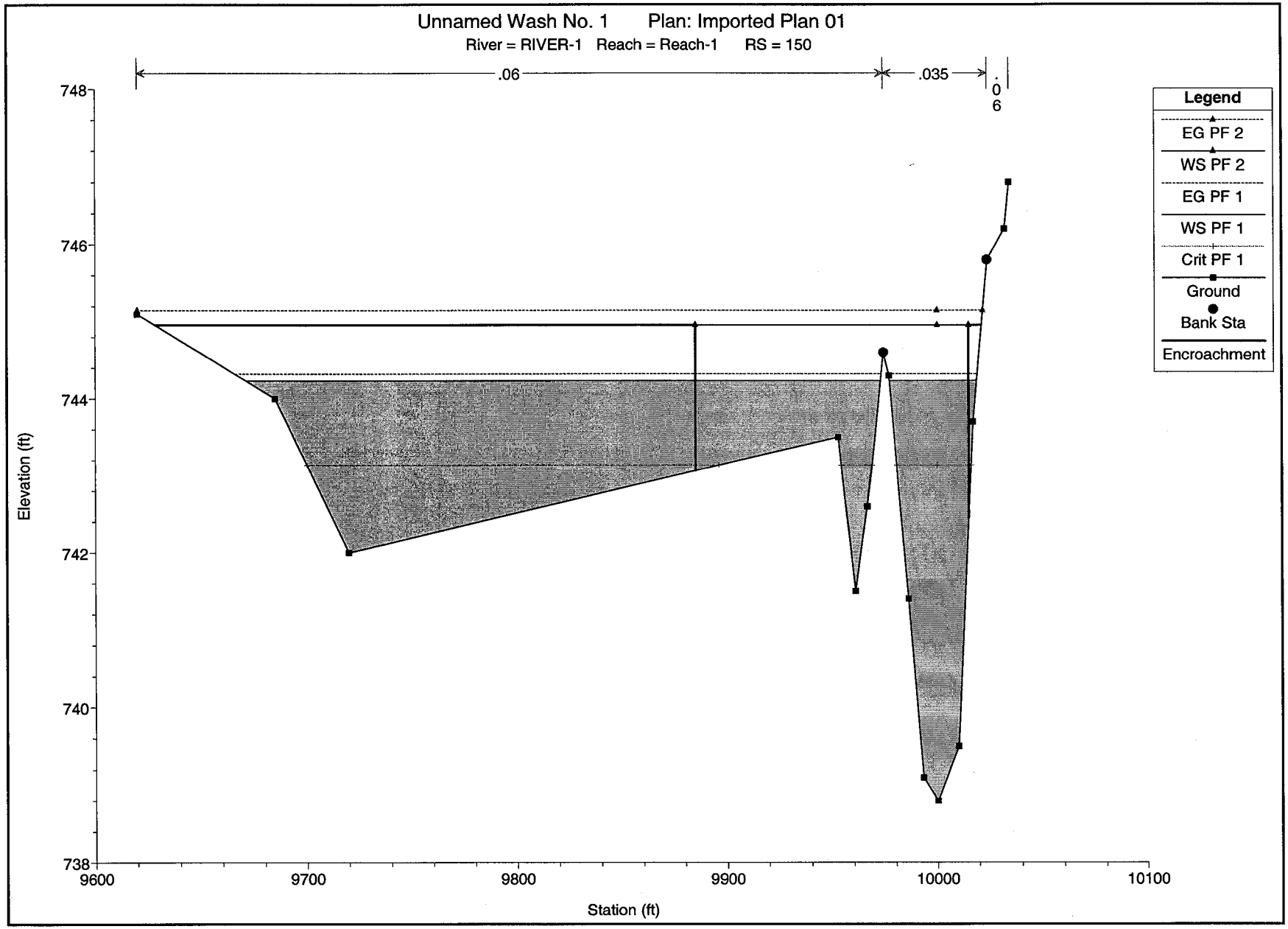

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 654 new-xsection
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
756
755
754
753
752
751
750
749
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

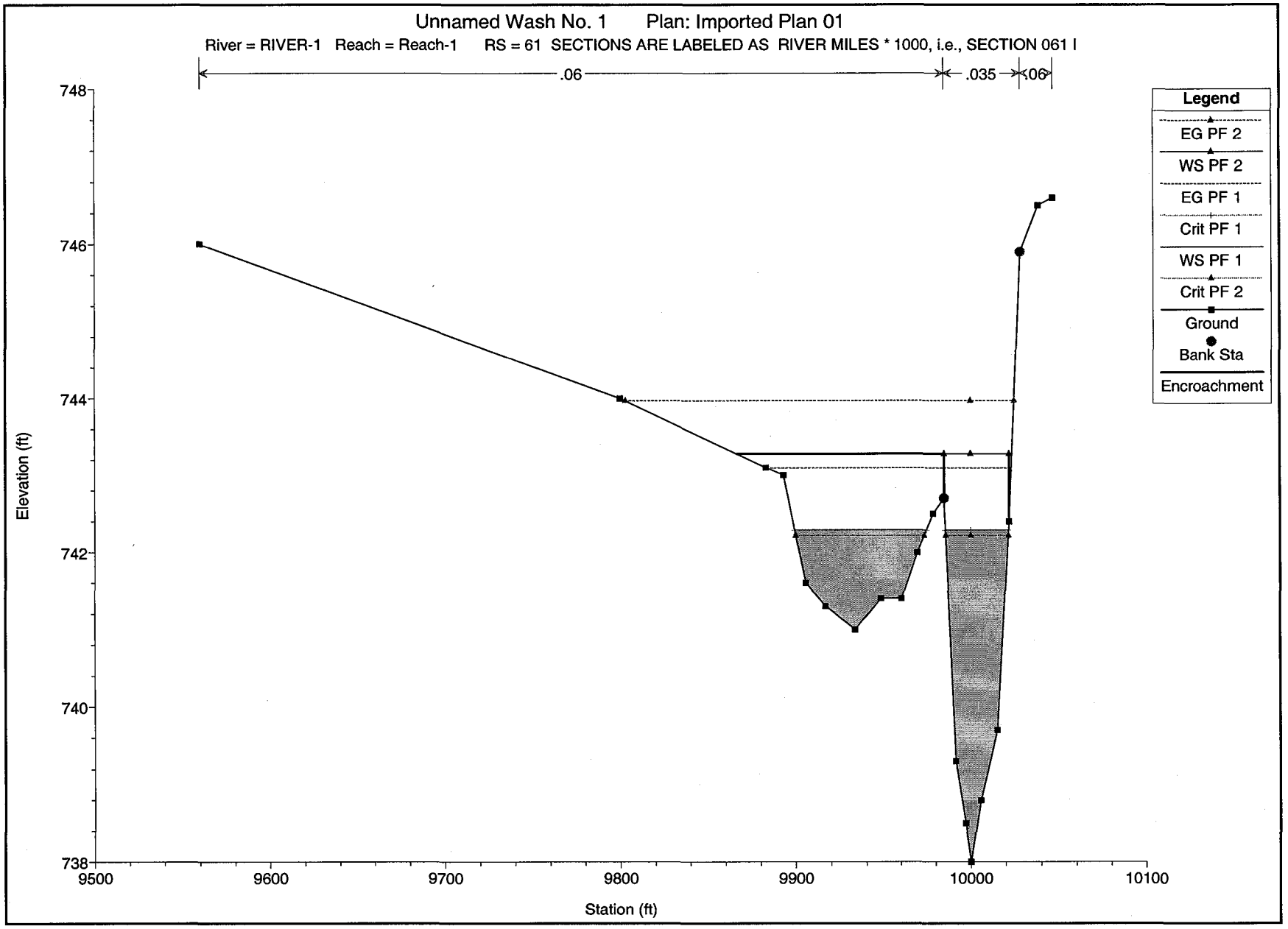

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 610 new-xsection
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 1
WS PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
756
755
754
753
752
751
750
749
748
9850
9900
9950
10000
10050
10100
10150
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 559
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 2
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
756
755
754
753
752
751
750
749
9400
9500
9600
9700
9800
9900
10000
10100
10200
Station (ft)


Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 417
.035
.035
.035
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
751
750
749
748
747
746
745
9600
9800
10000
10200
10400
Station (ft)

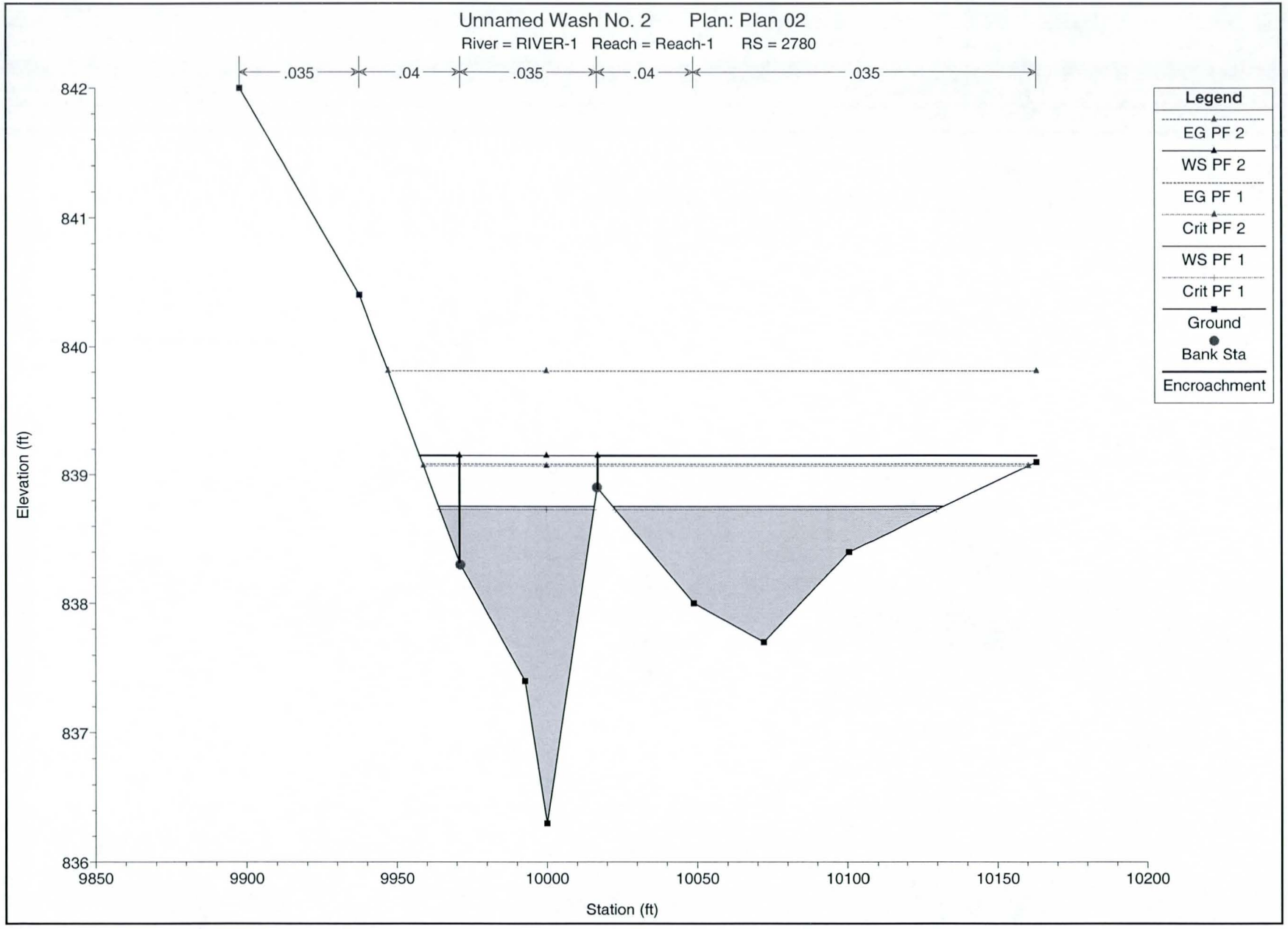

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 337 SECTION 337 IS IN THE CONFLUENCE AREA WITH UNNAMED WASH NO 2. T
.06
.035
.06
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
749
748
747
746
745
744
743
742
9600
9800
10000
10200
10400
10600
10800
Station (ft)

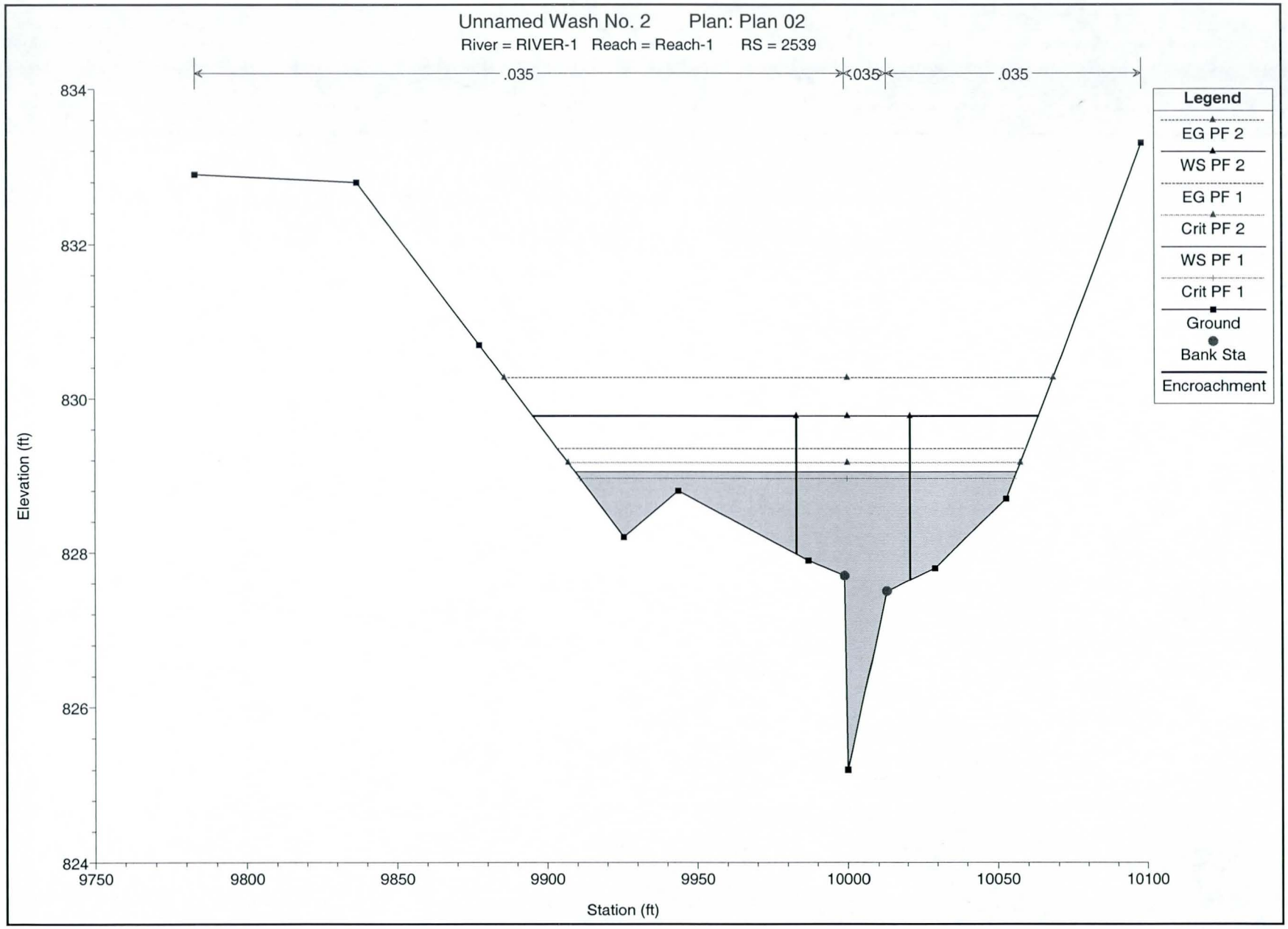

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 150
.06
.035
.06
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
748
746
744
742
740
738
9600
9700
9800
9900
10000
10100
Station (ft)

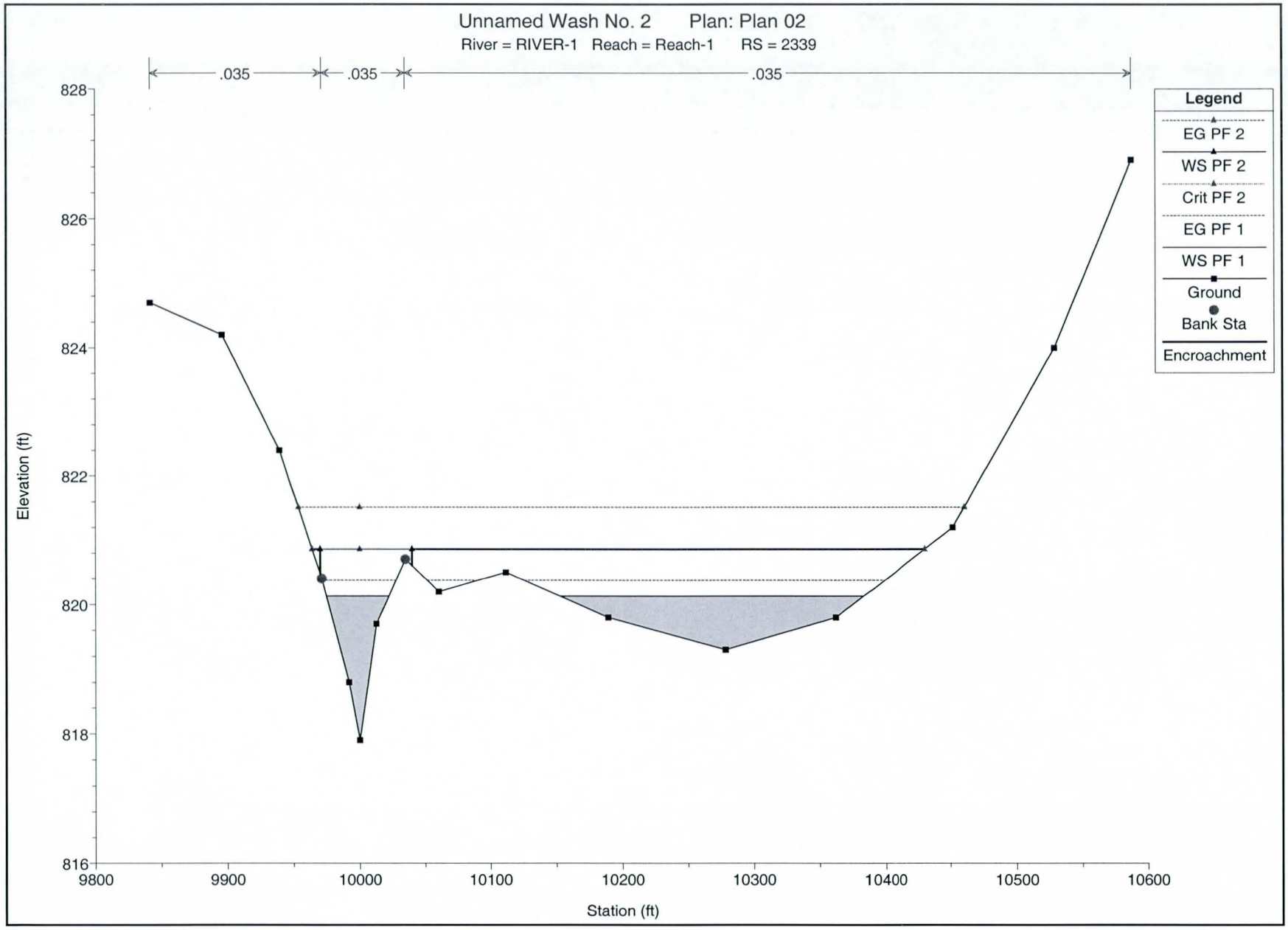

Unnamed Wash No. 1 Plan: Imported Plan 01
River = RIVER-1 Reach = Reach-1 RS = 61 SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 I
.06
.035
.06
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 1
WS PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
748
746
744
742
740
738
9500
9600
9700
9800
9900
10000
10100
Station (ft)

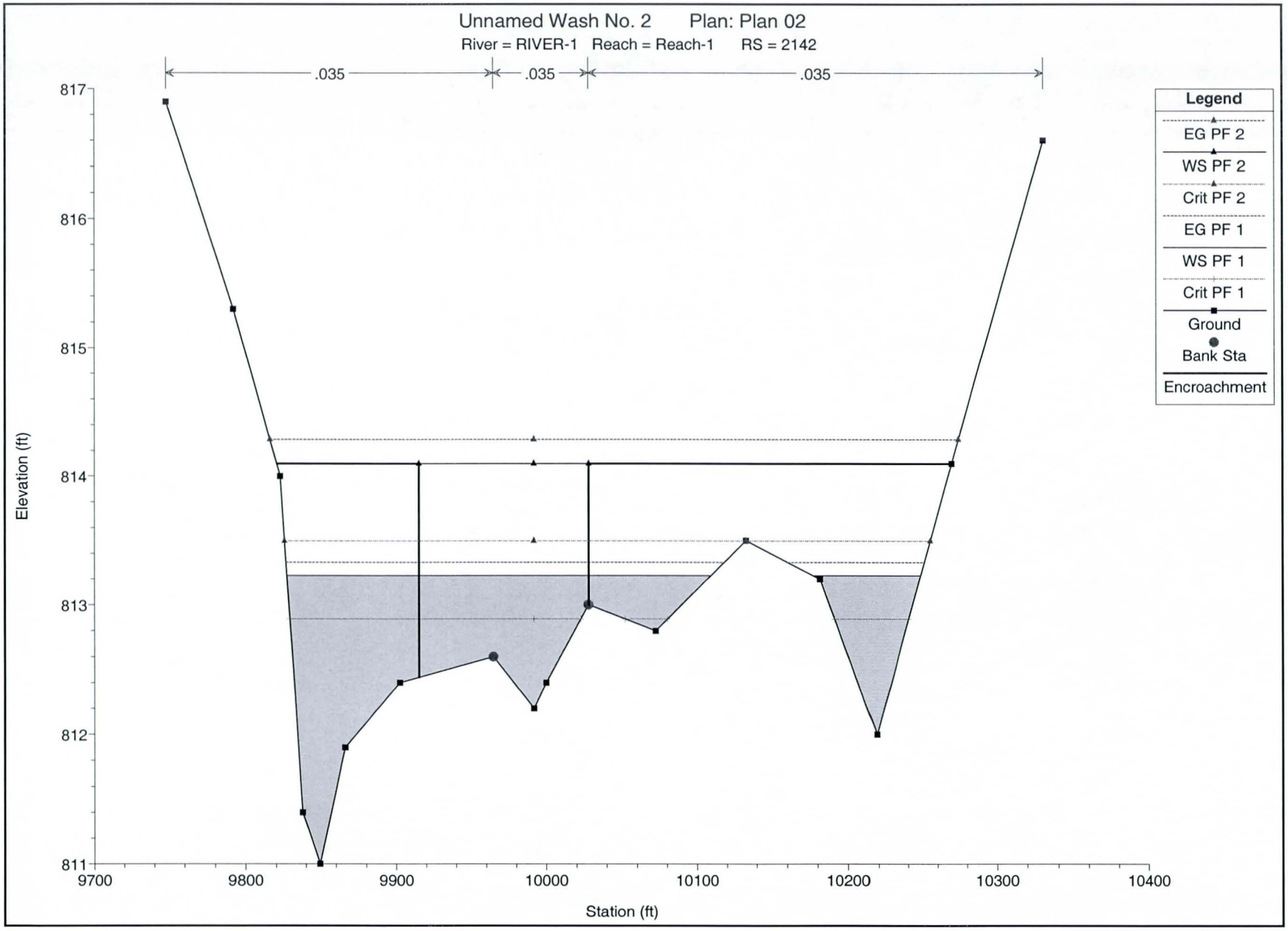
Appendix E.2

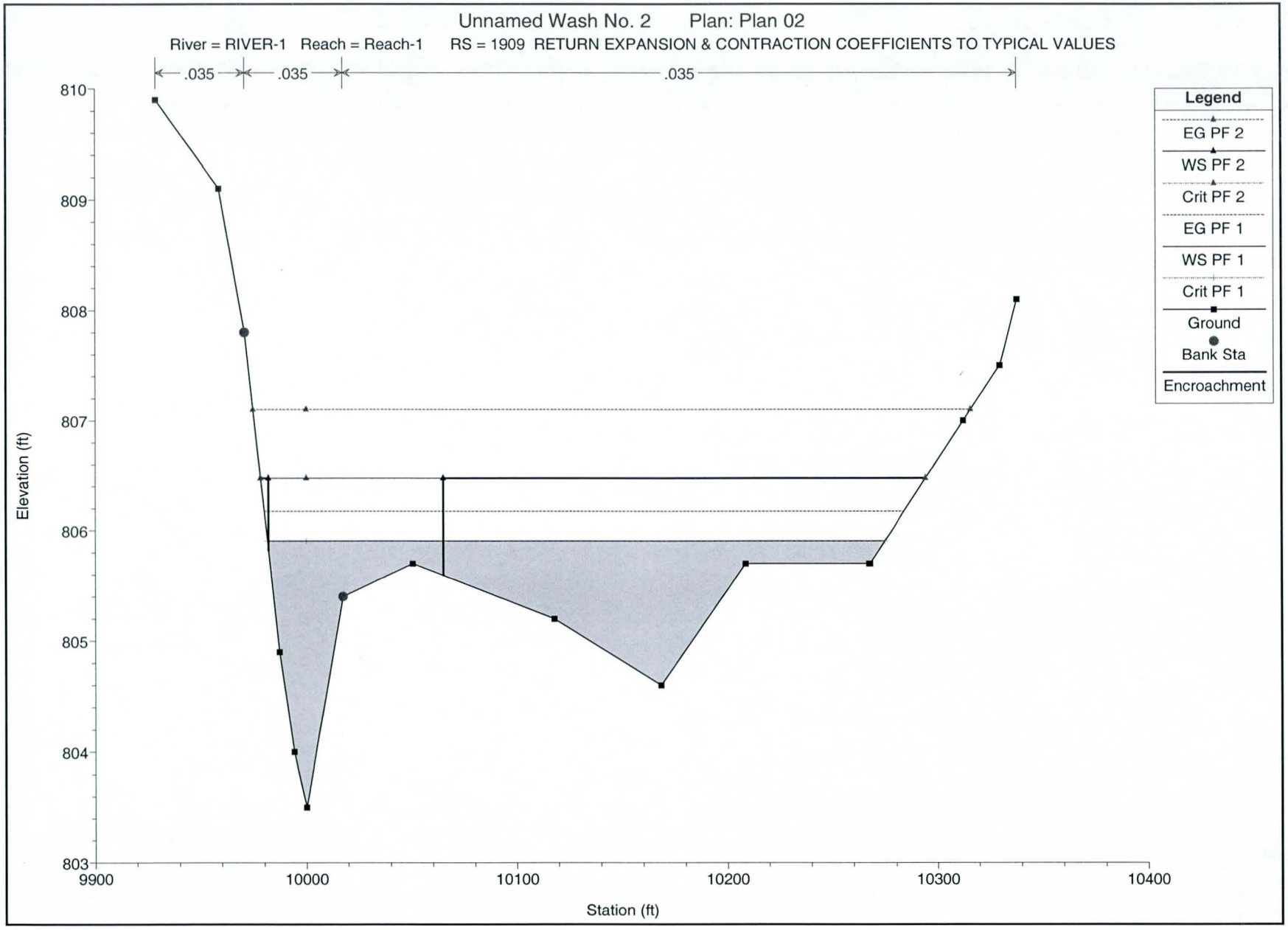
UNNAMED WASH NO. 2

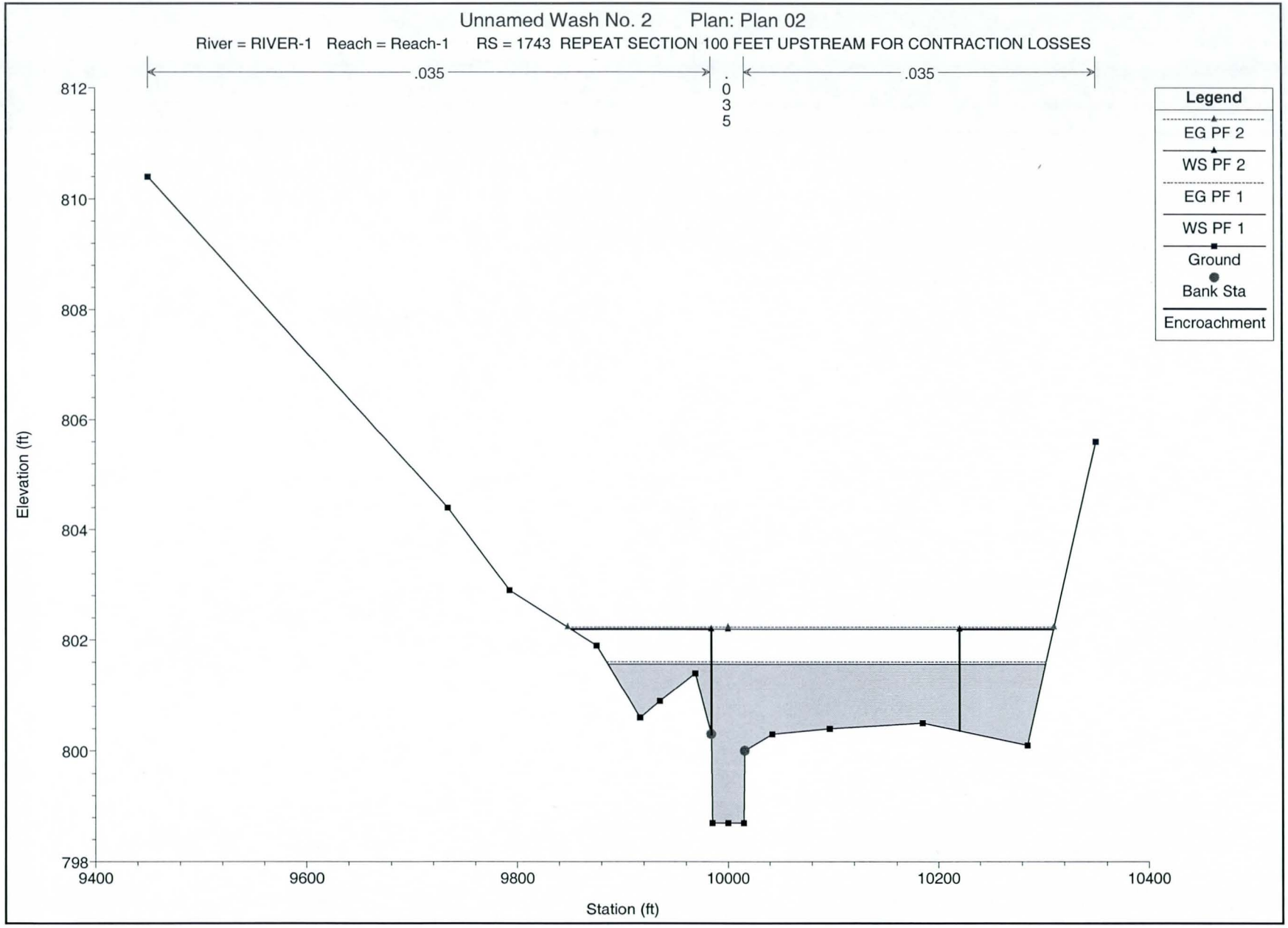

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 2780
.035
.04
.035
.04
.035
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
842
841
840
839
838
837
836
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

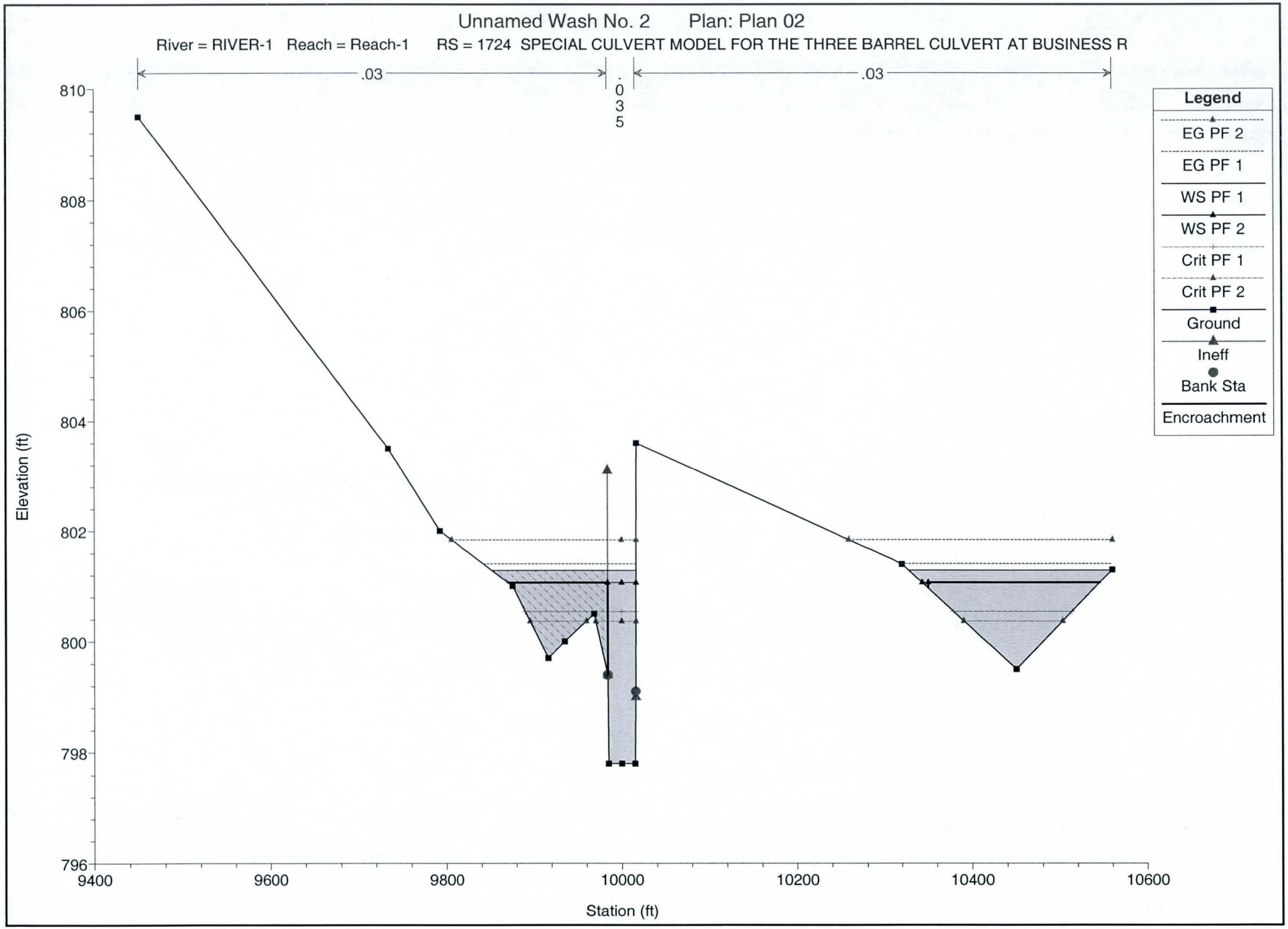

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 2539
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
834
832
830
828
826
824
9750
9800
9850
9900
9950
10000
10050
10100
Station (ft)

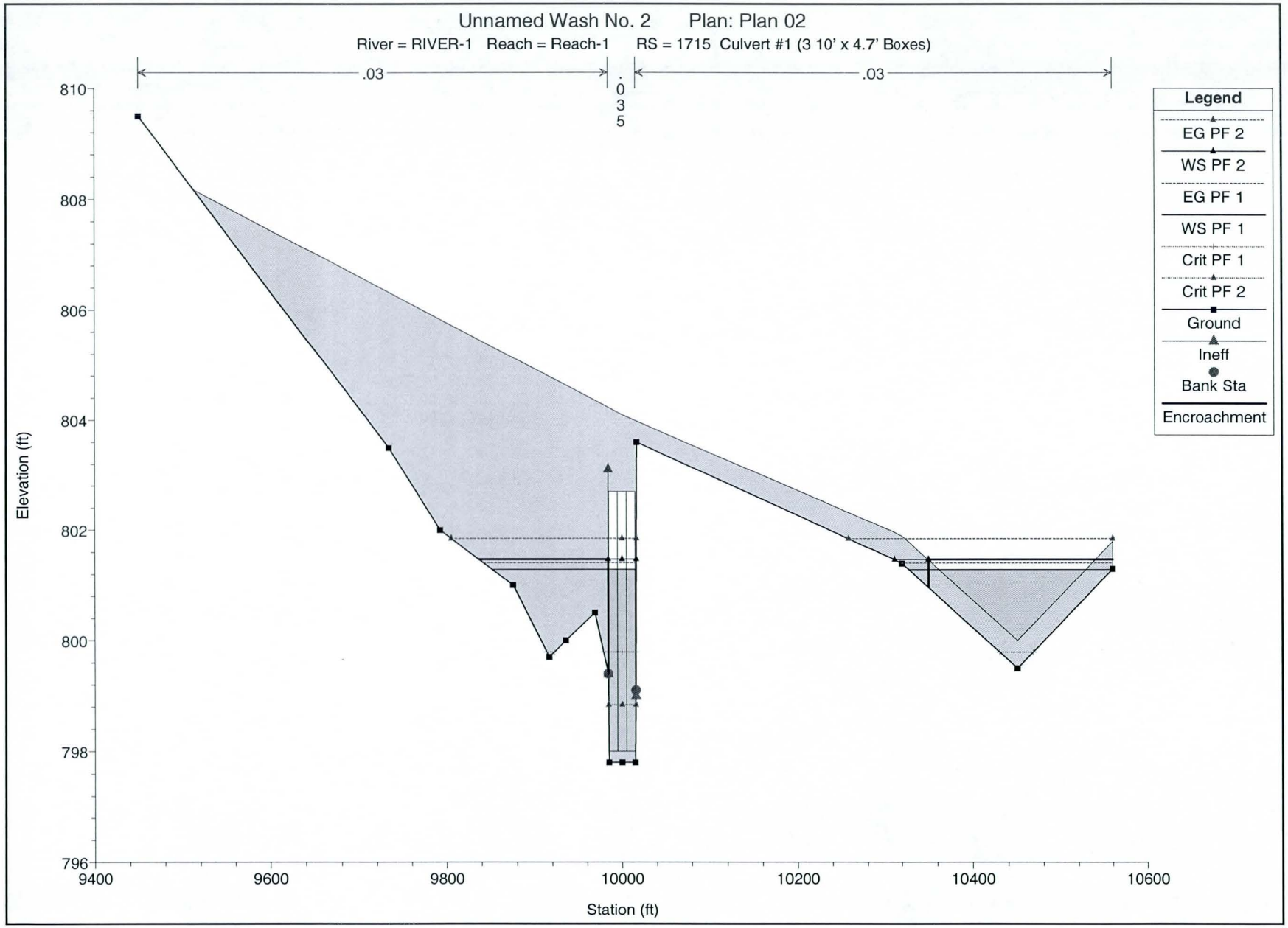

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 2339
.035
.035
.035
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
828
826
824
822
820
818
816
9800
9900
10000
10100
10200
10300
10400
10500
10600
Station (ft)

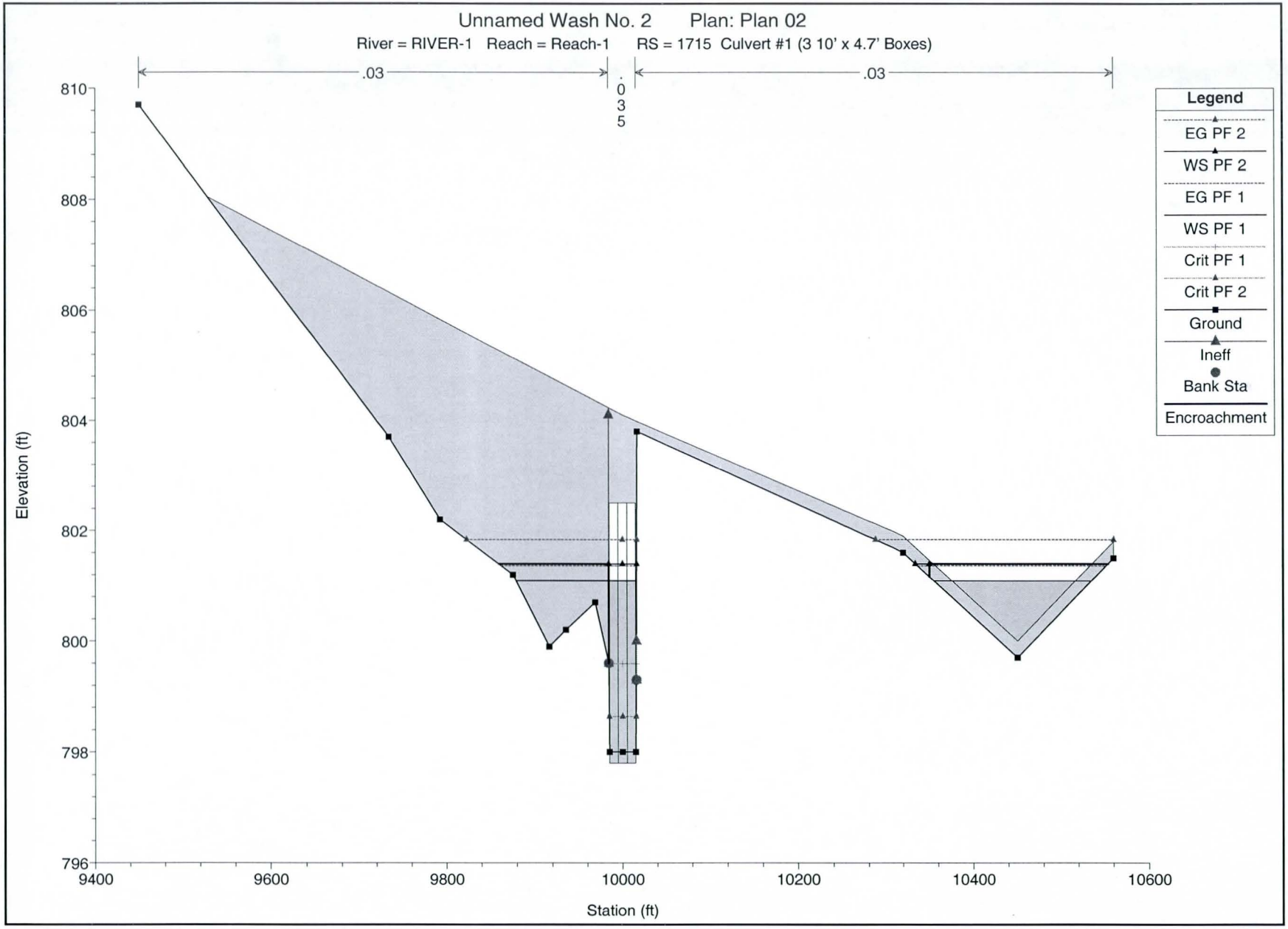

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 2142
.035
.035
.035
Elevation (ft)
817
816
815
814
813
812
811
9700
9800
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

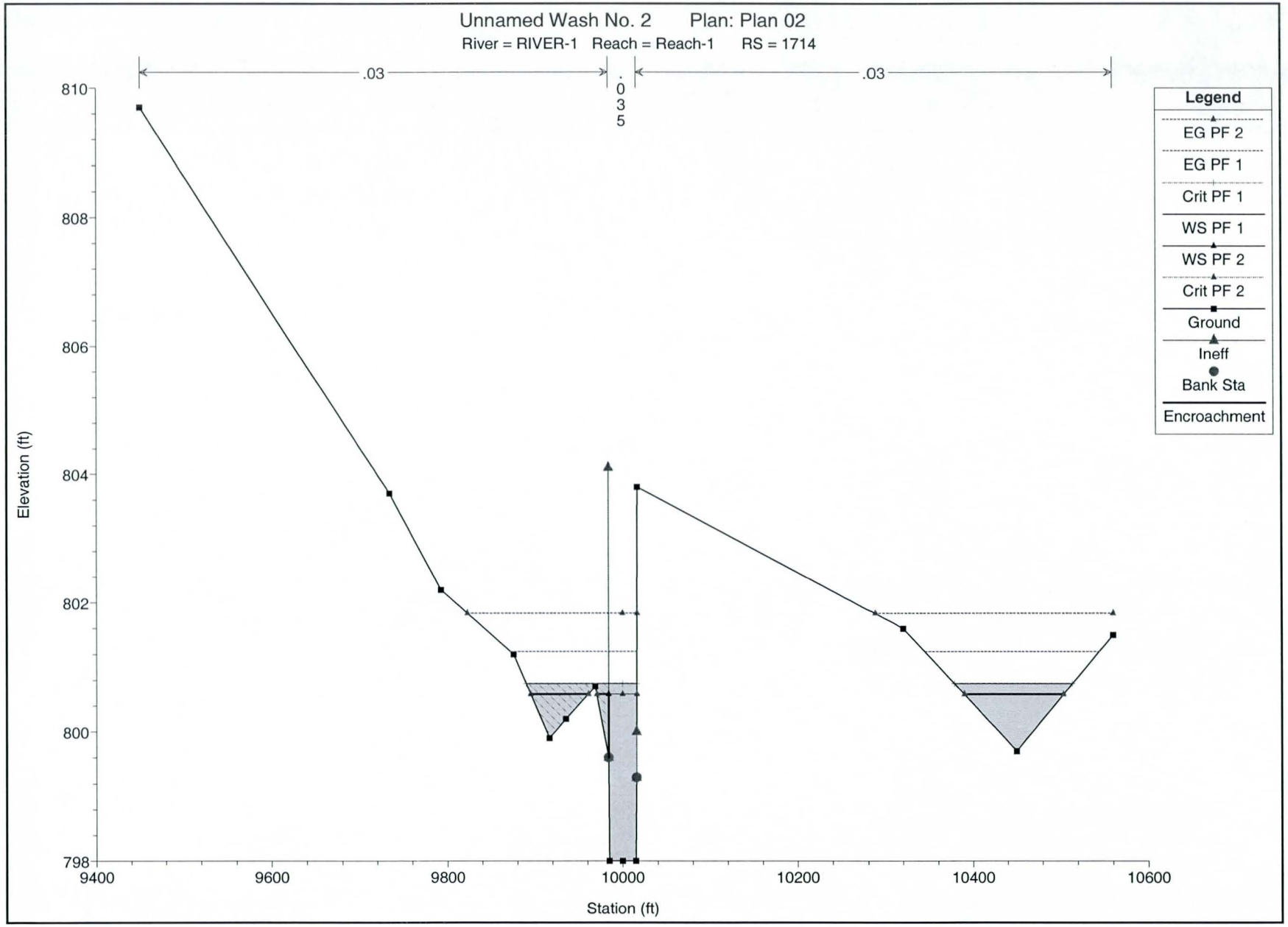

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1909 RETURN EXPANSION & CONTRACTION COEFFICIENTS TO TYPICAL VALUES
.035
.035
.035
Elevation (ft)
810
809
808
807
806
805
804
803
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

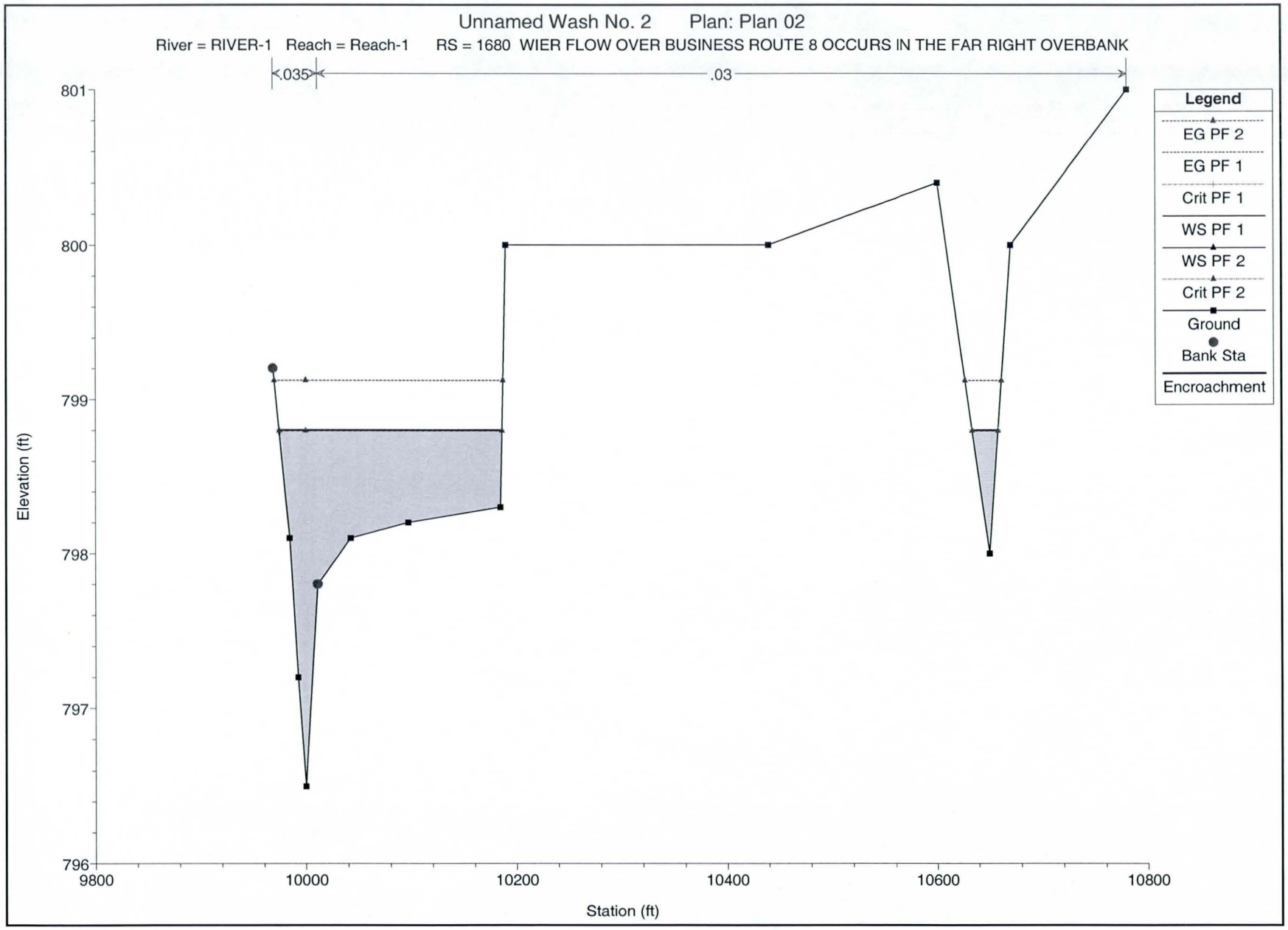

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1743 REPEAT SECTION 100 FEET UPSTREAM FOR CONTRACTION LOSSES
.035
.035
.035
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
812
810
808
806
804
802
800
798
9400
9600
9800
10000
10200
10400
Station (ft)

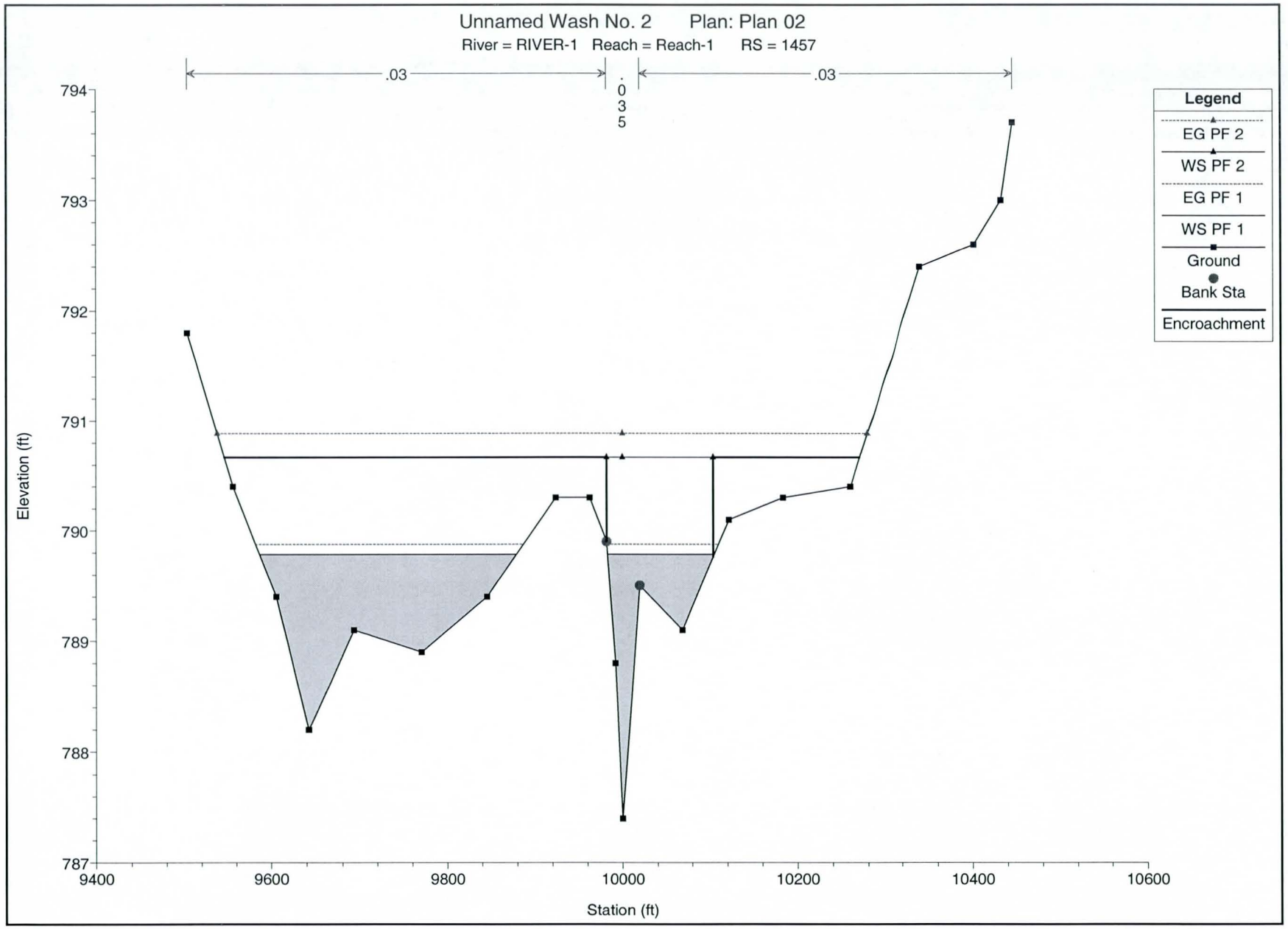

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1724 SPECIAL CULVERT MODEL FOR THE THREE BARREL CULVERT AT BUSINESS R
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 1
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
810
808
806
804
802
800
798
796
9400
9600
9800
10000
10200
10400
10600
Station (ft)

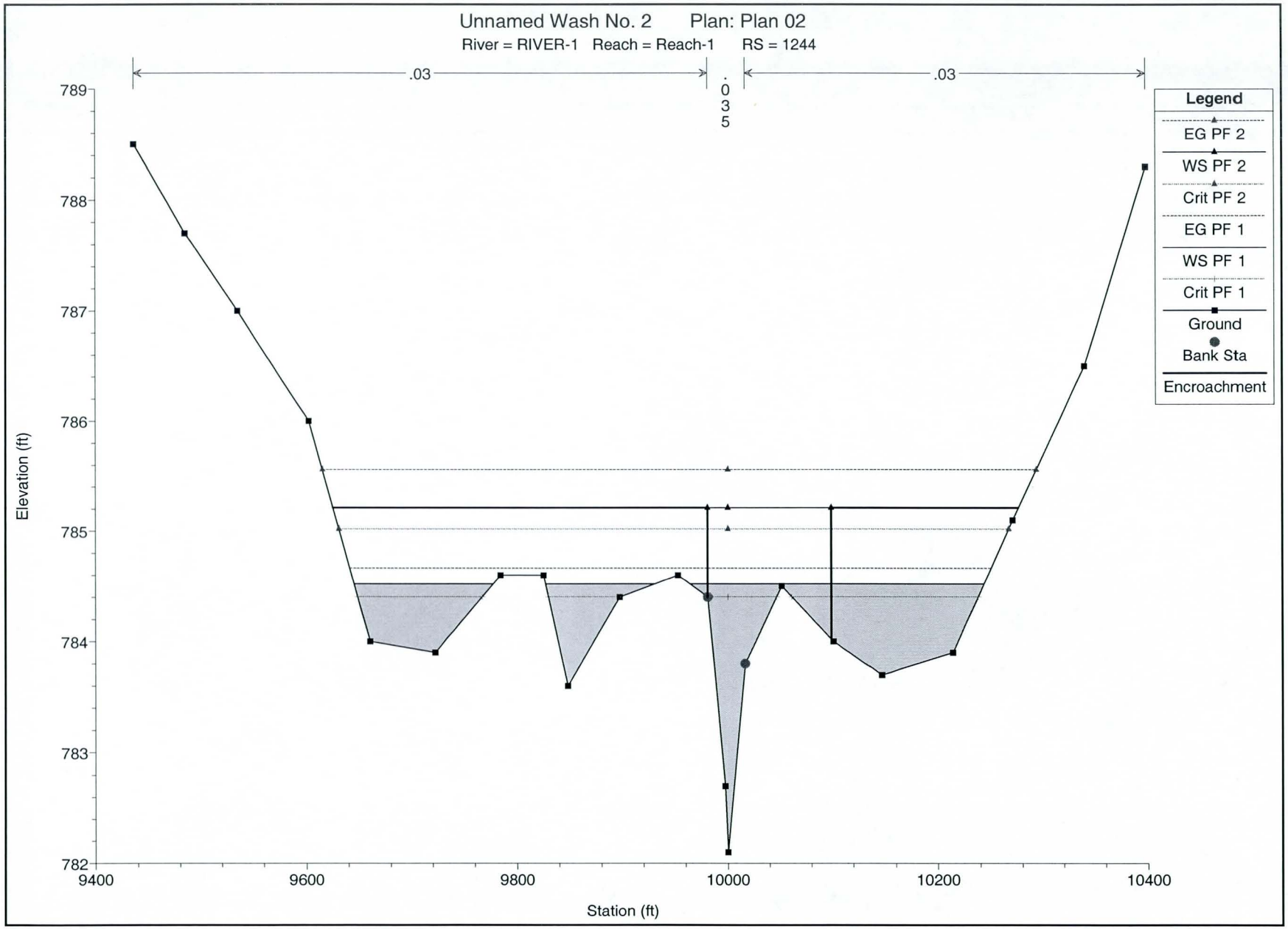

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1715 Culvert #1 (3 10' x 4.7' Boxes)
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
810
808
806
804
802
800
798
796
9400
9600
9800
10000
10200
10400
10600
Station (ft)

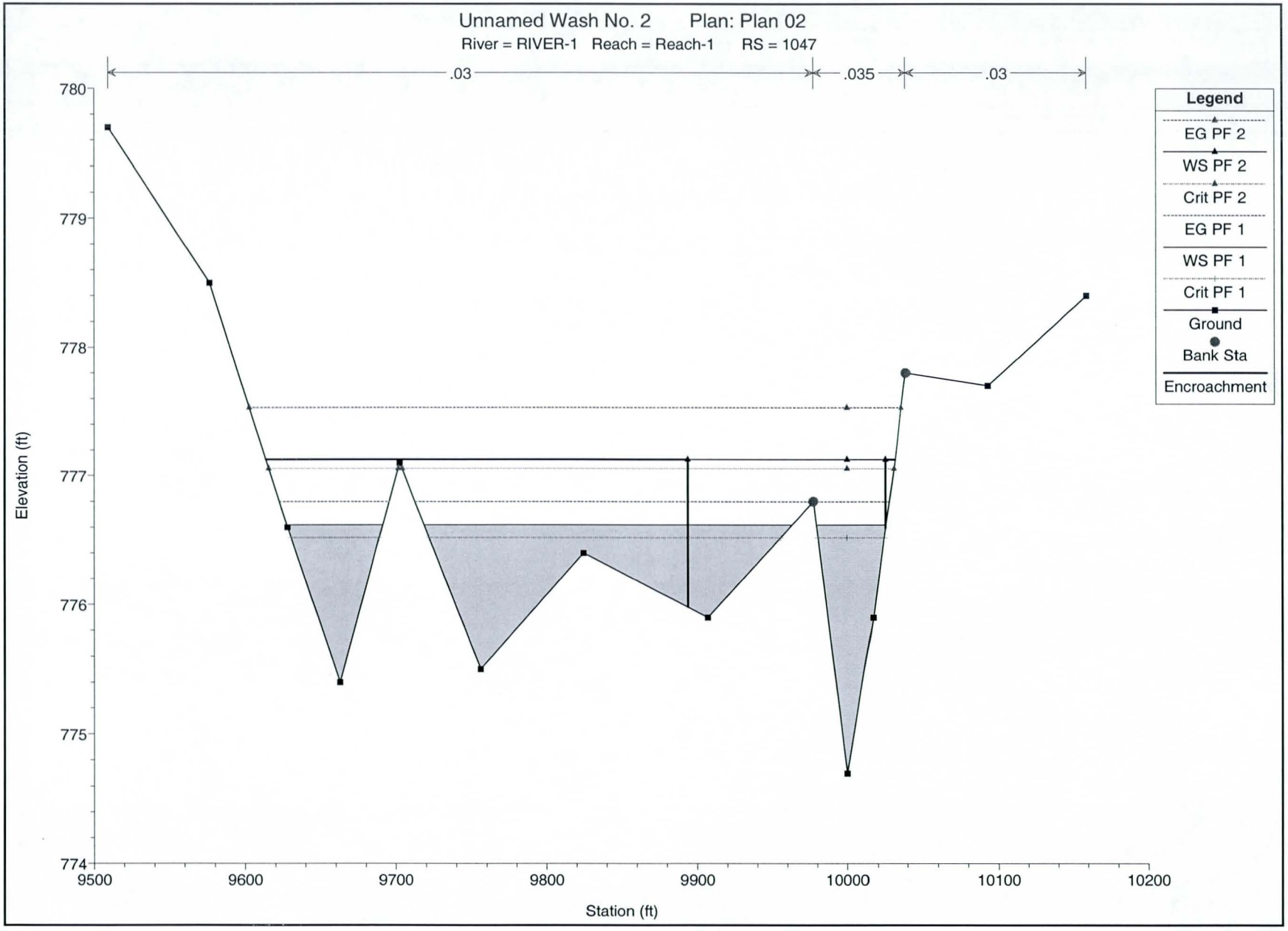

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1715 Culvert #1 (3 10' x 4.7' Boxes)
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
810
808
806
804
802
800
798
796
9400
9600
9800
10000
10200
10400
10600
Station (ft)

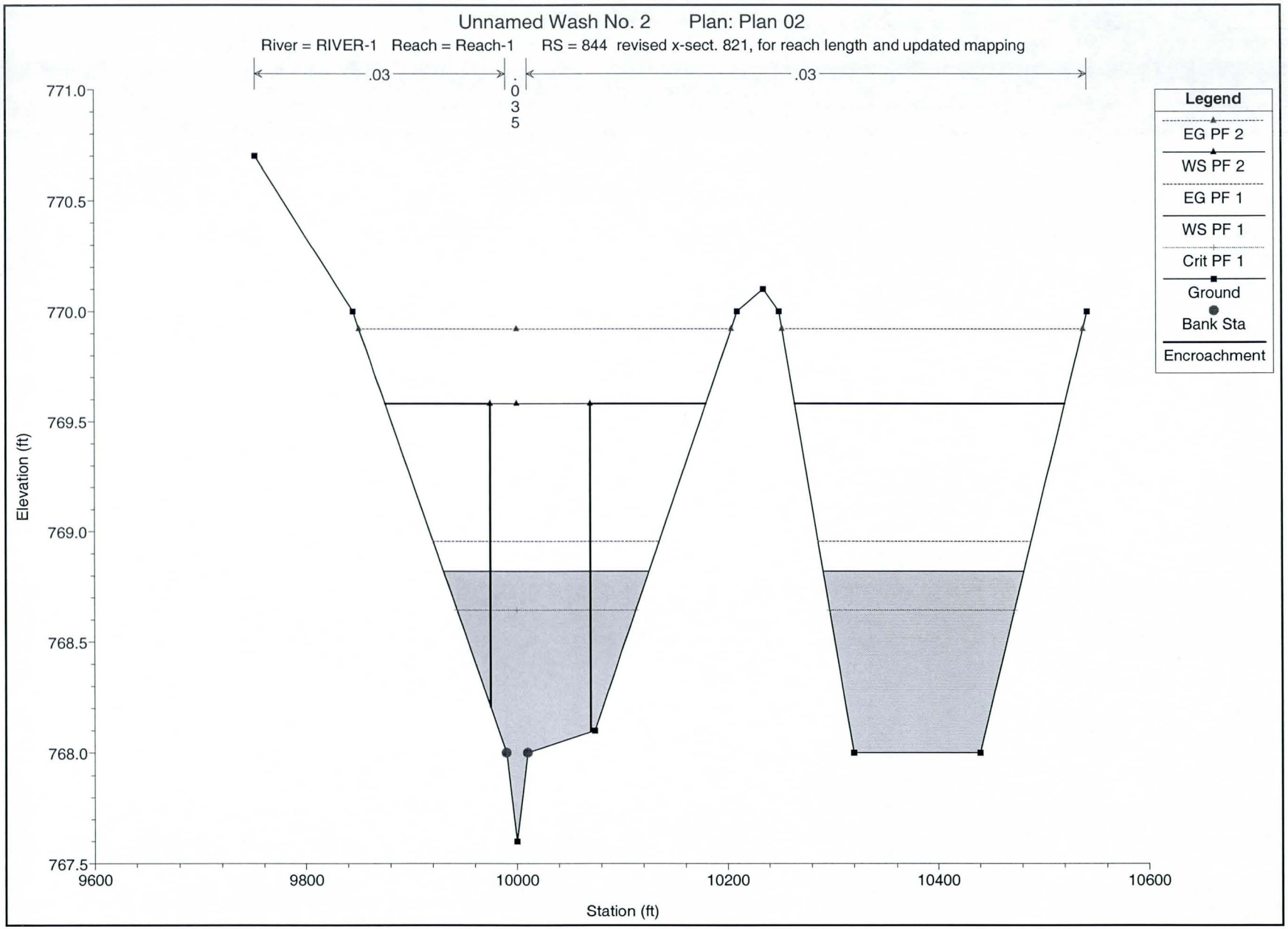

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1714
.03
.035
.03
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
810
808
806
804
802
800
798
9400
9600
9800
10000
10200
10400
10600
Station (ft)

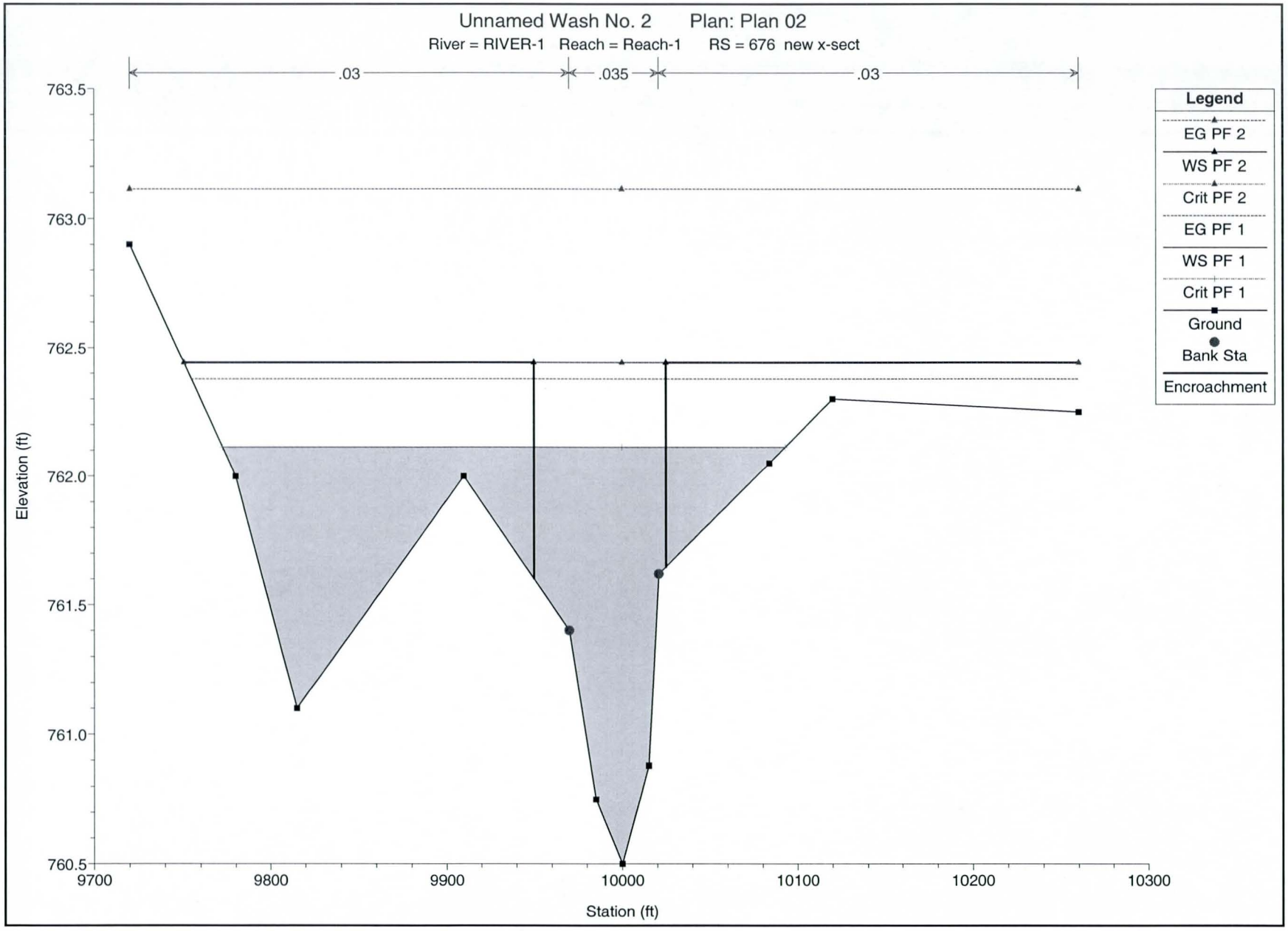

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1680 WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK
.035
.03
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
801
800
799
798
797
796
9800
10000
10200
10400
10600
10800
Station (ft)

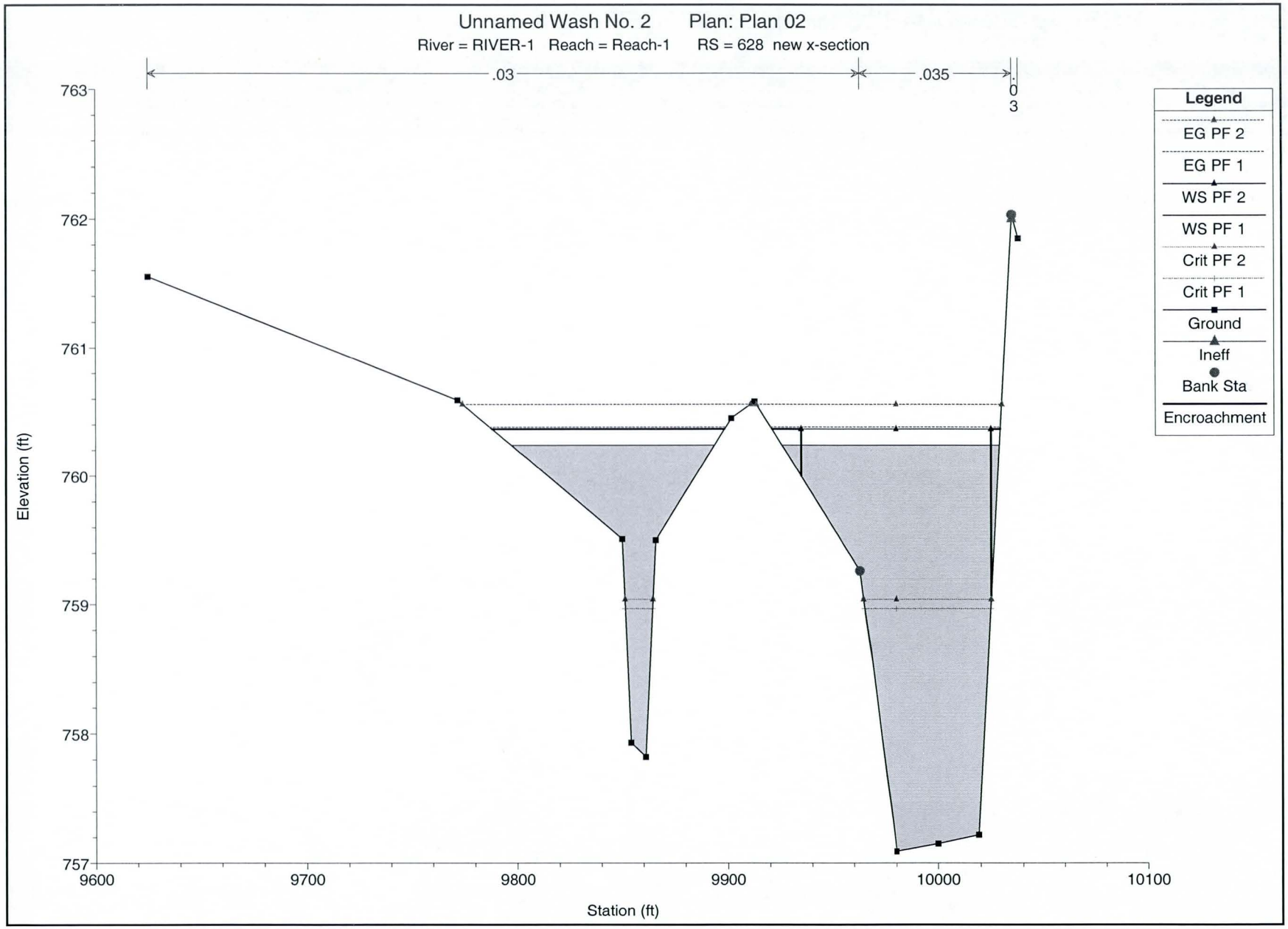

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1457
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
794
793
792
791
790
789
788
787
9400
9600
9800
10000
10200
10400
10600
Station (ft)

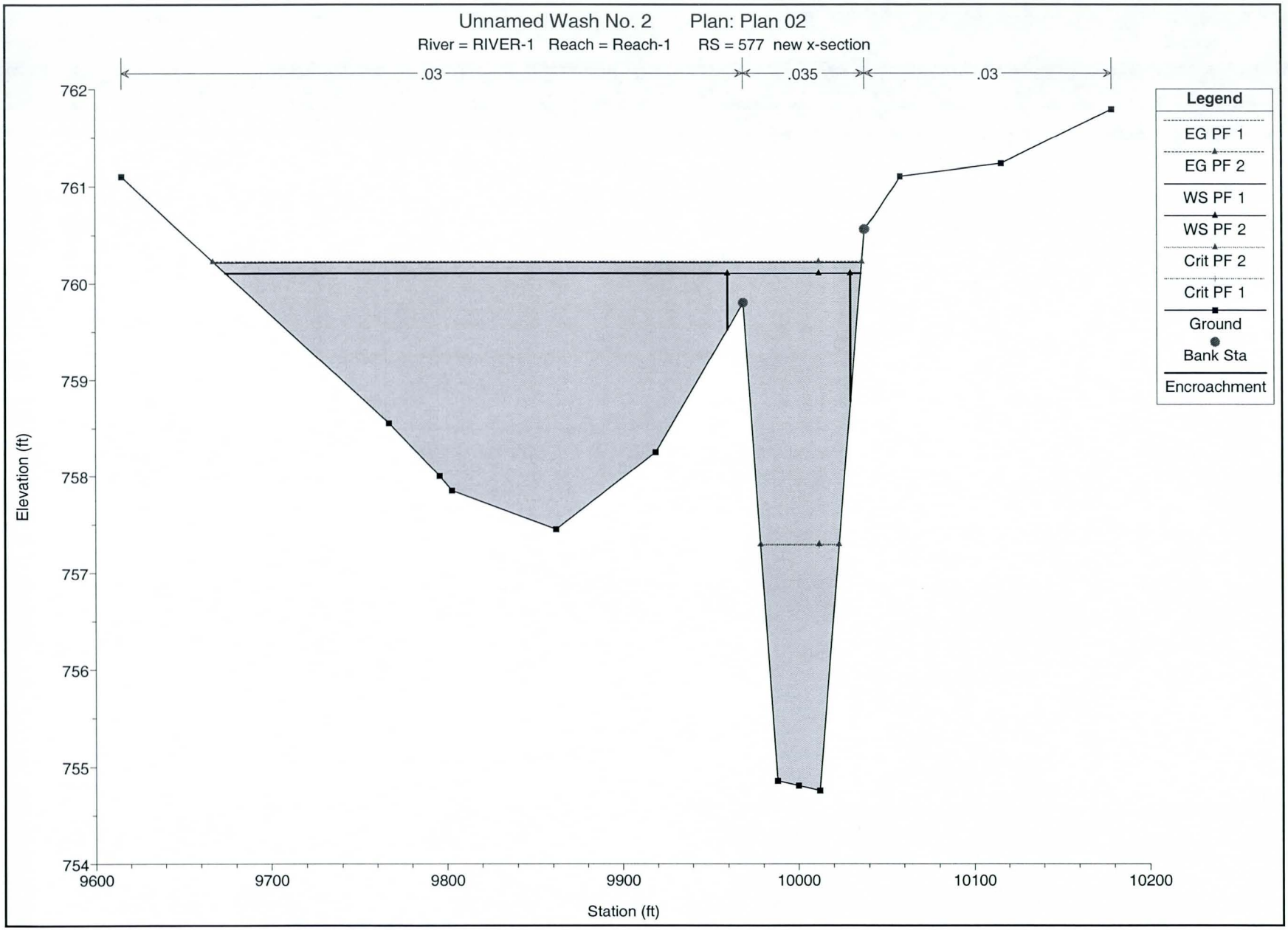

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1244
.03
.035
.03
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
789
788
787
786
785
784
783
782
9400
9600
9800
10000
10200
10400
Station (ft)

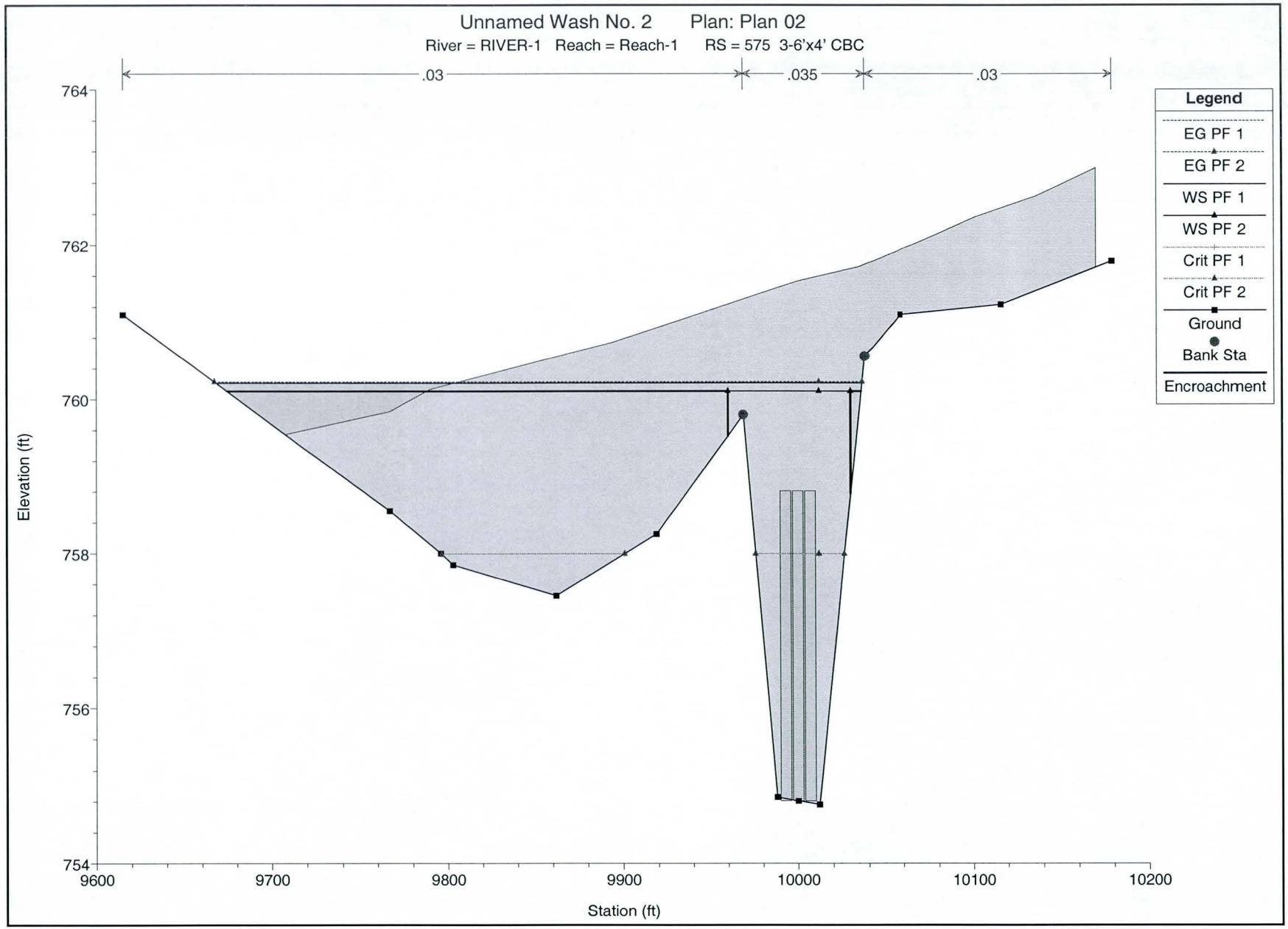

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 1047
.03
.035
.03
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
780
779
778
777
776
775
774
9500
9600
9700
9800
9900
10000
10100
10200
Station (ft)

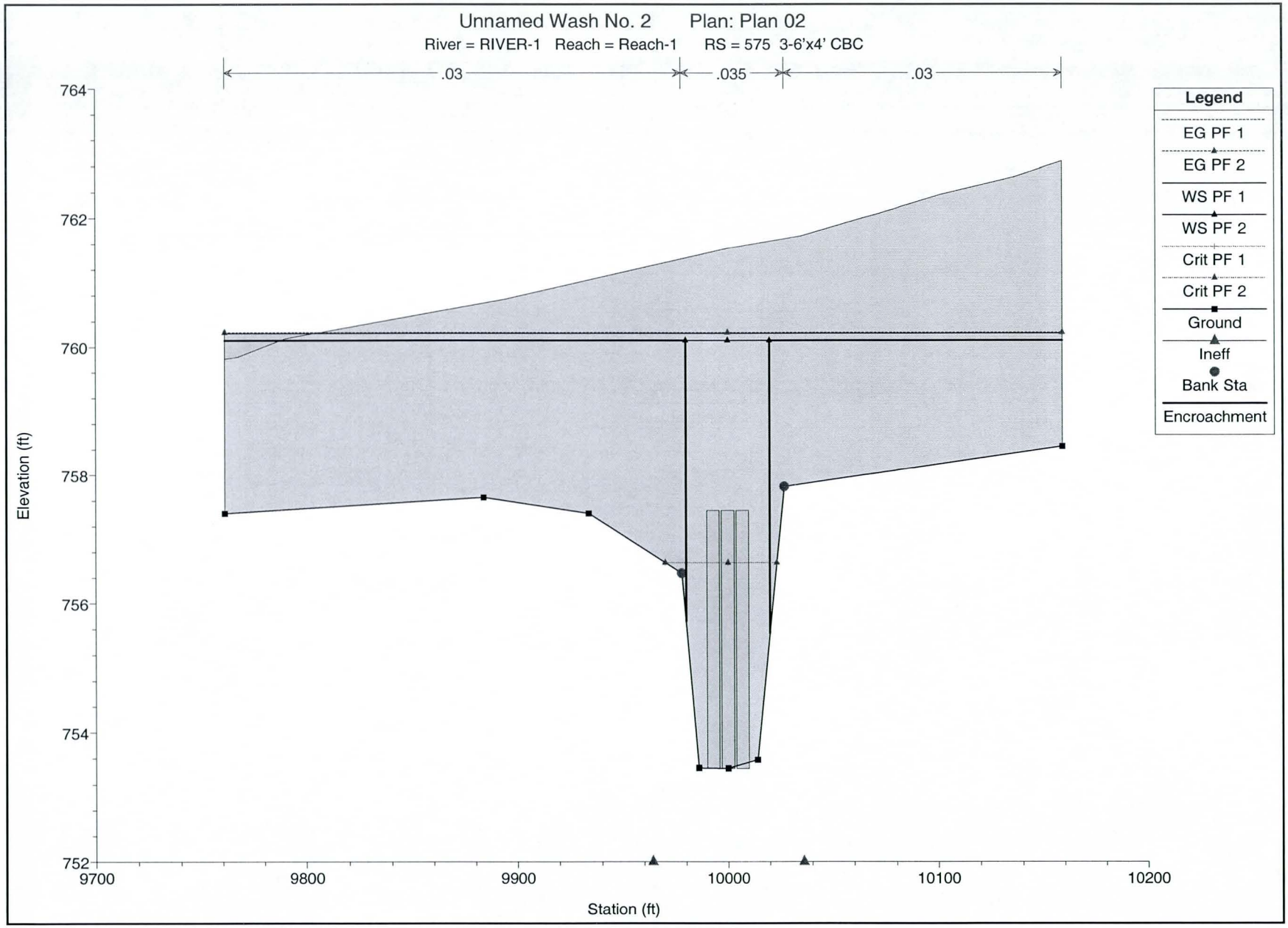

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 844 revised x-sect. 821, for reach length and updated mapping
.03
.035
.03
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
771.0
770.5
770.0
769.5
769.0
768.5
768.0
767.5
9600
9800
10000
10200
10400
10600
Station (ft)

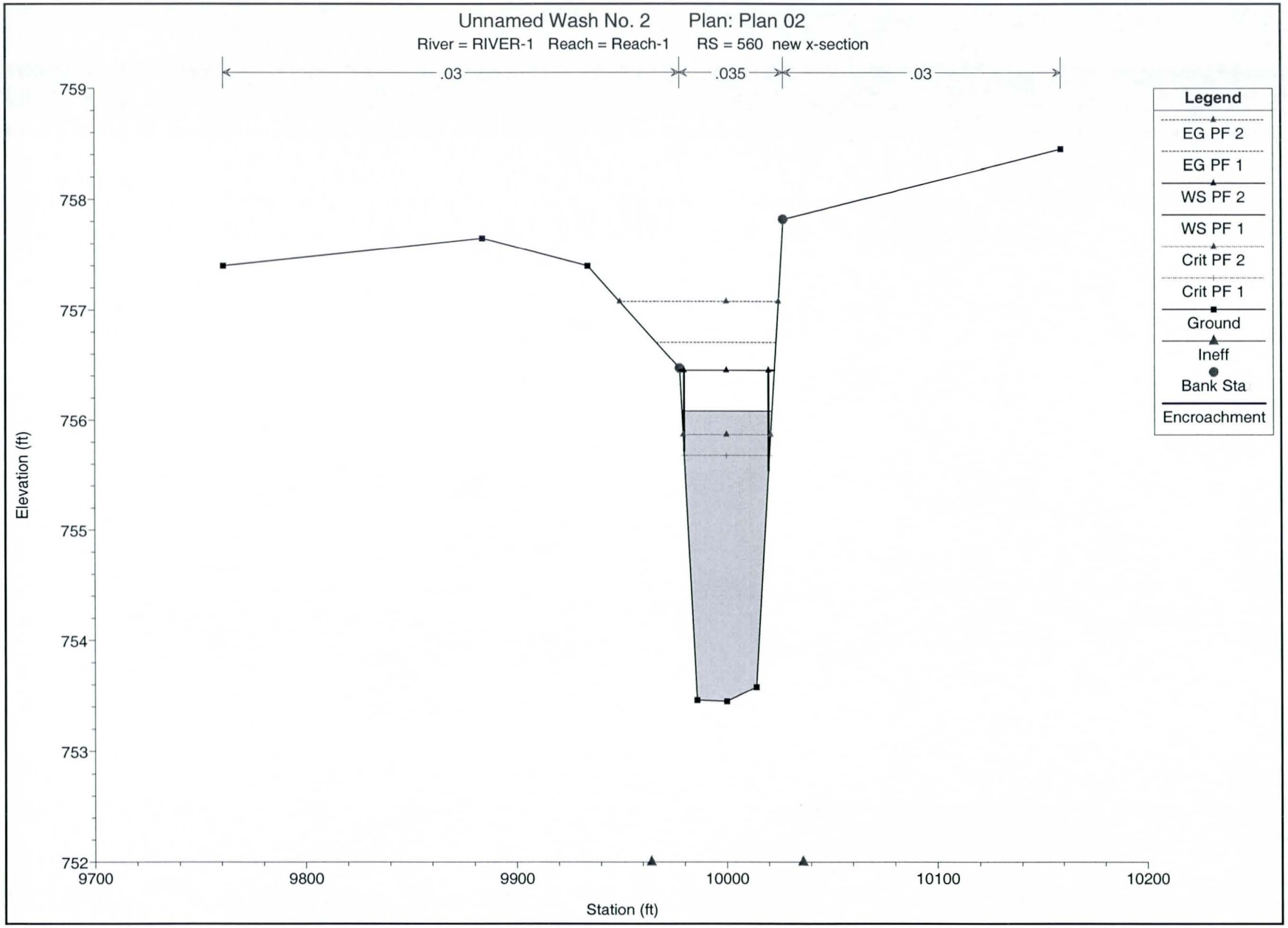

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 676 new x-sect
.03
.035
.03
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
763.5
763.0
762.5
762.0
761.5
761.0
760.5
9700
9800
9900
10000
10100
10200
10300
Station (ft)

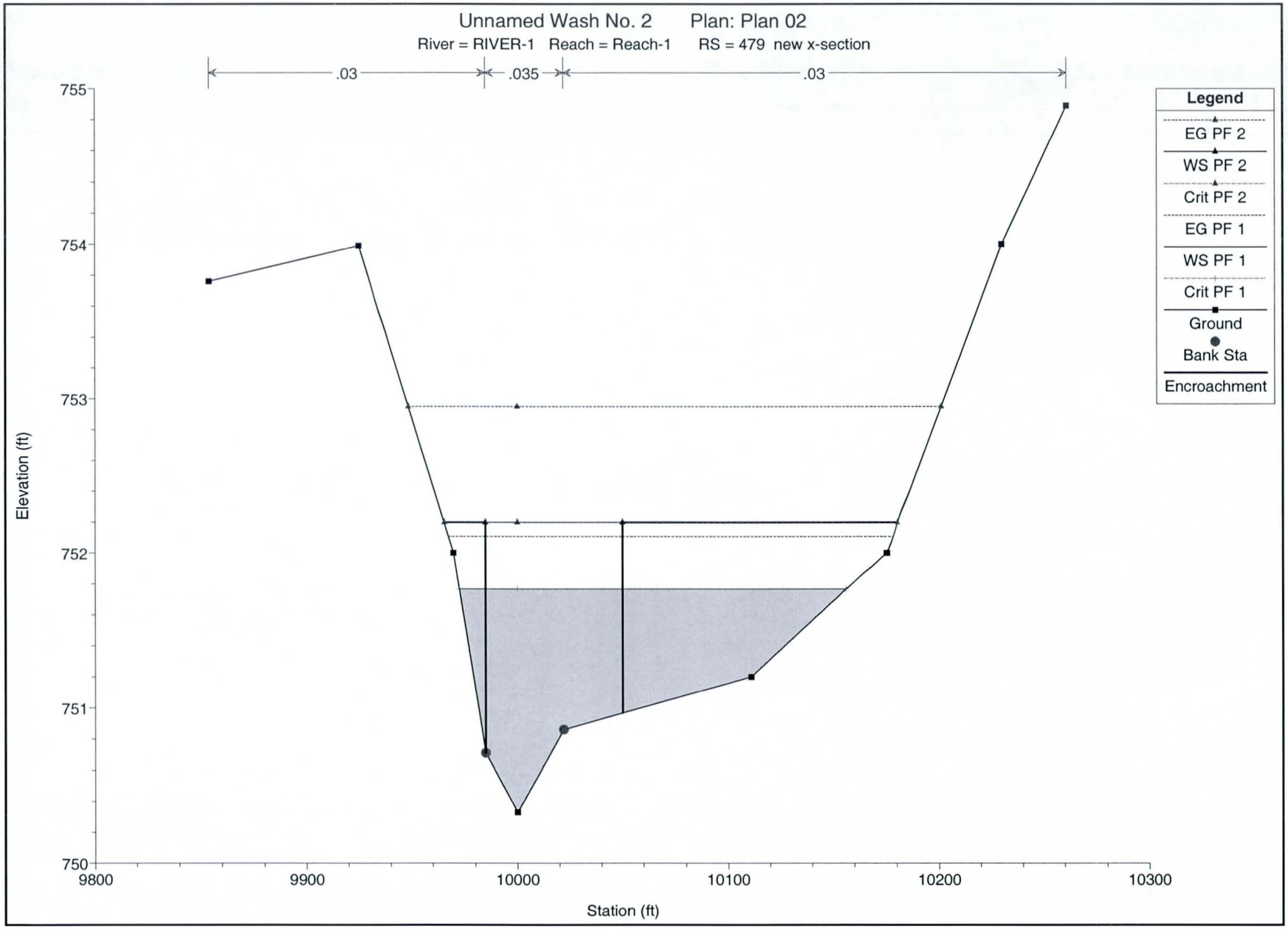

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 628 new x-section
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 2
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
763
762
761
760
759
758
757
9600
9700
9800
9900
10000
10100
Station (ft)

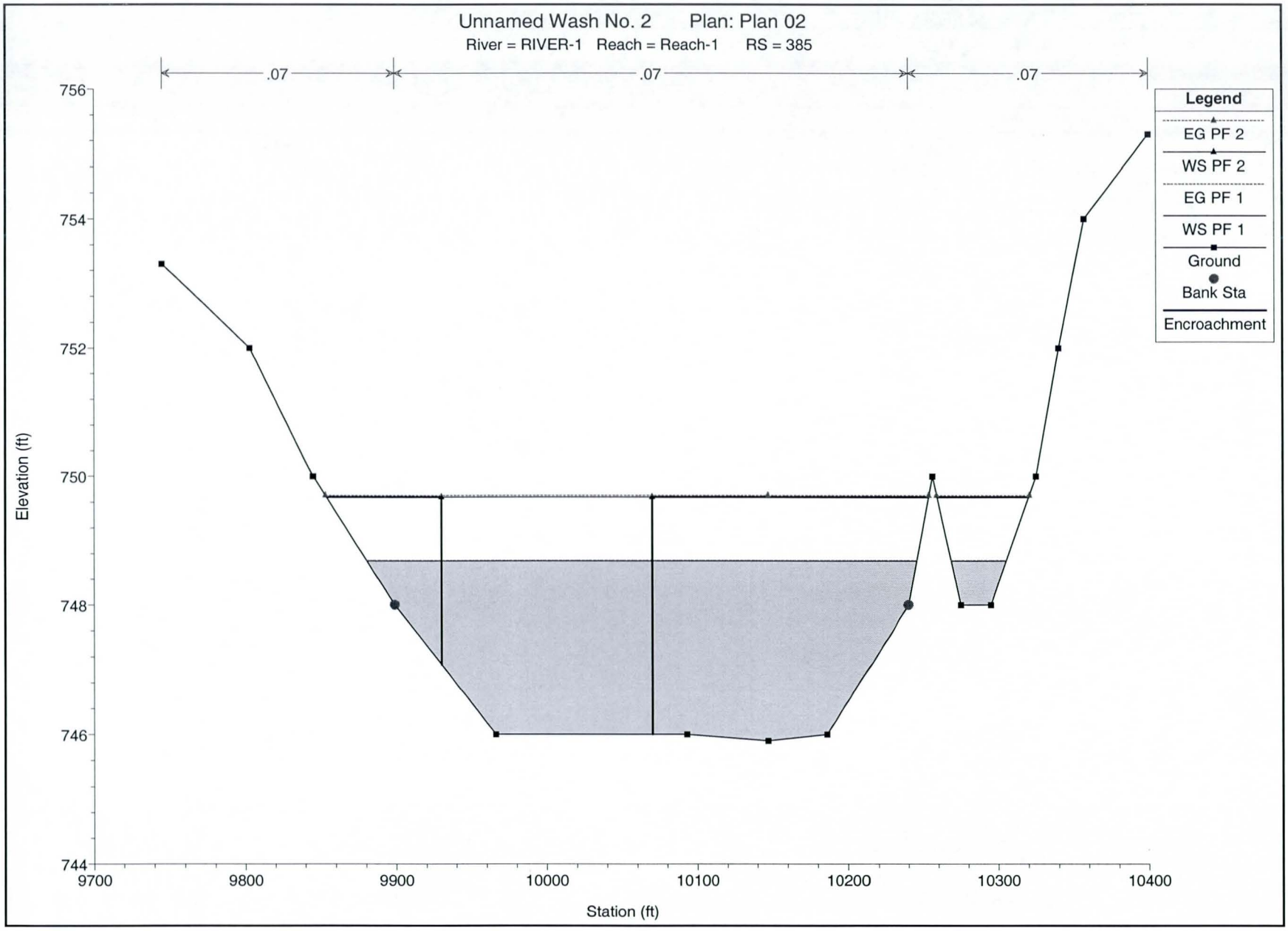

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 577 new x-section
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 2
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
762
761
760
759
758
757
756
755
754
9600
9700
9800
9900
10000
10100
10200
Station (ft)

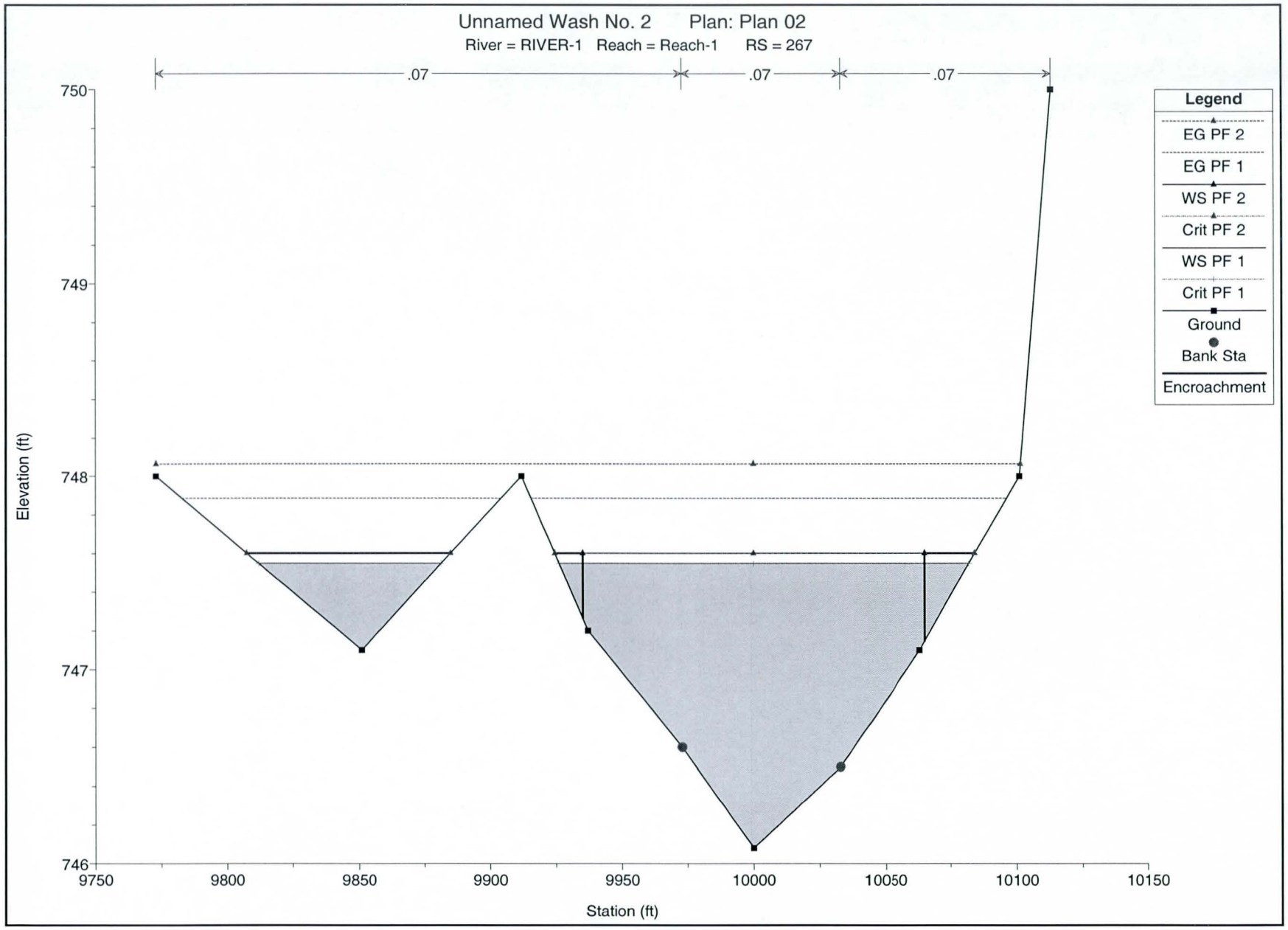

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 575 3-6'x4' CBC
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 1
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
764
762
760
758
756
754
9600
9700
9800
9900
10000
10100
10200
Station (ft)

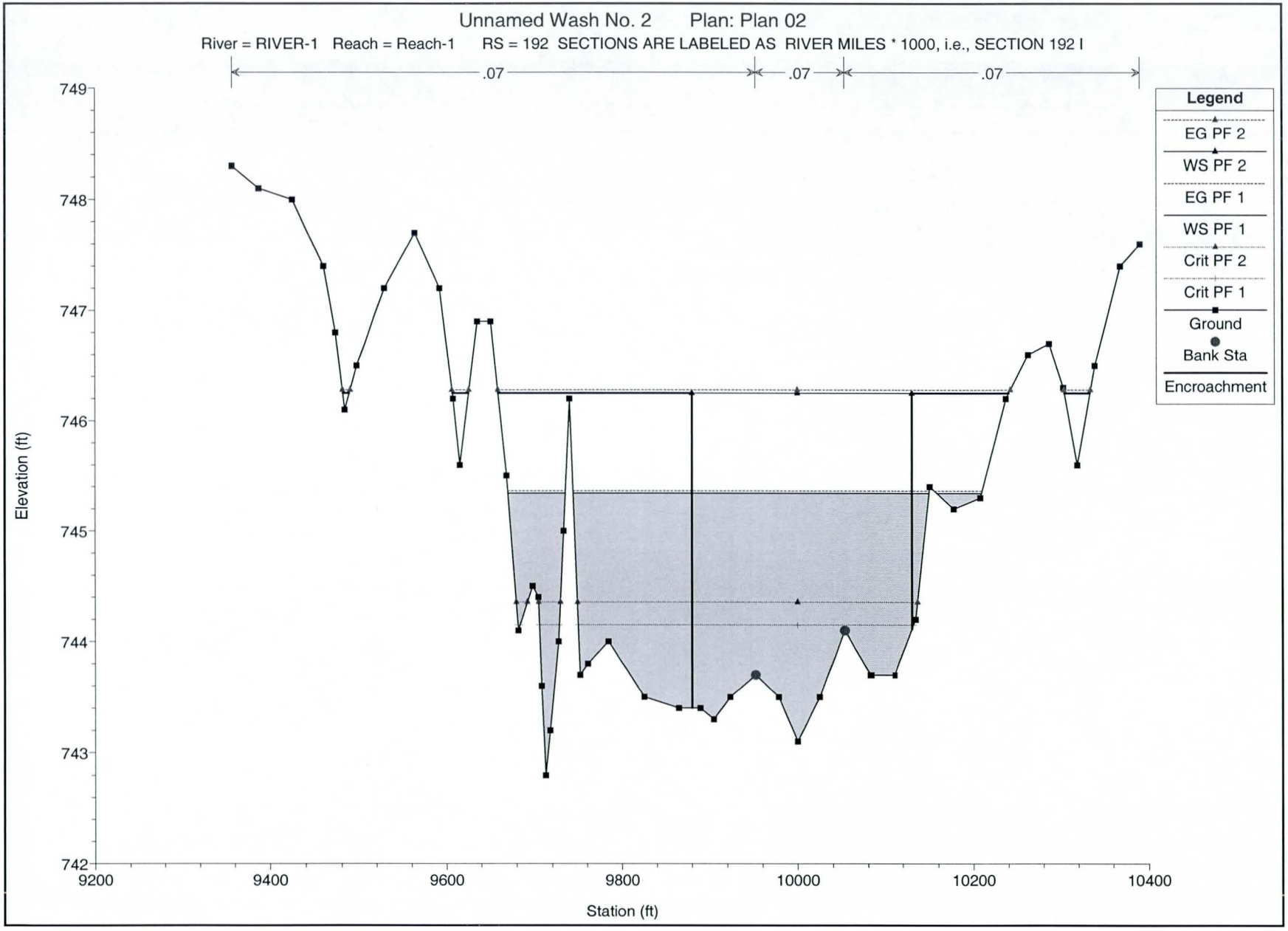

Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 575 3-6'x4' CBC
.03
.035
.03
Legend
EG PF 1
EG PF 2
WS PF 1
WS PF 2
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
764
762
760
758
756
754
752
9700
9800
9900
10000
10100
10200
Station (ft)


Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 560 new x-section
.03
.035
.03
Legend
EG PF 2
EG PF 1
WS PF 2
WS PF 1
Crit PF 2
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
759
758
757
756
755
754
753
752
9700
9800
9900
10000
10100
10200
Station (ft)


Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 479 new x-section
.03
.035
.03
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
755
754
753
752
751
750
9800
9900
10000
10100
10200
10300
Station (ft)


Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 385
.07
.07
.07
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
756
754
752
750
748
746
744
9700
9800
9900
10000
10100
10200
10300
10400
Station (ft)


Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 267
.07
.07
.07
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
750
749
748
747
746
9750
9800
9850
9900
9950
10000
10050
10100
10150
Station (ft)


Unnamed Wash No. 2 Plan: Plan 02
River = RIVER-1 Reach = Reach-1 RS = 192 SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 192 I
.07
.07
.07
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Crit PF 2
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
749
748
747
746
745
744
743
742
9200
9400
9600
9800
10000
10200
10400
Station (ft)

Appendix F

FLOODWAY DATA TABLES

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
Cross Section	Distance[1]	Width[2] (FEET)	Section Area (SQUARE FEET)	Mean Velocity (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
A	0.061	37	135	6.7	742.29	742.29	743.28	0.99
B	0.150	130	333	2.7	744.23	744.23	744.96	0.73
C[3]	**0.337**	**235**	**565**	**1.6**	**745.34**	**745.34**	**746.25**	**0.91**
D[3]	**0.417**	**140**	**133**	**5.5**	**746.67**	**746.67**	**746.93**	**0.26**
E[3]	**0.559**	**90**	**188**	**3.9**	**751.46**	**751.46**	**752.01**	**0.55**
F[3]	**0.610**	**80**	**166**	**4.4**	**752.41**	**752.41**	**752.87**	**0.46**
G[3]	**0.654**	**45**	**181**	**3.5**	**753.28**	**753.28**	**753.47**	**0.19**
H[3]	**0.674**	**35**	**220**	**3.6**	**757.24**	**757.24**	**756.87**	**-0.37**
I[3]	**0.730**	**100**	**273**	**2.4**	**757.49**	**757.49**	**757.21**	**-0.28**
J[3]	**0.769**	**130**	**310**	**2.1**	**757.52**	**757.52**	**757.36**	**-0.16**
K	**0.959**	**150**	**124**	**5.2**	**761.38**	**761.38**	**761.37**	**-0.01**
L	1.151	180	208	3.1	768.36	768.36	768.50	0.14
M	1.347	165	158	4.0	773.91	773.91	773.96	0.05
N	1.540	100	146	4.2	781.62	781.62	781.76	0.14
O	1.723	60	99	5.5	788.31	788.31	788.72	0.41
P	1.921	42	94	5.1	795.85	795.85	795.85	0.00
Q	2.127	56	72	5.5	803.63	803.63	803.60	-0.03
R	2.337	35	67	4.9	812.80	812.80	813.26	0.46
S	2.565	30	34	4.1	821.18	821.18	821.39	0.21
T	2.585	28	33	4.0	822.19	822.19	822.16	-0.03
U	2.632	80	80	1.4	828.51	828.51	828.52	0.01
V	2.649	10	34	3.1	828.48	828.48	828.51	0.03
W	2.698	10	48	1.9	831.78	831.78	831.81	0.03
X	2.746	30	43	1.8	832.04	832.04	832.21	0.17

[1]Miles Above Confluence with Bender Wash [2]Width/Width Within County

[3] Bold Cross Sections C through J are the limits of the LOMR, remaining cross sections based upon original floodplain study.

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

Unnamed Wash No. 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
Cross Section	Distance[1]	Width[2] (FEET)	Section Area (SQUARE FEET)	Mean Velocity (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Y	2.779	10	29	2.5	832.17	832.17	832.36	0.19
Z	2.835	10	35	1.8	835.92	835.92	836.11	0.19
AA	2.936	26	28	2.7	836.30	836.30	836.63	0.33
AB	2.974	6	18	7.0	837.72	837.72	837.44	-0.28
AC	3.002	6	100	1.8	841.94	841.94	841.94	0.00
AD	3.080	13	8	4.4	842.40	842.40	842.40	0.00
AE	3.111	4	8	3.3	845.33	845.33	845.71	0.38
AF	3.129	4	18	1.4	848.67	848.67	848.71	0.04
AG	3.148	27	60	1.3	848.72	848.72	848.78	0.06
AH	3.260	15	10	4.8	852.19	852.19	852.19	0.00

[1]Miles Above Confluence with Bender Wash [2]Width/Width Within County

[3] Bold Cross Sections C through J are the limits of the LOMR, remaining cross sections based upon original floodplain study.

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

Unnamed Wash No. 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
Cross Section	Distance[1]	Width[2] (FEET)	Section Area (SQUARE FEET)	Mean Velocity (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
A[3]	**0.192**	**250**	**663**	**1.4**	**745.34**	**745.34**	**746.25**	**0.91**
B[3]	**0.267**	**130**	**128**	**5.2**	**747.55**	**747.55**	**747.6**	**0.05**
C[3]	**0.385**	**140**	**495**	**1.4**	**748.68**	**748.68**	**749.67**	**0.99**
D[3]	**0.479**	**65**	**96**	**6.9**	**751.76**	**751.76**	**752.20**	**0.44**
E[3]	**0.560**	**40**	**106**	**6.4**	**756.08**	**756.08**	**756.45**	**0.37**
F[3]	**0.577**	**70**	**244**	**2.8**	**760.21**	**760.21**	**760.10**	**-0.11**
G[3]	**0.628**	**90**	**197**	**3.4**	**760.24**	**760.24**	**760.36**	**0.12**
H[3]	**0.676**	**75**	**103**	**6.5**	**762.11**	**762.11**	**762.44**	**0.33**
I[3]	**0.844**	**95**	**150**	**4.7**	**768.82**	**768.82**	**769.58**	**0.76**
J	**1.047**	**131**	**139**	**5.0**	**776.62**	**776.62**	**777.13**	**0.51**
K	1.244	118	154	4.5	784.52	784.52	785.21	**0.69**
L	1.457	122	188	3.7	789.78	789.78	790.67	**0.89**
M	1.680	236	165	4.4	798.80	798.80	798.80	**0.00**
N	1.714	32	81	8.9	800.75	800.75	800.58	**-0.17**
O	1.724	39	104	7.0	801.29	801.29	801.06	**-0.23**
P	1.743	236	480	1.5	801.56	801.56	802.19	**0.63**
Q	1.909	83	114	5.9	805.91	805.91	806.47	**0.56**
R	2.142	113	178	3.5	813.23	813.23	814.10	**0.87**
S	2.339	70	89	6.4	820.13	820.13	820.86	**0.73**
T	2.539	38	96	5.4	829.05	829.05	829.77	**0.72**
U	2.780	46	71	6.5	838.75	838.75	839.15	**0.40**

[1]Miles Above Confluence with Unnamed Wash No 1. River miles revised by 0.004 upstream of RM 0.560. [2]Width/Width Within County

[3] Bold Cross Sections A through I are the limits of the LOMR, remaining cross sections based upon original floodplain study.

TABLE 5

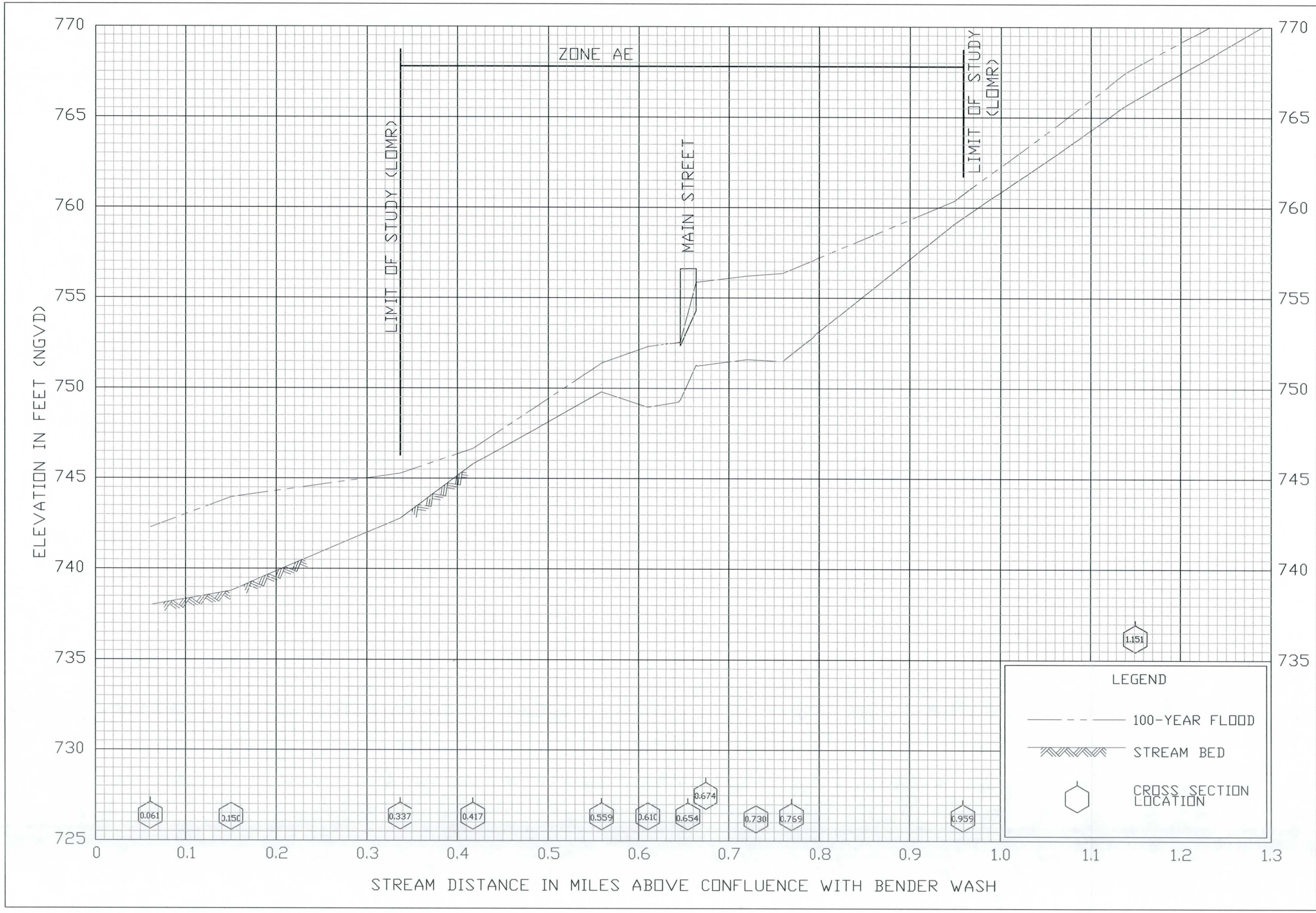
FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

Unnamed Wash No. 2

Appendix G
FLOOD PROFILE



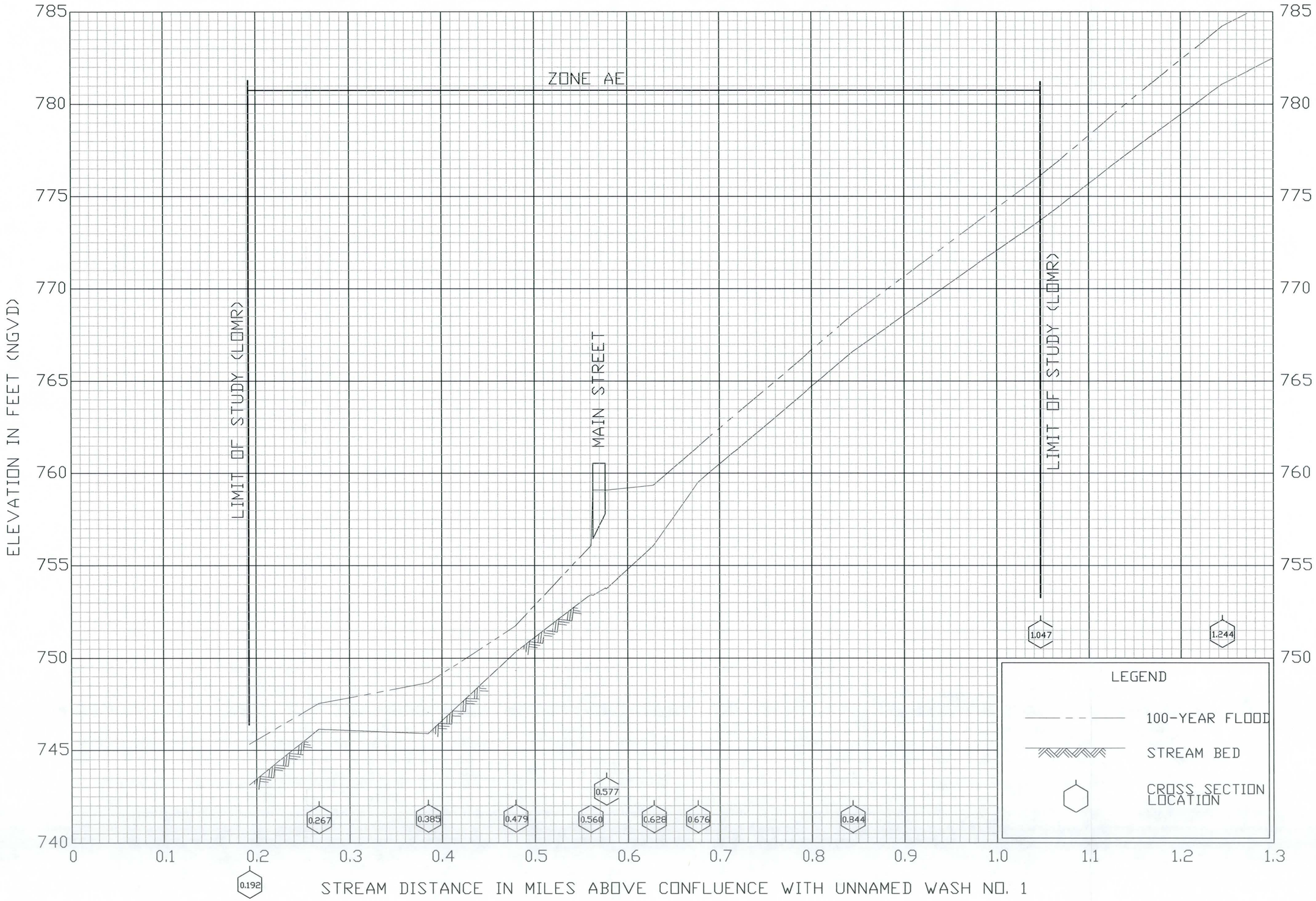
FLOOD PROFILES

UNNAMED WASH NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY
UNINCORPORATED MARICOPA COUNTY, ARIZONA

MARICOPA COUNTY

01P



FLOOD PROFILES

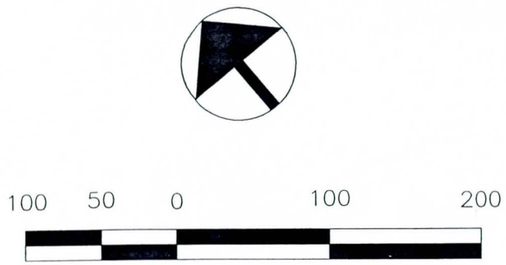
UNNAMED WASH NO. 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
UNINCORPORATED MARICOPA COUNTY, ARIZONA

MARICOPA COUNTY

01P

Appendix H
AS-BUILT SURVEY



Registered Professional Engineer (Civil)
CERTIFICATE NO.
15594
MARK T.
GAVAN
Date Signed 11/6/01
ARIZONA, U.S.A.

AS BUILT SURVEY

MAIN STREET ROADWAY IMPROVEMENTS

eec
Engineering and Environmental Consultants, Inc.
3003 N. Central Avenue, Suite 600
Phoenix, Arizona 85012-2905
TEL: (602)248-7702 FAX: (602)248-7851

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222,14150.463193,16740.764154,760.49,fl1
223,14149.722431,16681.676588,760.22,fl1
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227,14147.685511,16454.892317,759.78,fl1
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233,14162.233517,16201.590605,759.97,ep1
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446,14158.085533,15858.696076,757.84,gr3
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467,14153.994631,15750.875476,751.20,inv
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477,14088.010315,15760.982126,751.42,fl4
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521,13901.014639,15994.796186,754.99,top12
522,13839.965963,16027.567426,755.33,top12
523,13795.682936,16038.788976,755.44,top12
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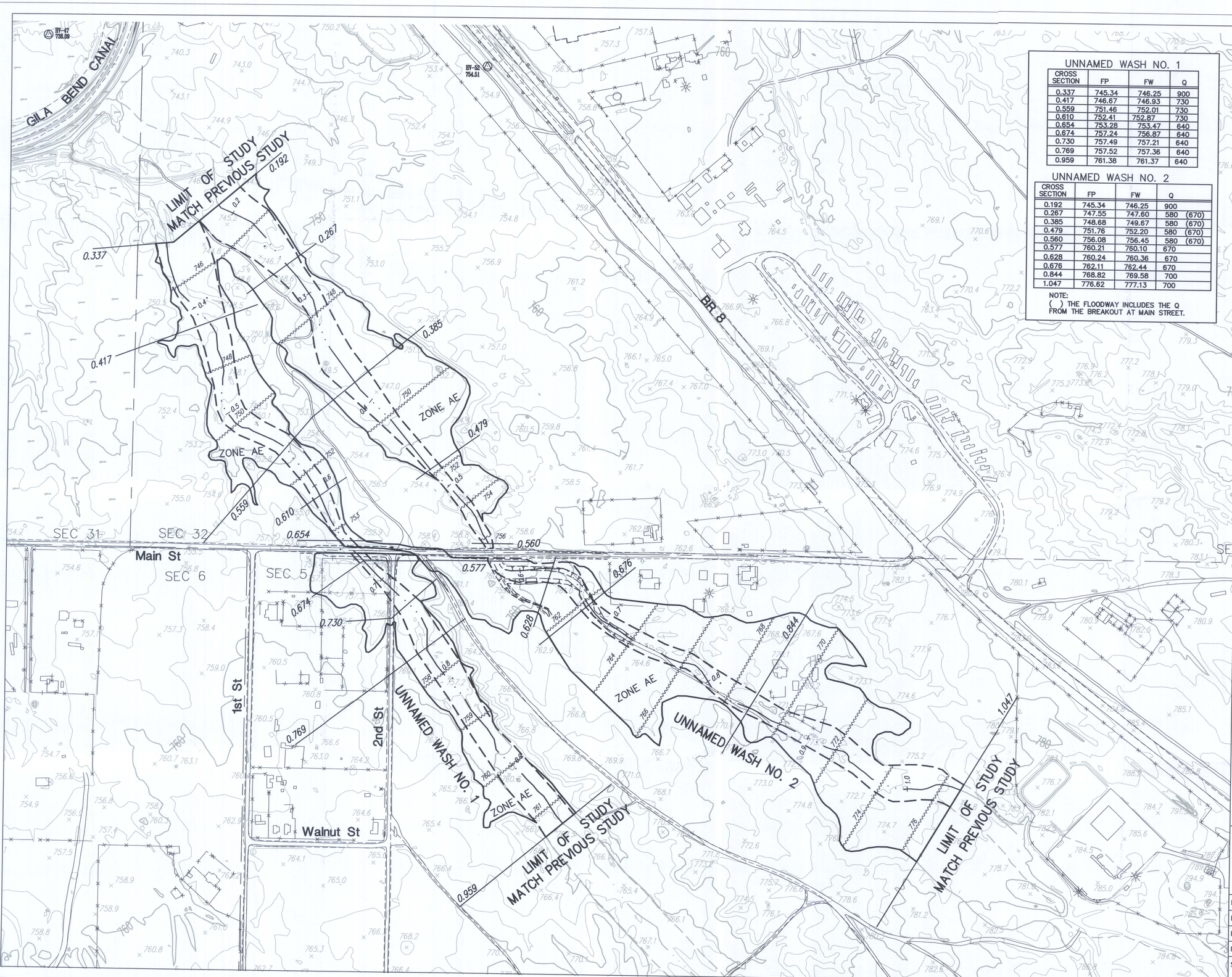


UNNAMED WASH NO. 1

CROSS SECTION	FP	FW	Q
0.337	745.34	746.25	900
0.417	746.67	746.93	730
0.559	751.46	752.01	730
0.610	752.41	752.87	730
0.654	753.28	753.47	640
0.674	757.24	756.87	640
0.730	757.49	757.21	640
0.769	757.52	757.36	640
0.959	761.38	761.37	640

UNNAMED WASH NO. 2

CROSS SECTION	FP	FW	Q
0.192	745.34	746.25	900
0.267	747.55	747.60	580 (670)
0.385	748.68	749.67	580 (670)
0.479	751.76	752.20	580 (670)
0.560	756.08	756.45	580 (670)
0.577	760.21	760.10	670
0.628	760.24	760.36	670
0.676	762.11	762.44	670
0.844	768.82	769.58	700
1.047	776.62	777.13	700

NOTE:
( ) THE FLOODWAY INCLUDES THE Q FROM THE BREAKOUT AT MAIN STREET.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LETTER OF MAP REVISION FOR UNNAMED WASH NO. 1 & UNNAMED WASH NO. 2

F.C.D. CONTRACT NO. 99-18 GILA BEND AREA

LEGEND

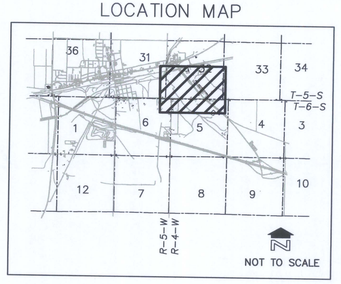
100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE & RIVER MILE	2.0
CROSS SECTION	1.047
ELEVATION REFERENCE MARK	⊗ ERM32
BASE FLOOD ELEVATIONS	770
ZONE DESIGNATIONS	ZONE AE
SECTION LINE	

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

ERM 32 EL=746.66
1" iron pipe, 2.8 feet east and 1.0 foot north of a utility pole and 2.6 feet north of a #4 rebar with cap stamped "LS 9087", +/- 30 feet south of a building corner and +/- 150 feet west of the intersection of Main St. and Martin Ave. Section 31, T 5 S, R 5 W.

LOCATION MAP

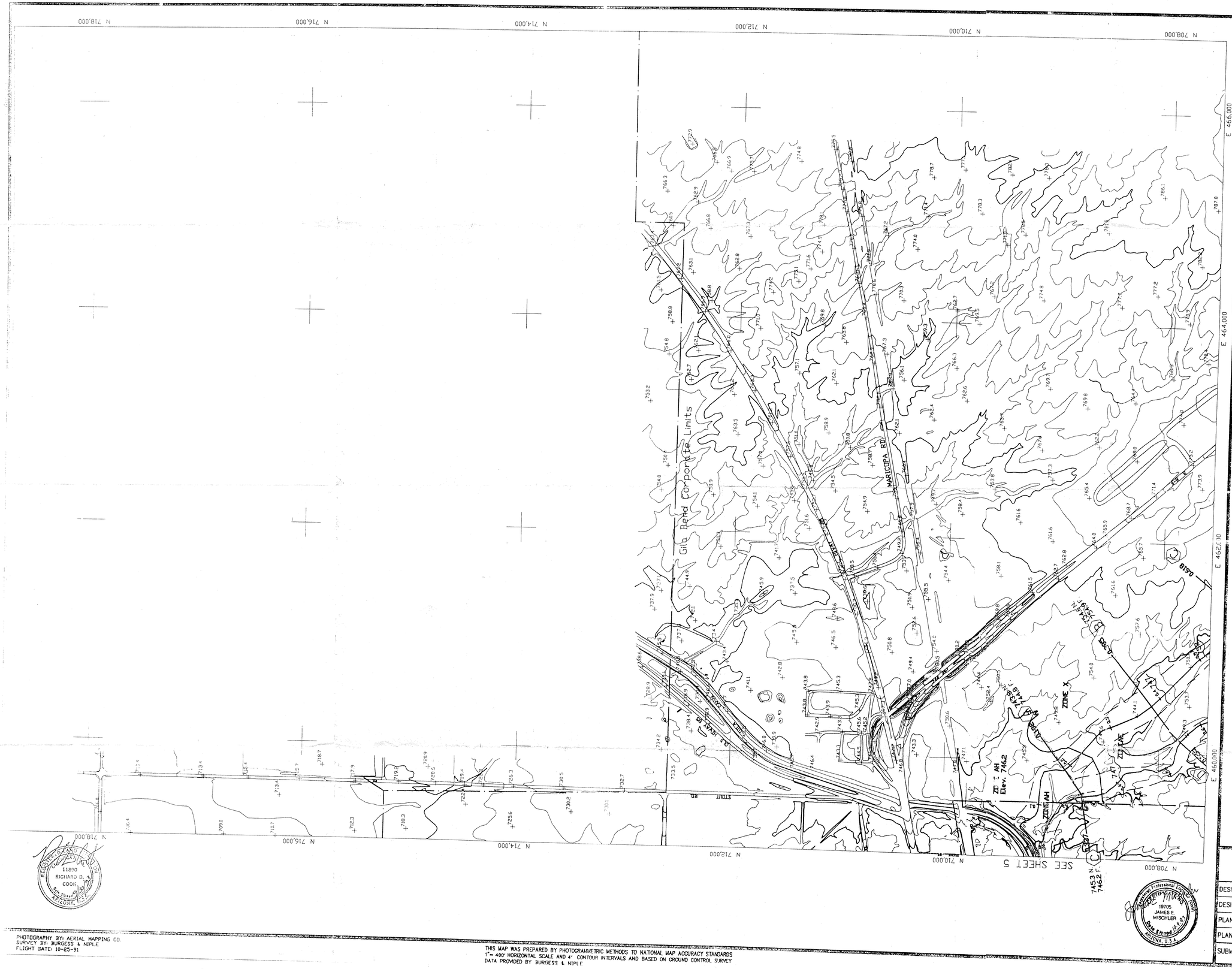


200' 0' 200' 400'
SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

eec
Engineering and Environmental Consultants, Inc.
3003 N. Central Avenue, Suite 600
Phoenix, Arizona 85012-2905
TEL: (602)248-7702 FAX: (602)248-7851

15594 MARK T. GAVAN 1/23/02 ARIZONA, U.S.A.

	BY	DATE	
DESIGN	LAV	01/02	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	MTG	01/02	RECOMMENDED BY: DATE
PLANS	KLH	01/02	APPROVED BY: DATE
PLANS CHK.	MTG	01/02	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE:			SHEET 1 OF 1



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF GILA BEND FIS

F.C.D. CONTRACT NO. 90-67

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	A N=100 Yr WSE F=Floodway WSE A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	1221
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

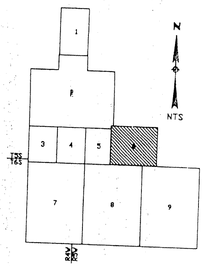
ERM#5 ERM EL = 741.885

This station is located 0.85 miles east along the Southern Pacific Railroad from the northwest rail of the main track, 134 feet southwest of the center of the junction of U.S. Highway 80 and Arlington – Hassayampa Road, 105 feet southeast of the centerline of U.S. Highway 80–84, 191 feet southwest of the south corner of a concrete highway bridge over the Gila Bend Canal, 8 feet south of a large metal post which supports a signboard, 1.0 foot north of a metal witness post, about 3 feet below the level of the highway and set in the top of a concrete post projecting 6 inches. The mark is a brass cap stamped U.S. Coast and Geodetic Survey B84.

ERM#6 ERM EL = 764.014

This station is located 1.7 miles east along the Southern Pacific Railroad from the station at Gila Bend in S32 T5S R4W, 4 rails east of railroad bridge 857.41, 39 feet north of the north rail of the main track, 91 feet south of the centerline of a graveled road, 9 feet west of a telephone pole in line with a row of poles, 1.6 feet east of a metal witness post, about 2 feet below the level of the tracks and set in the top of a concrete post projecting 5 inches. The mark is a brass cap stamped "US Coast and Geodetic Survey N285".

INDEX MAP



-400 0' 400 800

SCALE: 1"= 400'
CONTOUR INTERVAL = 4' FEET

BURGESS & NIPLE, INC.

	BY	DATE
DESIGN		
DESIGN CHK.		
PLANS		
PLANS CHK.		
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 6 OF 9

ADM.MRB REV. DEC. 10, 1991

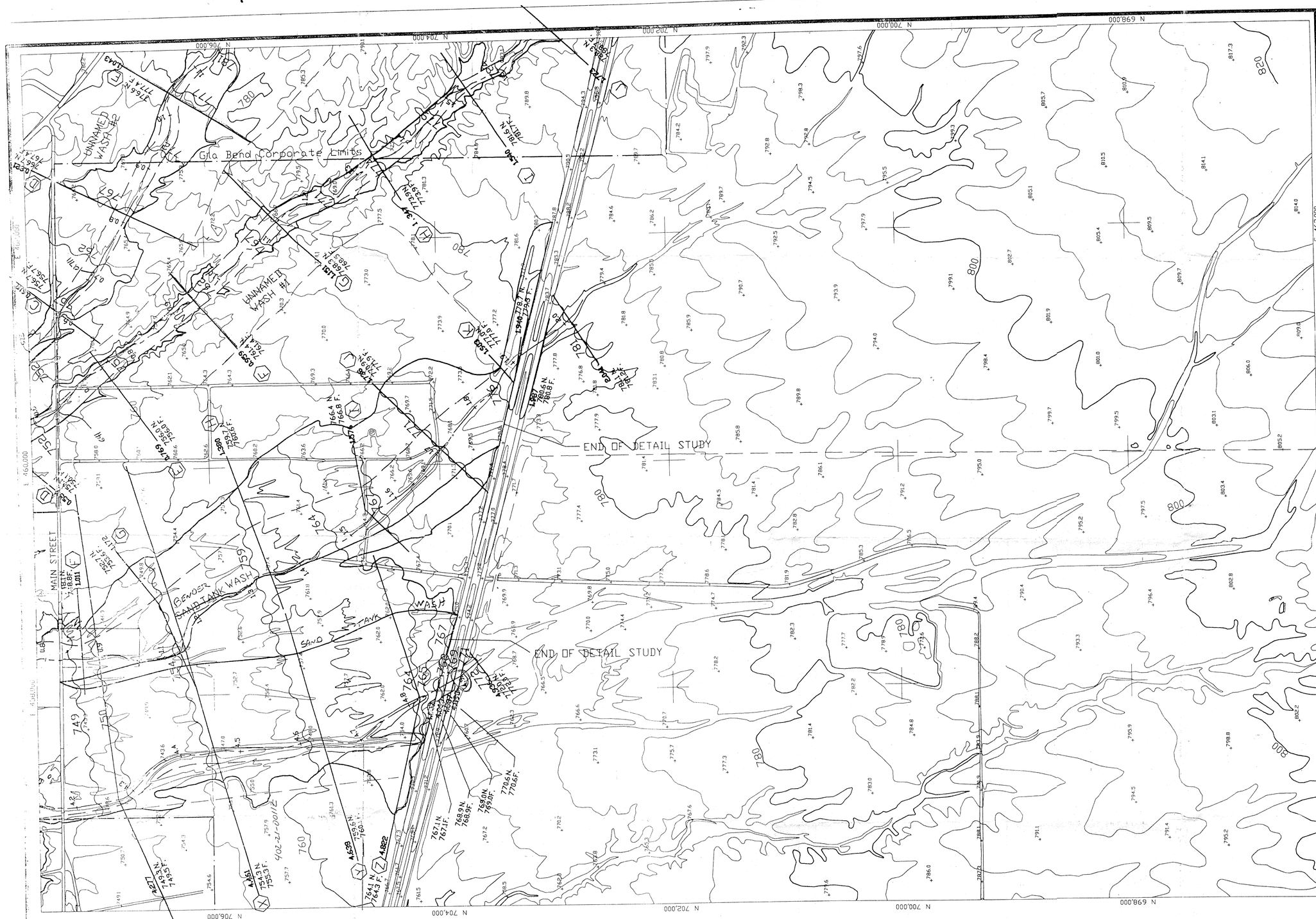
PHOTOGRAPHY BY: AERIAL MAPPING CO.
SURVEY BY: BURGESS & NIPLE
FLIGHT DATE: 10-25-91

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 400' HORIZONTAL SCALE AND 4' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY
DATA PROVIDED BY BURGESS & NIPLE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF GILA BEND FIS

F.C.D. CONTRACT NO. 90-67



LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M12.0 M13.0
CROSS SECTION	A N=100 Yr WSE F=Floodway WSE A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	1221
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

ELEVATION REFERENCE MARKS

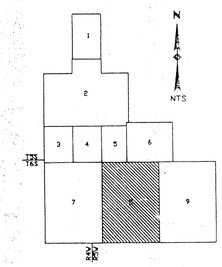
NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

ERM#16 ERM EL = 804.277

This station is located 0.3 mile south along State Highway 85 from the Southern Pacific Railroad Station at Gila Bend. Thence 1.9 miles south along a graded road, thence 0.7 mile east along a graded road at a gravel pit and a large mound of dirt at the junction of a track road leading south along a fence line, 86 feet north of the remains of a fence corner. 111 feet north of the junction of the tracked road, 18 feet east of the dirt mound, 5.0 feet northwest of a 6 foot high wooden post, 1.6 feet southwest of a witness post, set in the top of a concrete post projecting 0.4 foot above the ground and level with the roads. The mark is a brass cap stamped "U.S. Coast & Geodetic Survey R60".

INDEX MAP



-400 0' 400 800

SCALE: 1" = 400'

CONTOUR INTERVAL = 4' FEET

BURGESS & NIPLE, INC.

DESIGN	BY	DATE
DESIGN CHK.		
PLANS		
PLANS CHK.		
SUBMITTED BY:		DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 8 OF 9

REGISTERED LAND SURVEYOR 11990 RICHARD D. COOK 9-30-92 ARIZONA, U.S.A.

REGISTERED PROFESSIONAL ENGINEER 19705 JAMES E. MISCHLER DATE EXPIRES 12-31-92 ARIZONA, U.S.A.

PHOTOGRAPHY BY: AERIAL MAPPING CO.
SURVEY BY: BURGESS & NIPLE
FLIGHT DATE: 10-23-91

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1" = 400' HORIZONTAL SCALE AND 4' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY
DATA PROVIDED BY BURGESS & NIPLE

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM232	740.88	Top pavement at centerline intersection of Washington Avenue and Locke Street.
RM233	781.20	U.S. Geological Survey brass cap in concrete cylinder in median on north side of Business Route Interstate 8 bridge over the Southern Pacific Railroad, marked GILA.
RM234	738.36	AHD brass cap in center of north concrete headwall of culvert under Old U.S. Highway 80, at first crossing of Rodeo Wash northeast of Gila Bend, north of rodeo grounds, marked AHD, El. 738, 60, Sta. 75 + 19, 1930.
RM235	768.14	U.S. Geological Survey brass cap in concrete cylinder 0.5 mile southeast of Southern Pacific Railroad along the westerly side of Business Route Interstate 8, southwest of entrance to trailer park, marked R285.
RM1053	676.14	A 3-,-inch aluminum cap stamped MCFCD bench mark Cella Barr Associates RLS 19324 1989, located at the northwest corner of a T intersection of Stout Road and a dirt road to the west, 1 mile north of Watermelon Road near section corner 17, 18, 19, and 20, T5S, R4W, 2.5 feet south of a 4-strand barbed wire fence.
RM1054	646.94	GLO brass cap at section corner 7, 8, 17, and 18, T5S, R4W, located at the north end of Stout Road at the Gila River 10 feet q northwest of the southeast corner of a barbed wire fence.
RM2008	659.52	Station located at northwest corner of Section 19, mark is a brass cap.
RM2009	685.20	Station located at intersection of 307th Avenue on Watermelon Road, mark is a brass cap in handhole, Maricopa County Section Corner (24, 19, 25, 30)
RM2010	717.88	Station located 41.60 feet south of intersection at 307th Avenue and Indian Road, then 69.60 feet west, mark is a brass cap stamped M.C.F.C.D. E.R.M. EL.717.889 R.L.S. 18346.
RM2011	727.68	Station located 1.1 miles west along the Southern Pacific Railroad from the depot at Gila Bend to a bridge, 8 feet north of the north rail of the north track set in a drill hole in the top of the northwest concrete abutment and about 5 inches lower than the track Mark is a brass cap stamped Coast & Geodetic Survey K354.
RM2012	742.58	Station located at section corner (36,31), mark is a GLO brass cap.
RM2013	741.88	Station located 0.85 mile east along the Southern Pacific Railroad from the northwest rail of the main track, 134 feet southwest of the center of the junction of U. S. Highway 80 and Arlington-Hassayampa Road, 105 feet southeast of the centerline of U.S. Highway 80-84, 191 feet southwest of the south corner of a concrete highway bridge over the Gila Bend Canal, 8 feet south of a large metal post that supports a signboard, 1.0 foot north of a metal witness post, about 3 feet below the level of the highway and set in the top of a concrete post projecting 6 inches, mark is a brass cap stamped U.S. Coast and Geodetic Survey B84.
RM2014	751.91	Standard Triangulation Disk-station located 1.0 mile south on State Highway 85 from the junction of U.S. Highway 80 at Gila Bend, 150 feet west of the centerline of the highway, 56.78 feet northwest of RM 2, 55.45 feet northwest of RM 1, 4 feet north of a metal witness post with sign, set in a cylinder concrete post projecting 4 inches, mark is a brass cap stamped Coast and Geodetic Survey COY.

LEGEND

To obtain more detailed information in areas where Base Flood Elevations (BFEs)and /or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations and therefore may not exactly reflect the flood elevation data presented in the FIS. BFEs shown on the FIRM are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and /or floodplain management.

ERM elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Coastal BFE's shown on this map may apply only landward of 0.0' NGVD. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and / or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 flood 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 floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 — Identified 1990 — Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain 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. See Map Index for Elevation Datum.

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 × — Elevation Reference Mark

• M2 — River Mile

97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for more detailed data on BFE's, and for any information on floodway delineations, prior to use of this map for property purchase or construction purposes.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at V20 inch.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:
DECEMBER 3, 1993, SEPTEMBER 30, 1995

Map revised July 19, 2001 to update corporate limits, to change base flood elevations, to add base flood elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

MAP ROOM 3480G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 3480 OF 4350
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
GILA BEND, TOWN OF	040043	3480	G
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	3480	G

MAP NUMBER
04013C3480 G

MAP REVISED:
JULY 19, 2001

Federal Emergency Management Agency