Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

HYDROLOGIC ANALYSES

FLOODLAIN DELINEATION

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

BLACK & VEATCH
PROGRESS BY DESIGN

Project No. 17676

May 1994

COE & VAN LOO
PLANNING • ENGINEERING
LANDSCAPE ARCHITECTURE

CVL No. 1197-02

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.8: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #4 (Wash i)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

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May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

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

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain) _____

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Confluence with Hassayampa River	2.27 sq. mi.	—	1795 cfs

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:
NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # 6.8

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

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

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.110

Upstream limit: Station 1.344

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Hassayampa River

Upstream limit of study Station 1.344

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year	926 cfs	976 cfs
50-year	1458 cfs	1556 cfs
100-year	1684 cfs	1795 cfs
500-year	–	–

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.02 ~ 0.04

Overbanks 0.07

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

Location	FIS	Revised

Explain:

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

Data points for cross-sections are based on photogrammetric models for the topographic maps.

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 0.00977 ft/ft

Specify location 0.141

3. What is the distance between the cross-sections in 2 above? ..... 444 ft

Specify location 0.225

4. What is the maximum distance between cross-sections? ..... 576 ft

Specify location 1.058

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1.0 foot

b. What is the maximum surcharge for the revised conditions? ..... 0.7 foot

Specify location 0.141

c. What is the maximum velocity? ..... 12.32 fps

Specify location 1.250

Explain:

d. Are there any negeative surcharge values at any cross-section ☒ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge. A negative surcharge of -0.2 feet occurs upstream of a section where limits of effective flow area are set.

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

If Yes, explain:

_____

_____

_____

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash I:	Wickenburg ADMS-FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model- See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

FLOODWAY DATA, WASH I:UNNAMED WASH#4
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
46.760	226.	601.	3.0	1913.2	1913.2	.0
.110	35.	151.	11.9	1927.2	1927.2	.0
.134	73.	436.	4.1	1933.9	1933.4	.5
.141	80.	538.	3.3	1934.3	1933.6	.7
.225	79.	214.	8.4	1939.8	1940.0	-.2
.320	102.	255.	7.0	1950.9	1950.9	.0
.358	133.	314.	5.7	1955.5	1955.5	.0
.446	66.	202.	8.9	1965.9	1965.9	.0
.506	71.	219.	8.2	1974.4	1974.4	.0
.529	161.	338.	5.2	1977.2	1977.2	.0
.597	264.	393.	4.4	1984.0	1984.0	.0
.663	152.	303.	5.8	1991.9	1991.9	.0
.741	130.	282.	6.2	2000.9	2000.9	.0
.845	142.	273.	6.2	2014.4	2014.4	.0
.949	68.	192.	8.8	2025.4	2025.4	.0
1.058	81.	207.	8.1	2040.1	2040.1	.0
1.153	77.	217.	7.7	2050.2	2050.2	.0
1.250	62.	194.	8.7	2061.2	2061.2	.0
1.344	82.	211.	8.0	2070.5	2070.5	.0

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash I

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. Highway 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0,110 to Station 0,134
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

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

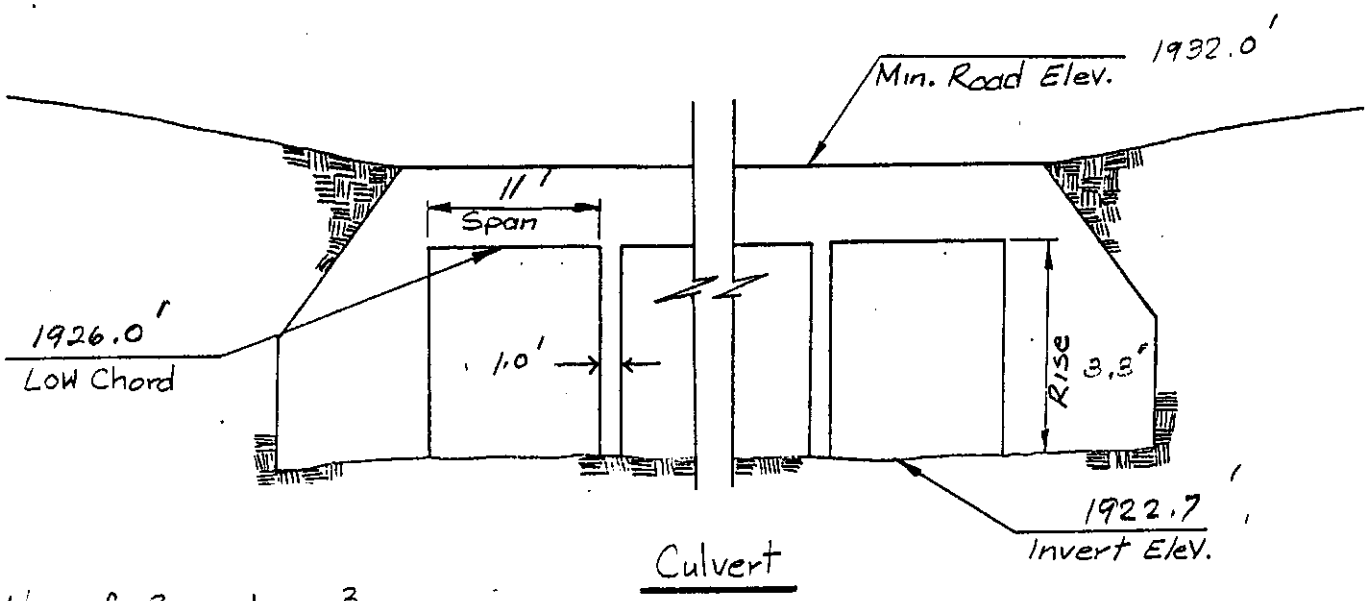
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) three 11' x 5' x 113.5' concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls, no inlet top edge bevel.
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine.

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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

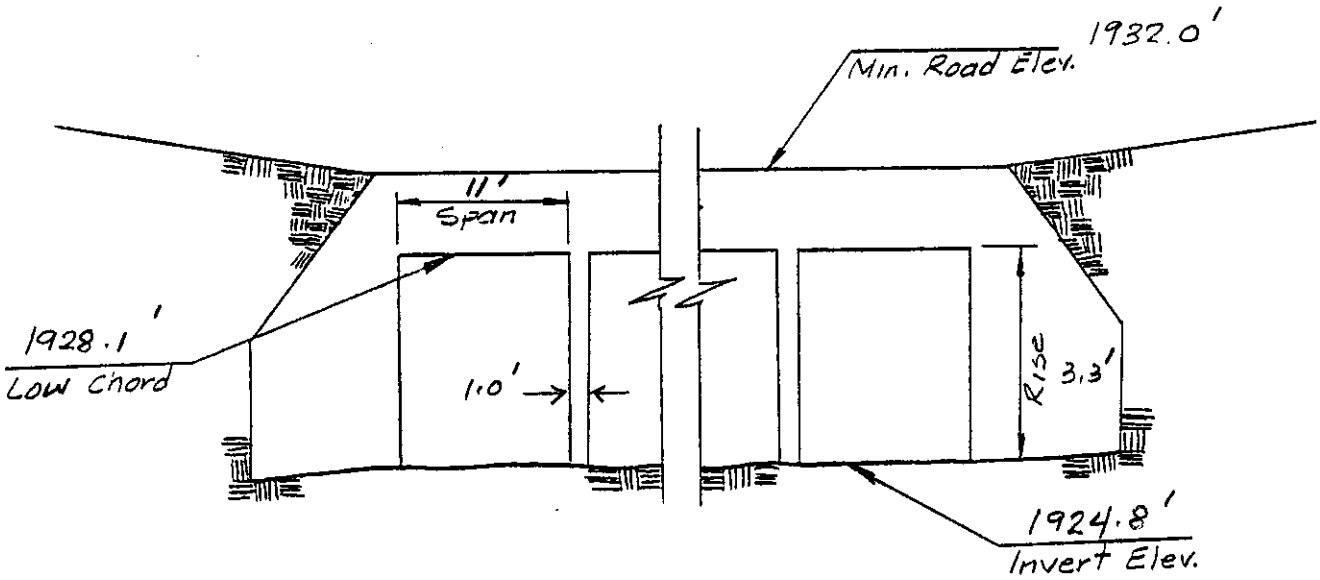


No. of Barrels: 3

Culvert Size: 11' x 5' x 113.5'

See Cross Section # 0.110

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

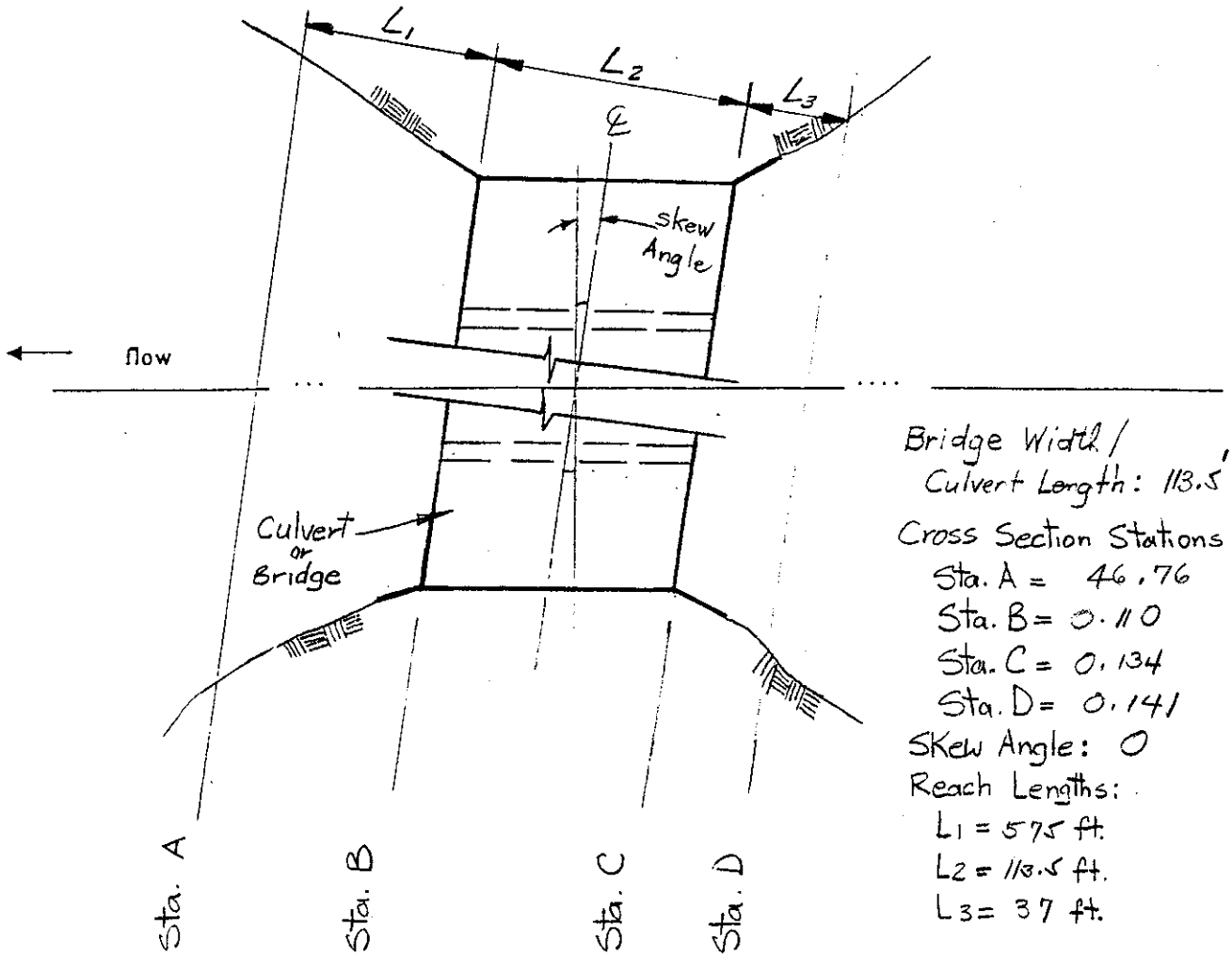


No of Barrels: 3

Culvert Size: 11' x 5' x 113.5'

See Cross Section # 0.134

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



Bridge Width / Culvert Length: 113.5'

Cross Section Stations
Sta. A = 46.76
Sta. B = 0.110
Sta. C = 0.134
Sta. D = 0.141

Skew Angle: 0

Reach Lengths:
L1 = 575 ft.
L2 = 113.5 ft.
L3 = 37 ft.

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

Culvert length or bridge width (ft)	113.5'
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	108.9 ft²
Total culvert/bridge area (ft²)	108.9 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.134)	1932.0	1934.8
Downstream face (STA 0.110)	1928.27	1928.27

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1932.0	1934.8
Downstream face	1932.0	1934.8

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1933.93	1934.42
Downstream face	1927.24	1929.43

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	1466	344	1795 = (1810)

The maximum depth of flow over the roadway/railroad (ft.) ..... 1.93'

Weir length (ft.) ..... 74'

Top Widths

	Floodplain	Floodway
Upstream face	210	74
Downstream face	320	36

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	170	210
Downstream face	35	320

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	2.90
Pier coefficient	—
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Method I of encroachment is used where encroachment stations are defined by ET (i.e. STENCL, ETENCR); further elevations are defined in X3 (i.e. ELLEA & ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    18AUG92    TIME   10:52:24   *
*********************************************
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****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

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

THIS RUN EXECUTED 18AUG92 10:52:24

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

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


T1      WICKENBURG ADMS: MARICOPA COUNTY - CONTRACT FCDMC 89-79
T2      BLACK & VEATCH PN 17676:  COE & VAN LOO JN 1197-02
T3      WASH I:UNNAMED WASH#4          (WI6F)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           .0027                                   1913.23

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                   -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

QT       2      1795      1795
NC    .045       .07      .035        .1        .3
         HASSAYAMPA RIVER FIS SECTION 46.76 (CBA 1988, NO DATUM CHANGE)
         CONFLUENCE WITH WASH I - UNNAMED WASH # 4, AN EAST TRIBUTARY
         NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
X1   46.76        16    1548.8    1600.4
GR  1930.1    1000.0    1930.1    1027.0    1917.3    1145.6    1916.2    1337.1    1912.9    1548.8
GR  1909.2    1572.2    1909.2    1600.4    1909.2    1632.2    1910.3    1656.9    1910.7    1722.1
GR  1916.9    1800.1    1917.4    1815.1    1958.0    1840.5    1962.6    1932.1    2011.8    2005.7
GR  2013.3    2022.7

NC    .070      .070      .020        .6        .8
ET                        9.1                                                         982.      1018.
         DOWNSTREAM BRIDGE SECTION (3-11'X 5'X 113.5' CBC'S)
         1' - 2' SEDIMENT ON BOTTOM
X1   0.110         9     982.4    1017.5       300       750       575
X3      10                                                            1931.8    1933.5
GR  1933.2     963.5   1928.27     982.4    1922.3     982.5    1922.3       988    1922.7      1000
GR  1923.8      1012    1923.8    1017.5   1928.27    1017.6    1933.2    1036.6

ET                       9.11                                                         944.      1018.
SC   3.02      0.40       2.9         0       3.3        11     113.5       8.1    1924.8    1922.7
         UPSTREAM BRIDGE SECTION
   0.134        19       982      1017     113.5     113.5     113.5
                           2   1928.46    1933.9
X3      10                                                            1932.0    1934.6
BT      -4       857      1932                999.    1933.2                1000.    1933.2
BT              1122.    1934.8
GR  1940.0      839.    1934.0      847.    1932.0      857.    1930.6      866.    1930.1      880.
```

GR	1930.6	897.	1932.0	944.	1929.4	966.	1926.0	982.	1925.0	997.

```
   1925.6     1000.     1928.4     1014.     1929.0     1017.     1930.7     1025.     1929.7     1043.
GR 1930.5     1083.     1930.9     1112.     1934.8     1122.     1940.0     1136.

NC   .070      .070      .040       .6        .8
ET              7.1       9.1                                     960       1040       960       1040
        STRUCTURE LOCATED ON RIGHT OVERBANK
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
X1  0.141        17       967       1000        20        50        37
GR 1944.1      849.     1941.2      858.     1933.5      872.     1930.2      886.     1929.5      920.
GR 1930.3      945.     1929.4      967.     1925.6      981.     1925.9      997.     1926.2     1000.
GR 1926.9     1009.     1928.9     1023.     1929.5     1035.     1929.0     1106.     1930.0     1122.
GR 1931.7     1130.     1944.0     1151.

NC   .070      .070      .040       .1        .3
ET                        9.1                                                          972.      1051.
X1  0.225        12       977       1026       425       480       444
GR 1952.0      891.     1939.3      912.     1939.1      943.     1939.1      972.     1937.4      977.
GR 1935.9      992.     1936.0     1000.     1936.0     1005.     1937.3     1026.     1938.8     1051.
GR 1940.4     1111.     1948.1     1138.

ET                        9.1                                                          979.      1082.
X1  0.320        11       983       1015       502       498       502
X3     10
   1960.0      971.     1947.1      983.     1947.1      995.     1947.1     1000.     1947.1     1004.
   1948.5     1015.     1950.2     1032.     1948.4     1053.     1947.6     1067.     1948.6     1077.
GR 1960.0     1099.

ET                        9.1                                                          942.      1077.
X1  0.358        16       997       1010       210       160       201
GR 1964.2      897.     1960.9      900.     1957.5      913.     1956.3      938.     1954.1      951.
GR 1953.3      970.     1953.0      988.     1950.7      997.     1950.7     1008.     1951.0     1010.
GR 1952.6     1021.     1953.8     1031.     1953.8     1052.     1953.7     1069.     1954.2     1074.
GR 1964.0     1090.

ET                        9.1                                                          952.      1019.
X1  0.446         8       985       1014       465       450       465
GR 1980.1      947.     1965.4      953.     1964.9      970.     1961.3      985.     1961.1      998.
GR 1961.1     1000.     1961.1     1014.     1980.1     1033.

ET              7.1       9.1                                     960       1032       960       1032
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
X1  0.506        18       979       1007       315       315       317
GR 1988.0      840.     1980.1      852.     1973.5      873.     1972.8      894.     1971.7      904.
GR 1972.1      917.     1972.4      925.     1972.4      927.     1973.2      959.     1972.7      971.
GR 1971.0      979.     1970.2      987.     1969.5      996.     1969.7     1000.     1970.1     1007.
GR 1971.7     1012.     1971.8     1026.     1988.0     1060.
```

QT	2	1750	1750							
ET			9.1						973.	1135.
X1	0.529	16	986	1006	121	115	121			
GR	1988.0	948.	1985.0	949.	1980.2	965.	1972.7	986.	1972.6	998.
GR	1972.8	1000.	1973.2	1006.	1975.2	1017.	1975.1	1029.	1975.3	1054.
GR	1975.7	1058.	1975.7	1080.	1975.8	1093.	1975.9	1109.	1975.7	1130.
GR	1988.0	1164.								
ET			9.1						980.	1245.
X1	0.597	18	984	1011	360	310	359			
GR	2000.1	958.	1996.7	966.	1981.2	984.	1980.5	999.	1980.7	1000.
GR	1982.5	1011.	1983.3	1019.	1983.4	1044.	1983.2	1060.	1983.6	1088.
GR	1981.8	1104.	1982.0	1124.	1982.4	1140.	1982.5	1181.	1982.0	1205.
GR	1982.6	1230.	1983.6	1243.	1996.0	1294.				
ET			9.1						866.	1019.
X1	0.663	14	982	1016	340	315	348			
GR	2008.0	833.	1996.4	848.	1990.9	871.	1990.9	892.	1990.1	914.
GR	1990.1	936.	1990.7	944.	1990.2	954.	1989.0	982.	1988.5	993.
GR	1988.5	1000.	1988.6	1005.	1989.2	1016.	2020.0	1044.		
ET			9.1						976.	1107.
X1	0.741	17	981	1016	360	450	412			
GR	2020.0	879.	2012.4	893.	2007.2	919.	2004.0	942.	2002.9	959.
GR	2002.1	974.	1998.3	981.	1997.2	993.	1996.8	1003.	1998.7	1016.
GR	1998.8	1020.	1999.0	1047.	1999.2	1065.	1999.3	1085.	1999.7	1099.
GR	1999.2	1102.	2008.1	1124.						
QT	2	1684	1684							
ET			9.1						881.	1024.
X1	0.845	11	974	1019	610	450	549			
GR	2032.0	855.	2027.2	861.	2013.1	883.	2013.1	904.	2013.7	929.
GR	2013.3	949.	2011.9	974.	2010.7	1000.	2010.6	1003.	2010.7	1019.
GR	2028.2	1040.								
ET			9.1						957.	1026.
X1	0.949	11	962	1006	480	570	549			
GR	2040.0	928.	2035.0	931.	2029.0	951.	2022.9	962.	2022.1	974.
GR	2022.1	991.	2022.3	1000.	2022.4	1006.	2022.6	1014.	2023.8	1024.
GR	2040.1	1041.								
ET			9.1						956.	1038.
X1	1.058	9	989	1035	550	570	576			
GR	2064.1	935.	2038.2	958.	2037.4	989.	2037.1	1000.	2037.0	1005.
GR	2036.8	1023.	2038.8	1035.	2045.3	1045.	2052.0	1072.		
ET			9.1						947.	1026.
X1	1.153	9	990	1010	510	502	502			
GR	2060.1	937.	2050.1	948.	2047.0	965.	2046.7	990.	2046.5	1000.
GR	2046.4	1003.	2046.5	1010.	2048.3	1021.	2060.1	1048.		

ET			9.1						951.	1014.
X1	1.250	8	979	1000	512	512	512			
GR	2072.1	934.	2057.8	957.	2057.5	979.	2057.3	990.	2057.3	998.
GR	2057.7	1000.	2059.1	1007.	2072.1	1045.				
ET			9.1						935.	1018.
X1	1.344	10	970	1016	520	480	496			
GR	2088.1	899.	2074.9	921.	2069.9	937.	2067.4	956.	2067.8	970.
GR	2067.3	987.	2067.3	1000.	2067.3	1006.	2069.4	1016.	2084.1	1032.

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 46.760
HASSAYAMPA RIVER FIS SECTION 46.76 (CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH I - UNNAMED WASH # 4, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

46.760	4.03	1913.23	1911.72	1913.23	1913.43	.20	.00	.00	1912.90
1795.0	1.8	783.5	1009.7	3.5	164.7	432.4	.0	.0	1909.20
.00	.52	4.76	2.34	.045	.035	.070	.000	1909.20	1527.63
.002693	0.	0.	0.	0	13	0	.00	226.30	1753.93

FLOW DISTRIBUTION FOR SECNO= 46.76 CWSEL= 1913.23

STA=	1528.	1549.	1600.	1632.	1657.	1722.	1754.
PER Q=	.1	43.6	19.9	12.1	21.3	2.9	
AREA=	3.5	164.7	128.2	86.0	178.0	40.3	
VEL=	.5	4.8	2.8	2.5	2.2	1.3	
DEPTH=	.2	3.2	4.0	3.5	2.7	1.3	

CCHV= .600 CEHV= .800
*SECNO .110

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1931.80 ELREA= 1933.50

DOWNSTREAM BRIDGE SECTION (3-11'X 5'X 113.5' CBC'S)
1' - 2' SEDIMENT ON BOTTOM

.110	4.94	1927.24	1927.24	.00	1929.43	2.19	2.10	1.59	1928.27
1795.0	.0	1795.0	.0	.0	151.2	.0	5.8	2.0	1923.80
.01	.00	11.87	.00	.000	.020	.000	.000	1922.30	982.42
.004335	300.	575.	750.	0	11	0	.00	35.08	1017.50

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= .11 CWSEL= 1927.24

STA= 982. 1018.
PER Q= 100.0
AREA= 151.2
VEL= 11.9
DEPTH= 4.3

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	3.30	11.00	113.50	8	1	1924.80	1922.70

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

5130, EGIC= 1937.90..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO .134
5, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
AL QWEIR + QCULV = 2012. DOES NOT EQUAL ACTUAL Q = 1795.

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1933.85

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.11

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1937.90	1937.22	4.42	607.	1405.	5.757	108.9	1933.90	193.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1932.00 ELREA= 1934.60

UPSTREAM BRIDGE SECTION

.134	8.44	1933.44	.00	.00	1933.85	.41	4.42	.00	1926.00
1795.0	366.7	1428.3	.0	373.7	248.1	.0	6.8	2.2	1929.00
.02	.98	5.76	.00	.070	.020	.000	.000	1925.00	849.77
.000448	114.	114.	114.	2	0	0	.00	167.23	1017.00

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 1933.44

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

STA=	850.	857.	866.	880.	897.	944.	966.	982.	1017.
PER Q=	.1	.8	2.3	2.8	4.2	3.0	7.3	79.6	
AREA=	5.2	19.3	43.3	52.6	100.8	60.4	91.9	248.1	
VEL=	.4	.7	1.0	1.0	.7	.9	1.4	5.8	
DEPTH=	.7	2.1	3.1	3.1	2.1	2.7	5.7	7.1	

CCHV= .600 CEHV= .800
*SECNO .141

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .56

3470 ENCROACHMENT STATIONS= 960.0 1040.0 TYPE= 1 TARGET= 80.000
STRUCTURE LOCATED ON RIGHT OVERBANK
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

.141	8.03	1933.63	1930.35	.00	1933.94	.31	.03	.06	1929.40
1795.0	43.8	1211.8	539.4	28.6	234.8	218.0	7.2	2.3	1926.20
.02	1.53	5.16	2.47	.070	.040	.070	.000	1925.60	960.00
.001440	20.	37.	50.	2	11	0	.00	80.00	1040.00

FLOW DISTRIBUTION FOR SECNO= .14 CWSEL= 1933.63

STA=	960.	967.	1000.	1009.	1023.	1035.	1040.
PER Q=	2.4	67.5	10.5	11.5	6.4	1.6	
AREA=	28.6	234.8	63.8	80.3	53.2	20.8	
VEL=	1.5	5.2	3.0	2.6	2.2	1.4	
DEPTH=	4.1	7.1	7.1	5.7	4.4	4.2	

CCHV= .100 CEHV= .300
*SECNO .225

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.225	4.07	1939.97	1939.97	.00	1940.94	.97	1.37	.20	1937.40
1795.0	117.7	1480.4	196.8	57.9	171.4	73.5	11.3	3.7	1937.30
.04	2.03	8.64	2.68	.070	.040	.070	.000	1935.90	910.90
.010207	425.	444.	480.	0	8	0	.00	183.89	1094.79

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= .22 CWSEL= 1939.97

STA=	911.	912.	943.	972.	977.	1026.	1051.	1095.
PER Q=	.0	2.4	2.7	1.4	82.5	8.8	2.1	
AREA=	.4	23.8	25.2	8.6	171.4	47.9	25.6	
VEL=	.9	1.8	2.0	3.0	8.6	3.3	1.5	
DEPTH=	.3	.8	.9	1.7	3.5	1.9	.6	

*SECNO .320
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.320	3.80	1950.90	1950.90	.00	1952.14	1.24	6.12	.08	1947.10
1795.0	20.6	1196.9	577.5	6.7	113.7	133.3	14.5	5.3	1948.50
.06	3.07	10.52	4.33	.070	.040	.070	.000	1947.10	979.47
.014846	502.	502.	498.	0	11	0	.00	101.96	1081.43

FLOW DISTRIBUTION FOR SECNO= .32 CWSEL= 1950.90

STA=	979.	983.	1015.	1032.	1053.	1067.	1077.	1081.
PER Q=	1.1	66.7	5.0	6.6	11.9	8.0	.7	
AREA=	6.7	113.7	26.3	33.5	40.5	28.0	5.1	
VEL=	3.1	10.5	3.4	3.5	5.2	5.1	2.6	
DEPTH=	1.9	3.6	1.5	1.6	2.9	2.8	1.1	

*SECNO .358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.358	4.79	1955.49	1955.49	.00	1956.54	1.05	2.60	.02	1950.70
1795.0	488.5	733.5	573.0	114.3	61.9	137.3	15.7	5.8	1951.00
.06	4.27	11.85	4.17	.070	.040	.070	.000	1950.70	942.81
.012723	210.	201.	160.	0	11	0	.00	133.28	1076.10

FLOW DISTRIBUTION FOR SECNO= .36 CWSEL= 1955.49

STA=	943.	951.	970.	988.	997.	1010.	1021.	1031.	1052.	1069.	1074.	1076.
PER Q=	.6	6.7	9.9	10.1	40.9	12.8	5.3	6.7	5.7	1.4	.1	
AREA=	5.7	33.9	42.0	32.7	61.9	40.5	22.9	35.4	29.5	7.7	1.3	
VEL=	1.9	3.5	4.2	5.5	11.8	5.7	4.1	3.4	3.5	3.2	1.6	
DEPTH=	.7	1.8	2.3	3.6	4.8	3.7	2.3	1.7	1.7	1.5	.6	

```
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  .446

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .446      4.77   1965.87   1965.87       .00   1967.62      1.75      5.65       .21   1961.30
   1795.0     207.1    1550.9      37.0      53.8     137.0      11.4      18.5       6.9   1961.10
     .08      3.85     11.32      3.26      .070      .040      .070      .000   1961.10    952.81
  .011722     465.      465.      450.         0         5         0       .00     65.96   1018.77


FLOW DISTRIBUTION FOR SECNO=       .45          CWSEL=   1965.87

STA=     953.     970.     985.    1014.    1019.
  PER Q=      1.3     10.3     86.4      2.1
   AREA=     12.2     41.5    137.0     11.4
    VEL=      1.8      4.4     11.3      3.3
  DEPTH=       .7      2.8      4.7      2.4

ECNO  .506
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      960.0    1032.0  TYPE=      1  TARGET=       72.000
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
     .506      4.88   1974.38   1974.38       .00   1975.97      1.59      3.93       .02   1971.00
   1795.0     136.7    1374.4     283.9      36.2     121.6      61.3      20.0       7.4   1970.10
     .09      3.77     11.31      4.64      .070      .040      .070      .000   1969.50    960.00
  .013131     315.      317.      315.         0         8         0       .00     71.42   1031.42


FLOW DISTRIBUTION FOR SECNO=       .51          CWSEL=   1974.38

STA=     960.     971.     979.    1007.    1012.    1026.    1031.
  PER Q=      2.6      5.0     76.6      5.2      9.5      1.1
   AREA=     16.0     20.3    121.6     17.4     36.9      7.0
    VEL=      2.9      4.5     11.3      5.4      4.6      2.7
  DEPTH=      1.5      2.5      4.3      3.5      2.6      1.3
```

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 .529

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.529	4.64	1977.24	1977.24	.00	1978.16	.93	1.38	.07	1972.70
1750.0	102.8	914.4	732.9	28.8	89.5	225.1	20.8	7.7	1973.20
.09	3.57	10.21	3.26	.070	.040	.070	.000	1972.60	973.30
.010255	121.	121.	115.	0	12	0	.00	160.95	1134.25

FLOW DISTRIBUTION FOR SECNO= .53 CWSEL= 1977.24

STA=	973.	986.	1006.	1017.	1029.	1054.	1058.	1080.	1093.	1109.	1130.	1134.
PER Q=	5.9	52.2	8.5	5.0	10.1	1.2	5.5	3.1	3.4	4.7	.3	
AREA=	28.8	89.5	33.4	25.0	50.9	6.9	33.8	19.3	22.2	30.2	3.3	
VEL=	3.6	10.2	4.5	3.5	3.5	3.1	2.9	2.8	2.7	2.7	1.7	
DEPTH=	2.3	4.5	3.0	2.1	2.0	1.7	1.5	1.5	1.4	1.4	.8	

*SECNO .597
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.597	3.53	1984.03	1984.03	.00	1984.63	.60	4.03	.03	1981.20
1750.0	12.4	698.5	1039.2	4.6	77.7	310.7	23.5	9.2	1982.50
.11	2.67	8.98	3.34	.070	.040	.070	.000	1980.50	980.72
.014406	360.	359.	310.	0	14	0	.00	264.03	1244.75

FLOW DISTRIBUTION FOR SECNO= .60 CWSEL= 1984.03

STA=	981.	984.	1011.	1044.	1088.	1104.	1124.	1140.	1181.	1205.	1230.	1245.
PER Q=	.7	39.9	3.3	3.2	3.7	10.2	6.4	12.7	9.1	9.0	1.7	
AREA=	4.6	77.7	25.9	29.1	21.2	42.5	29.2	64.6	42.6	43.1	12.4	
VEL=	2.7	9.0	2.2	1.9	3.1	4.2	3.8	3.5	3.7	3.7	2.4	
DEPTH=	1.4	2.9	.8	.7	1.3	2.1	1.8	1.6	1.8	1.7	.8	

*SECNO .663
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.663	3.44	1991.94	1991.94	.00	1992.88	.93	4.76	.10	1989.00
1750.0	693.9	1048.0	8.1	189.5	109.7	3.4	26.1	10.8	1989.20
.12	3.66	9.55	2.37	.070	.040	.070	.000	1988.50	866.63
.013875	340.	348.	315.	0	8	0	.00	151.86	1018.50

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= .66 CWSEL= 1991.94

STA=	867.	871.	892.	914.	936.	944.	954.	982.	1016.	1018.
PER Q=	.2	3.2	5.8	8.7	2.4	2.8	16.5	59.9	.5	
AREA=	2.3	21.9	31.8	40.6	12.4	14.9	65.7	109.7	3.4	
VEL=	1.6	2.6	3.2	3.8	3.3	3.3	4.4	9.6	2.4	
DEPTH=	.5	1.0	1.4	1.8	1.5	1.5	2.3	3.2	1.4	

*SECNO .741
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.741	4.12	2000.92	2000.92	.00	2001.97	1.05	5.64	.04	1998.30
1750.0	17.2	1157.9	574.9	6.3	118.3	157.0	28.8	12.1	1998.70
.13	2.73	9.78	3.66	.070	.040	.070	.000	1996.80	976.18
.013770	360.	412.	450.	0	11	0	.00	130.06	1106.24

FLOW DISTRIBUTION FOR SECNO= .74 CWSEL= 2000.92

STA=	976.	981.	1016.	1020.	1047.	1065.	1085.	1099.	1102.	1106.
PER Q=	1.0	66.2	2.1	12.4	6.9	6.7	3.6	.8	.4	
AREA=	6.3	118.3	8.7	54.5	32.7	33.3	19.8	4.4	3.6	
VEL=	2.7	9.8	4.2	4.0	3.7	3.5	3.1	3.2	2.1	
DEPTH=	1.3	3.4	2.2	2.0	1.8	1.7	1.4	1.5	.9	

*SECNO .845
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.845	3.78	2014.38	2014.38	.00	2015.39	1.02	6.79	.00	2011.90
1684.0	313.4	1347.3	23.3	114.3	150.7	8.1	32.2	13.8	2010.70
.15	2.74	8.94	2.87	.070	.040	.070	.000	2010.60	881.01
.011559	610.	549.	450.	0	11	0	.00	142.40	1023.41

FLOW DISTRIBUTION FOR SECNO= .85 CWSEL= 2014.38

STA=	881.	883.	904.	929.	949.	974.	1019.	1023.
PER Q=	.1	4.3	3.2	2.2	8.8	80.0	1.4	
AREA=	1.3	26.8	24.4	17.5	44.4	150.7	8.1	
VEL=	1.5	2.7	2.2	2.1	3.3	8.9	2.9	
DEPTH=	.6	1.3	1.0	.9	1.8	3.3	1.8	

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

*SECNO .949
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.949	3.33	2025.43	2025.43	.00	2026.88	1.45	7.46	.13	2022.90
1684.0	16.8	1430.9	236.3	5.8	139.1	47.0	35.1	15.0	2022.40
.17	2.92	10.28	5.02	.070	.040	.070	.000	2022.10	957.45
.016523	480.	549.	570.	0	11	0	.00	68.25	1025.70

FLOW DISTRIBUTION FOR SECNO= .95 CWSEL= 2025.43

STA=	957.	962.	1006.	1014.	1024.	1026.
PER Q=	1.0	85.0	7.8	6.1	.2	
AREA=	5.8	139.1	23.4	22.3	1.4	
VEL=	2.9	10.3	5.6	4.6	1.9	
DEPTH=	1.3	3.2	2.9	2.2	.8	

*SECNO 1.058
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.058	3.31	2040.11	2040.11	.00	2041.41	1.30	9.83	.02	2037.40
1684.0	358.0	1323.4	2.5	73.2	132.2	1.3	37.7	16.0	2038.80
.19	4.89	10.01	1.90	.070	.040	.070	.000	2036.80	956.30
.017841	550.	576.	570.	0	5	0	.00	80.71	1037.01

FLOW DISTRIBUTION FOR SECNO= 1.06 CWSEL= 2040.11

STA=	956.	958.	989.	1035.	1037.
PER Q=	.2	21.1	78.6	.1	
AREA=	1.6	71.6	132.2	1.3	
VEL=	2.1	5.0	10.0	1.9	
DEPTH=	1.0	2.3	2.9	.7	

*SECNO 1.153
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.153	3.76	2050.16	2050.16	.00	2051.54	1.37	9.13	.02	2046.70
1684.0	636.8	866.3	180.9	110.2	72.8	34.4	40.2	16.9	2046.50
.20	5.78	11.91	5.27	.070	.040	.070	.000	2046.40	947.93
.018364	510.	502.	502.	0	8	0	.00	77.33	1025.26

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= 1.15 CWSEL= 2050.16

STA=	948.	965.	990.	1010.	1021.	1025.
PER Q=	6.4	31.4	51.4	10.1	.6	
AREA=	27.4	82.8	72.8	30.4	4.0	
VEL=	3.9	6.4	11.9	5.6	2.6	
DEPTH=	1.6	3.3	3.6	2.8	.9	

*SECNO 1.250
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.250	3.91	2061.21	2061.21	.00	2062.84	1.63	9.39	.08	2057.50
1684.0	560.0	994.0	130.0	87.7	80.7	26.2	42.6	17.7	2057.70
.22	6.38	12.32	4.96	.070	.040	.070	.000	2057.30	951.51
.018335	512.	512.	512.	0	8	0	.00	61.66	1013.18

FLOW DISTRIBUTION FOR SECNO= 1.25 CWSEL= 2061.21

STA=	952.	957.	979.	1000.	1007.	1013.
PER Q=	2.0	31.2	59.0	6.6	1.1	
AREA=	9.4	78.4	80.7	19.7	6.5	
VEL=	3.7	6.7	12.3	5.7	2.9	
DEPTH=	1.7	3.6	3.8	2.8	1.1	

*SECNO 1.344

1.344	3.21	2070.51	2070.46	.00	2071.75	1.24	8.87	.04	2067.80
1684.0	378.5	1304.5	1.0	76.7	133.0	.7	44.9	18.6	2069.40
.23	4.93	9.81	1.53	.070	.040	.070	.000	2067.30	935.04
.017037	520.	496.	480.	2	15	0	.00	82.17	1017.21

FLOW DISTRIBUTION FOR SECNO= 1.34 CWSEL= 2070.51

STA=	935.	937.	956.	970.	1016.	1017.
PER Q=	.0	8.8	13.7	77.5	.1	
AREA=	.6	35.4	40.8	133.0	.7	
VEL=	1.2	4.2	5.6	9.8	1.5	
DEPTH=	.3	1.9	2.9	2.9	.6	

FLOODWAY DETERMINATION

T2

T3 WASH I:UNNAMED WASH #4

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	0	1913.23	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	-1	0	0	0

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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO 46.760
HASSAYAMPA RIVER FIS SECTION 46.76 (CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH I - UNNAMED WASH # 4, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

46.760	4.03	1913.23	1911.72	1913.23	1913.43	.20	.00	.00	1912.90
1795.0	1.8	783.5	1009.7	3.5	164.7	432.4	.0	.0	1909.20
.00	.52	4.76	2.34	.045	.035	.070	.000	1909.20	1527.63
.002693	0.	0.	0.	0	13	0	.00	226.30	1753.93

CCHV= .600 CEHV= .800
*SECNO .110

01 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 982.0 1018.0 TYPE= 1 TARGET= 36.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1931.80 ELREA= 1933.50

DOWNSTREAM BRIDGE SECTION (3-11'X 5'X 113.5' CBC'S)
1' - 2' SEDIMENT ON BOTTOM

.110	4.94	1927.24	1927.24	1927.24	1929.43	2.19	2.10	1.59	1928.27
1795.0	.0	1795.0	.0	.0	151.2	.0	5.8	2.0	1923.80
.01	.00	11.87	.00	.000	.020	.000	.000	1922.30	982.42
.004335	300.	575.	750.	0	11	0	.00	35.08	1017.50

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	3.30	11.00	113.50	8	1	1924.80	1922.70

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

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

5130, EGIC= 1937.90..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO .134
BTCARD, BRIDGE STENCL= 944.00 STENCR= 1018.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1934.42

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.14

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1937.90	1937.22	4.99	344.	1466.	5.962	108.9	1933.90	74.

3470 ENCROACHMENT STATIONS= 944.0 1018.0 TYPE= 1 TARGET= 74.000

5 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1932.00 ELREA= 1934.60

UPSTREAM BRIDGE SECTION

.134	8.93	1933.93	.00	1933.44	1934.42	.49	4.99	.00	1926.00
1795.0	213.5	1581.5	.0	171.0	265.3	.0	6.6	2.1	1929.00
.02	1.25	5.96	.00	.070	.020	.000	.000	1925.00	944.00
.000440	114.	114.	114.	2	0	0	.00	73.00	1017.00

CCHV= .600 CEHV= .800
*SECNO .141

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .66

3470 ENCROACHMENT STATIONS= 960.0 1040.0 TYPE= 1 TARGET= 80.000
STRUCTURE LOCATED ON RIGHT OVERBANK
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

.141	8.74	1934.34	1930.33	1933.63	1934.59	.25	.02	.15	1929.40
1795.0	46.2	1196.4	552.4	33.6	258.3	246.5	7.0	2.2	1926.20
.02	1.37	4.63	2.24	.070	.040	.070	.000	1925.60	960.00
.001022	20.	37.	50.	2	11	0	.00	80.00	1040.00

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

CCHV= .100 CEHV= .300
*SECNO .225

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 972.0 1051.0 TYPE= 1 TARGET= 79.000

.225	3.89	1939.79	1939.79	1939.97	1941.19	1.40	1.15	.35	1937.40
1795.0	23.3	1615.5	156.2	7.7	162.6	43.4	10.9	3.0	1937.30
.04	3.03	9.94	3.60	.070	.040	.070	.000	1935.90	972.00
.014498	425.	444.	480.	0	14	0	.00	79.00	1051.00

*SECNO .320
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70 ENCROACHMENT STATIONS= 979.0 1082.0 TYPE= 1 TARGET= 103.000

.320	3.81	1950.91	1950.91	1950.90	1952.14	1.23	7.29	.02	1947.10
1795.0	20.6	1195.2	579.2	6.8	114.2	134.3	13.6	4.0	1948.50
.05	3.05	10.46	4.31	.070	.040	.070	.000	1947.10	979.46
.014595	502.	502.	498.	0	8	0	.00	102.00	1081.46

*SECNO .358
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 942.0 1077.0 TYPE= 1 TARGET= 135.000

.358	4.79	1955.49	1955.49	1955.49	1956.54	1.05	2.57	.02	1950.70
1795.0	488.6	733.2	573.2	114.4	61.9	137.4	14.8	4.5	1951.00
.06	4.27	11.84	4.17	.070	.040	.070	.000	1950.70	942.80
.012700	210.	201.	160.	0	11	0	.00	133.30	1076.10

*SECNO .446

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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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=      952.0    1019.0  TYPE=      1  TARGET=      67.000
      .446      4.77   1965.87   1965.87   1965.87   1967.62      1.75      5.64       .21   1961.30
    1795.0     207.1    1550.9      37.0      53.8     137.0      11.4      17.6       5.6   1961.10
       .07      3.85     11.32      3.26      .070      .040      .070      .000   1961.10    952.81
   .011720      465.      465.      450.         0         5         0       .00     65.96   1018.77


*SECNO  .506
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      960.0    1032.0  TYPE=      1  TARGET=      72.000
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
      .506      4.88   1974.38   1974.38   1974.38   1975.97      1.59      3.92       .02   1971.00
    1795.0     136.7     1374.4     284.0      36.2     121.6      61.3      19.1       6.1   1970.10
       .08      3.77     11.31      4.64      .070      .040      .070      .000   1969.50    960.00
   .013130      315.      317.      315.         0         8         0       .00     71.42   1031.42


*SECNO  .529

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      973.0    1135.0  TYPE=      1  TARGET=     162.000
      .529      4.60   1977.20   1977.20   1977.24   1978.16       .96      1.41       .06   1972.70
    1750.0     102.8      921.9     725.2      28.4      88.8     220.6      19.8       6.4   1973.20
       .09      3.62     10.38      3.29      .070      .040      .070      .000   1972.60    973.39
   .010702      121.      121.      115.         0        11         0       .00    160.76   1134.15


*SECNO  .597
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      980.0    1245.0  TYPE=      1  TARGET=     265.000
      .597      3.53   1984.03   1984.03   1984.03   1984.63       .60      4.12       .04   1981.20
    1750.0      12.4      698.2    1039.5       4.6      77.8     311.0      22.6       7.9   1982.50
       .10      2.66      8.98      3.34      .070      .040      .070      .000   1980.50    980.72
   .014371      360.      359.      310.         0        14         0       .00    264.04   1244.76
```

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 .663
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 866.0 1019.0 TYPE= 1 TARGET= 153.000

.663	3.44	1991.94	1991.94	1991.94	1992.88	.93	4.75	.10	1989.00
1750.0	693.7	1048.1	8.1	189.4	109.7	3.4	25.2	9.5	1989.20
.12	3.66	9.56	2.37	.070	.040	.070	.000	1988.50	866.64
.013894	340.	348.	315.	0	8	0	.00	151.86	1018.49

*SECNO .741
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 976.0 1107.0 TYPE= 1 TARGET= 131.000

.741	4.12	2000.92	2000.92	2000.92	2001.97	1.05	5.64	.04	1998.30
1750.0	17.2	1157.8	575.0	6.3	118.4	157.1	27.9	10.8	1998.70
.13	2.73	9.78	3.66	.070	.040	.070	.000	1996.80	976.18
.013761	360.	412.	450.	0	11	0	.00	130.07	1106.24

*SECNO .845
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 881.0 1024.0 TYPE= 1 TARGET= 143.000

.845	3.78	2014.38	2014.38	2014.38	2015.39	1.02	6.78	.00	2011.90
1684.0	313.6	1347.2	23.3	114.4	150.8	8.1	31.3	12.5	2010.70
.15	2.74	8.94	2.87	.070	.040	.070	.000	2010.60	881.01
.011548	610.	549.	450.	0	11	0	.00	142.40	1023.41

*SECNO .949
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 957.0 1026.0 TYPE= 1 TARGET= 69.000

.949	3.32	2025.42	2025.42	2025.43	2026.88	1.45	7.46	.13	2022.90
1684.0	16.8	1431.0	236.3	5.7	139.1	47.0	34.2	13.7	2022.40
.17	2.92	10.29	5.03	.070	.040	.070	.000	2022.10	957.45
.016559	480.	549.	570.	0	11	0	.00	68.24	1025.69

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 1.058
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 956.0 1038.0 TYPE= 1 TARGET= 82.000

1.058	3.31	2040.11	2040.11	2040.11	2041.41	1.30	9.83	.02	2037.40
1684.0	358.1	1323.4	2.5	73.2	132.3	1.3	36.8	14.7	2038.80
.18	4.89	10.00	1.90	.070	.040	.070	.000	2036.80	956.30
.017819	550.	576.	570.	0	5	0	.00	80.71	1037.02

*SECNO 1.153
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 947.0 1026.0 TYPE= 1 TARGET= 79.000

1.153	3.76	2050.16	2050.16	2050.16	2051.54	1.37	9.12	.02	2046.70
1684.0	636.8	866.3	180.9	110.2	72.8	34.4	39.2	15.6	2046.50
.20	5.78	11.91	5.27	.070	.040	.070	.000	2046.40	947.93
.018364	510.	502.	502.	0	8	0	.00	77.33	1025.26

*SECNO 1.250
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 951.0 1014.0 TYPE= 1 TARGET= 63.000

1.250	3.91	2061.21	2061.21	2061.21	2062.84	1.64	9.42	.08	2057.50
1684.0	559.9	994.2	129.9	87.6	80.5	26.1	41.6	16.4	2057.70
.21	6.39	12.34	4.97	.070	.040	.070	.000	2057.30	951.52
.018432	512.	512.	512.	0	8	0	.00	61.64	1013.16

*SECNO 1.344

3470 ENCROACHMENT STATIONS= 935.0 1018.0 TYPE= 1 TARGET= 83.000

1.344	3.22	2070.52	2070.46	2070.51	2071.75	1.24	8.87	.04	2067.80
1684.0	378.7	1304.3	1.0	76.9	133.2	.7	44.0	17.3	2069.40
.23	4.92	9.79	1.53	.070	.040	.070	.000	2067.30	935.03
.016947	520.	496.	480.	2	15	0	.00	82.19	1017.21

THIS RUN EXECUTED 18AUG92 10:52:30

****
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

WASH I:UNNAMED WASH#4

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	46.760	.00	.00	.00	1909.20	1795.00	1913.23	1911.72	1913.43	26.93	4.76	600.52	345.88
	46.760	.00	.00	.00	1909.20	1795.00	1913.23	1911.72	1913.43	26.93	4.76	600.52	345.88
*	.110	575.00	.00	.00	1922.30	1795.00	1927.24	1927.24	1929.43	43.35	11.87	151.20	272.62
*	.110	575.00	.00	.00	1922.30	1795.00	1927.24	1927.24	1929.43	43.35	11.87	151.20	272.62
	.134	113.50	1933.90	1928.46	1925.00	1795.00	1933.44	.00	1933.85	4.48	5.76	621.78	847.99
*	.134	113.50	1933.90	1928.46	1925.00	1795.00	1933.93	.00	1934.42	4.40	5.96	436.22	856.15
*	.141	37.00	.00	.00	1925.60	1795.00	1933.63	1930.35	1933.94	14.40	5.16	481.46	473.01
*	.141	37.00	.00	.00	1925.60	1795.00	1934.34	1930.33	1934.59	10.22	4.63	538.36	561.54
*	.225	444.00	.00	.00	1935.90	1795.00	1939.97	1939.97	1940.94	102.07	8.64	302.85	177.67
*	.225	444.00	.00	.00	1935.90	1795.00	1939.79	1939.79	1941.19	144.98	9.94	213.72	149.08
*	.320	502.00	.00	.00	1947.10	1795.00	1950.90	1950.90	1952.14	148.46	10.52	253.76	147.32
*	.320	502.00	.00	.00	1947.10	1795.00	1950.91	1950.91	1952.14	145.95	10.46	255.29	148.58
*	.358	201.00	.00	.00	1950.70	1795.00	1955.49	1955.49	1956.54	127.23	11.85	313.55	159.14
*	.358	201.00	.00	.00	1950.70	1795.00	1955.49	1955.49	1956.54	127.00	11.84	313.76	159.28
*	.446	465.00	.00	.00	1961.10	1795.00	1965.87	1965.87	1967.62	117.22	11.32	202.10	165.79
*	.446	465.00	.00	.00	1961.10	1795.00	1965.87	1965.87	1967.62	117.20	11.32	202.12	165.81
*	.506	317.00	.00	.00	1969.50	1795.00	1974.38	1974.38	1975.97	131.31	11.31	219.05	156.64
*	.506	317.00	.00	.00	1969.50	1795.00	1974.38	1974.38	1975.97	131.30	11.31	219.06	156.65
*	.529	121.00	.00	.00	1972.60	1750.00	1977.24	1977.24	1978.16	102.55	10.21	343.45	172.81
*	.529	121.00	.00	.00	1972.60	1750.00	1977.20	1977.20	1978.16	107.02	10.38	337.82	169.16
	.597	359.00	.00	.00	1980.50	1750.00	1984.03	1984.03	1984.63	144.06	8.98	393.10	145.80
	.597	359.00	.00	.00	1980.50	1750.00	1984.03	1984.03	1984.63	143.71	8.98	393.45	145.98

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.663	348.00	.00	.00	1988.50	1750.00	1991.94	1991.94	1992.88	138.75	9.55	302.69	148.56
*	.663	348.00	.00	.00	1988.50	1750.00	1991.94	1991.94	1992.88	138.94	9.56	302.54	148.46
*	.741	412.00	.00	.00	1996.80	1750.00	2000.92	2000.92	2001.97	137.70	9.78	281.69	149.13
*	.741	412.00	.00	.00	1996.80	1750.00	2000.92	2000.92	2001.97	137.61	9.78	281.75	149.18
*	.845	549.00	.00	.00	2010.60	1684.00	2014.38	2014.38	2015.39	115.59	8.94	273.16	156.63
*	.845	549.00	.00	.00	2010.60	1684.00	2014.38	2014.38	2015.39	115.48	8.94	273.26	156.71
*	.949	549.00	.00	.00	2022.10	1684.00	2025.43	2025.43	2026.88	165.23	10.28	191.94	131.01
*	.949	549.00	.00	.00	2022.10	1684.00	2025.42	2025.42	2026.88	165.59	10.29	191.80	130.87
*	1.058	576.00	.00	.00	2036.80	1684.00	2040.11	2040.11	2041.41	178.41	10.01	206.78	126.08
*	1.058	576.00	.00	.00	2036.80	1684.00	2040.11	2040.11	2041.41	178.19	10.00	206.86	126.15
*	1.153	502.00	.00	.00	2046.40	1684.00	2050.16	2050.16	2051.54	183.64	11.91	217.36	124.27
*	1.153	502.00	.00	.00	2046.40	1684.00	2050.16	2050.16	2051.54	183.64	11.91	217.36	124.27
*	1.250	512.00	.00	.00	2057.30	1684.00	2061.21	2061.21	2062.84	183.35	12.32	194.62	124.37
*	1.250	512.00	.00	.00	2057.30	1684.00	2061.21	2061.21	2062.84	184.32	12.34	194.27	124.04
	1.344	496.00	.00	.00	2067.30	1684.00	2070.51	2070.46	2071.75	170.37	9.81	210.40	129.02
	1.344	496.00	.00	.00	2067.30	1684.00	2070.52	2070.46	2071.75	169.47	9.79	210.76	129.36

SH I:UNNAMED WASH#4

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	46.760	1795.00	1913.23	.00	.00	.00	226.30	.00
	46.760	1795.00	1913.23	.00	.00	.00	226.30	.00
*	.110	1795.00	1927.24	.00	14.01	.00	35.08	575.00
*	.110	1795.00	1927.24	.00	14.01	.00	35.08	575.00
*	.134	1795.00	1933.44	.00	6.20	.00	167.23	113.50
*	.134	1795.00	1933.93	.49	6.69	.49	73.00	113.50
*	.141	1795.00	1933.63	.00	.19	.00	80.00	37.00
*	.141	1795.00	1934.34	.71	.41	.71	80.00	37.00
*	.225	1795.00	1939.97	.00	6.33	.00	183.89	444.00
*	.225	1795.00	1939.79	-.18	5.44	-.18	79.00	444.00
*	.320	1795.00	1950.90	.00	10.93	.00	101.96	502.00
*	.320	1795.00	1950.91	.02	11.12	.02	102.00	502.00
	.358	1795.00	1955.49	.00	4.59	.00	133.28	201.00
	.358	1795.00	1955.49	.00	4.58	.00	133.30	201.00
*	.446	1795.00	1965.87	.00	10.38	.00	65.96	465.00
*	.446	1795.00	1965.87	.00	10.38	.00	65.96	465.00
*	.506	1795.00	1974.38	.00	8.51	.00	71.42	317.00
*	.506	1795.00	1974.38	.00	8.51	.00	71.42	317.00
*	.529	1750.00	1977.24	.00	2.85	.00	160.95	121.00
*	.529	1750.00	1977.20	-.04	2.82	-.04	160.76	121.00
*	.597	1750.00	1984.03	.00	6.79	.00	264.03	359.00
*	.597	1750.00	1984.03	.00	6.83	.00	264.04	359.00
*	.663	1750.00	1991.94	.00	7.92	.00	151.86	348.00
*	.663	1750.00	1991.94	.00	7.92	.00	151.86	348.00
*	.741	1750.00	2000.92	.00	8.97	.00	130.06	412.00
*	.741	1750.00	2000.92	.00	8.97	.00	130.07	412.00
*	.845	1684.00	2014.38	.00	13.46	.00	142.40	549.00
*	.845	1684.00	2014.38	.00	13.46	.00	142.40	549.00
*	.949	1684.00	2025.43	.00	11.05	.00	68.25	549.00
	.949	1684.00	2025.42	.00	11.05	.00	68.24	549.00
*	1.058	1684.00	2040.11	.00	14.68	.00	80.71	576.00
*	1.058	1684.00	2040.11	.00	14.69	.00	80.71	576.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.153	1684.00	2050.16	.00	10.05	.00	77.33	502.00
*	1.153	1684.00	2050.16	.00	10.05	.00	77.33	502.00
*	1.250	1684.00	2061.21	.00	11.05	.00	61.66	512.00
*	1.250	1684.00	2061.21	-.01	11.04	-.01	61.64	512.00
	1.344	1684.00	2070.51	.00	9.30	.00	82.17	496.00
	1.344	1684.00	2070.52	.00	9.31	.00	82.19	496.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .110  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .110  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .134  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .134  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .141  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .141  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .225  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .225  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .225  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .225  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .320  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .320  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      .320  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      .358  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      .446  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .446  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      .506  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .529  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .529  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .529  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .529  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .597  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .597  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .597  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .597  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .663  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .663  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .663  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .663  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      .741  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .845  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .949  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .949  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .949  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     1.058  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.058  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.058  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.058  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     1.153  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.153  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     1.153  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     1.250  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.250  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.250  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.250  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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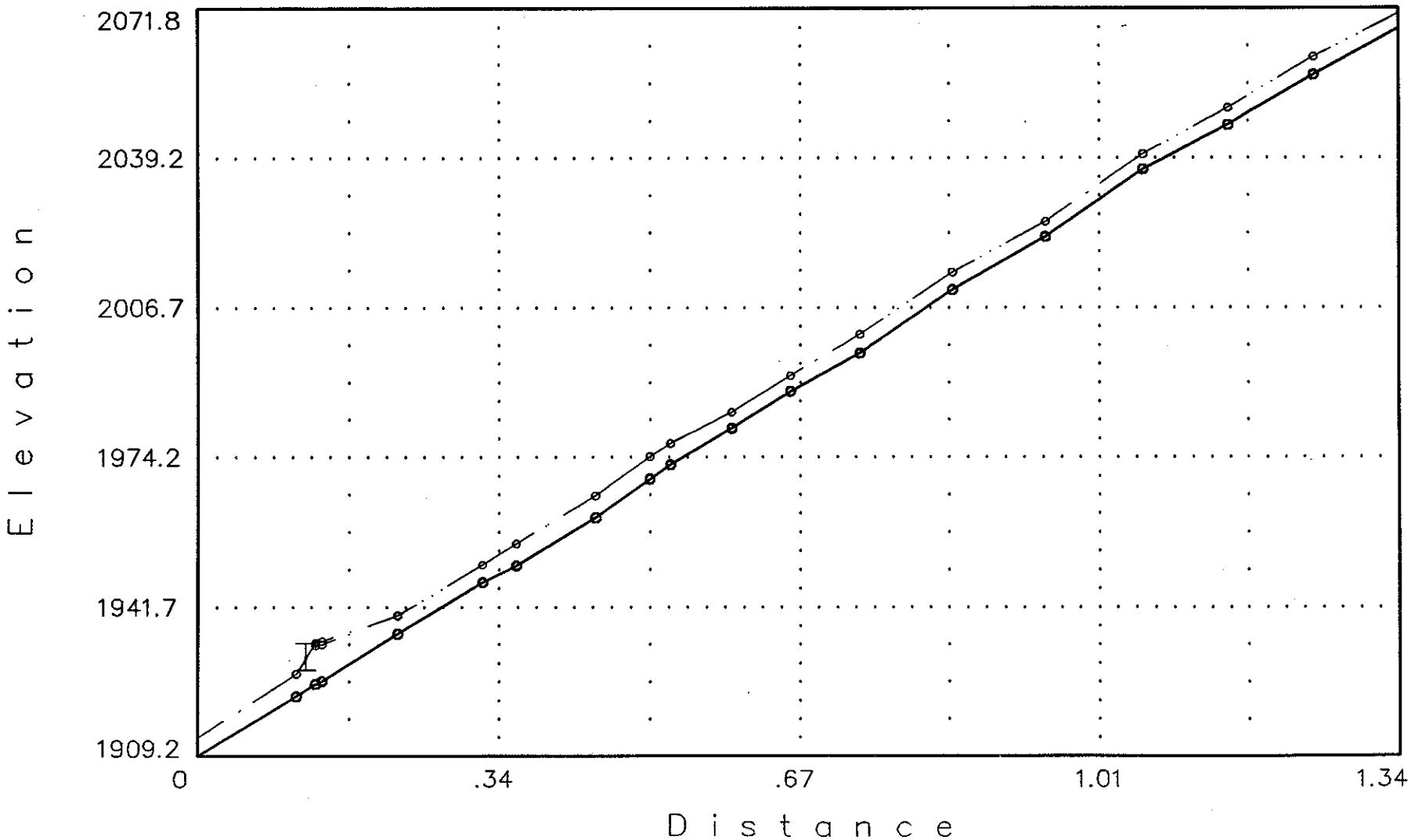
FLOODWAY DATA, WASH I:UNNAMED WASH#4
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
46.760	226.	601.	3.0	1913.2	1913.2	.0
.110	35.	151.	11.9	1927.2	1927.2	.0
.134	73.	436.	4.1	1933.9	1933.4	.5
.141	80.	538.	3.3	1934.3	1933.6	.7
.225	79.	214.	8.4	1939.8	1940.0	-.2
.320	102.	255.	7.0	1950.9	1950.9	.0
.358	133.	314.	5.7	1955.5	1955.5	.0
.446	66.	202.	8.9	1965.9	1965.9	.0
.506	71.	219.	8.2	1974.4	1974.4	.0
.529	161.	338.	5.2	1977.2	1977.2	.0
.597	264.	393.	4.4	1984.0	1984.0	.0
.663	152.	303.	5.8	1991.9	1991.9	.0
.741	130.	282.	6.2	2000.9	2000.9	.0
.845	142.	273.	6.2	2014.4	2014.4	.0
.949	68.	192.	8.8	2025.4	2025.4	.0
1.058	81.	207.	8.1	2040.1	2040.1	.0
1.153	77.	217.	7.7	2050.2	2050.2	.0
1.250	62.	194.	8.7	2061.2	2061.2	.0
1.344	82.	211.	8.0	2070.5	2070.5	.0

<<<<<< WS ELEV. & BED ELEV. vs DISTANCE(mi) >>>>>>

Profile No. 1
Profile No. 2

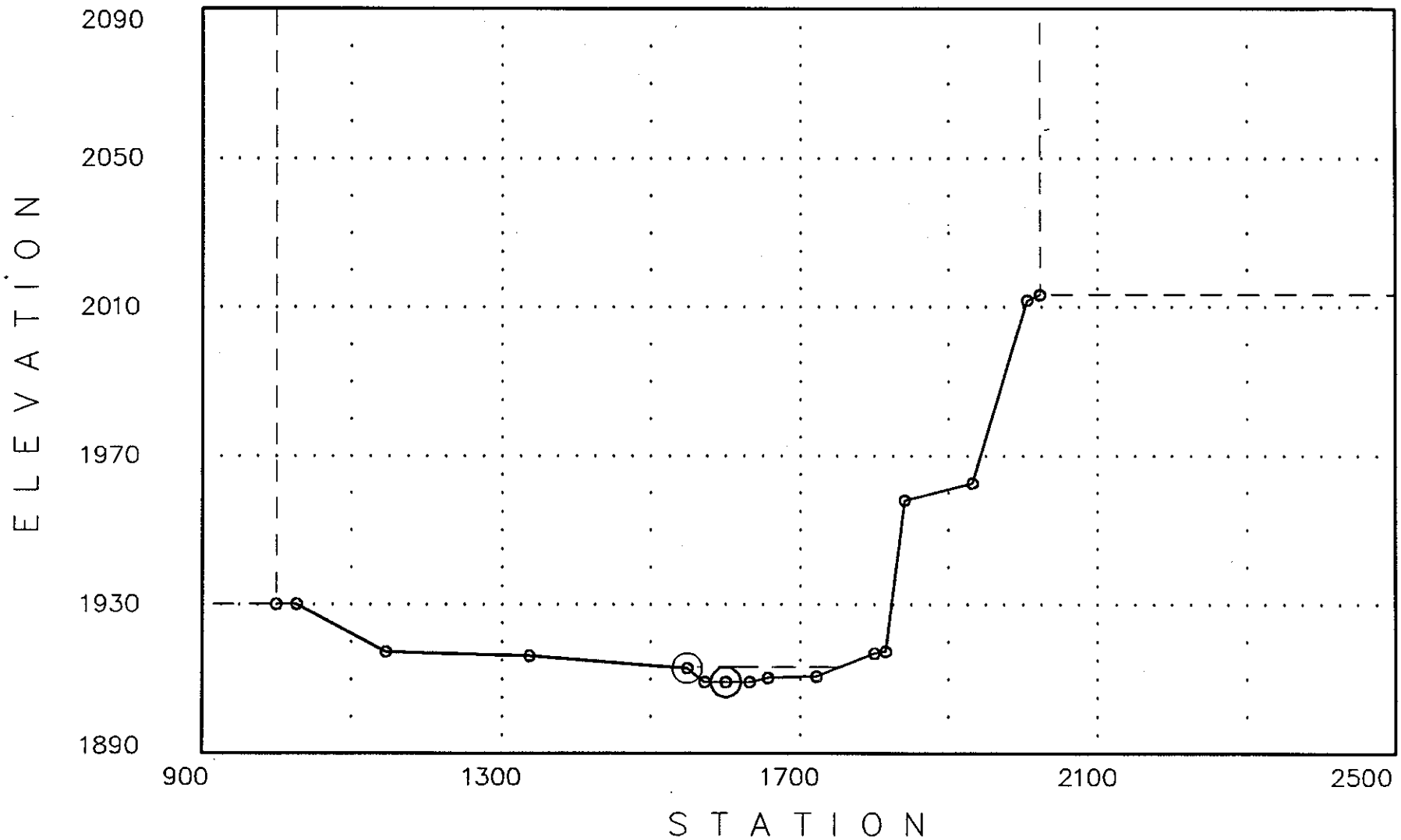
(FN=WASHI.O)



<<<<<< Cross Section: 46.76: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1913.23
Q2= 1795 WS2= 1913.23

Manning-n's: n-lob = .045 n-ch = .035 n-rob = .07

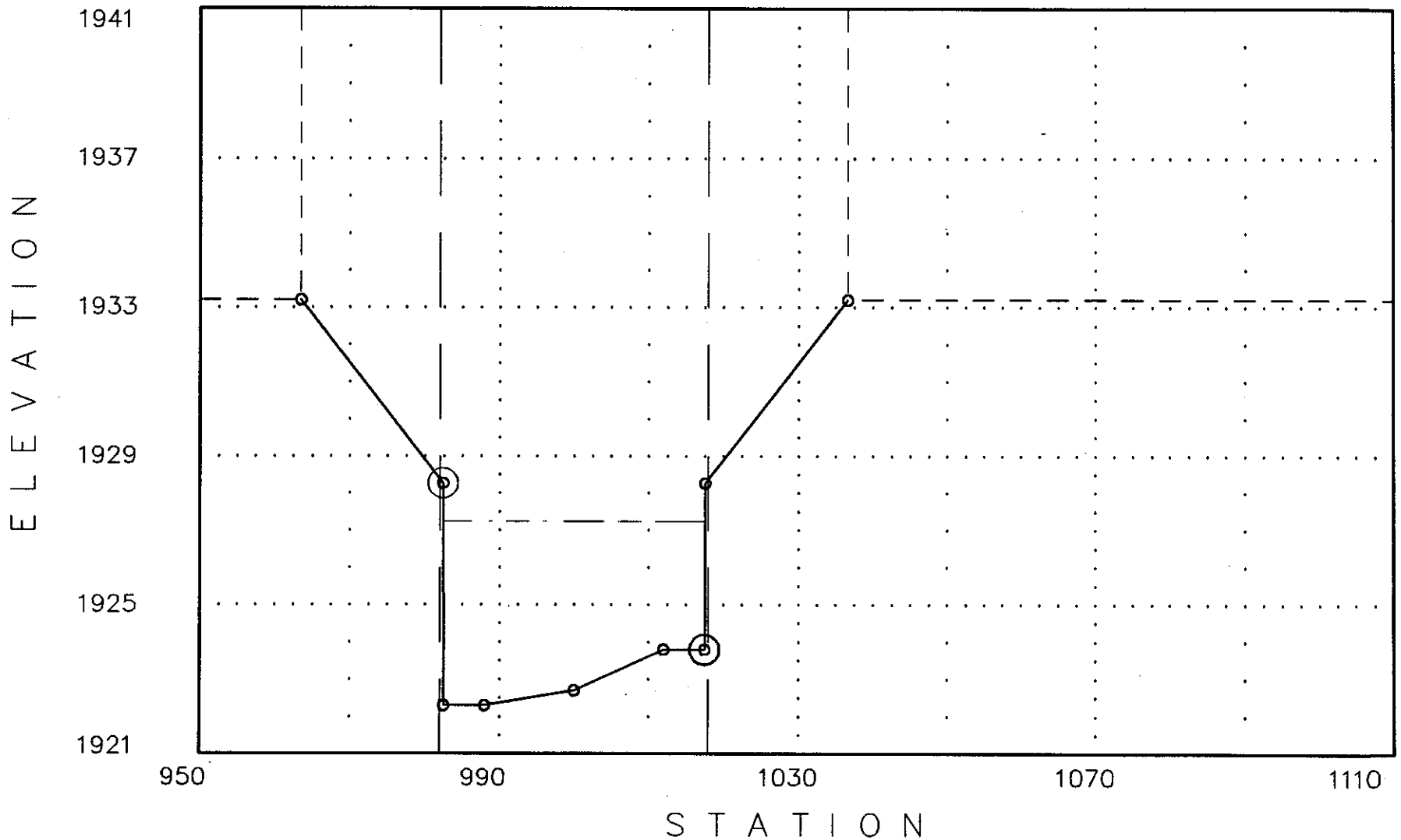


08-18-1992

<<<<<< Cross Section: .11: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1927.24
Q2= 1795 WS2= 1927.24

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07



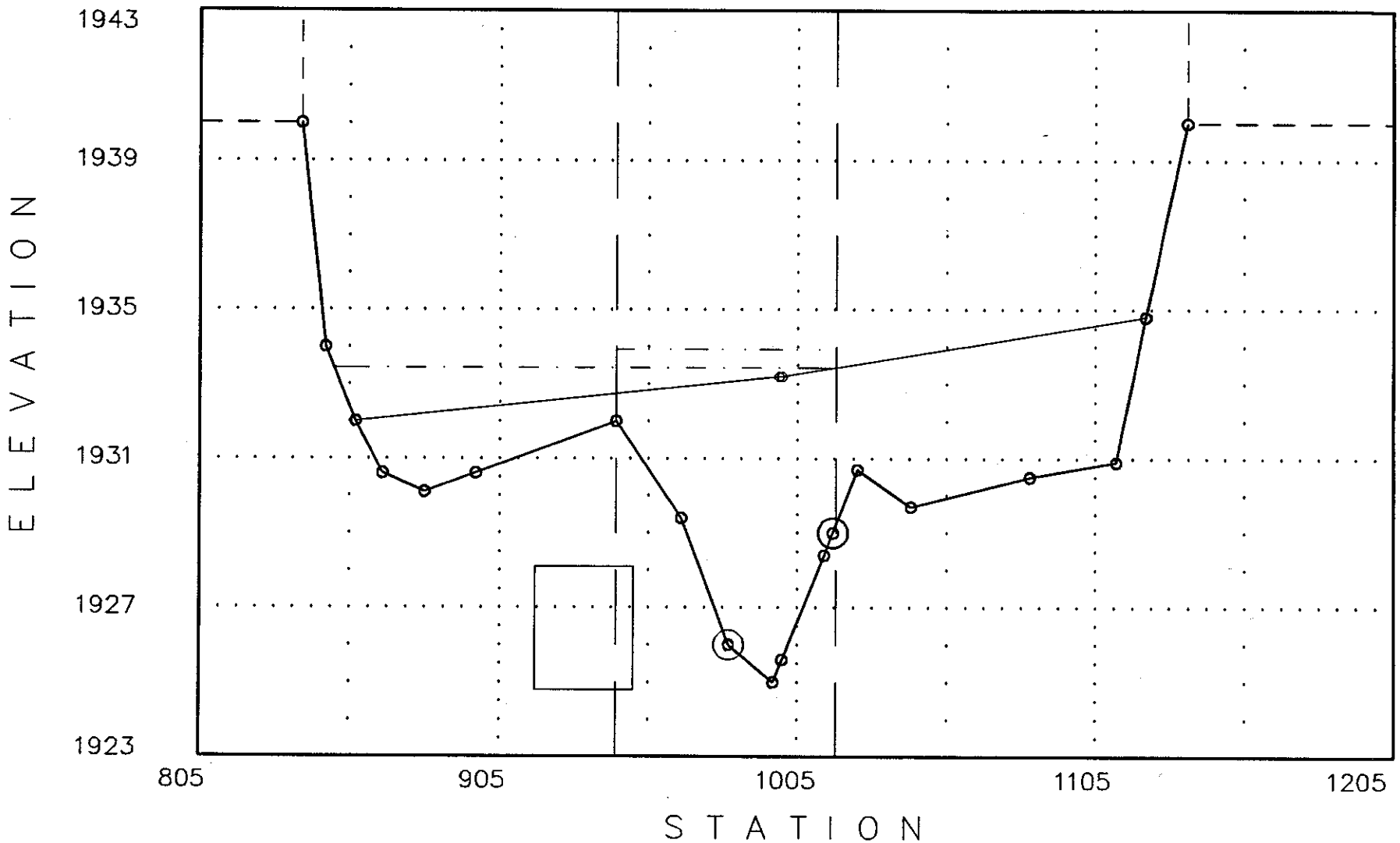
08-18-1992

<<<<<< Cross Section: .134: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1933.44
Q2= 1795 WS2= 1933.93

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07

SPECIAL CULVERT

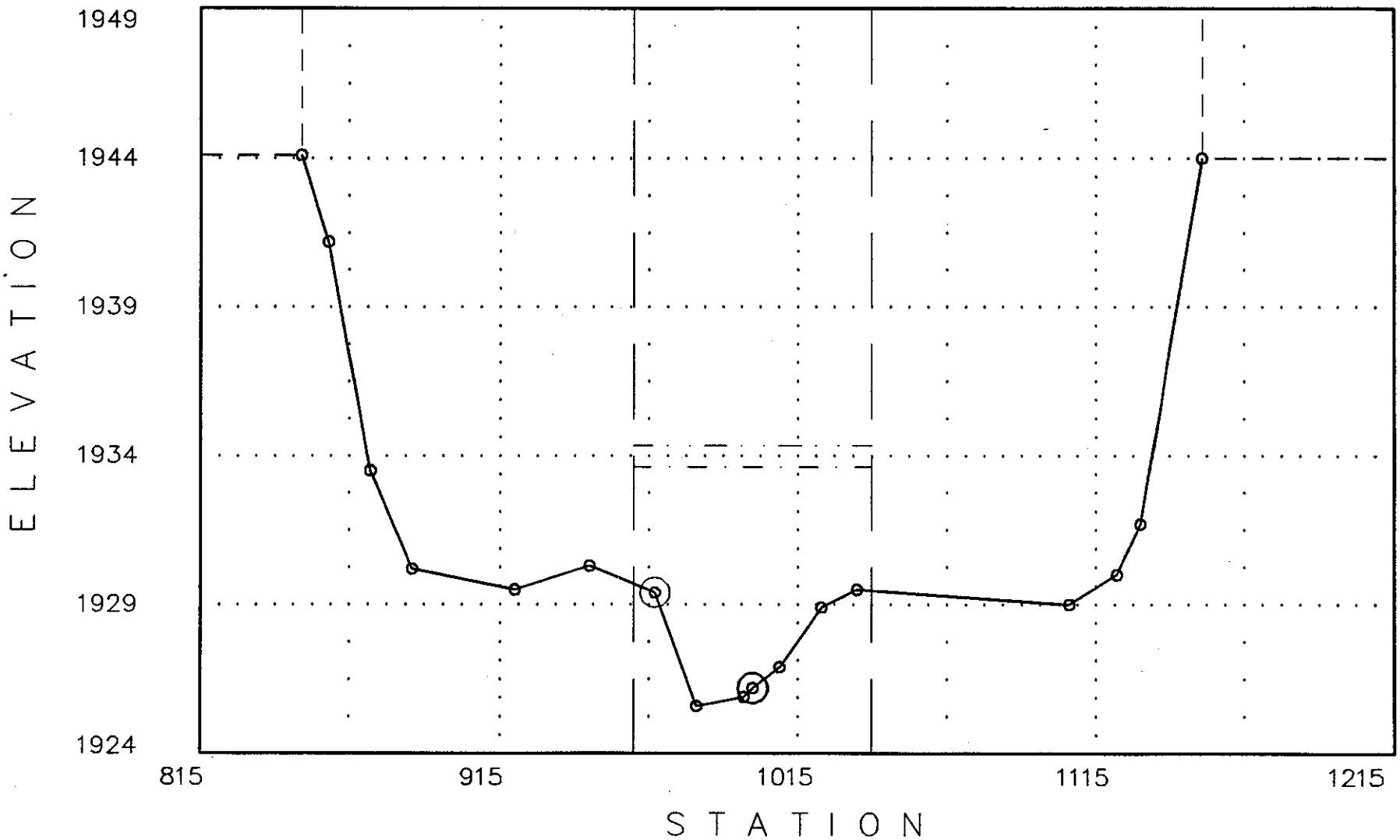


08-18-1992

<<<<<< Cross Section: .141: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1933.63
Q2= 1795 WS2= 1934.34

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

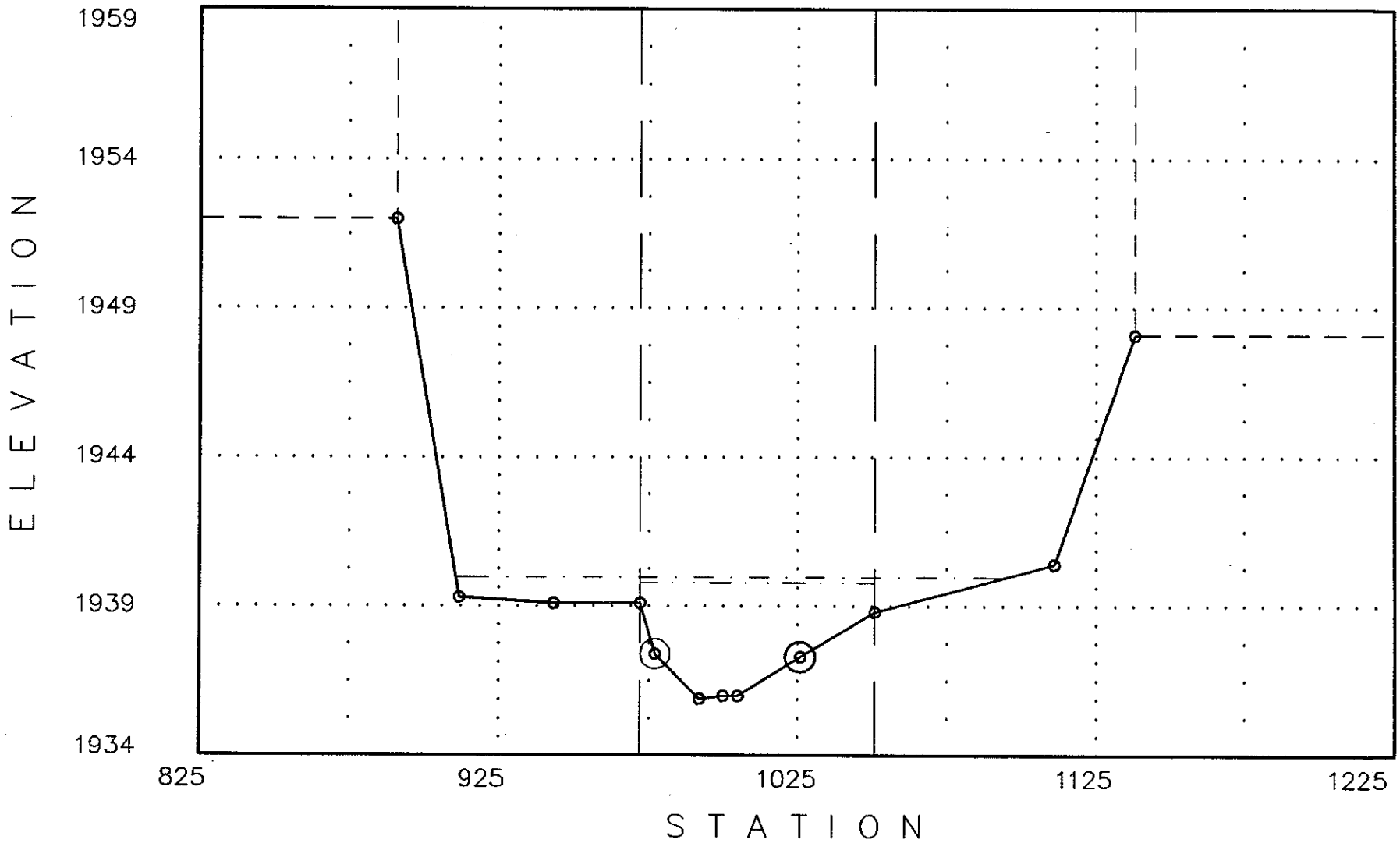


08-16-1992

<<<<<< Cross Section: .225: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1939.97
Q2= 1795 WS2= 1939.79

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

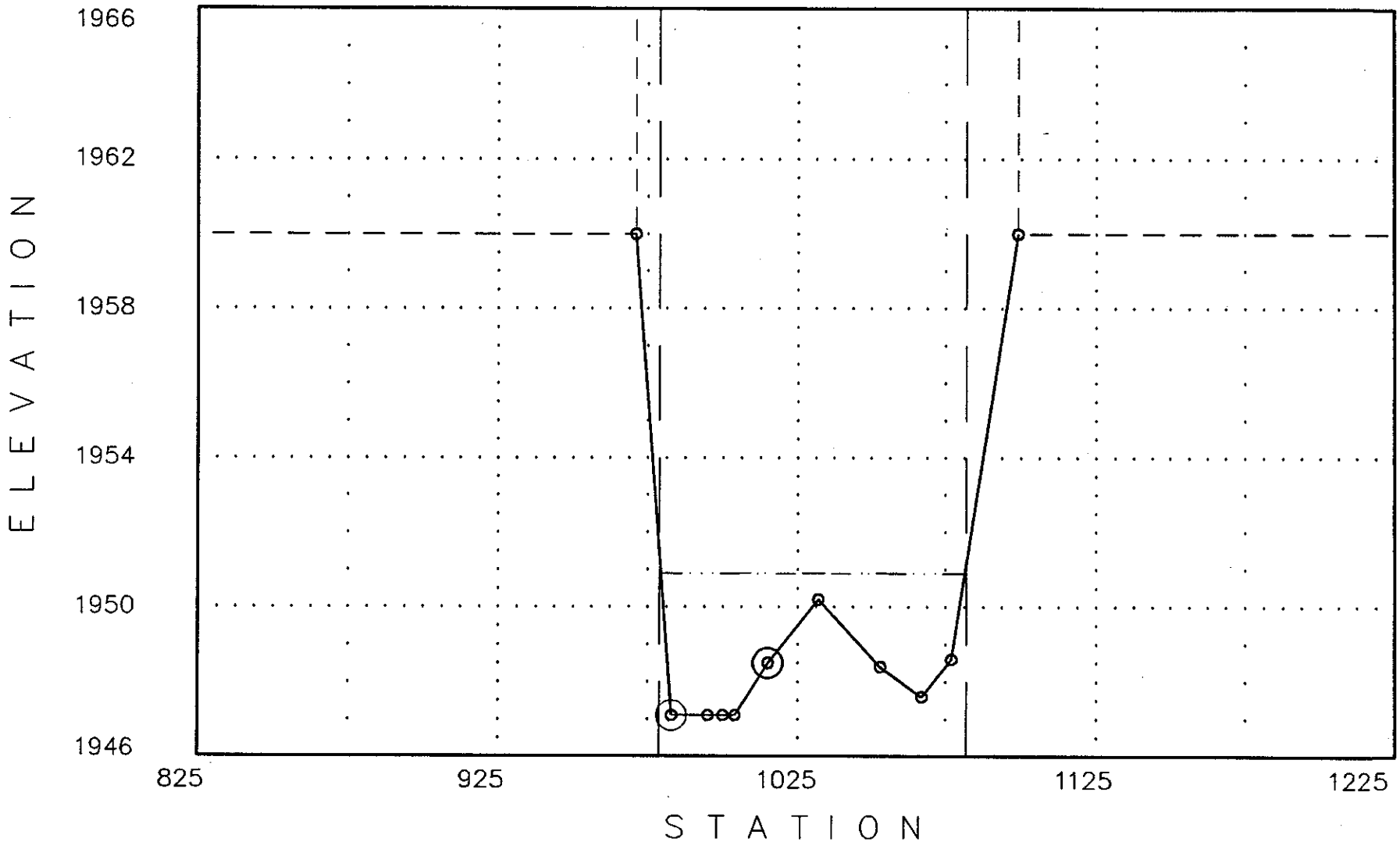


08-18-1992

<<<<<< Cross Section: .32: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1950.9
Q2= 1795 WS2= 1950.91

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

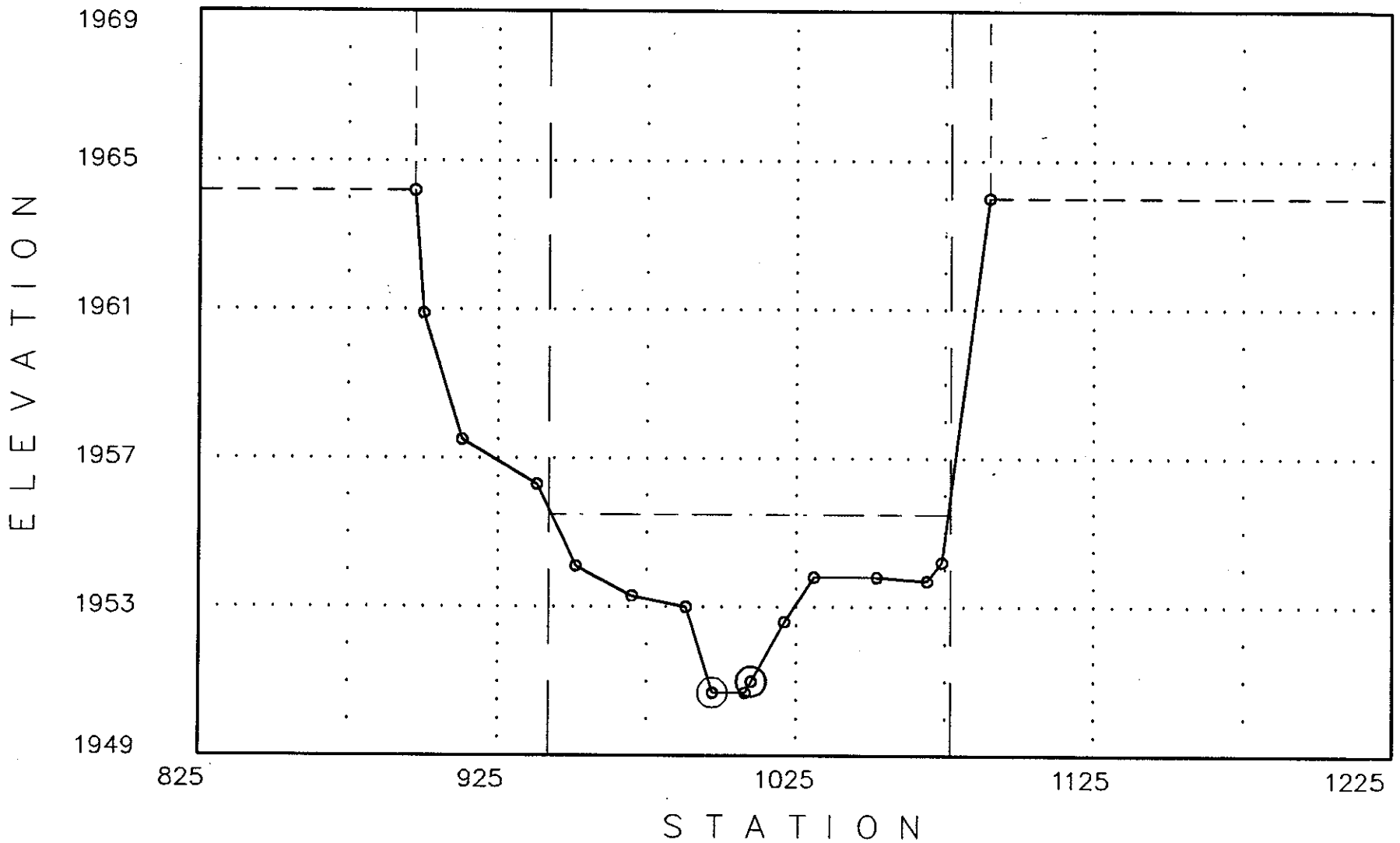


08-18-1992

<<<<<< Cross Section: .358: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1955.49
Q2= 1795 WS2= 1955.49

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

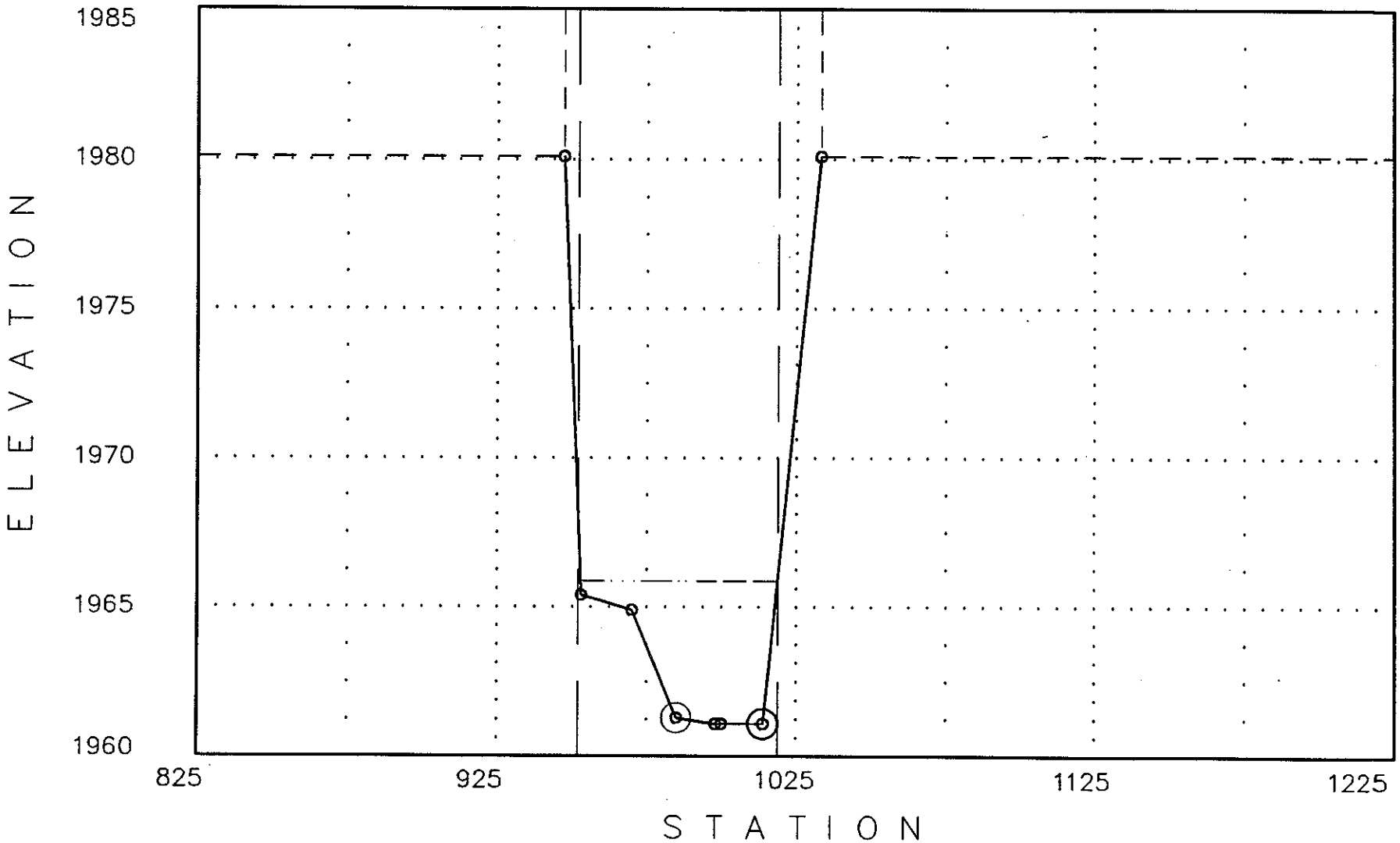


08-18-1992

<<<<<< Cross Section: .446: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1965.87
Q2= 1795 WS2= 1965.87

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

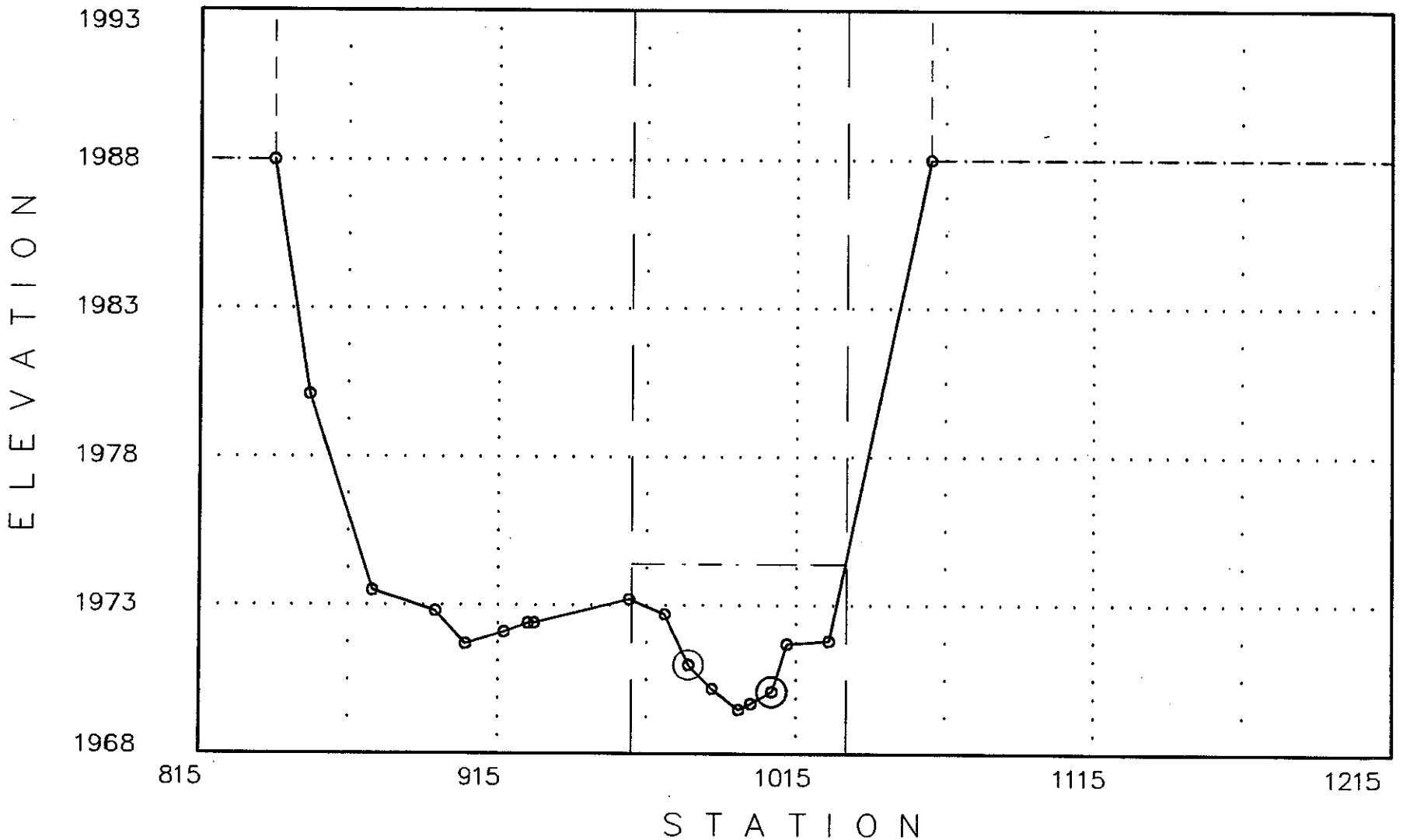


08-18-1992

<<<<<< Cross Section: .506: (FN = WASHI.O) >>>>>>

Q1= 1795 WS1= 1974.38
Q2= 1795 WS2= 1974.38

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

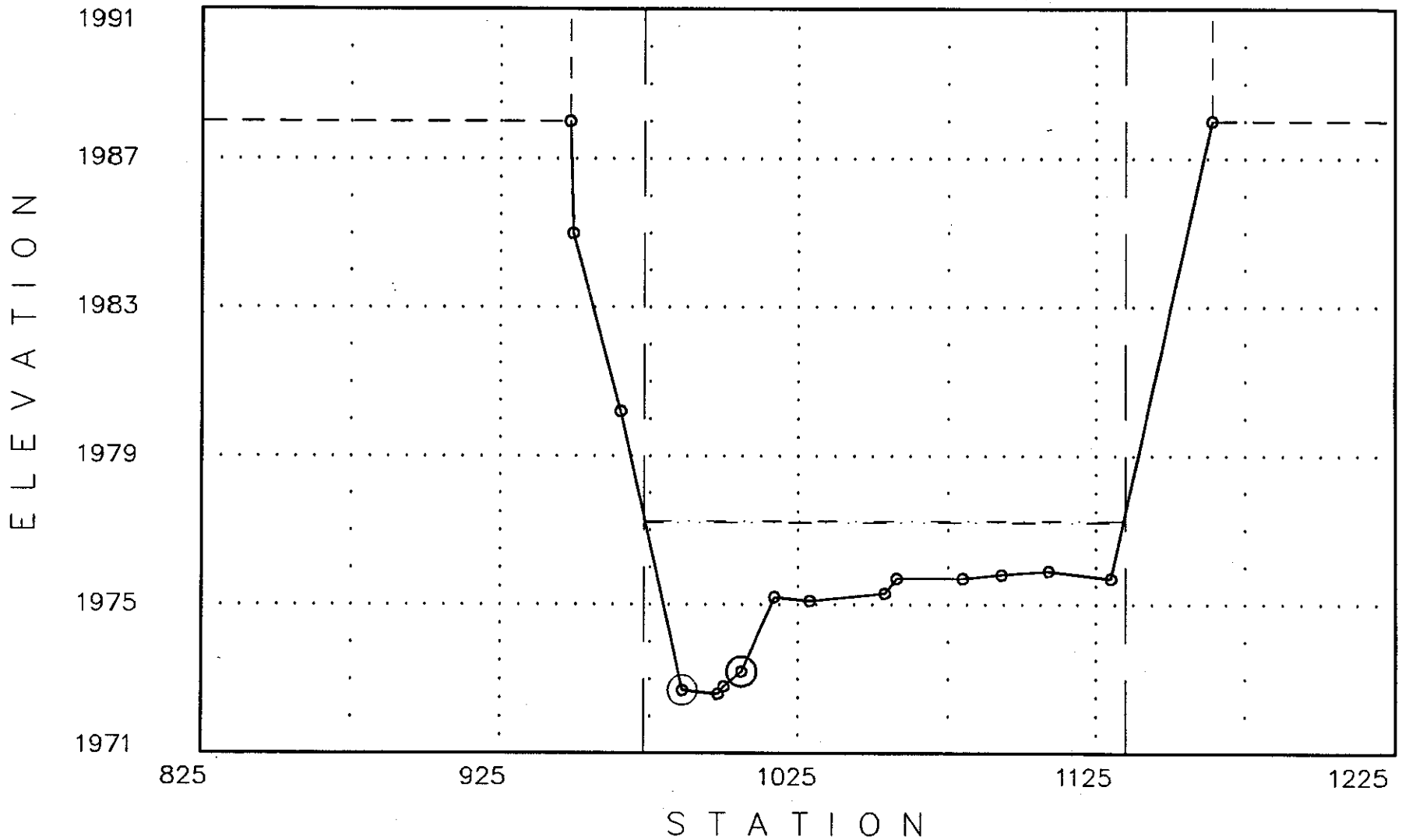


08-18-1992

<<<<<< Cross Section: .529: (FN = WASHI.O) >>>>>>

Q1= 1750 WS1= 1977.24
Q2= 1750 WS2= 1977.2

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

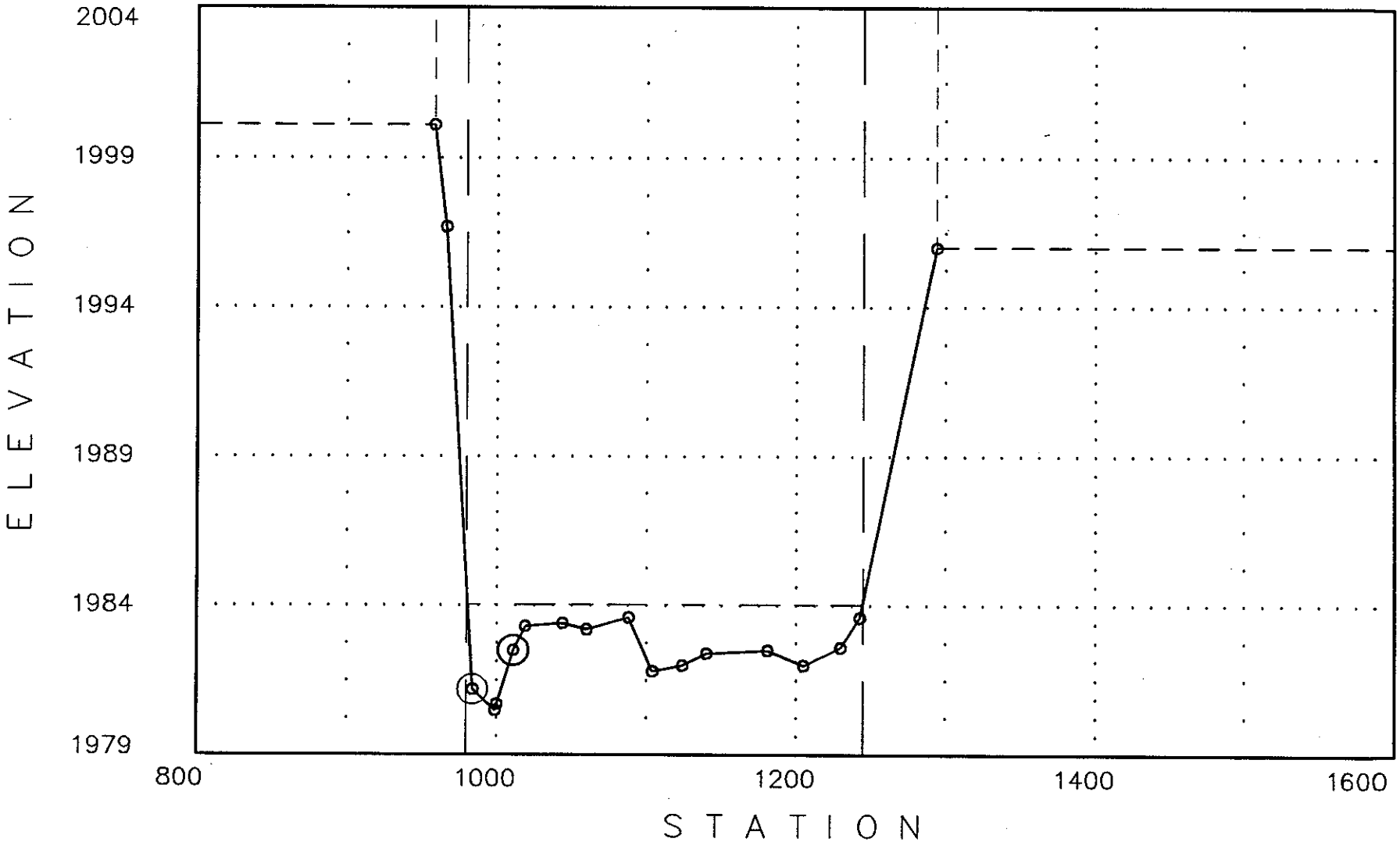


08-18-1992

<<<<<< Cross Section: .597: (FN = WASHI.O) >>>>>>

Q1= 1750 WS1= 1984.03
Q2= 1750 WS2= 1984.03

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

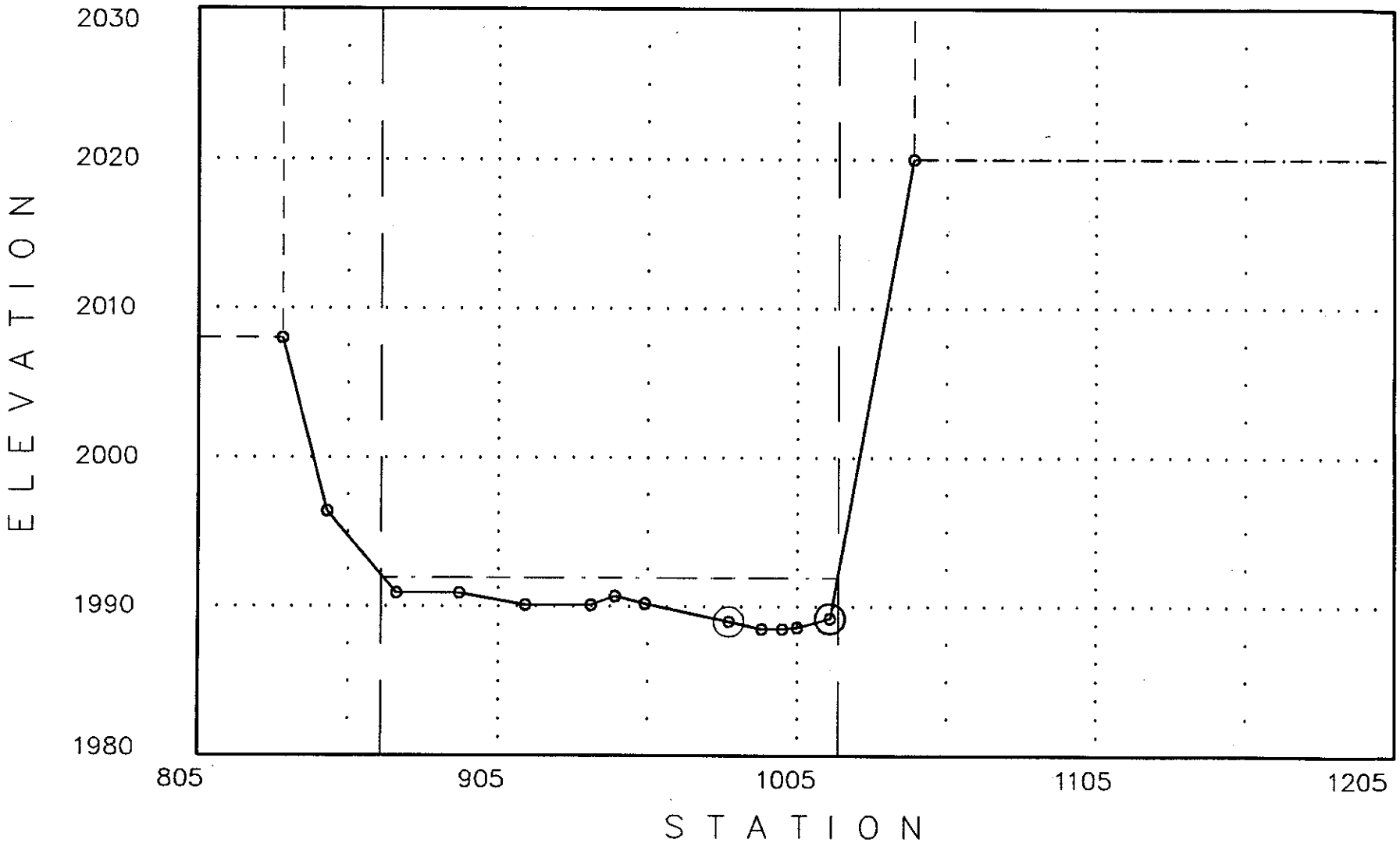


08-18-1992

<<<<<< Cross Section: .663: (FN = WASHI.O) >>>>>>

Q1= 1750 WS1= 1991.94
Q2= 1750 WS2= 1991.94

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

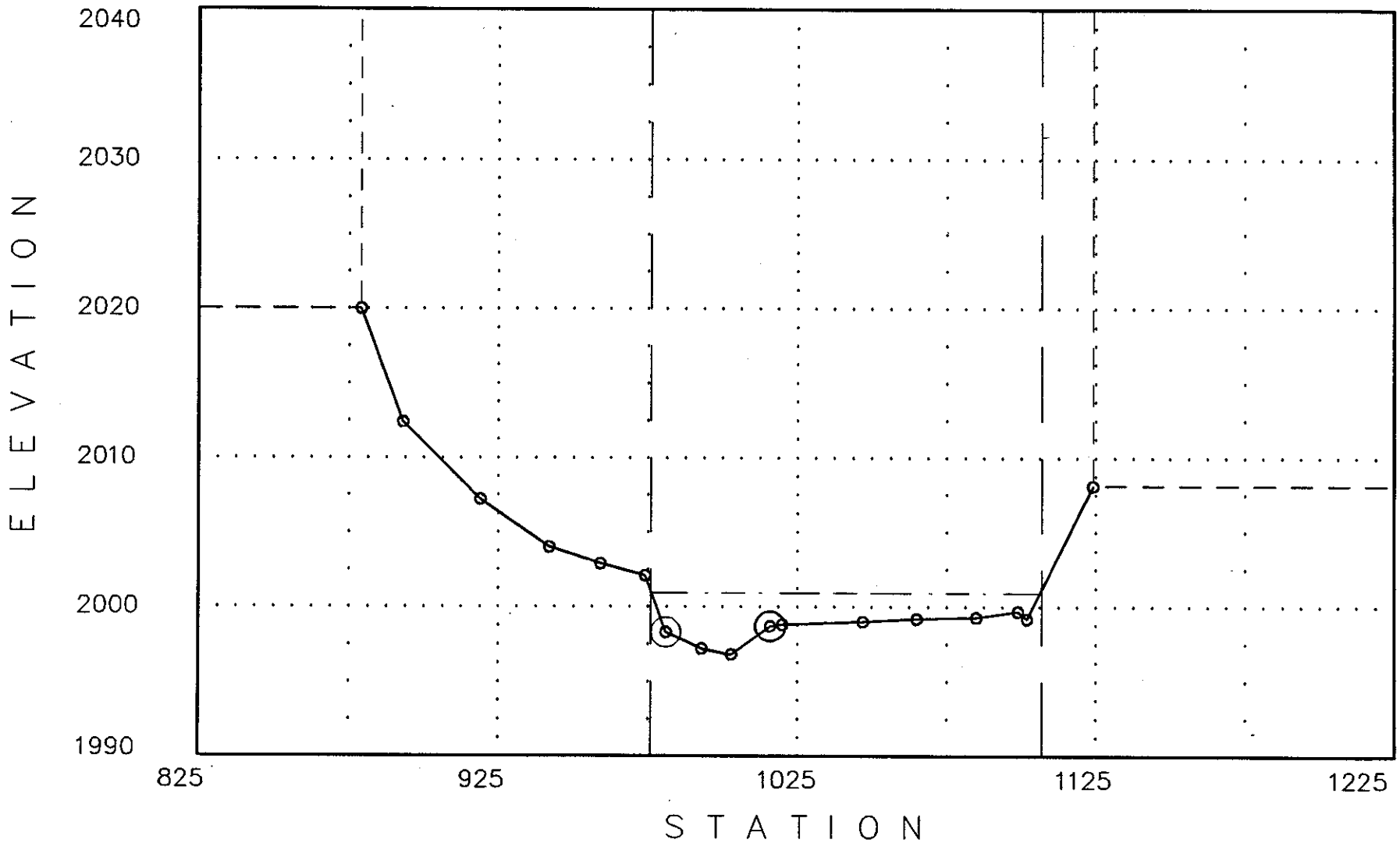


08-18-1992

<<<<<< Cross Section: .741: (FN = WASHI.O) >>>>>>

Q1= 1750 WS1= 2000.92
Q2= 1750 WS2= 2000.92

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07



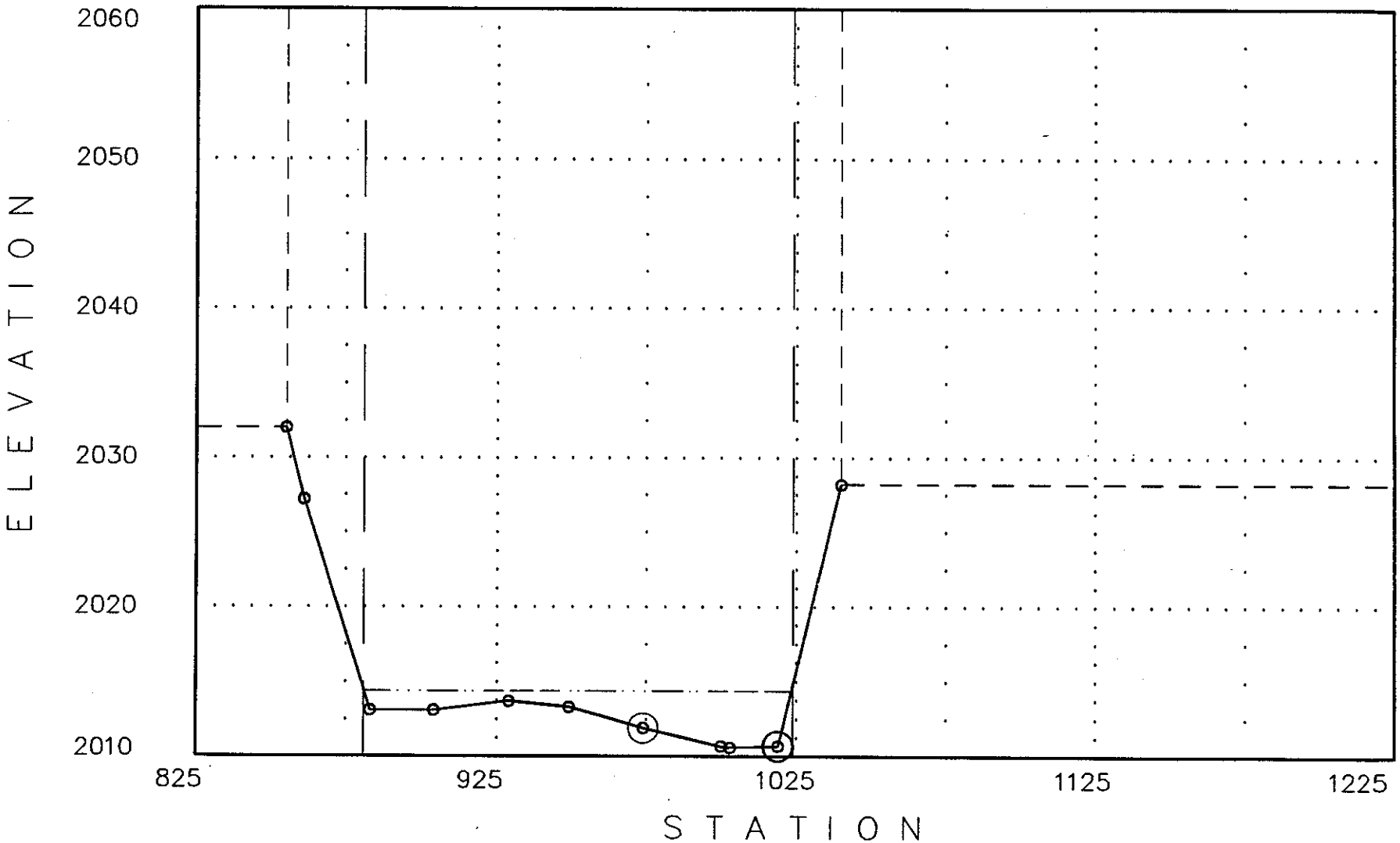
08-18-1992

<<<<<< Cross Section: .845: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2014.38

Q2= 1684 WS2= 2014.38

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

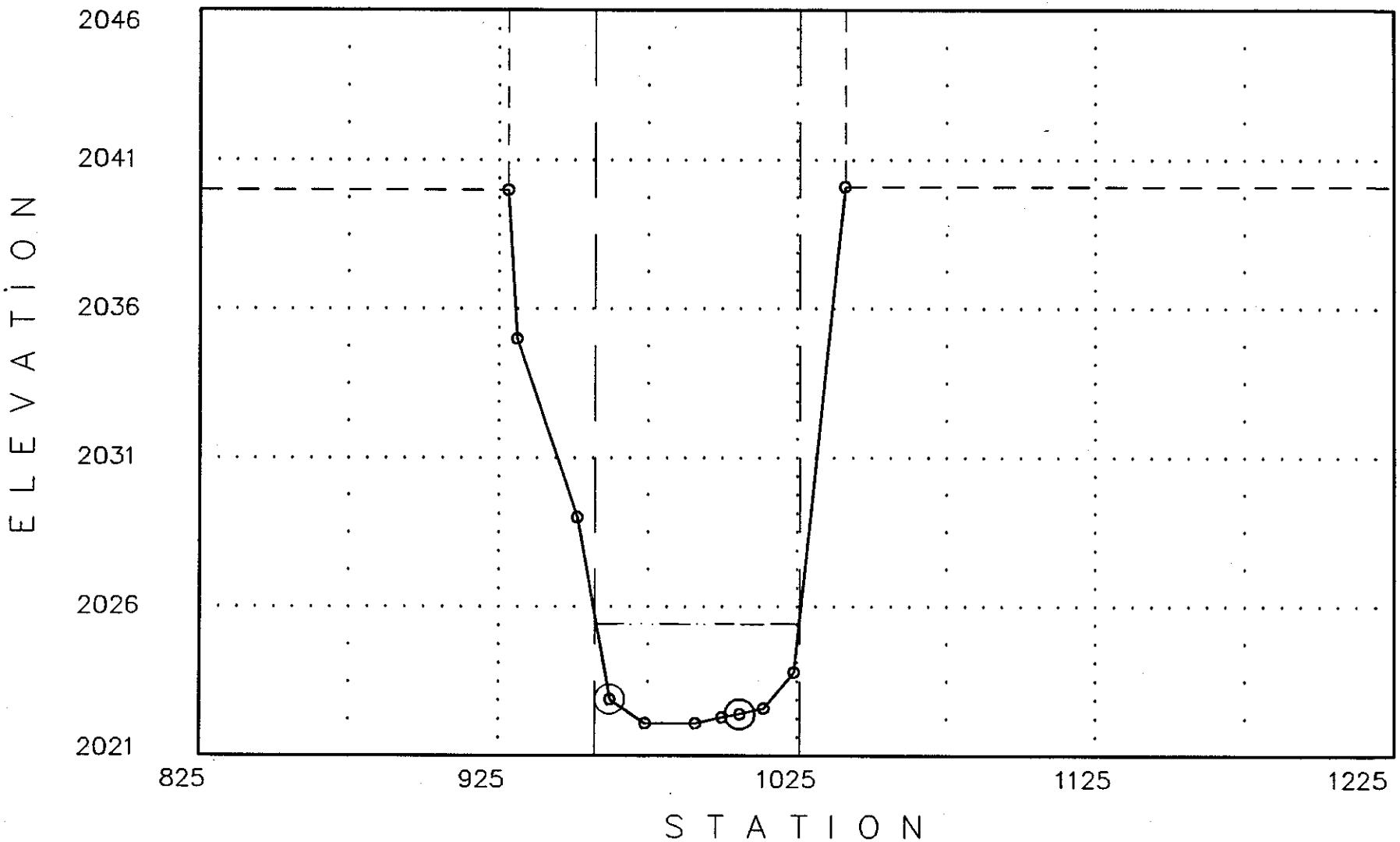


08-18-1992

<<<<<< Cross Section: .949: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2025.43
Q2= 1684 WS2= 2025.42

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

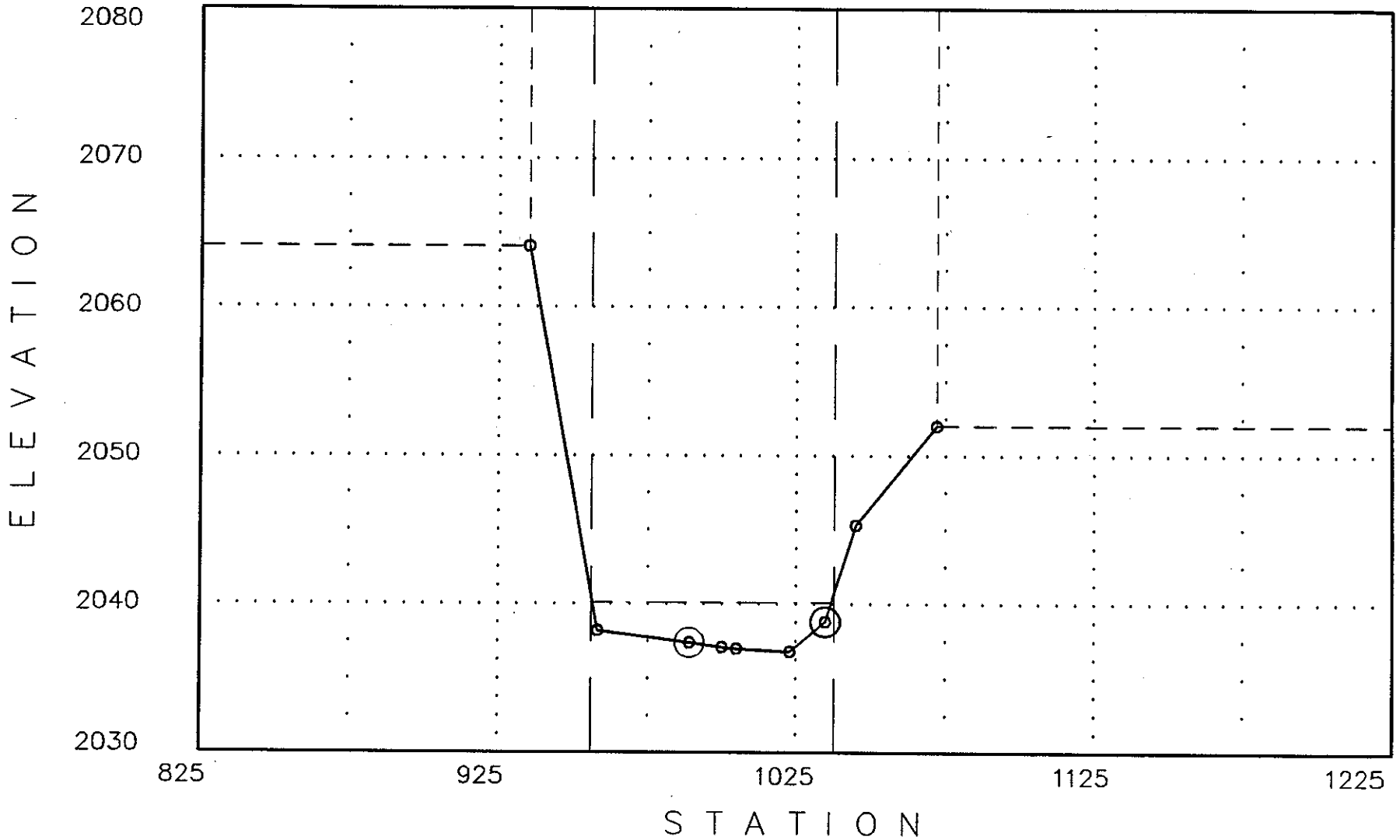


08-16-1992

<<<<<< Cross Section: 1.058: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2040.11
Q2= 1684 WS2= 2040.11

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

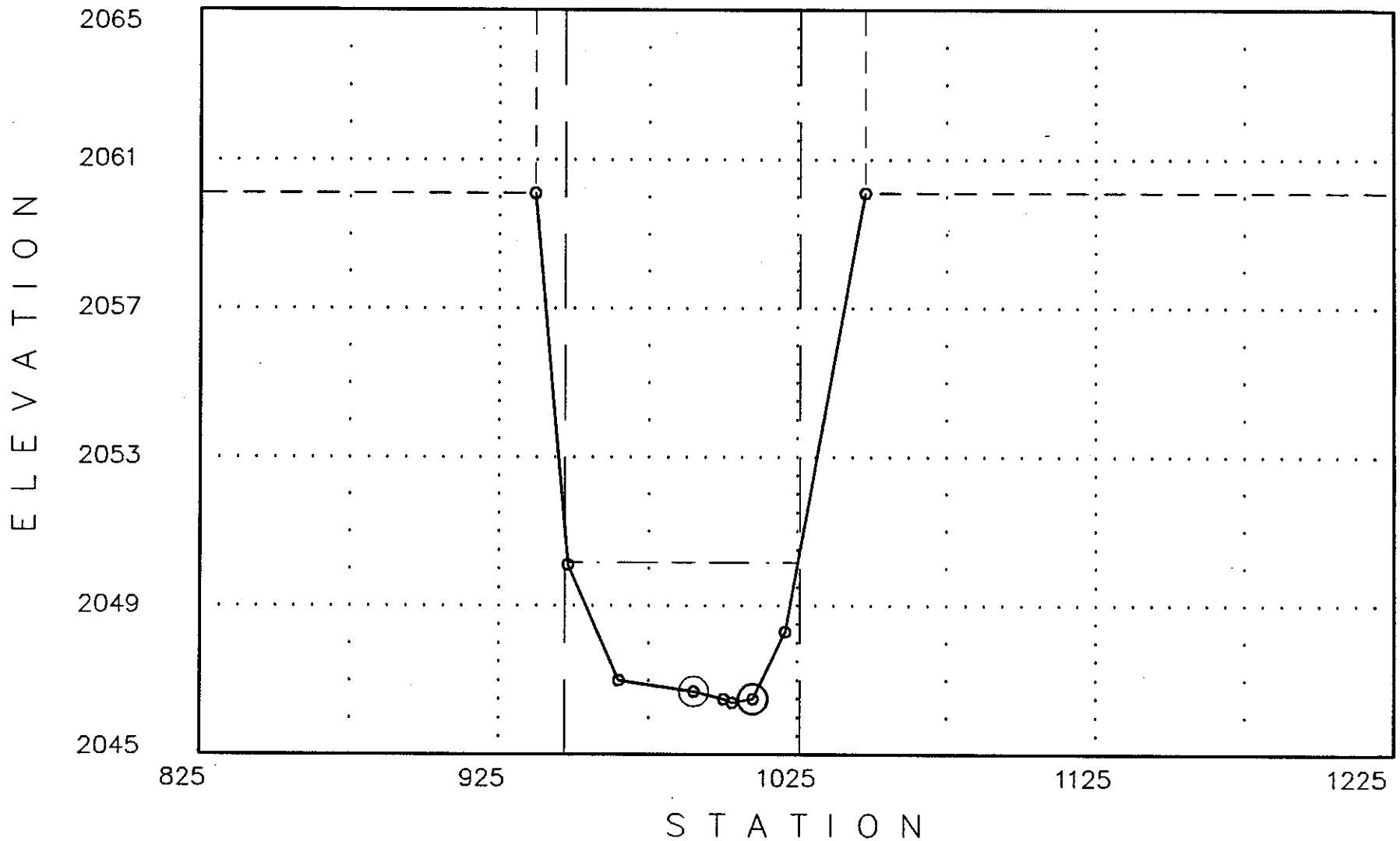


08-18-1992

<<<<<< Cross Section: 1.153: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2050.16
Q2= 1684 WS2= 2050.16

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

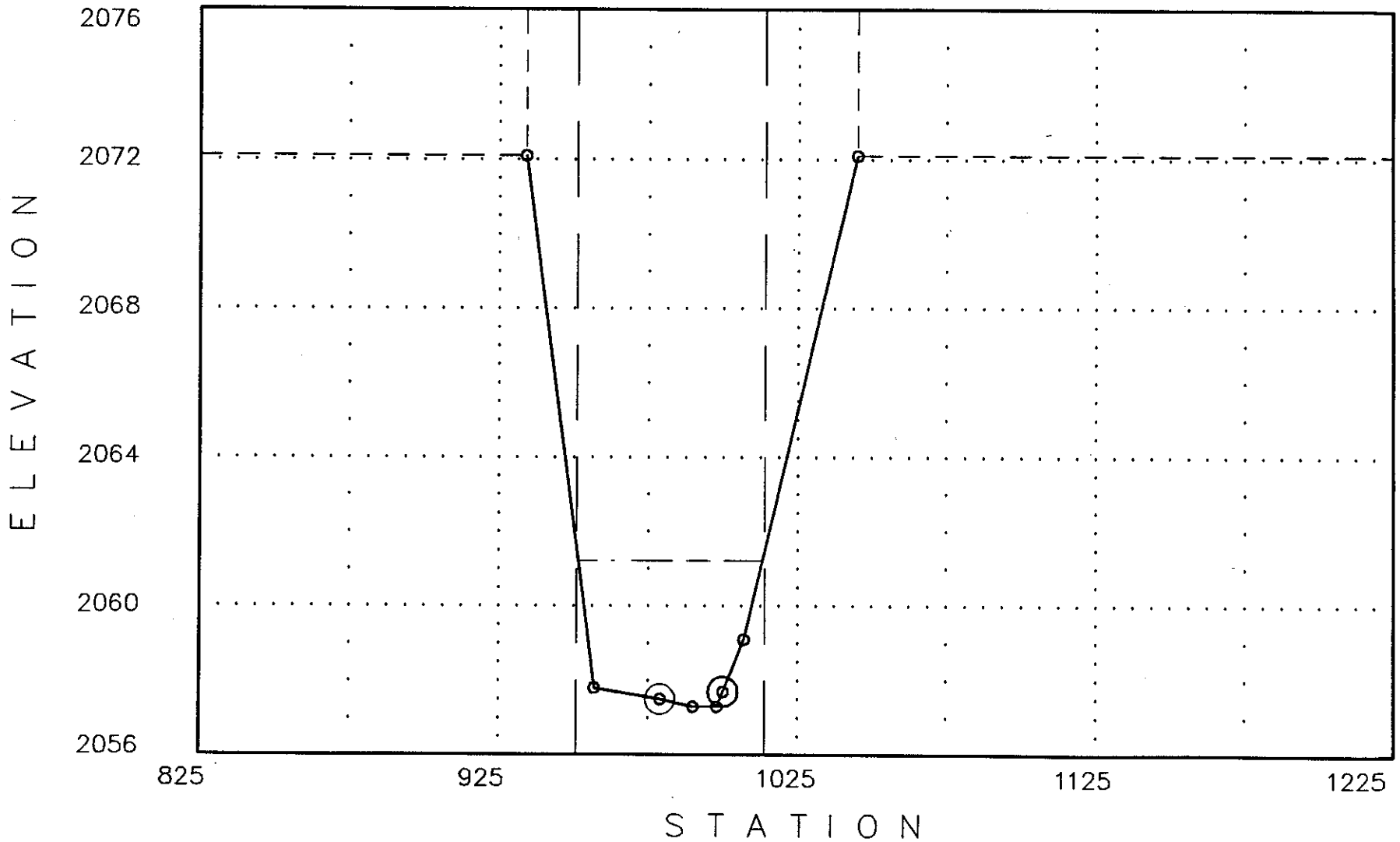


08-18-1992

<<<<<< Cross Section: 1.25: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2061.21
Q2= 1684 WS2= 2061.21

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

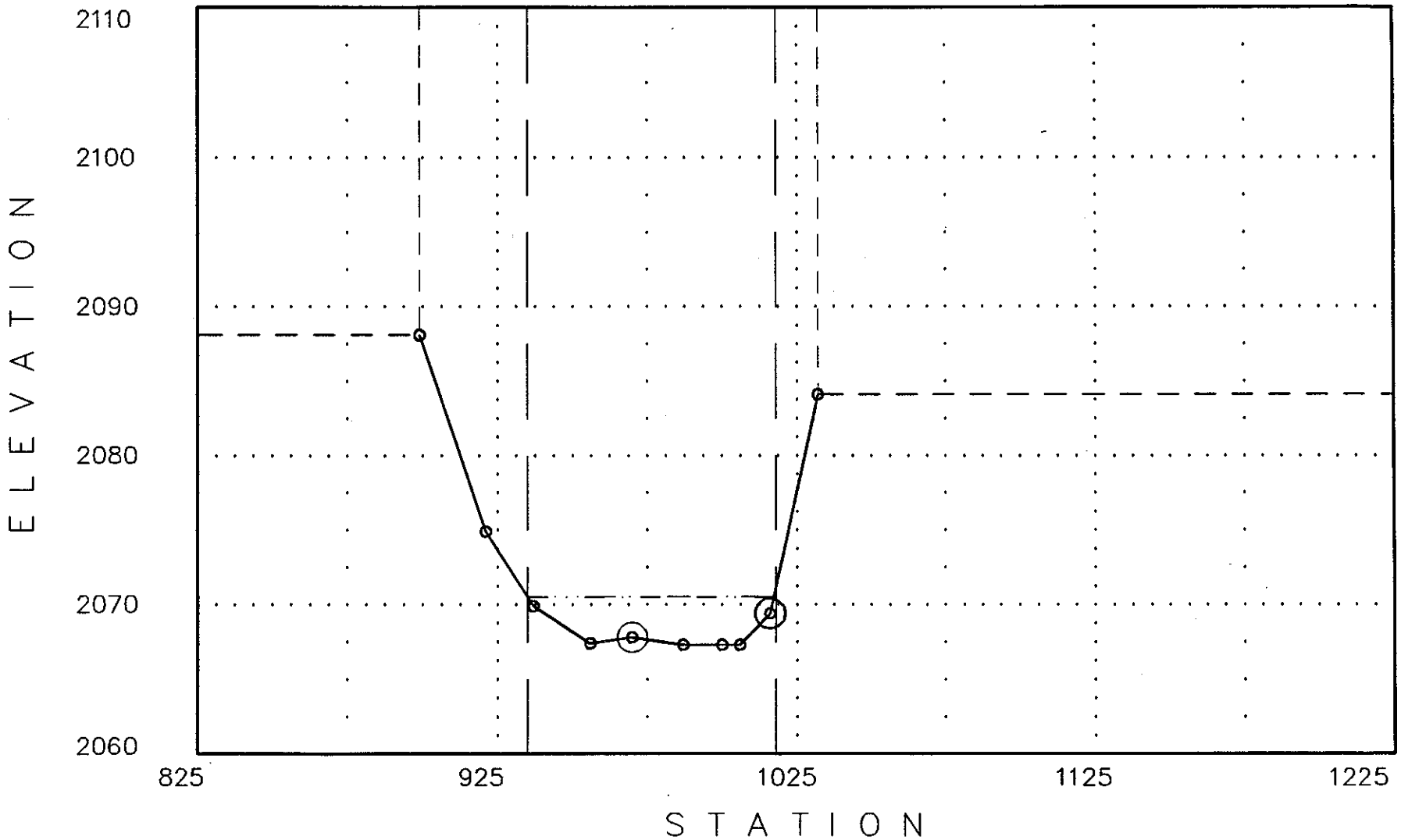


08-18-1992

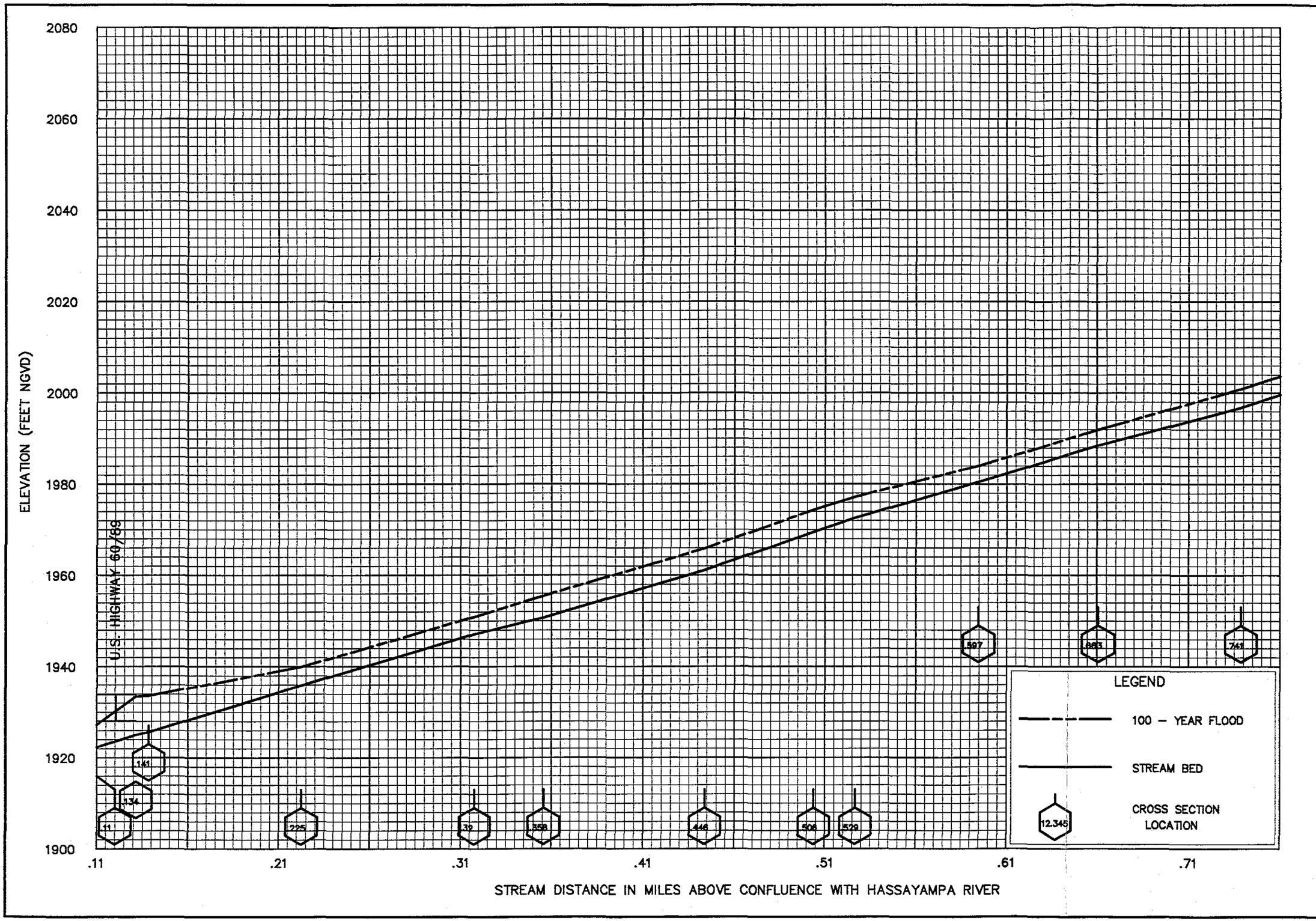
<<<<<< Cross Section: 1.344: (FN = WASHI.O) >>>>>>

Q1= 1684 WS1= 2070.51
Q2= 1684 WS2= 2070.52

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07



08-18-1992

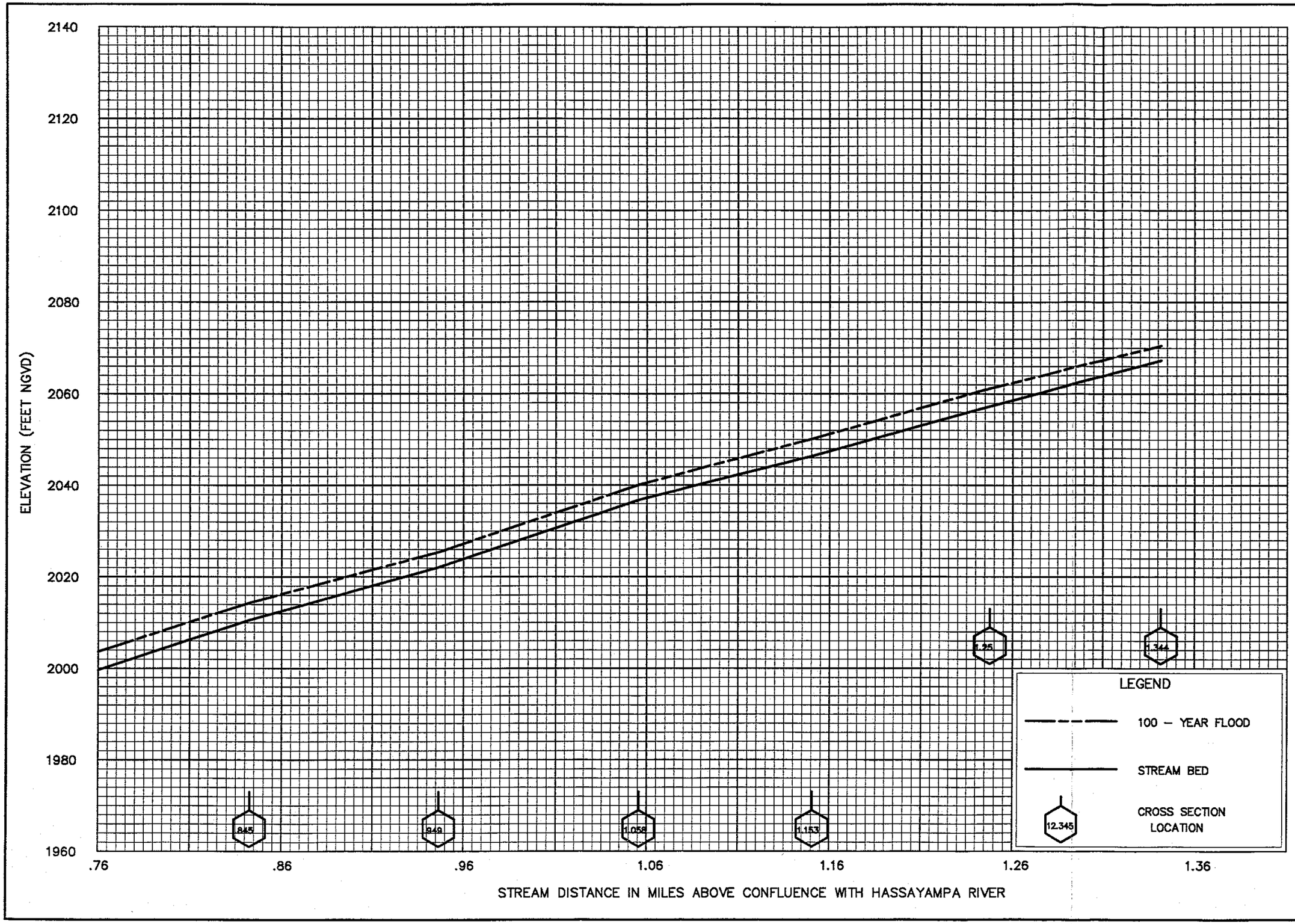


FLOOD PROFILES

UN–NAMED WASH #4 (WASH I)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

UN–NAMED WASH #4 (WASH I)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.9: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #5 (Wash j)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1187\02\ADMIN\118702RP.063

May 1994

6.9

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/ Town of Wickenburg

Flooding Source: UNNAMED TASSAMPA TRIBUTARY #5 (J)
(One form for each flooding source)

Project Name /Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☐ Detailed study stream (briefly explain methodology) NA

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: Wash J: Unnamed Hassayampa River Tributary (#5)

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
US 60-89	0.42	—	488

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability*	☐ Yes ☐ No
11. Comparison of results with other analyses	☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN of WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash J: Unnamed Hassayampa River Tributary (#5)
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.063

Upstream limit: Station 0.305

2. EFFECTIVE FIS

☒ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☐ Studied by detailed methods

Downstream limit of study _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☒ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: ~~Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County~~

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model).* Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	488	488
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .045 – .060

Overbanks ..... .050 – .070

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☐ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 31.84

Specify location 0.494

3. What is the distance between the cross-sections in 2 above? 500

Specify location 0.494

4. What is the maximum distance between cross-sections? 600

Specify location 0.608

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... NA foot

b. What is the maximum surcharge for the revised conditions? ..... Zone A foot

Specify location .....

c. What is the maximum velocity? ..... fps

Specify location .....

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model (*10-, 50-, 100-, and 500-year*), downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODIND SOURCE:

PROJECT NAME /IDENTIFIER: Wickenburg ADMS FCD 89-79

	Proposed EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
.063	1922.92														
.091	1927.65														
.116	1931.04														
.133	1932.80														
.210	1934.30														
.305	1953.33														
.400	1974.87														
.494	2007.09														
.608	2028.73														

COMMENTS: New Model - ~~See following Floodway Data Table~~ No FLOODWAY RUN - ZONE A PROPOSED EFFECTIVE

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

Sheet 1 of 1

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE/COASTAL MAPPING FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash & Unnamed Hassayampa River Tributary (#5)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No 100-year, 500-year, or coastal zones revised or delineated. New Zone A floodplain ties into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following work maps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 Contour interval

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

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

Attach additional pages if needed.

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

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

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

~~Revised detailed 100-year floodplain replaces effective zone floodplain~~ NA - NEW ZONE A FLOODPLAIN

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

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

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

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

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

If no, explain:
NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

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

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

      If yes, justify steeper slopes_____

      _____

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

      If no, describe erosion protection provided_____

      _____

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

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

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

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

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

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH J: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#5)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: US Hwy 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.091 to Station 0.116
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

   (Explain why new analysis was performed)

2. BACKGROUND

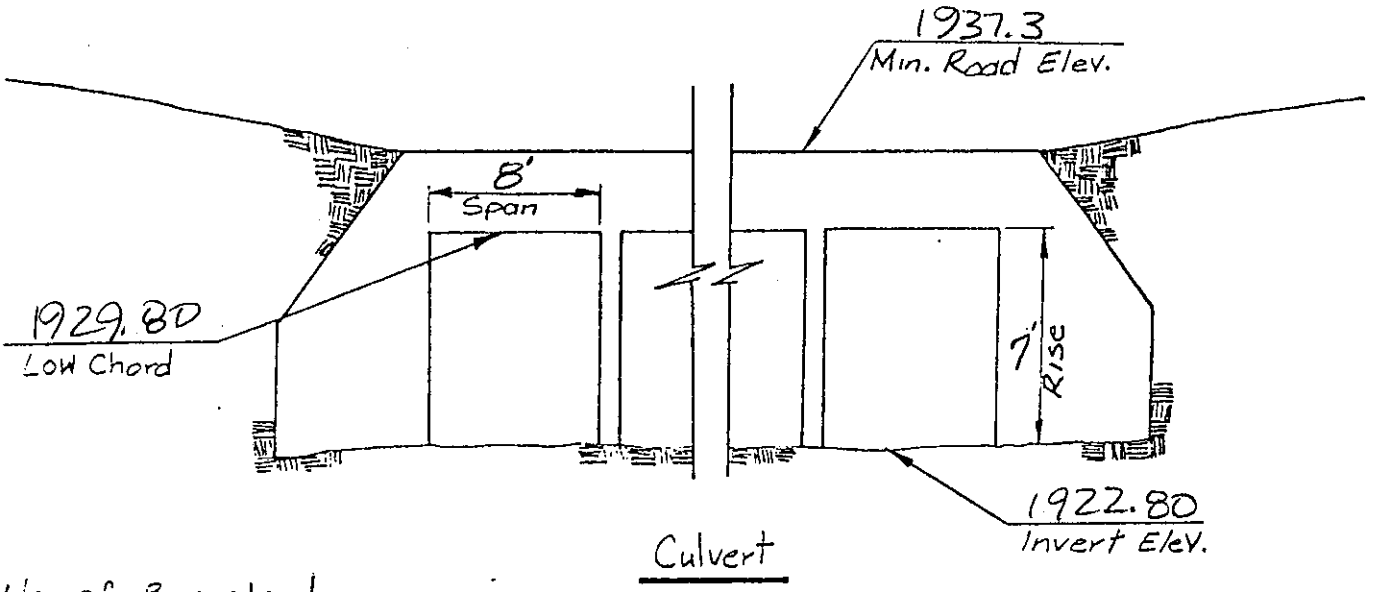
Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) Single 8x7 ft reinforced concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls w/no inlet bevel
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with Special Culvert

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

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

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

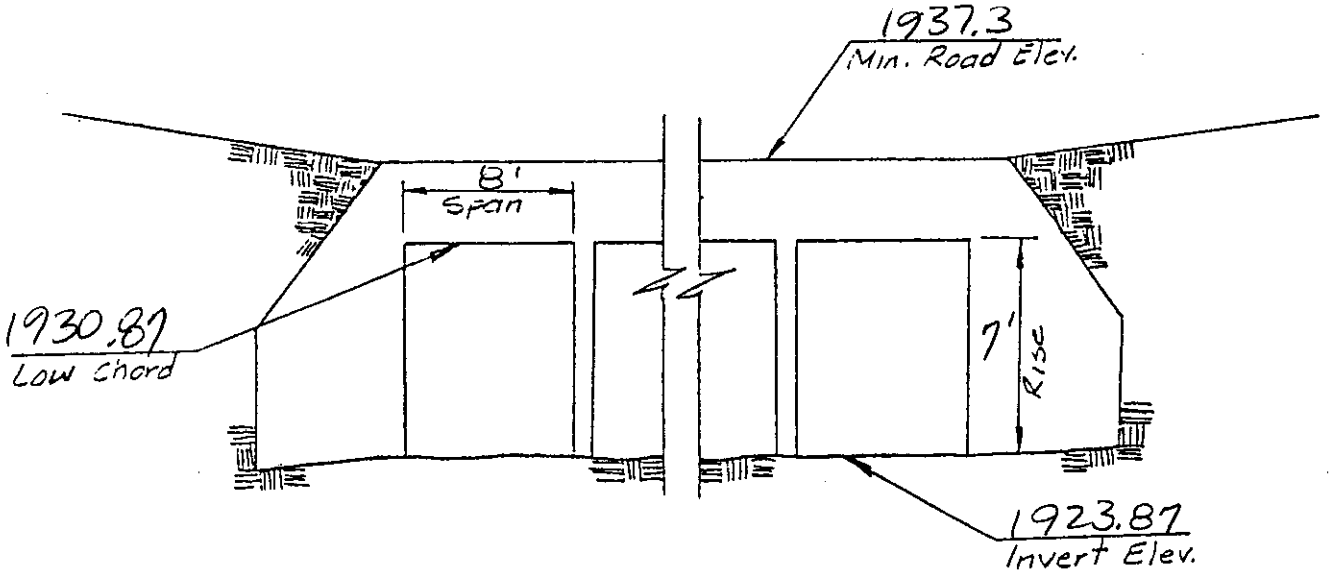


No. of Barrels: 1

Culvert Size: 8x7 x 127.8'

Approx. Depth of Sediment in Culvert: See Cross Section # D.09 1

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

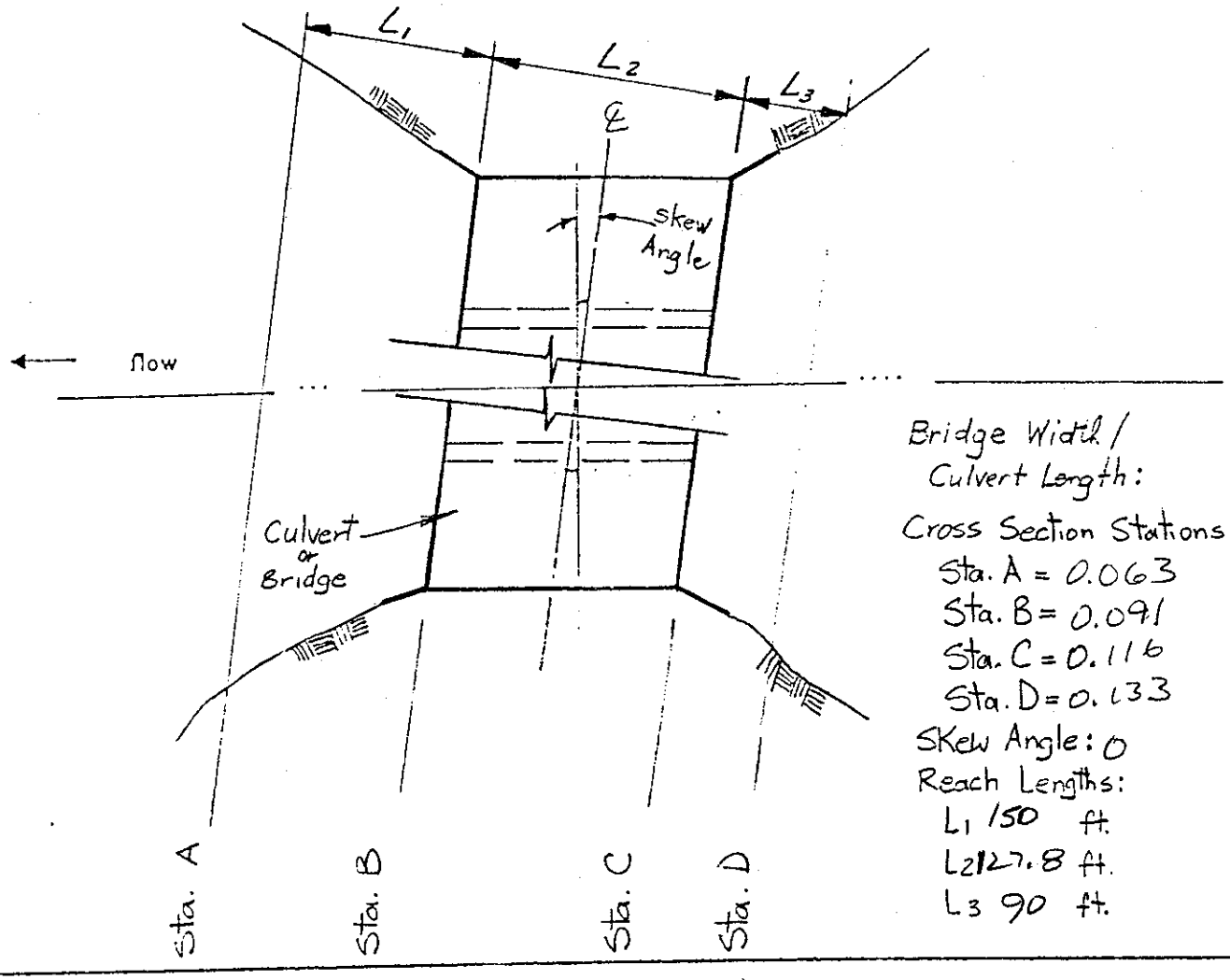


No. of Barrels: 1

Culvert Size: 8x7x127.8'

Approx. Depth of Sediment in Culvert: See Cross Section # D.11b

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



Bridge Width / Culvert Length:

Cross Section Stations
Sta. A = 0.063
Sta. B = 0.091
Sta. C = 0.116
Sta. D = 0.133

Skew Angle: 0

Reach Lengths:
L1 150 ft.
L2 127.8 ft.
L3 90 ft.

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

Culvert length or bridge width (ft)	127.8
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	56
Total culvert/bridge area (ft²)	56

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1937.3	1940.5
Downstream face	1937.3	1940.5

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1937.3	1940.5
Downstream face	1937.3	1940.5

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1931.04	1932.15
Downstream face	1927.65	1930.11

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	488	0	488

The maximum depth of flow over the roadway/railroad (ft.) ..... -0-

Weir length (ft.) ..... -0-

Top Widths

	Floodplain	Floodway
Upstream face	8	—
Downstream face	8	—

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	8	—
Downstream face	8	—

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.016
Friction loss coefficient through structure (s)	0.016
Other loss coefficients (e.g., bend manhole, etc.)	→
Total loss coefficient	
Weir coefficient	NA
Pier coefficient	~~NA~~
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) NA - Zone A

Comments *(explain any unusual situations)*:

Attach analysis.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    24JUN92    TIME    15:22:19  *
*****************************************
```

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

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

THIS RUN EXECUTED 24JUN92 15:22:19

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

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


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      B&V PN 17676  CVL JN 1197-02
T3      WASH J: UNNAMED WASH #5     (FILE WASHJ.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0         0         0         0         0   1922.92         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                   -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

NC    0.070     0.070     0.045       0.1       0.3
QT        1       488
            CONFLUENCE OF WASH J:  UNNAMED WASH #5
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 SX (HASSAYAMPA RIVER MILE 46.95)
                 SY (HASSAYAMPA RIVER MILE 47.05)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

X1    0.063        22       995      1005         0         0         0
GR   1936.2      789.    1935.1      793.    1933.8      799.    1930.3      825.    1926.9      848.
GR   1925.4      885.    1924.5      933.    1924.5      939.    1923.3      960.    1921.5      974.
GR   1920.3      995.    1920.2      997.    1920.1     1000.    1921.1     1005.    1922.1     1010.
GR   1922.8     1034.    1924.2     1060.    1925.1     1089.    1927.7     1107.    1928.7     1140.
GR   1930.6     1165.    1936.0     1187.

NC    0.050     0.050     0.016       0.6       0.8
            DOWNSTREAM FACE OF 1 - 8' X 7' RCB
```

```
                NOTE: WB LANE CENTERLINE SECTION WAS USED
                      TO CREATE THE DS AND US FACE SECTION
X1    0.091       10      996.0    1004.0      150       150       150
X3    10                                                          1937.3    1939.1
GR    1937.4      738.    1937.3   850.     1938.3    955.      1939.03   995.99    1922.80   996
GR    1922.8      1000    1922.8   1004     1939.1    1004.01   1939.2    1155      1940      1256

SC    1.016       0.40    2.8      0        7         8         127.8     8.1       1923.87   1922.80
                UPSTREAM FACE OF 1 - 8' X 7' RCB
                NOTE: WB LANE CENTERLINE SECTION WAS USED
                      TO CREATE THE DS AND US FACE SECTION
X1    0.116       10      996.0    1004.0    127.8     127.8     127.8
X2                        2        1930.87   1937.3
X3    10                                                          1937.3    1939.1
BT    -10         738     1937.4            850       1937.3              955       1938.3
BT                995.99  1939.03           996       1939.03             1000      1939.1
BT                1004    1939.1            1004.01   1939.1              1155      1939.2
BT                1256    1940
GR    1937.4      738     1937.3   850      1938.3    955       1939.03   995.99    1923.87   996
GR    1923.8      1000    1923.87  1004     1939.1    1004.01   1939.2    1155      1940      1256

NC    0.070       0.070   0.045    0.6      0.8
X1    0.133       11      995      1005     90        85        90
GR    1940.0      974.    1935.0   983.     1927.0    995.      1926.6    1000.     1927.2    1005.
GR    1928.0      1011.   1927.7   1017.    1928.5    1026.     1928.5    1052.     1931.3    1068.
GR    1940.0      1100.

NC    0.070       0.070   0.045    0.1      0.3
X1    0.210       13      995      1005     400       400       400
GR    1944.1      929.    1937.0   942.     1934.8    955.      1936.4    967.      1934.9    978.
GR    1932.2      992.    1931.6   995.     1930.7    1000.     1931.1    1003.     1931.3    1005.
GR    1931.7      1010.   1940.4   1020.    1944.1    1026.

NC    0.070       0.070   0.060    0.1      0.3
X1    0.305       7       998      1003     500       500       500
GR    1964.0      965.    1949.4   995.     1949.7    996.      1949.6    998.      1949.5    1000.
GR    1949.5      1003.   1964.1   1027.

X1    0.400       8       997.5    1002.5   500       500       500
GR    1984.0      965.    1980.1   982.     1970.0    997.5     1969.2    999.      1969.2    1000.
GR    1969.2      1001.   1970.5   1002.5   1984.2    1019.

X1    0.494       9       997.5    1002.5   500       500       500
GR    2020.0      965.    2003.5   996.     2003.5    997.5     2003.5    1000.     2003.5    1002.5
GR    2003.5      1003.   2003.7   1004.    2005.1    1009.     2020.0    1040.

                APPROXIMATE END OF DETAILED STUDY
X1    0.608       11      995      1005     600       600       600
GR    2040.0      905.    2037.5   919.     2032.4    951.      2030.5    976.      2028.0    985.
GR    2026.6      992.    2026.0   995.     2024.9    1000.     2026.0    1005.     2027.3    1011.
GR    2040.0      1035.
```

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .063
3720 CRITICAL DEPTH ASSUMED
CONFLUENCE OF WASH J: UNNAMED WASH #5
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
SX (HASSAYAMPA RIVER MILE 46.95)
SY (HASSAYAMPA RIVER MILE 47.05)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED BY SLOPE AREA METHOD

.063	2.82	1922.92	1922.92	1922.92	1923.60	.67	.00	.00	1920.30
488.0	224.1	219.1	44.8	50.4	25.3	18.1	.0	.0	1921.10
.00	4.45	8.66	2.47	.070	.045	.070	.000	1920.10	962.92
.020249	0.	0.	0.	0	4	0	.00	73.38	1036.30

FLOW DISTRIBUTION FOR SECNO= .06 CWSEL= 1922.92

STA=	963.	974.	995.	1005.	1010.	1034.	1036.
PER Q=	3.9	42.1	44.9	4.9	4.3	.0	
AREA=	7.9	42.5	25.3	6.6	11.4	.1	
VEL=	2.4	4.8	8.7	3.6	1.8	.5	
DEPTH=	.7	2.0	2.5	1.3	.5	.1	

CCHV= .600 CEHV= .800
*SECNO .091

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

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

3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1937.30 ELREA= 1939.10

DOWNSTREAM FACE OF 1 - 8' X 7' RCB
NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.091	4.85	1927.65	1927.65	.00	1930.11	2.45	.75	1.43	1922.80
488.0	.0	488.0	.0	.0	38.8	.0	.2	.1	1922.80
.00	.00	12.57	.00	.000	.016	.000	.000	1922.80	996.00
.002231	150.	150.	150.	0	14	0	.00	8.00	1004.00

FLOW DISTRIBUTION FOR SECNO= .09 CWSEL= 1927.65

STA= 996. 1004.
PER Q= 100.0
AREA= 38.8
VEL= 12.6
DEPTH= 4.9

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.016	.40	2.80	.00	7.00	8.00	127.80	8	1	1923.87	1922.80

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

*SECNO .116

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1931.746 EGOC = 1932.150 PCWSE= 1927.652 ELTRD= 1937.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.93

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1931.75	1932.15	2.04	0.	488.	8.468	56.0	1937.30	0.

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1937.30 ELREA= 1939.10

UPSTREAM FACE OF 1 - 8' X 7' RCB
NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.116	7.24	1931.04	.00	.00	1932.15	1.11	2.04	.00	1923.87
488.0	.0	488.0	.0	.0	57.6	.0	.4	.2	1923.87
.01	.00	8.47	.00	.000	.016	.000	.000	1923.80	996.00
.000598	128.	128.	128.	3	0	0	.00	8.00	1004.00

FLOW DISTRIBUTION FOR SECNO= .12 CWSEL= 1931.04

STA=	996.	1004.
PER Q=	100.0	
AREA=	57.6	
VEL=	8.5	
DEPTH=	7.2	

.600 CEHV= .800
.133

3301 HV CHANGED MORE THAN HVINS

.133	6.20	1932.80	1929.56	.00	1932.84	.04	.05	.64	1927.00
488.0	21.3	142.4	324.3	25.2	59.5	265.4	.8	.3	1927.20
.02	.85	2.39	1.22	.070	.045	.070	.000	1926.60	986.30
.000491	90.	90.	85.	3	18	0	.00	87.21	1073.51

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 1932.80

STA=	986.	995.	1005.	1011.	1017.	1026.	1052.	1068.	1074.
PER Q=	4.4	29.2	9.0	8.3	11.4	28.5	9.0	.3	
AREA=	25.2	59.5	31.2	29.7	42.3	111.8	46.4	4.1	
VEL=	.8	2.4	1.4	1.4	1.3	1.2	.9	.4	
DEPTH=	2.9	5.9	5.2	4.9	4.7	4.3	2.9	.7	

CCHV= .100 CEHV= .300

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

*SECNO .210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.210	3.60	1934.30	1934.30	.00	1935.44	1.14	.59	.33	1931.60
488.0	72.5	321.6	93.9	18.6	32.1	17.9	2.7	.8	1931.30
.04	3.90	10.01	5.26	.070	.045	.070	.000	1930.70	981.12
.019686	400.	400.	400.	0	11	0	.00	31.86	1012.99

FLOW DISTRIBUTION FOR SECNO= .21 CWSEL= 1934.30

STA=	981.	992.	995.	1005.	1010.	1013.
PER Q=	7.1	7.8	65.9	16.9	2.3	
AREA=	11.4	7.2	32.1	14.0	3.9	
VEL=	3.0	5.3	10.0	5.9	2.9	
DEPTH=	1.0	2.4	3.2	2.8	1.3	

.100 CEHV= .300
O .305
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.305	3.93	1953.33	1953.33	.00	1954.68	1.35	13.08	.06	1949.60
488.0	200.9	219.4	67.7	27.0	19.0	12.0	3.4	1.1	1949.50
.05	7.44	11.52	5.62	.070	.060	.070	.000	1949.40	986.93
.036424	500.	500.	500.	0	8	0	.00	22.36	1009.29

FLOW DISTRIBUTION FOR SECNO= .31 CWSEL= 1953.33

STA=	987.	995.	996.	998.	1003.	1009.
PER Q=	19.2	7.4	14.5	45.0	13.9	
AREA=	15.9	3.8	7.4	19.0	12.0	
VEL=	5.9	9.6	9.6	11.5	5.6	
DEPTH=	2.0	3.8	3.7	3.8	1.9	

*SECNO .400
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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


   .400      5.67   1974.87   1974.87       .00   1976.51      1.64     16.42       .09   1970.00
  488.0     107.2     321.3      59.5      18.2      26.8      11.5       4.1       1.3   1970.50
    .07      5.89     12.00      5.18      .070      .060      .070      .000   1969.20    990.03
 .029754     500.      500.      500.         0        11         0       .00     17.73   1007.76


FLOW DISTRIBUTION FOR SECNO=      .40        CWSEL=   1974.87

STA=     990.     998.    1003.    1008.
  PER Q=     22.0     65.8     12.2
   AREA=     18.2     26.8     11.5
    VEL=      5.9     12.0      5.2
  DEPTH=      2.4      5.4      2.2

*SECNO  .494
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   .494      3.59   2007.09   2007.09       .00   2008.35      1.26     16.52       .04   2003.50
  488.0     118.8     200.4     168.8      17.5      18.0      22.9       4.7       1.6   2003.50
    .08      6.78     11.16      7.38      .070      .060      .070      .000   2003.50    989.25
 36883       500.      500.      500.         0        14         0       .00     23.90   1013.15


FLOW DISTRIBUTION FOR SECNO=      .49        CWSEL=   2007.09

STA=     989.     996.     998.    1003.    1003.    1004.    1009.    1013.
  PER Q=     13.8     10.6     41.1      3.5      6.6     21.2      3.2
   AREA=     12.1      5.4     18.0      1.8      3.5     13.5      4.1
    VEL=      5.5      9.6     11.2      9.6      9.3      7.7      3.8
  DEPTH=      1.8      3.6      3.6      3.6      3.5      2.7      1.0

*SECNO  .608
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
            APPROXIMATE END OF DETAILED STUDY
   .608      3.83   2028.73   2028.73       .00   2029.78      1.05     20.23       .02   2026.00
  488.0      97.2     310.6      80.1      18.3      32.8      14.4       5.6       2.0   2026.00
    .10      5.32      9.47      5.56      .070      .060      .070      .000   2024.90    982.37
 .030932     600.      600.      600.         0         8         0       .00     31.33   1013.70
```

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

FLOW DISTRIBUTION FOR SECNO= .61 CWSEL= 2028.73

STA=	982.	985.	992.	995.	1005.	1011.	1014.
PER Q=	.4	9.6	10.0	63.7	15.3	1.1	
AREA=	1.0	10.0	7.3	32.8	12.5	1.9	
VEL=	1.9	4.7	6.7	9.5	6.0	2.8	
DEPTH=	.4	1.4	2.4	3.3	2.1	.7	

THIS RUN EXECUTED 24JUN92 15:22:25

****
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

WASH J: UNNAMED WASH #5

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.063	.00	.00	.00	1920.10	488.00	1922.92	1922.92	1923.60	202.49	8.66	93.82	34.29
*	.091	150.00	.00	.00	1922.80	488.00	1927.65	1927.65	1930.11	22.31	12.57	38.81	103.32
*	.116	127.80	1937.30	1930.87	1923.80	488.00	1931.04	.00	1932.15	5.98	8.47	57.63	199.63
	.133	90.00	.00	.00	1926.60	488.00	1932.80	1929.56	1932.84	4.91	2.39	350.14	220.31
*	.210	400.00	.00	.00	1930.70	488.00	1934.30	1934.30	1935.44	196.86	10.01	68.59	34.78
*	.305	500.00	.00	.00	1949.40	488.00	1953.33	1953.33	1954.68	364.24	11.52	58.07	25.57
*	.400	500.00	.00	.00	1969.20	488.00	1974.87	1974.87	1976.51	297.54	12.00	56.46	28.29
*	.494	500.00	.00	.00	2003.50	488.00	2007.09	2007.09	2008.35	368.83	11.16	58.36	25.41
*	.608	600.00	.00	.00	2024.90	488.00	2028.73	2028.73	2029.78	309.32	9.47	65.50	27.75

: UNNAMED WASH #5

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.063	488.00	1922.92	.00	.00	.00	73.38	.00
*	.091	488.00	1927.65	.00	4.73	.00	8.00	150.00
*	.116	488.00	1931.04	.00	3.39	.00	8.00	127.80
	.133	488.00	1932.80	.00	1.76	.00	87.21	90.00
*	.210	488.00	1934.30	.00	1.50	.00	31.86	400.00
*	.305	488.00	1953.33	.00	19.03	.00	22.36	500.00
*	.400	488.00	1974.87	.00	21.54	.00	17.73	500.00
*	.494	488.00	2007.09	.00	32.22	.00	23.90	500.00
*	.608	488.00	2028.73	.00	21.64	.00	31.33	600.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .063  PROFILE=  1  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .091  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .091  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .116  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .210  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .210  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .305  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .305  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .400  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .400  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .494  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .494  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .608  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .608  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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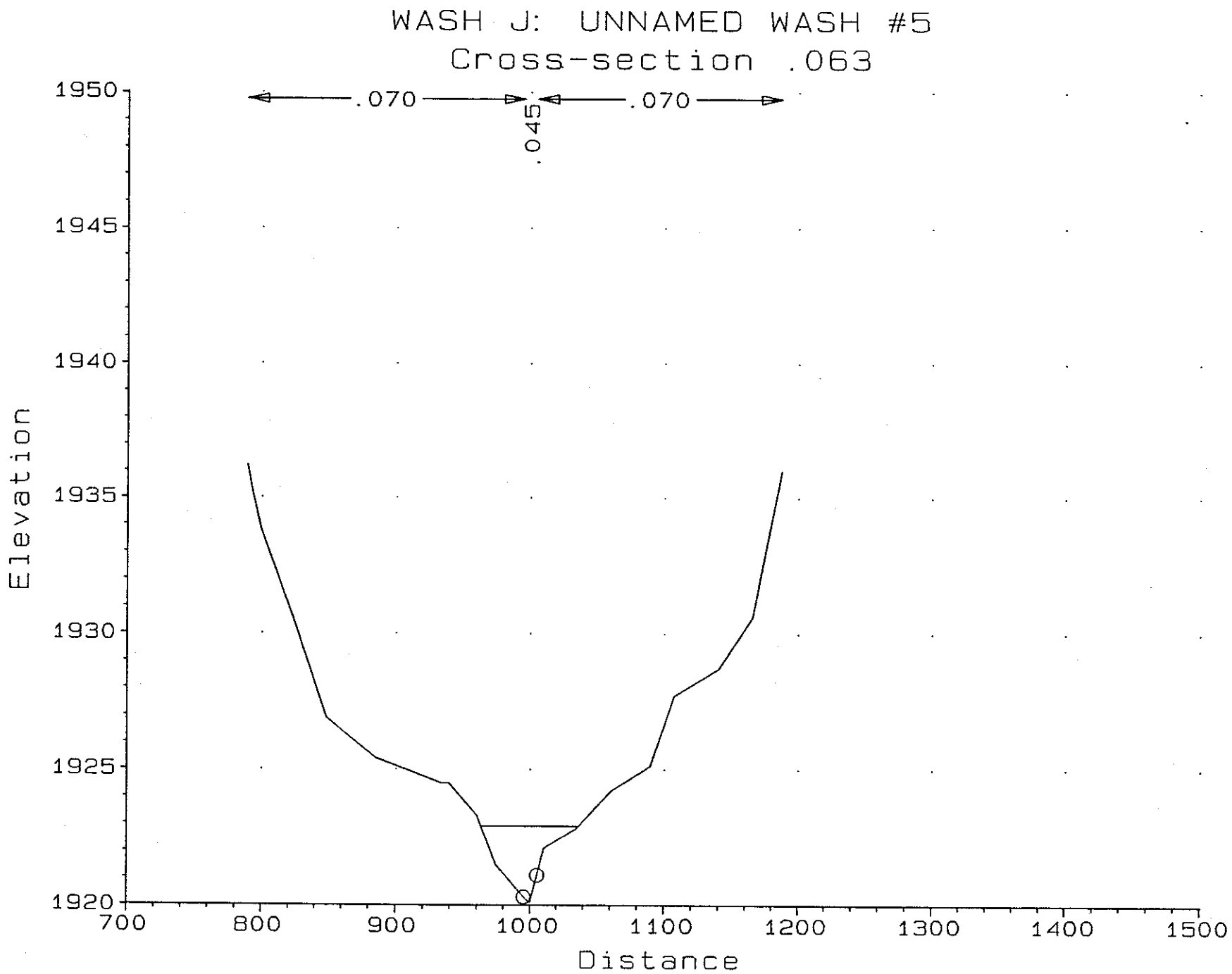
WASH J: UNNAMED WASH #5
Cross-section .063
.070
.070
.045
1950
1945
1940
1935
1930
1925
1920
Elevation
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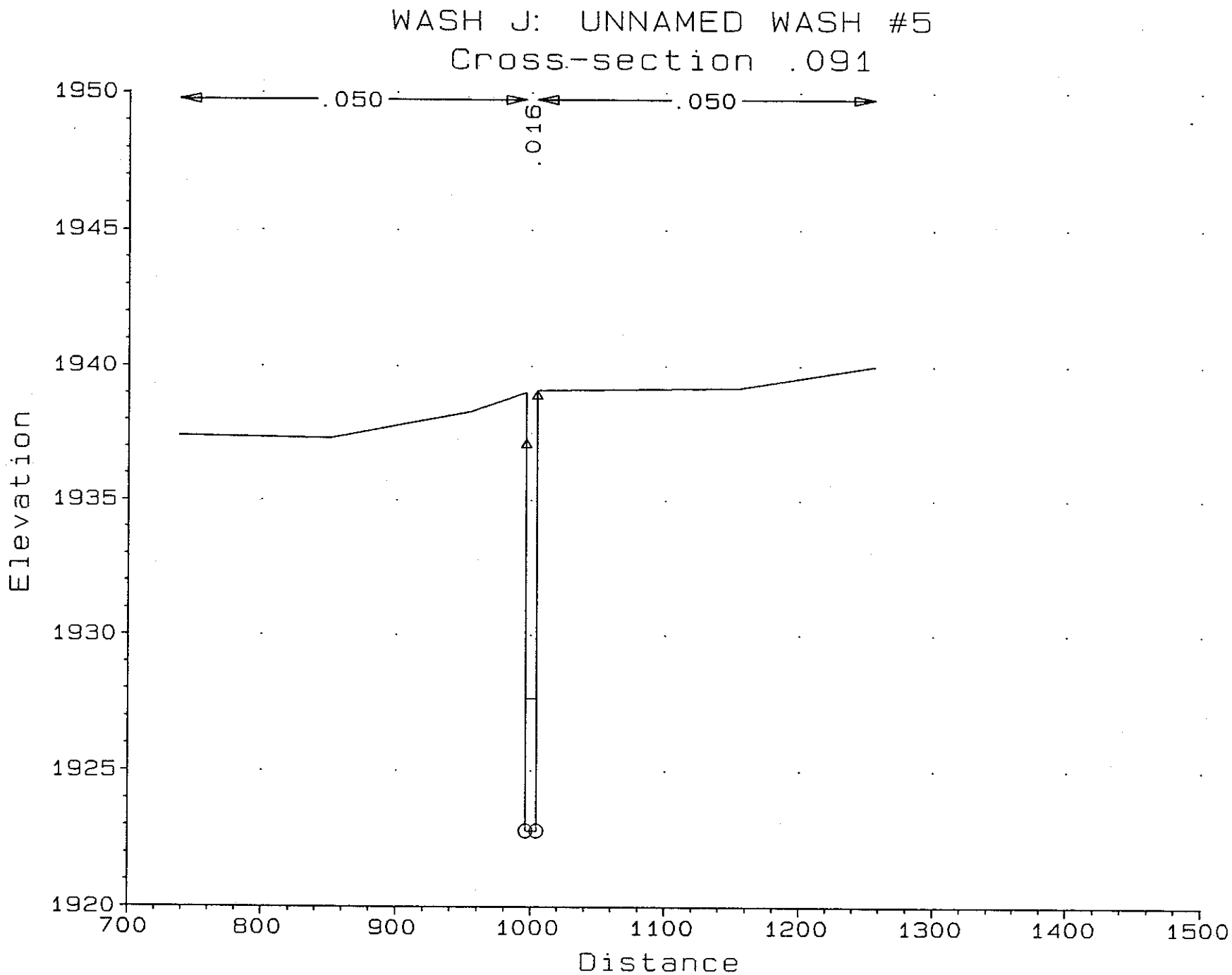
900
1000
1100
1200
1300
1400
1500
Distance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Cross-section .091
.050
.016
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1950
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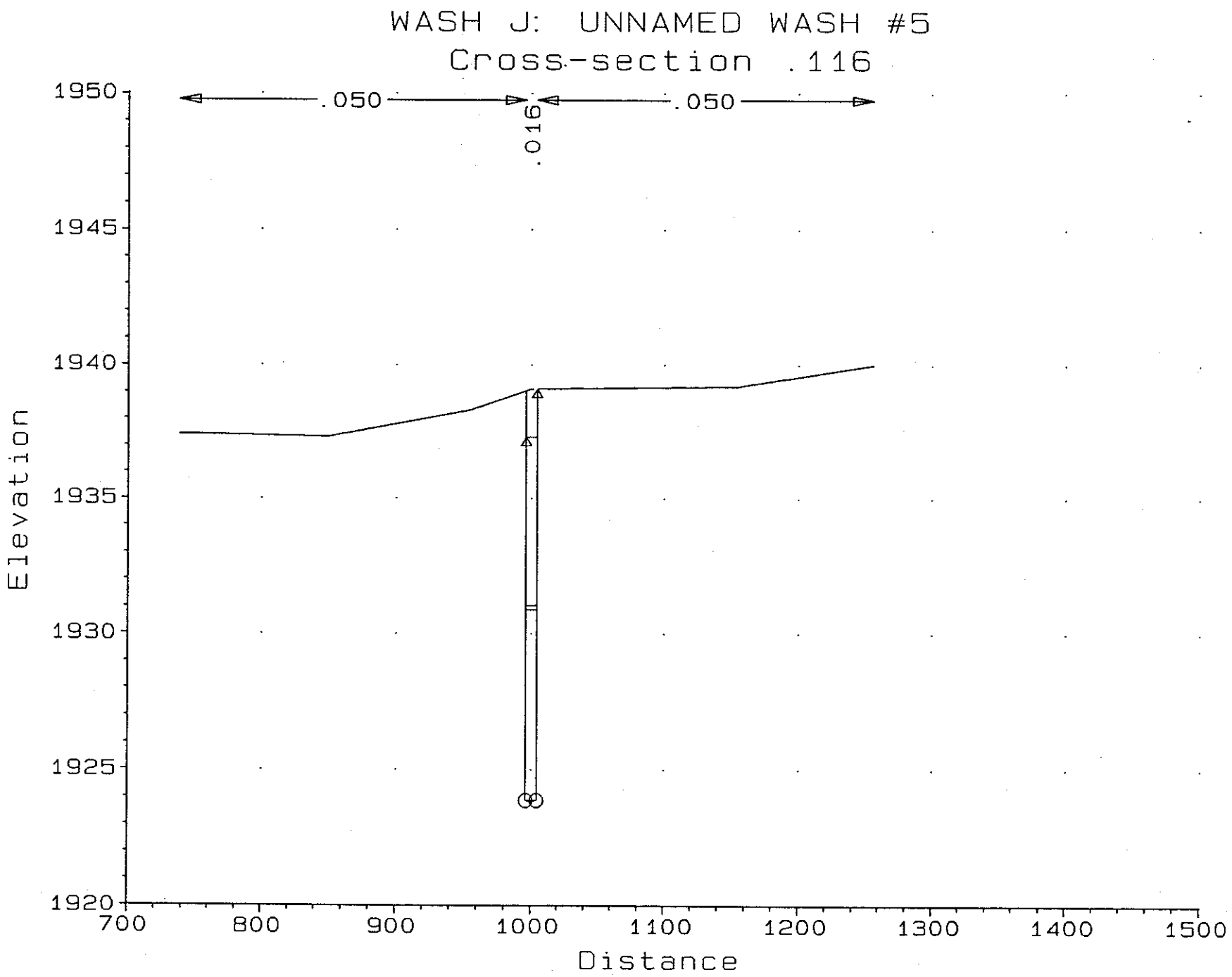
Distance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.016
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Elevation
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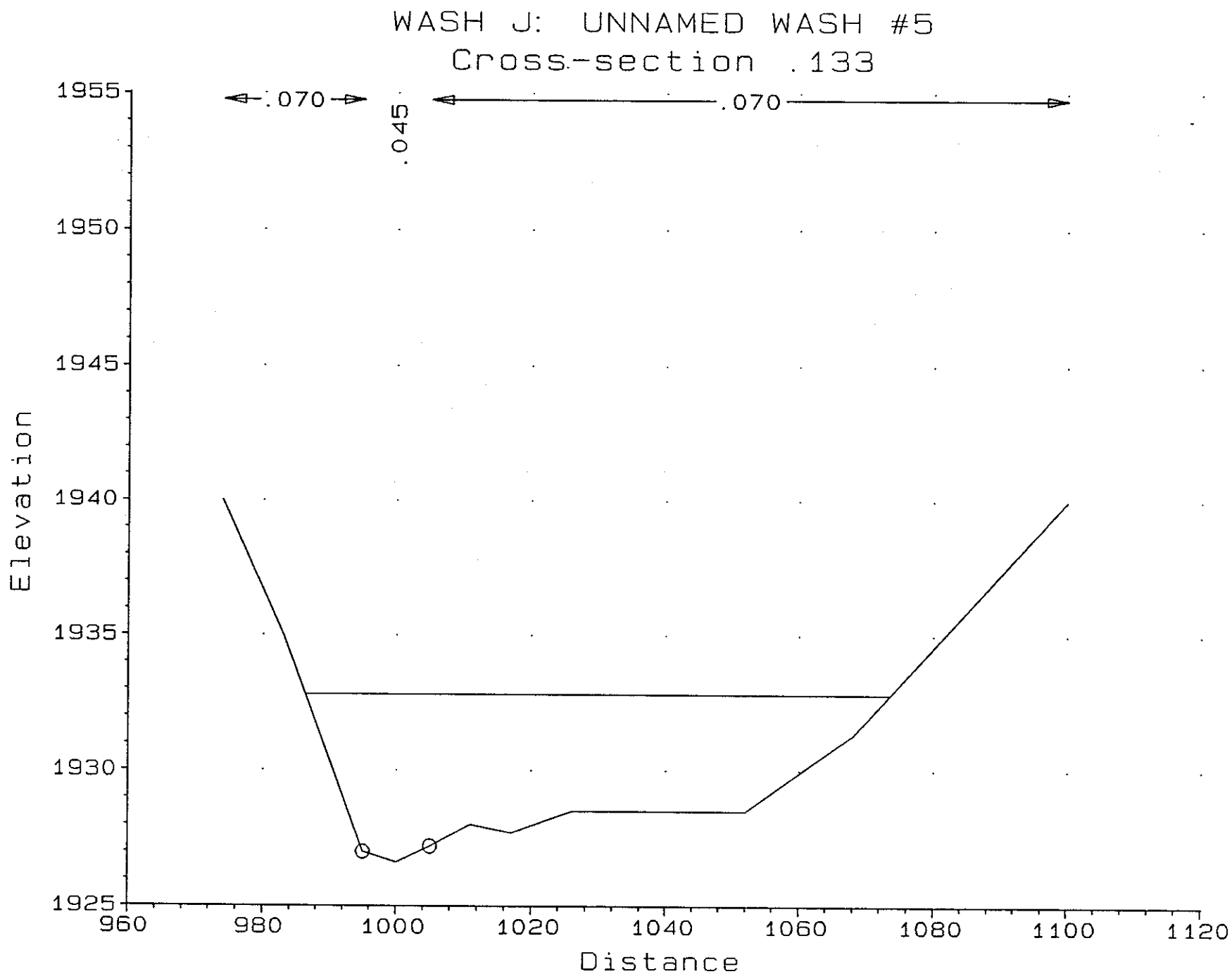
Distance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.045
.070
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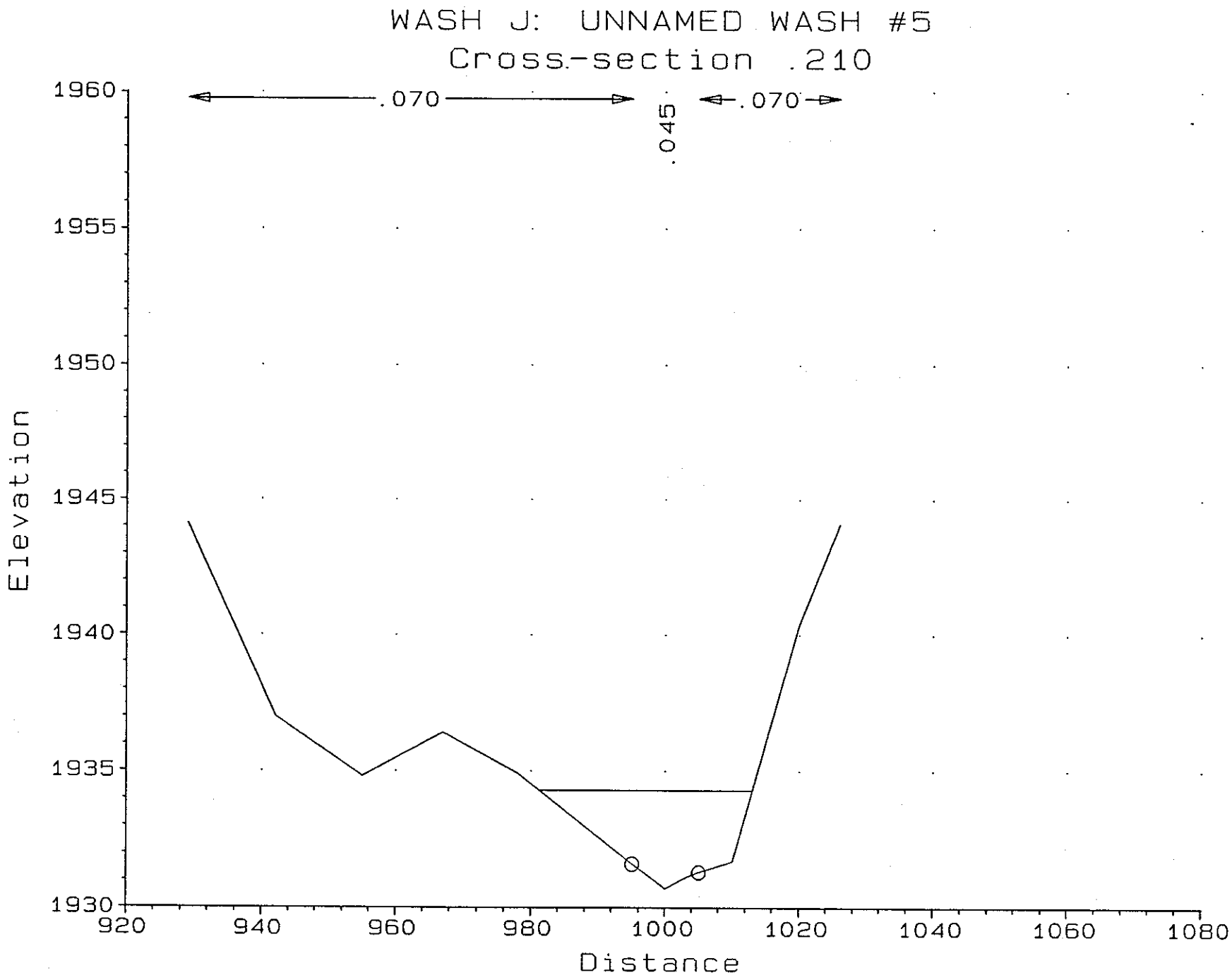
1100
1120
Distance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.070
.045
.070
1960
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1950
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1935
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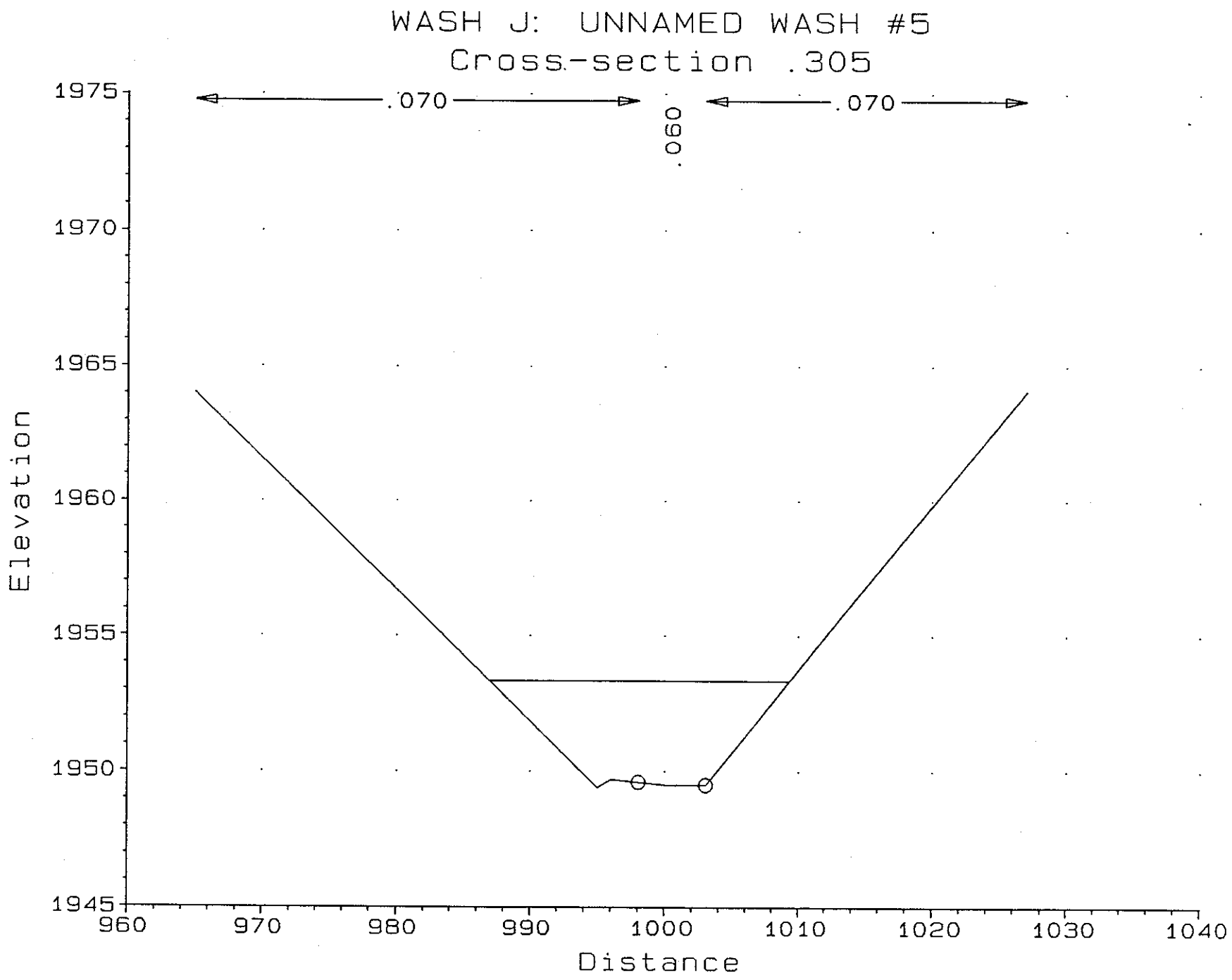
1020
1040
1060
1080
Distance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.060
.070
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1945
Elevation
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990
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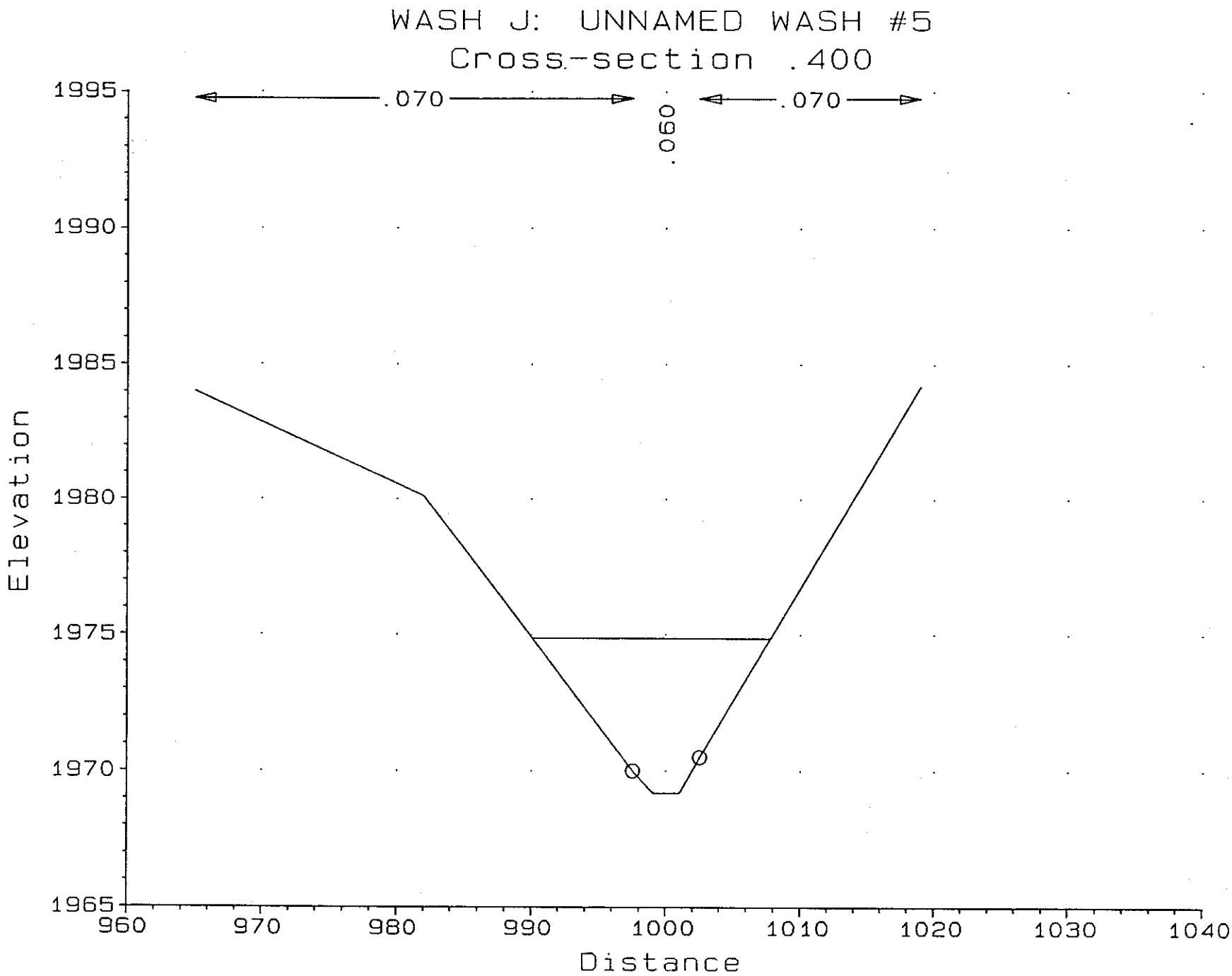
1030
1040
Distance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.070
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1975
1970
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Elevation
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1010
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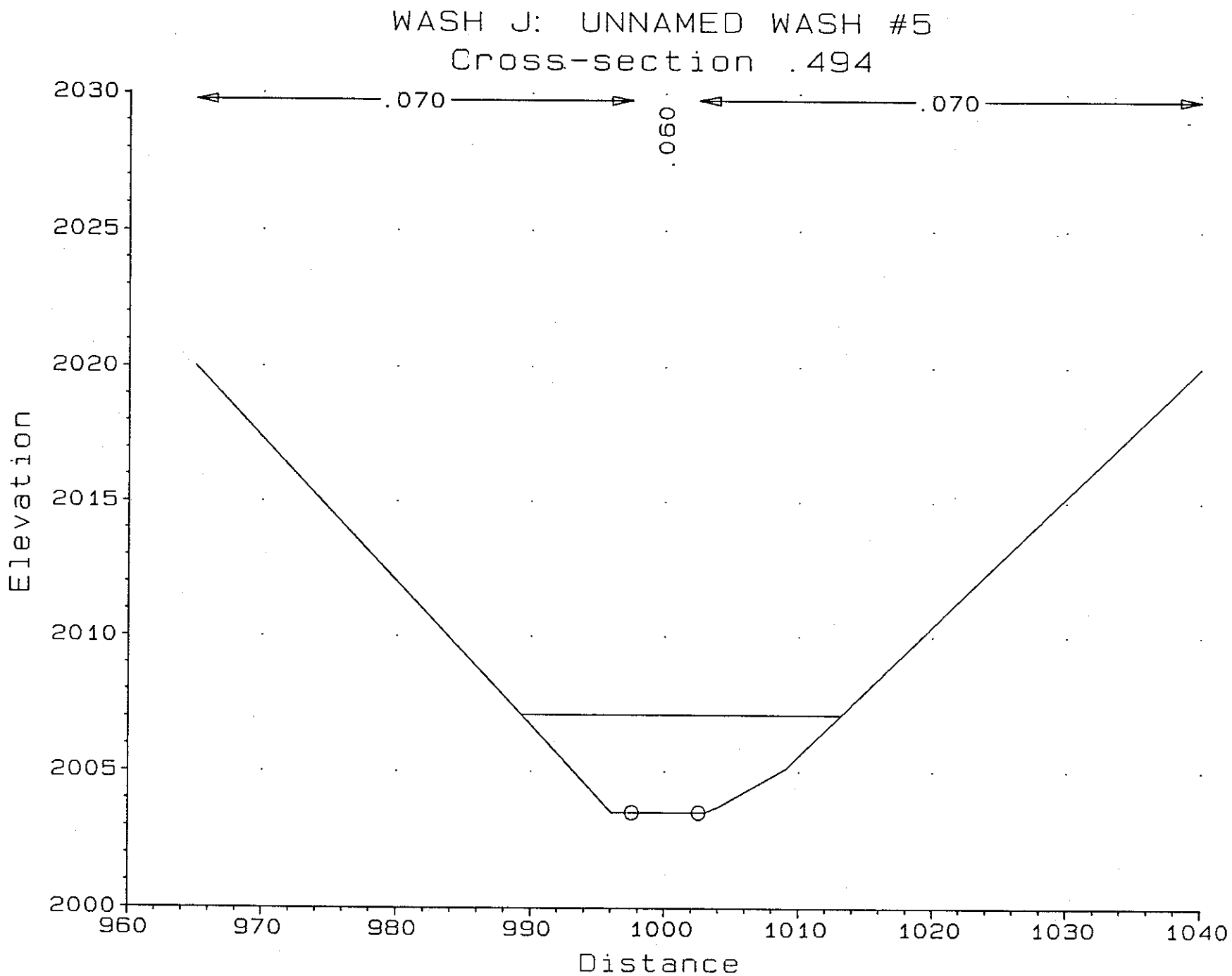
1030
1040
Distance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Cross-section .494
.070
.060
.070
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2010
2005
2000
Elevation
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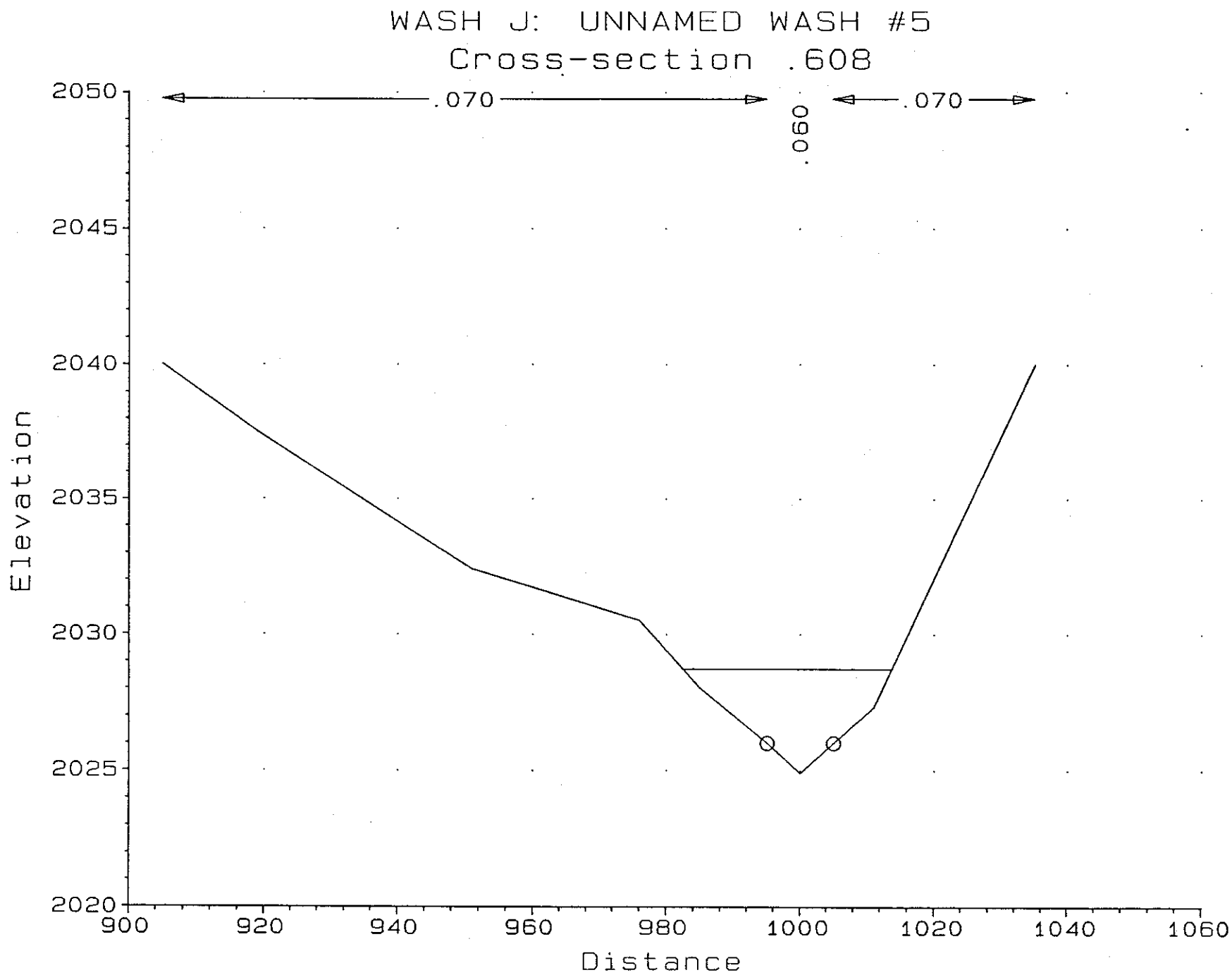
1030
1040
Distance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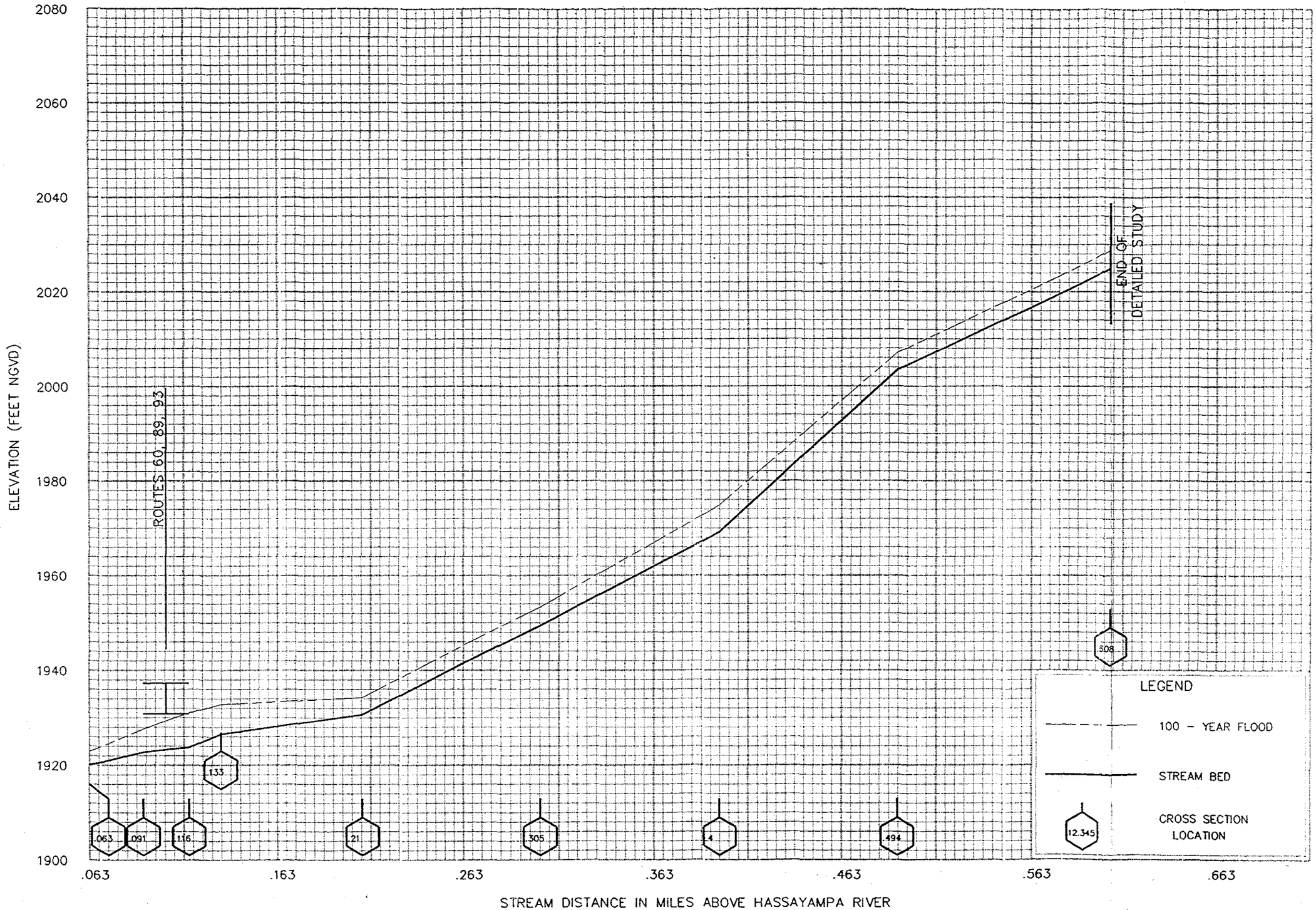
.060
.070
2050
2045
2040
2035
2030
2025
2020
Elevation
900
920
940
960
980
1000
1020
1040
1060
Distance



FLOOD PROFILES

UNNAMED WASH #5 (J)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/22/94 08:19:52 ACD-12-

PC FILE:WASHJ.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.10: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #6 & TRIBUTARY (Wash k)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1197\02\ADMIN\119702RP.063

May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

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

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

4. REVIEW OF RESULTS

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Confluence with Hassayampa River	2.97 sq mi.	—	2508 cfs

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

ATTACHMENT A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability*	☐ Yes ☐ No
11. Comparison of results with other analyses	☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:
N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # 6.10

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Unincorporated Maricopa County/Town of Wickenburg

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

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.095

Upstream limit: Station 3.840

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Hassayampa River

Upstream limit of study Station 3.840

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year	450 cfs	1317 cfs
50-year	703 cfs	2153 cfs
100-year	810 cfs	2508 cfs
500-year	—	—

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.02 ~ 0.04

Overbanks ..... 0.055 ~ 0.070

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

Location	FIS	Revised

Explain:

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

Data points for cross-sections are based on photogrammetric models for the topographic maps.

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ☐ Yes ☒ No

b. Supercritical depth? ☐ Yes ☒ No

c. Critical depth? ☒ Yes ☐ No

d. Other unique situations ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 0.0287 ft/ft

Specify location 2 798

3. What is the distance between the cross-sections in 2 above? 512 ft

Specify location 2.895

4. What is the maximum distance between cross-sections? 607 ft

Specify location 0.373

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1.0 foot

b. What is the maximum surcharge for the revised conditions? 0.0 foot

Specify location N/A

c. What is the maximum velocity? 16.28 fps

Specify location 0.409

Explain:

d: Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

_____

_____

_____

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash K:	Wickenburg ADMS-FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model- See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

Sheet___ ____ of _____

FLOODWAY DATA, WASH K:UNNAMED WASH #6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
47.520	679.	1053.	2.4	1933.4	1933.4	.0
.095	334.	477.	5.3	1949.4	1949.4	.0
.099	399.	706.	3.6	1949.5	1949.5	.0
.115	226.	546.	4.6	1958.3	1958.3	.0
.121	243.	984.	2.5	1958.6	1958.6	.0
.136	321.	3600.	.7	1965.5	1965.5	.0
.152	461.	3806.	.7	1965.6	1965.6	.0
.190	308.	1638.	1.5	1965.5	1965.5	.0
.258	175.	375.	6.7	1967.0	1967.0	.0
.373	151.	389.	6.4	1982.8	1982.8	.0
.409	45.	247.	10.2	1989.5	1989.5	.0
.504	48.	256.	9.8	1999.7	1999.7	.0
.568	103.	312.	8.0	2005.8	2005.8	.0
.663	57.	240.	10.1	2021.6	2021.6	.0
.758	82.	276.	8.8	2047.7	2047.7	.0
.852	68.	239.	10.1	2061.3	2061.3	.0
.947	99.	316.	7.7	2075.4	2075.4	.0
1.042	118.	303.	8.0	2085.7	2085.7	.0
1.136	88.	261.	8.8	2096.3	2096.3	.0
1.227	134.	314.	7.3	2106.8	2106.8	.0
1.311	152.	336.	6.8	2117.9	2117.9	.0
1.383	141.	324.	7.1	2124.6	2124.6	.0
1.477	154.	330.	6.9	2136.7	2136.7	.0
1.553	160.	289.	7.4	2142.4	2142.4	.0
1.631	367.	412.	5.2	2152.6	2152.6	.0
1.693	145.	304.	7.1	2161.4	2161.4	.0
1.740	207.	349.	6.2	2165.5	2165.5	.0
1.831	101.	249.	8.6	2174.5	2174.5	.0
1.941	270.	387.	5.6	2186.8	2186.8	.0
2.036	346.	330.	5.9	2195.6	2195.6	.0
2.131	172.	310.	6.3	2208.1	2208.1	.0
2.227	109.	270.	7.2	2219.5	2219.5	.0
2.320	332.	358.	5.4	2229.3	2229.3	.0
2.393	267.	396.	4.9	2237.6	2237.6	.0
2.464	342.	418.	4.2	2245.4	2245.4	.0
2.526	247.	277.	6.3	2250.8	2250.8	.0
2.614	208.	329.	5.3	2262.9	2262.9	.0
2.700	144.	287.	6.1	2272.2	2272.2	.0
2.798	142.	266.	6.5	2282.8	2282.8	.0
2.895	501.	352.	4.9	2291.6	2291.6	.0
2.966	157.	190.	5.0	2301.9	2301.9	.0
3.032	156.	205.	4.7	2310.7	2310.7	.0

FLOODWAY DATA, WASH K:UNNAMED WASH #6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
3.087	66.	140.	6.8	2317.3	2317.3	.0
3.134	62.	133.	7.2	2322.9	2322.9	.0
3.225	131.	179.	5.3	2334.2	2334.2	.0
3.306	81.	134.	6.6	2340.2	2340.2	.0
3.383	213.	194.	4.6	2348.2	2348.2	.0
3.466	210.	207.	4.3	2355.5	2355.5	.0
3.559	54.	114.	7.8	2365.4	2365.4	.0
3.661	257.	186.	4.4	2374.8	2374.8	.0
3.716	132.	153.	5.3	2381.0	2381.0	.0
3.798	166.	182.	4.5	2389.4	2389.4	.0
3.840	127.	159.	5.1	2393.5	2393.5	.0
-2.895	501.	352.	4.9	2291.6	2291.6	.0
.032	319.	170.	5.0	2302.8	2302.8	.0
.097	132.	166.	5.1	2310.0	2310.0	.0
.131	160.	181.	4.7	2314.3	2314.3	.0
.182	33.	94.	9.1	2321.7	2321.7	.0
.212	126.	184.	2.6	2324.3	2324.3	.0
.259	45.	71.	6.8	2329.8	2329.8	.0
.318	83.	92.	5.2	2337.3	2337.3	.0
.416	21.	55.	8.7	2348.1	2348.1	.0
.506	71.	90.	5.3	2358.1	2358.1	.0
.604	99.	92.	4.3	2371.7	2371.7	.0
.705	108.	86.	4.7	2384.2	2384.2	.0
.795	72.	70.	4.7	2396.1	2396.1	.0

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash K :

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: East Bound: US. Highway 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.099 to Station 0.115
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

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

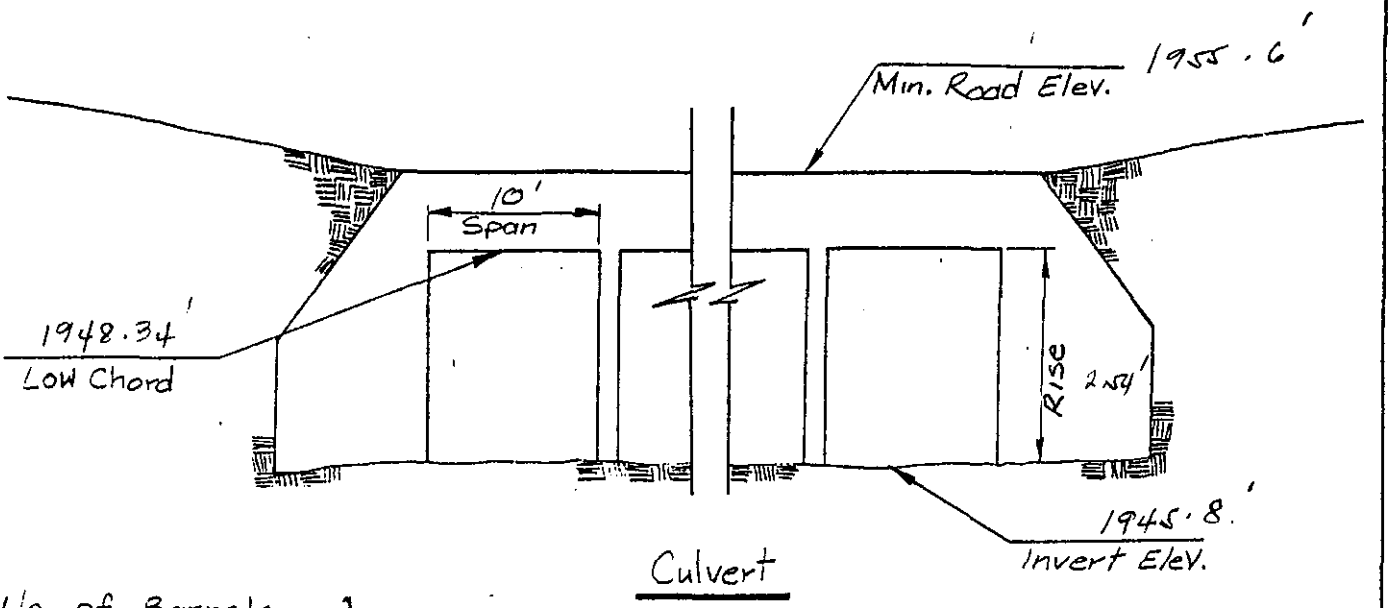
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) three 10'x8'x 91.7' concrete box culvert.
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls ; no inlet top edge bevel
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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



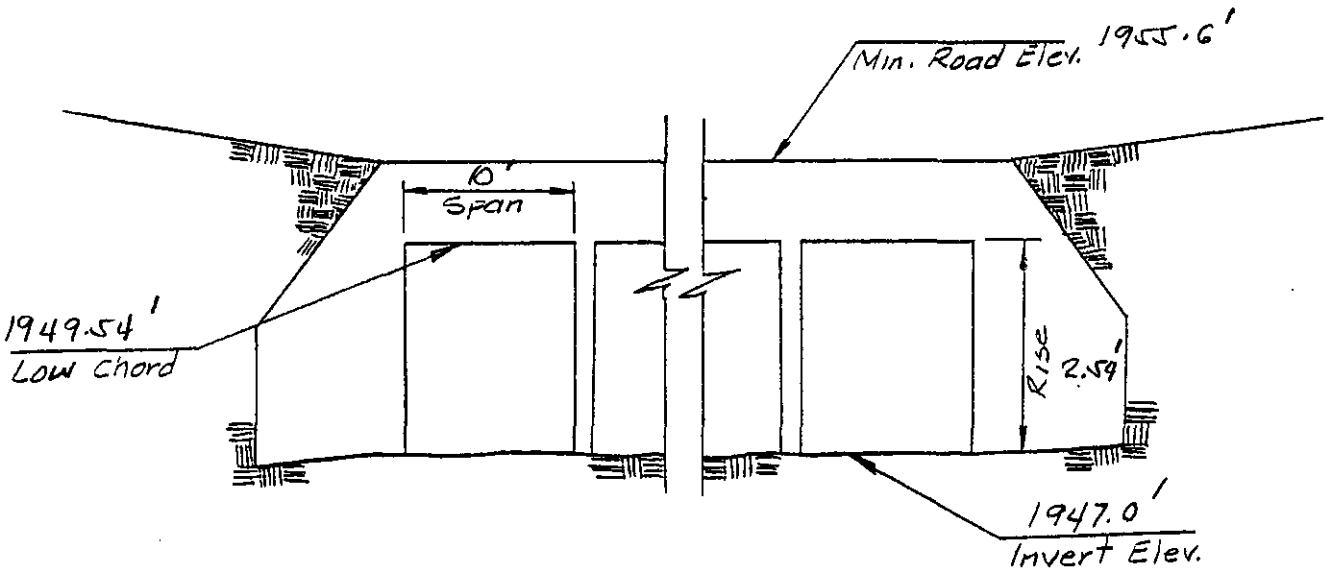
No. of Barrels: 3

Culvert Size: 10' x 8' x 81.7

Approx. Depth of Sediment in Culvert: 5.5'+/-

See Cross Section # 0.099

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



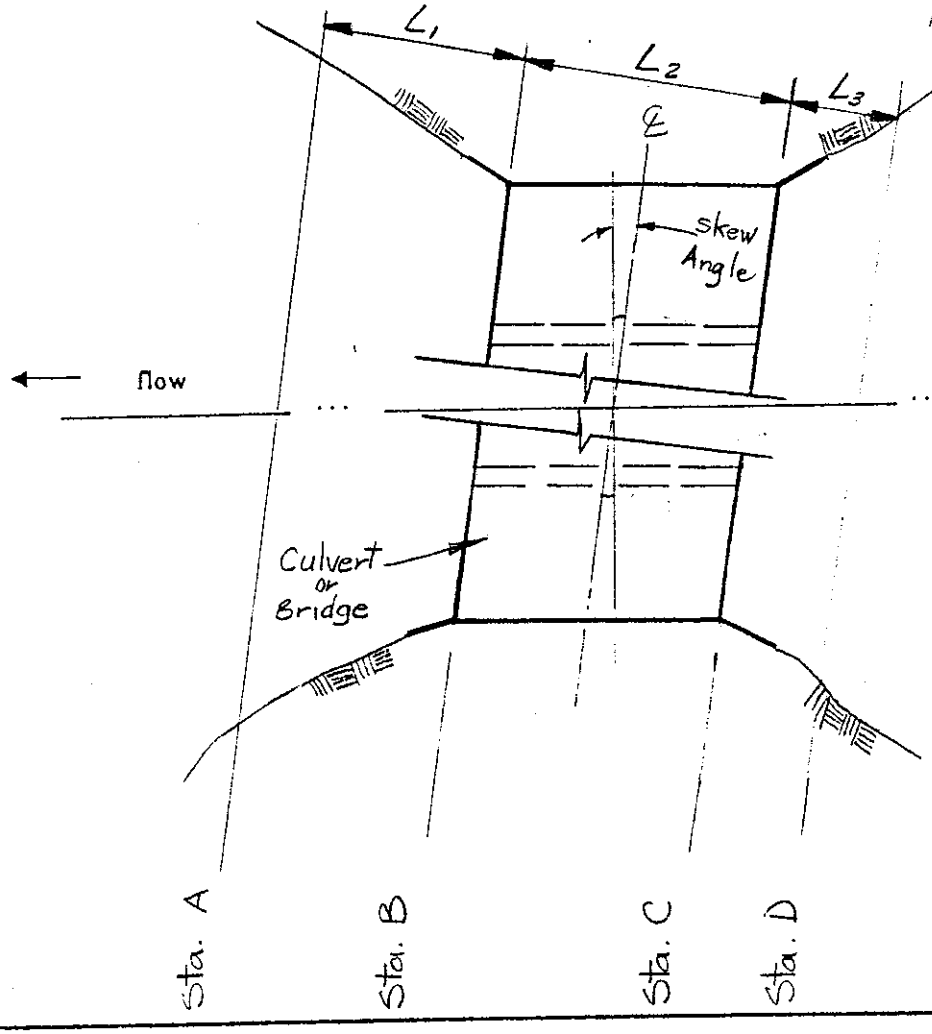
No of Barrels: 3

Culvert

Culvert Size: 10' x 8' x 81.7'

Approx. Depth of Sediment in Culvert: 5.5' +/- See Cross Section # 0.115

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



Bridge Width / Culvert Length: 81.7'

Cross Section Stations

Sta. A = 0.095

Sta. B = 0.099

Sta. C = 0.115

Sta. D = 0.121

Skew Angle: 0

Reach Lengths:

L1 = 21 ft.

L2 = 81.7 ft.

L3 = 31.7 ft.

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

Culvert length or bridge width (ft)	81.7'
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	76.2 ft^2
Total culvert/bridge area (ft^2)	76.2 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.115)	1955.6	1960.0
Downstream face (STA 0.099)	1949.1	1947.6

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1955.6	1960.0
Downstream face	1955.6	1960.0

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1958.28	1958.96
Downstream face	1949.48	1950.46

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	1223	1292	2508 (= 2505)

The maximum depth of flow over the roadway/railroad (ft.) ..... 2.68'

Weir length (ft.) ..... 226'

Top Widths

	Floodplain	Floodway
Upstream face	500'	226.1
Downstream face	(*)	399

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	226.1	500'
Downstream face	399	399'

(*) Hassayampa River Floodplain

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	2.90
Pier coefficient	—
Contraction loss coefficient	0.600
Expansion loss coefficient	0.800

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Method I of bridge encroachment is used where encroachment stations are defined by ET (i.e., STENCL, STENCR) while effective elevations are defined by X3 (i.e., ELLEA, ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash K:

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: West Bound : U.S. Highway 60-89

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.121 to Station 0.136

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

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) three 10'x8' x 86.2' Concrete box culvert

2. Entrance geometry of culvert/type of bridge opening (e.g. 30°-75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls ; no inlet top edge bevel

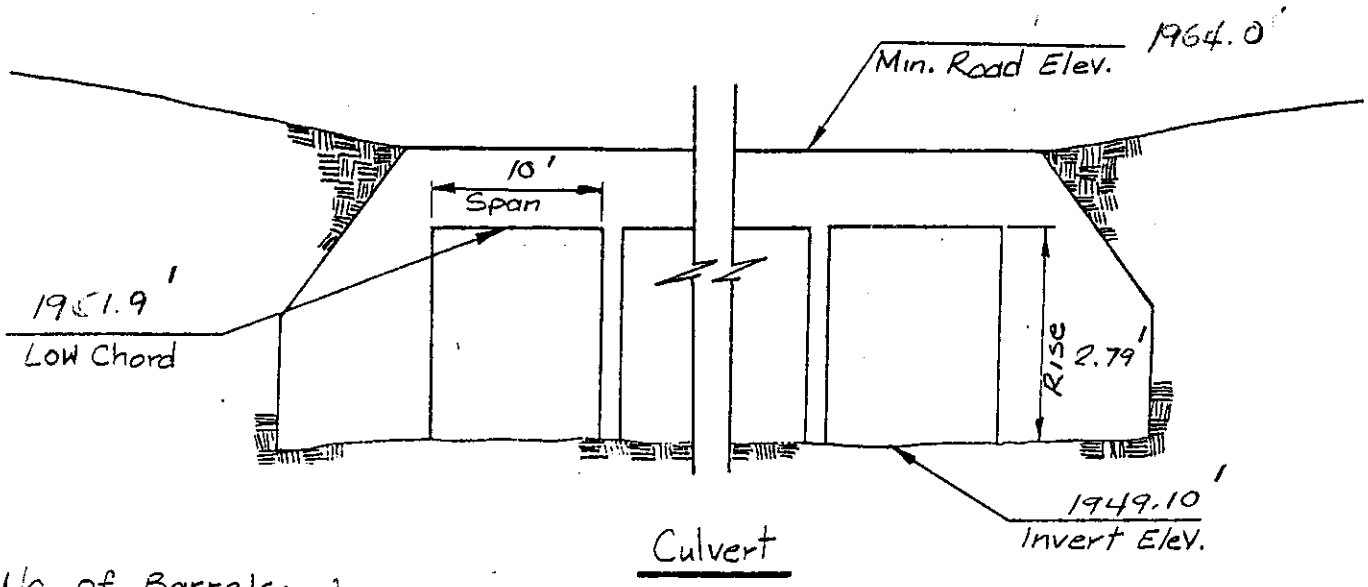
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine.

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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

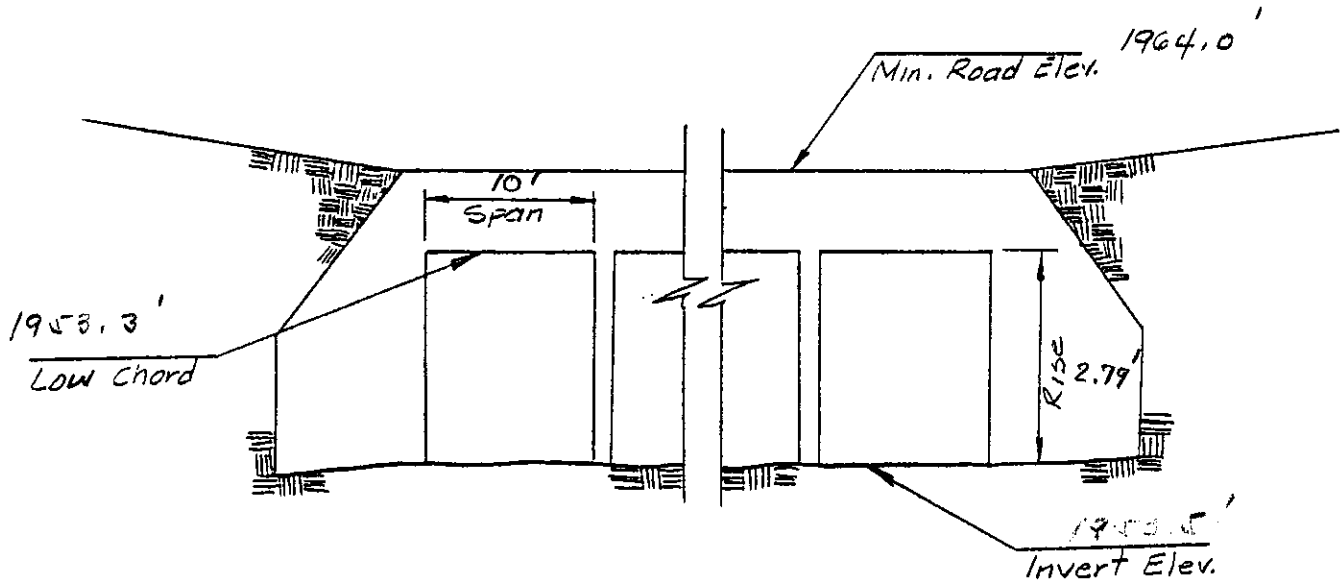


No. of Barrels: 3

Culvert Size: 10' x 8' x 86.2'

Approx. Depth of Sediment in Culvert: 5.2' +/- See Cross Section # 0.121

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

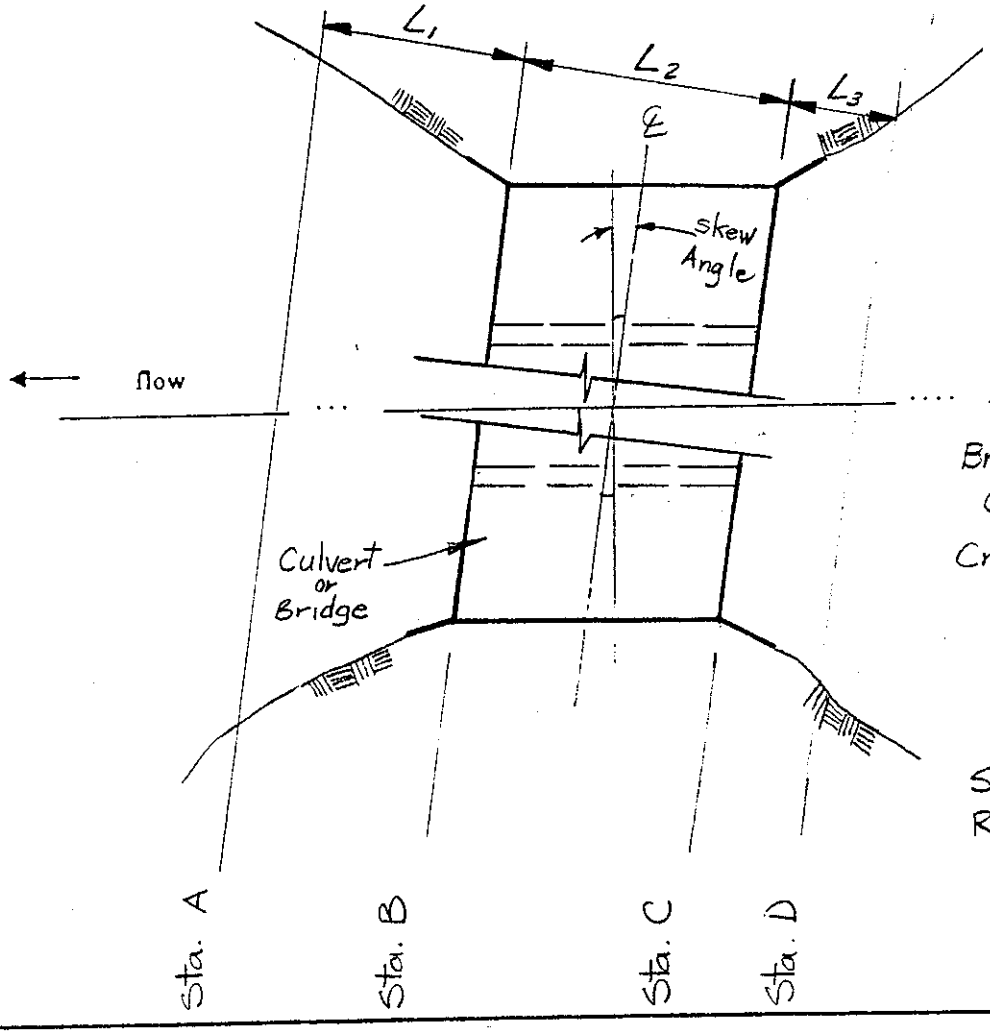


No of Barrels: 3

Culvert Size: 10' x 8' x 86.2'

Approx. Depth of Sediment in Culvert: 5.2' +/- See Cross Section # 0.136

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



Bridge Width / Culvert Length: 86.2

Cross Section Stations
Sta. A = 0.115
Sta. B = 0.121
Sta. C = 0.136
Sta. D = 0.152

Skew Angle: 0

Reach Lengths:
L1 = 31.7 ft.
L2 = 86.2 ft.
L3 = 85 ft.

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

Culvert length or bridge width (ft)	86.2'
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	83.7 ft²
Total culvert/bridge area (ft²)	83.7 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.136)	1964.0	1964.0
Downstream face (STA 0.121)	1956.0	1960.0

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1964.0	1964.0
Downstream face	1964.0	1964.0

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1965.53	1965.55
Downstream face	1958.64	1959.10

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	1166	1355	2508 (≈ 2521)

The maximum depth of flow over the roadway/railroad (ft.) 1.53

Weir length (ft.) 3N

Top Widths

	Floodplain	Floodway
Upstream face	330'	323'
Downstream face	475'	244.1'

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	323'	330'
Downstream face	244.1'	475'

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	2.90
Pier coefficient	—
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Method I of bridge encroachment is used where encroachment stations are defined by ET (i.e., STENCL, STENCR) while effective elevations are defined by XS (i.e., ELLEA, ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash K2:
(One form for each flooding source)

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)

☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis

☐ Improved data *(see data revision on page 3)*

☐ Changed physical conditions of watershed *(explain)* _____

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain) _____

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

4. REVIEW OF RESULTS

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
	0.84 Sq. mi.	—	848 cfs

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

ATTACHMENT A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: N/A

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. *Bibliographical Reference:*
N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # 6.10

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash K2
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.032

Upstream limit: Station 0.795

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Wash K

Upstream limit of study Station 0.795

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year	179 cfs	460 cfs
50-year	286 cfs	735 cfs
100-year	330 cfs	848 cfs
500-year	—	—

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.035 ~ 0.045

Overbanks ..... 0.060 ~ 0.065

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

Location	FIS	Revised

Explain:

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

Data points for cross-sections are based on photogrammetric models for the topographic maps.

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 0.00824 ft/ft

Specify location 0.212

3. What is the distance between the cross-sections in 2 above? 248.0

Specify location 0.259

4. What is the maximum distance between cross-sections? ..... 533.0 ft

Specify location 0.705

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1.0 foot

b. What is the maximum surcharge for the revised conditions? ..... 0 foot

Specify location ..... N/A

c. What is the maximum velocity? ..... 9.99 fps

Specify location 0.182

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

_____

_____

_____

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash K2 :	Wickenburg ADMS-FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model- See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

FLOODWAY DATA, WASH K:UNNAMED WASH #6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
3.087	66.	140.	6.8	2317.3	2317.3	.0
3.134	62.	133.	7.2	2322.9	2322.9	.0
3.225	131.	179.	5.3	2334.2	2334.2	.0
3.306	81.	134.	6.6	2340.2	2340.2	.0
3.383	213.	194.	4.6	2348.2	2348.2	.0
3.466	210.	207.	4.3	2355.5	2355.5	.0
3.559	54.	114.	7.8	2365.4	2365.4	.0
3.661	257.	186.	4.4	2374.8	2374.8	.0
3.716	132.	153.	5.3	2381.0	2381.0	.0
3.798	166.	182.	4.5	2389.4	2389.4	.0
3.840	127.	159.	5.1	2393.5	2393.5	.0
-2.895	501.	352.	4.9	2291.6	2291.6	.0
.032	319.	170.	5.0	2302.8	2302.8	.0
.097	132.	166.	5.1	2310.0	2310.0	.0
.131	160.	181.	4.7	2314.3	2314.3	.0
.182	33.	94.	9.1	2321.7	2321.7	.0
.212	126.	184.	2.6	2324.3	2324.3	.0
.259	45.	71.	6.8	2329.8	2329.8	.0
.318	83.	92.	5.2	2337.3	2337.3	.0
.416	21.	55.	8.7	2348.1	2348.1	.0
.506	71.	90.	5.3	2358.1	2358.1	.0
.604	99.	92.	4.3	2371.7	2371.7	.0
.705	108.	86.	4.7	2384.2	2384.2	.0
.795	72.	70.	4.7	2396.1	2396.1	.0

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    04JUN92    TIME   09:41:37 *
*******************************************
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***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

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

THIS RUN EXECUTED 04JUN92 09:41:38

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

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


T1    WICKENBURG ADMS: MARICOPA COUNTY - CONTRACT FCDMC 89-79
T2    BLACK & VEATCH PN 17676:  COE & VAN LOO JN 1197-02
T3      WASH K:UNNAMED WASH #6            (WK6F)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0      .0027        0         0         0    1943.38      0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1         0         0         15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NH       4       .07     1320.4      .035     1344.5      .045     1720.7       .07     2204.2
NC    .070      .070      .035        .1        .3
QT       2      2508      2508
         HASSAYAMPA RIVER FIS SECTION 47.52(CBA 1988, NO DATUM CHANGE)
         CONFLUENCE WITH WASH K - UNNAMED WASH # 6, AN EAST TRIBUTARY
         NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
         THE STARTING WATER SURFACE ELEVATION WAS DETERMINED BY THE
         SLOPE AREA METHOD IN THE HEC-2 INPUT (J1, FIELD 5)
X1    47.52        23     1320.4     1344.5         0         0         0
GR   1953.0    1000.0     1953.0     1032.9    1932.5    1083.8    1933.5    1257.2    1928.1    1320.4
GR   1928.0    1334.4     1928.0     1344.5    1933.3    1367.1    1933.3    1415.2    1929.6    1504.9
GR   1934.0    1602.6     1934.0     1611.5    1930.7    1635.1    1930.8    1720.7    1938.2    1837.2
GR   1944.0    1887.2     1945.2     2030.4    1952.5    2054.2    1953.1    2072.1    1950.0    2091.4
GR   1951.9    2147.8     1957.3     2182.6    1960.1    2204.2       0.0       0.0       0.0       0.0

NC    .070      .070      .035        .6        .8
ET                        9.1                                                          730       1064
         THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
         CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION;
         UNLESS OTHERWISE NOTED.
         THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS
         SECTION CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
         UNLESS OTHERWISE NOTED.
   0.095        39       843       926       650       950       880
  1952.4       673.     1950.3     682.    1948.0     803.    1949.2     814.    1949.1     829.
GR 1947.9      843.     1947.0     858.    1946.3     867.    1946.3     895.    1947.0     915.
GR 1947.6      926.     1947.6     943.    1947.7     950.    1948.0     958.    1947.9     964.
GR 1947.5      979.     1947.1     985.    1947.1     991.    1947.0     997.    1947.2    1000.
GR 1947.6     1005.     1948.2    1015.    1949.0    1028.    1949.3    1056.    1949.6    1081.
```

GR	1950.0	1097.	1950.0	1103.	1951.0	1123.	1952.9	1138.	1953.2	1162.

```
     1954.0     1175.     1954.4     1180.     1955.6     1190.     1955.9     1191.     1956.0     1195.
GR   1956.5     1197.     1957.2     1220.     1957.4     1234.     1960.4     1288.

NC    .070      .070      .020        .6        .8
ET                        9.1                                                          698       1097
        DOWNSTREAM SECTION:EAST BOUND CULVERT
X1   0.099        39       858       895        21        21        21                 -.5
X3      10                                                                  1948.6    1947.1
GR   1952.4     673.     1950.3     682.     1948.0     803.     1949.2     814.     1949.1     829.
GR   1947.9     843.     1947.0     858.     1946.3     867.     1946.3     895.     1947.0     915.
GR   1947.6     926.     1947.6     943.     1947.7     950.     1948.0     958.     1947.9     964.
GR   1947.5     979.     1947.1     985.     1947.1     991.     1947.0     997.     1947.2    1000.
GR   1947.6    1005.     1948.2    1015.     1949.0    1028.     1949.3    1056.     1949.6    1081.
GR   1950.0    1097.     1950.0    1103.     1951.0    1123.     1952.9    1138.     1953.2    1162.
GR   1954.0    1175.     1954.4    1180.     1955.6    1190.     1955.9    1191.     1956.0    1195.
GR   1956.5    1197.     1957.2    1220.     1957.4    1234.     1960.4    1288.

SC   3.020     0.40        2.9        0       2.54        10      81.7       8.1     1947.0    1945.8
ET                        9.11                                                         789.9      1016
        UPSTREAM SECTION: EAST BOUND CULVERT
        (3-10' x 8'x 81.7' CBCs), 5.5' OF SEDIMENT ON BOTTOM
        HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 790 REPRESENTS
        THE LIMIT OF THE EFFECTIVE FLOW AREA
X1   0.115        10    984.15    1015.85      81.7      81.7      81.7
X2                          2    1951.58     1958.5
        10                                                                  1955.6    1958.5
BT      -6       790    1955.6                 865    1957.25               984.14    1958.5
BT              1000    1958.5                1050     1960.0                 1110    1960.1
GR   1960.0    789.9    1955.6       790    1957.25       865    1958.5    984.14    1947.0    984.15
GR   1947.0   1000.0    1947.0    1015.85    1958.5    1015.90    1960.0     1050.    1960.1      1110

ET                        9.1                                                          799.9      1044
        DOWNSTREAM SECTION:WEST BOUND CULVERT
        HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 800 REPRESENTS
        THE LIMIT OF THE EFFECTIVE FLOW AREA
X1   0.121        12    984.15    1015.85      31.7      31.7      31.7
X3      10                                                                  1953.1    1953.1
GR   1964.0    799.9    1956.0       800    1956.0       880    1956.0       900    1953.1    984.14
GR   1949.1   984.15    1949.1    1000.0    1949.1    1015.85    1953.1    1015.86    1960.0      1050
GR   1960.0     1100    1964.0    1100.1

SC   3.020     0.40        2.9        0       2.79        10      86.2       8.1     1950.5    1949.1
ET                        9.11                                                         826       1149
        WEST BOUND CULVERT AT UPSTREAM SECTION;
        (3-10' x 8'x 86.2' CBCs), APPROX. 5.2' OF SEDIMENT ON BOTTOM
X1   0.136        34       991       1027      86.2      86.2      86.2
X2                          2    1953.3     1964.8
X3      10                                                                  1964.0    1964.0
BT      -4       830    1964.0                 940    1964.0                 1000    1964.8
BT             1145.4    1964.0
GR   1968.0     822.     1966.0      826.     1964.0      830     1962.4      833.    1961.2      837.
GR   1960.5     838.     1960.5      846.     1960.5      863.    1960.5      868.    1958.2      880.
GR   1951.1     899.     1950.7      913.     1951.6      934.    1951.6      950.    1951.0      965.
GR   1950.7     976.     1950.7      984.     1950.8      991.    1950.7     1000.    1950.5     1004.
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     1949.7    1007.    1949.8    1008.    1949.8    1010.    1950.2    1011.    1951.0    1013.
GR   1952.9    1027.    1953.4    1074.    1954.0    1097.    1954.7    1112.    1955.8    1129.
GR   1961.7    1141.    1964.0    1145.4   1965.4    1148.    1966.8    1152.

NC    .065     .065     .035      .6       .8
ET                      9.1                                                        673       1135
X1   0.152      39      972       1008     105       85       85
GR   1966.0    672.     1964.2    678.     1964.2    689.     1963.9    704.     1962.0    712.
GR   1958.8    718.     1957.8    725.     1958.2    755.     1957.9    779.     1957.3    795.
GR   1957.0    806.     1956.1    819.     1955.4    827.     1955.6    836.     1955.9    849.
GR   1957.0    856.     1958.4    873.     1958.4    886.     1958.4    890.     1958.2    915.
GR   1957.6    941.     1957.1    962.     1955.6    968.     1952.5    972.     1952.2    990.
GR   1951.6    996.     1951.6    1000.    1951.7    1005.    1952.0    1008.    1953.5    1021.
GR   1953.7    1037.    1954.6    1052.    1955.0    1071.    1956.1    1083.    1957.5    1107.
GR   1961.2    1119.    1964.6    1130.    1966.0    1136.    1970.0    1153.

NC    .065     .065     .035      .1       .3
ET                      9.1                                                        740       1049
          STRUCTURE BLOCKED OUT WITH GR POINTS.
X1   0.190      39      982       1022     195       200      201
GR   1968.0    737.     1965.9    740.     1963.2    744.     1961.0    748.     1961.3    763.
GR   1961.3    776.     1961.5    793.     1961.8    806.     1962.9    809.     1963.3    816.
GR   1971.3    816.1    1971.3    849.9    1960.7    850.     1960.3    855.     1960.0    882.
GR   1960.8    903.     1961.3    923.     1960.4    935.     1959.7    944.     1958.1    947.
GR   1956.7    949.     1956.7    968.     1956.0    982.     1955.9    985.     1955.6    989.
     1955.5    992.     1955.4    998.     1955.3    1000.    1955.2    1002.    1955.2    1007.
     1955.5    1013.    1955.7    1018.    1956.1    1022.    1956.1    1025.    1956.2    1028.
GR   1956.8    1032.    1959.8    1033.    1964.1    1046.    1968.4    1054.

ET               7.1     9.1                                       866      1042     866.      1042.
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1   0.258      47      979       1014     280       380      359
GR   1976.1    776.     1972.9    777.     1969.3    780.     1967.6    789.     1966.8    793.
GR   1966.5    801.     1967.2    808.     1968.0    815.     1967.6    827.     1967.6    833.
GR   1967.8    848.     1967.6    854.     1967.3    861.     1967.0    866.     1966.2    872.
GR   1963.6    882.     1963.3    888.     1963.8    892.     1964.4    898.     1964.7    904.
GR   1965.5    915.     1965.0    933.     1965.0    945.     1968.1    948.     1968.4    952.
GR   1969.3    956.     1967.7    960.     1966.0    965.     1964.9    967.     1964.2    970.
GR   1963.9    972.     1964.0    977.     1964.0    979.     1963.9    985.     1963.7    987.
GR   1963.4    989.     1963.4    993.     1963.4    996.     1963.4    1000.    1963.4    1004.
GR   1964.2    1014.    1964.6    1022.    1965.1    1032.    1967.7    1045.    1971.7    1049.
GR   1975.7    1058.    1980.5    1062.

ET                      9.1                                                        880       1032
X1   0.373      33      976       1007     560       600      607
GR   1992.2    867.     1990.0    869.     1987.0    875.     1983.2    880.     1980.8    885.
GR   1979.8    887.     1980.2    923.     1980.9    931.     1980.9    940.     1980.9    947.
GR   1980.9    950.     1981.0    964.     1980.8    968.     1980.7    972.     1979.9    976.
     1979.3    981.     1977.3    982.     1977.0    989.     1977.4    992.     1977.5    996.
     1978.5    998.     1978.8    1000.    1978.9    1001.    1979.0    1004.    1979.9    1005.
GR   1980.7    1007.    1981.2    1012.    1981.5    1015.    1981.9    1030.    1987.8    1040.
GR   1992.5    1050.    1997.0    1057.    2000.2    1060.
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NC    .070      .070      .035       .1        .3
ET                        9.1                                                  978       1025
X1   0.409        26       980       993       195       190       190
GR  2040.2      942.     2024.4     955.    2015.5     963.    2010.7     967.    2007.9     974.
GR  2006.7      976.     2002.9     977.    1982.6     980.    1981.8     981.    1982.0     982.
GR  1982.1      985.     1982.9     989.    1983.2     993.    1983.2    1000.    1983.2    1002.
GR  1983.2     1003.     1984.4    1006.    1984.9    1014.    1985.9    1020.    1985.9    1021.
GR  1991.1     1026.     1996.2    1033.    2002.6    1041.    2008.3    1047.    2014.9    1055.
GR  2020.8     1066.

ET                        9.1                                                  984       1033
X1   0.504        21       991      1004       480       430       502
GR  2020.8      943.     2020.2     960.    2014.9     963.    2012.0     969.    2008.4     974.
GR  2005.8      978.     2001.5     984.    1996.8     986.    1996.4     987.    1992.9     991.
GR  1991.7      993.     1991.8     997.    1992.4    1000.    1993.3    1004.    1993.7    1009.
GR  1994.4     1017.     1995.5    1023.    1996.2    1030.    2009.0    1039.    2017.8    1047.
GR  2020.3     1053.

ET                        9.1                                                  940       1044
X1   0.568        29       985      1004       320       340       338
GR  2020.3      925.     2018.2     926.    2015.5     927.    2010.4     935.    2007.0     939.
GR  2005.2      941.     2001.9     942.    2002.1     953.    2002.3     964.    2002.5     970.
GR  2002.7      972.     2002.8     974.    2002.9     977.    2002.9     980.    2002.6     985.
GR  2002.2      988.     2002.1     993.    2002.6     998.    2002.6    1000.    2002.7    1004.
GR  2003.0     1009.     2003.3    1023.    2003.5    1024.    2003.4    1032.    2003.3    1039.
GR  2004.4     1041.     2008.9    1049.    2012.7    1057.    2020.6    1064.

QT        2     2430      2430
ET                        9.1                                                  973       1031
          DIVIDED FLOW 280 FEET UPSTREAM OF SECTION 0.663. SMALLER
          LOW FLOW CHANNEL IS MODELED SEPARATELY USING MANNINGS OPEN
          CHANNEL FLOW EQUATION TO DETERMINE DEPTH OF FLOW.
X1   0.663        25       982      1010       460       480       502
GR  2040.4      950.     2037.9     960.    2033.1     961.    2030.4     965.    2026.8     967.
GR  2023.2      972.     2019.5     976.    2019.0     978.    2016.6     982.    2014.8     984.
GR  2014.8      988.     2015.5     991.    2016.2     993.    2016.4    1000.    2016.4    1001.
GR  2016.4     1006.     2016.8    1010.    2017.2    1015.    2017.8    1018.    2018.5    1020.
GR  2018.7     1022.     2021.2    1030.    2031.4    1043.    2036.4    1053.    2040.7    1062.

NC    .065      .065      .035       .1        .3
ET                        9.1                                                  948       1030
X1   0.758        28       959       995       510       502       502
GR  2056.6      935.     2051.4     940.    2049.4     946.    2047.1     949.    2046.0     953.
GR  2044.9      955.     2044.3     959.    2043.2     961.    2042.3     963.    2042.9     966.
GR  2043.2      972.     2043.3     977.    2043.3     984.    2043.6     989.    2043.8     994.
GR  2044.2      995.     2044.2    1000.    2044.2    1002.    2044.4    1007.    2044.4    1009.
GR  2044.5     1014.     2046.7    1028.    2049.0    1032.    2050.2    1039.    2050.6    1045.
GR  2051.8     1051.     2054.7    1059.    2056.2    1070.
```

ET			9.1						962	1031
X1	0.852	32	966	1017	470	480	496			
GR	2072.4	939.	2072.1	942.	2070.7	947.	2067.9	951.	2065.6	955.
GR	2064.3	959.	2061.6	962.	2060.4	964.	2058.1	966.	2057.1	968.
GR	2057.2	976.	2057.4	980.	2057.4	982.	2057.4	984.	2057.5	991.
GR	2057.5	995.	2057.5	997.	2057.5	998.	2057.5	1000.	2057.5	1005.
GR	2057.5	1009.	2057.5	1014.	2057.5	1015.	2058.1	1017.	2058.1	1019.
GR	2058.1	1024.	2058.5	1027.	2060.0	1029.	2063.3	1032.	2067.0	1038.
GR	2067.9	1045.	2072.2	1056.						
NC	.065	.065	.030	.1	.3					
ET			9.1						947	1047
X1	0.947	19	953	983	505	475	502			
GR	2080.6	936.	2080.6	937.	2080.6	939.	2079.0	943.	2076.8	946.
GR	2074.8	948.	2074.2	950.	2072.1	953.	2071.9	959.	2071.2	960.
GR	2071.3	977.	2071.3	980.	2071.3	983.	2072.0	998.	2072.0	1003.
GR	2072.2	1012.	2073.0	1042.	2079.0	1054.	2080.4	1058.		
ET			9.1						916	1034
X1	1.042	28	975	1030	500	485	502			
GR	2096.1	862.	2092.7	869.	2090.3	879.	2088.6	891.	2087.6	904.
GR	2086.0	911.	2085.2	923.	2084.3	927.	2084.3	946.	2084.1	960.
GR	2083.3	967.	2083.2	975.	2082.6	981.	2082.1	987.	2082.1	993.
GR	2081.2	998.	2081.2	1000.	2081.2	1010.	2081.3	1025.	2083.6	1030.
[illegible]	2085.8	1034.	2087.1	1035.	2089.6	1038.	2091.9	1046.	2093.7	1052.
GR	2095.1	1057.	2096.4	1058.	2097.2	1073.				
QT	2	2290	2290							
ET			9.1						972	1061
X1	1.136	25	1000	1056	490	510	496			
GR	2104.2	958.	2103.6	959.	2102.6	962.	2101.2	966.	2099.7	968.
GR	2097.5	971.	2095.4	973.	2095.0	976.	2094.6	982.	2093.5	994.
GR	2093.2	1000.	2093.1	1003.	2093.0	1005.	2092.9	1011.	2092.8	1018.
GR	2092.8	1030.	2092.7	1035.	2092.6	1039.	2092.4	1044.	2092.4	1051.
GR	2093.0	1056.	2093.8	1057.	2098.6	1063.	2100.0	1070.	2104.8	1084.
ET			9.1						965	1101
X1	1.227	32	971	1035	430	510	480			
GR	2120.2	908.	2119.4	931.	2116.3	935.	2114.2	941.	2112.1	954.
GR	2106.3	967.	2104.3	971.	2103.2	976.	2102.8	979.	2103.1	982.
GR	2103.7	988.	2103.8	997.	2103.6	1008.	2103.6	1010.	2103.6	1015.
GR	2103.7	1020.	2103.9	1028.	2104.5	1035.	2104.3	1045.	2104.4	1049.
GR	2104.6	1055.	2105.1	1066.	2105.5	1076.	2105.7	1083.	2105.8	1091.
GR	2105.8	1097.	2107.4	1102.	2107.8	1103.	2107.7	1106.	2108.8	1111.
GR	2112.6	1126.	2112.6	1136.						
ET			9.1						880	1033
X1	1.311	38	968	1025	500	435	444			
GR	2128.3	832.	2128.3	833.	2127.3	834.	2126.4	837.	2125.8	838.
[illegible]	2125.0	845.	2122.9	851.	2122.0	854.	2120.2	860.	2119.1	864.
[illegible]	2118.9	875.	2117.7	882.	2117.2	887.	2116.8	891.	2116.7	892.
GR	2115.8	895.	2115.5	896.	2115.1	901.	2115.1	907.	2116.5	908.
GR	2116.9	918.	2115.1	928.	2114.7	934.	2114.7	938.	2114.7	943.

	2116.1	944.	2116.4	957.	2115.1	968.	2115.1	975.	2115.1	976.
GR	2115.1	978.	2115.1	980.	2115.1	997.	2115.1	998.	2115.1	1004.
GR	2115.6	1025.	2119.5	1038.	2128.7	1051.				
ET			9.1						955	1097
X1	1.383	32	975	1025	330	390	380			
GR	2138.8	932.	2126.8	952.	2121.4	960.	2122.0	966.	2121.2	975.
GR	2121.0	983.	2121.0	992.	2121.0	996.	2121.0	1000.	2121.0	1009.
GR	2121.0	1016.	2121.2	1025.	2122.2	1037.	2122.9	1045.	2123.4	1053.
GR	2123.6	1066.	2123.7	1077.	2124.1	1085.	2124.6	1097.	2125.0	1101.
GR	2125.6	1107.	2125.7	1113.	2126.0	1118.	2126.2	1125.	2127.0	1132.
GR	2128.0	1136.	2128.7	1141.	2129.6	1143.	2130.4	1144.	2131.4	1146.
GR	2132.3	1155.	2132.3	1162.						
NC	.060	.060	.035	.1	.3					
ET			9.1						902	1057
X1	1.477	34	949	1000	480	490	496			
GR	2140.6	875.	2139.8	880.	2138.1	887.	2137.2	899.	2136.3	905.
GR	2135.8	910.	2135.2	915.	2134.8	918.	2134.9	926.	2134.8	930.
GR	2134.8	933.	2134.1	934.	2134.1	940.	2133.9	949.	2133.3	969.
GR	2132.8	978.	2133.1	987.	2133.7	997.	2133.8	1000.	2134.1	1006.
GR	2134.3	1012.	2134.9	1021.	2135.5	1025.	2135.7	1031.	2136.0	1043.
GR	2136.1	1049.	2136.7	1057.	2136.9	1060.	2136.9	1067.	2137.2	1076.
GR	2138.6	1081.	2139.2	1084.	2141.0	1092.	2144.0	1110.		
	2	2150	2150							
	.060	.060	.040							
ET			9.1						976	1137
X1	1.553	35	986	1111	390	380	401			
GR	2156.5	911.	2156.0	914.	2152.1	922.	2151.0	937.	2149.9	943.
GR	2147.8	950.	2146.0	956.	2144.9	961.	2143.9	971.	2142.4	976.
GR	2141.2	983.	2140.2	986.	2140.2	998.	2140.2	1000.	2140.2	1009.
GR	2140.6	1033.	2140.6	1069.	2140.0	1097.	2140.0	1111.	2141.9	1130.
GR	2142.9	1144.	2143.9	1161.	2145.0	1164.	2145.4	1169.	2146.1	1176.
GR	2145.3	1188.	2144.3	1191.	2144.1	1223.	2143.1	1234.	2143.3	1235.
GR	2144.3	1247.	2148.9	1254.	2152.2	1265.	2156.2	1278.	2156.2	1284.
NC	.055	.060	.040	.1	.3					
ET			9.1						826	1194
X1	1.631	62	938	995	425	380	412			
GR	2164.4	786.	2162.7	790.	2158.9	798.	2157.5	806.	2154.5	816.
GR	2153.0	821.	2152.4	828.	2151.4	834.	2151.1	840.	2150.9	842.
GR	2150.5	845.	2150.7	853.	2151.6	872.	2151.6	888.	2151.6	896.
GR	2151.6	903.	2151.7	910.	2151.7	913.	2151.7	918.	2151.7	925.
GR	2151.5	934.	2150.8	938.	2150.8	941.	2150.9	944.	2150.9	945.
GR	2150.9	952.	2150.9	957.	2150.9	962.	2150.7	970.	2150.4	976.
GR	2150.0	981.	2150.0	985.	2150.5	989.	2150.7	992.	2150.8	995.
GR	2150.8	996.	2150.8	1000.	2150.8	1005.	2150.8	1015.	2151.1	1037.
GR	2151.4	1055.	2151.4	1081.	2151.6	1100.	2151.7	1116.	2152.1	1136.
GR	2152.5	1148.	2152.5	1168.	2152.5	1185.	2152.6	1200.	2152.6	1207.
	2152.7	1208.	2152.8	1230.	2154.1	1240.	2154.8	1251.	2155.8	1265.
	2156.1	1277.	2156.8	1288.	2158.5	1292.	2159.9	1297.	2161.3	1315.
GR	2164.4	1320.	2164.4	1321.						

NC	.060	.060	.035	.1	.3					
ET			9.1						894	1040
X1	1.693	36	991	1036	430	275	327			
GR	2180.5	755.	2177.9	766.	2174.2	771.	2170.7	782.	2169.4	787.
GR	2166.8	793.	2166.2	799.	2164.0	805.	2162.9	814.	2162.1	823.
GR	2162.1	841.	2162.0	869.	2161.5	888.	2161.2	912.	2160.3	934.
GR	2159.7	945.	2159.5	963.	2158.8	972.	2158.5	979.	2158.6	991.
GR	2158.0	997.	2157.7	1000.	2157.8	1009.	2157.8	1015.	2157.8	1017.
GR	2157.9	1021.	2157.9	1025.	2157.9	1031.	2158.0	1033.	2158.2	1036.
GR	2159.3	1038.	2163.7	1041.	2166.3	1044.	2167.2	1049.	2169.1	1053.
GR	2172.1	1064.								

NC	.060	.060	.040	.1	.3					
ET			9.1						861	1068
X1	1.740	60	899	963	220	260	248			
GR	2176.4	666.	2176.4	670.	2174.8	676.	2173.8	683.	2173.1	694.
GR	2171.9	704.	2171.7	718.	2171.1	727.	2170.3	732.	2169.7	740.
GR	2170.6	752.	2172.4	756.	2172.8	760.	2173.1	767.	2171.1	780.
GR	2170.1	788.	2168.8	794.	2167.7	800.	2167.4	810.	2167.3	833.
GR	2165.6	859.	2165.0	869.	2164.4	882.	2163.9	888.	2163.5	899.
GR	2163.3	911.	2162.8	918.	2162.9	919.	2162.8	923.	2162.0	933.
GR	2162.3	942.	2162.3	947.	2162.9	953.	2163.0	963.	2163.6	976.
GR	2164.1	984.	2164.1	988.	2164.1	1004.	2164.1	1015.	2164.1	1020.
GR	2164.1	1026.	2164.1	1027.	2164.1	1028.	2164.1	1038.	2164.3	1050.
	2165.1	1058.	2165.5	1069.	2166.0	1082.	2166.1	1110.	2166.5	1135.
GR	2167.3	1153.	2168.0	1169.	2168.1	1179.	2168.1	1188.	2168.4	1195.
GR	2169.8	1203.	2172.3	1207.	2173.1	1213.	2173.5	1219.	2176.2	1239.

NC	.055	.060	.030	.1	.3					
ET			9.1						947	1049
X1	1.831	35	949	1007	390	540	480			
GR	2188.4	940.	2187.0	941.	2184.9	942.	2183.3	943.	2181.6	944.
GR	2170.6	949.	2171.1	962.	2171.1	973.	2171.1	975.	2171.1	979.
GR	2171.1	980.	2171.1	989.	2171.1	992.	2171.1	996.	2171.5	1005.
GR	2171.7	1007.	2172.3	1011.	2172.4	1018.	2172.6	1020.	2172.8	1022.
GR	2173.8	1025.	2174.2	1038.	2174.5	1048.	2174.9	1055.	2175.4	1062.
GR	2175.5	1069.	2175.8	1077.	2176.2	1078.	2176.5	1082.	2177.0	1083.
GR	2178.9	1098.	2182.3	1105.	2183.3	1113.	2186.3	1128.	2188.4	1142.

ET			9.1						980	1250
X1	1.941	45	982	1022	600	410	581			
GR	2200.5	947.	2195.1	955.	2192.3	961.	2189.7	967.	2188.8	978.
GR	2184.9	982.	2184.5	986.	2185.0	995.	2184.7	1000.	2184.6	1002.
GR	2184.3	1010.	2184.3	1018.	2184.6	1022.	2185.7	1029.	2186.1	1042.
GR	2186.4	1048.	2186.7	1055.	2187.0	1074.	2186.1	1095.	2185.5	1113.
GR	2184.6	1128.	2184.5	1144.	2184.5	1155.	2184.5	1161.	2184.1	1167.
GR	2184.1	1171.	2184.5	1172.	2184.5	1177.	2185.0	1183.	2185.0	1203.
GR	2185.4	1216.	2185.5	1226.	2185.8	1240.	2186.4	1248.	2187.0	1251.
GR	2188.2	1256.	2188.4	1261.	2188.4	1271.	2188.6	1275.	2189.5	1278.
GR	2189.9	1294.	2191.9	1298.	2191.9	1304.	2193.7	1312.	2196.5	1317.

QT	2	1945	1945							
NC	.060	.055	.035	.1	.3					
ET			9.1						722	1069
X1	2.036	50	1004	1068	495	445	502			
GR	2208.0	662.	2205.1	664.	2202.9	679.	2200.2	689.	2196.9	700.
GR	2196.3	717.	2195.2	726.	2195.4	746.	2195.2	768.	2194.6	781.
GR	2194.3	812.	2194.1	822.	2194.0	826.	2193.7	839.	2192.8	841.
GR	2191.9	853.	2191.5	860.	2193.6	865.	2194.5	867.	2195.0	871.
GR	2194.9	886.	2195.2	898.	2195.4	908.	2195.4	916.	2195.4	925.
GR	2196.1	936.	2196.1	941.	2196.1	953.	2196.1	960.	2195.2	966.
GR	2194.9	969.	2194.9	978.	2195.1	985.	2195.4	998.	2195.2	1000.
GR	2194.7	1004.	2194.1	1011.	2194.3	1014.	2194.3	1016.	2194.3	1017.
GR	2194.3	1021.	2194.3	1027.	2194.3	1033.	2194.3	1037.	2194.3	1048.
GR	2194.3	1055.	2194.6	1060.	2194.6	1068.	2201.2	1069.	2212.3	1075.
NC	.060	.060	.035							
ET			9.1						987	1160
X1	2.131	42	997	1053	400	630	502			
GR	2220.4	965.	2217.0	969.	2213.3	975.	2211.8	977.	2209.9	983.
GR	2208.9	985.	2204.4	997.	2203.7	1002.	2203.7	1009.	2204.7	1013.
GR	2205.2	1027.	2205.3	1030.	2205.5	1039.	2205.7	1045.	2206.2	1053.
GR	2206.6	1062.	2206.6	1078.	2206.6	1088.	2206.6	1099.	2206.8	1101.
GR	2206.9	1108.	2206.9	1118.	2207.1	1128.	2207.2	1132.	2207.4	1136.
GR	2207.5	1140.	2207.7	1146.	2208.0	1153.	2208.0	1156.	2208.1	1160.
	2208.2	1179.	2208.2	1180.	2208.5	1193.	2209.0	1207.	2209.5	1211.
GR	2209.5	1218.	2209.5	1222.	2209.5	1225.	2213.0	1226.	2213.0	1230.
GR	2217.4	1251.	2220.2	1262.						
NC	.060	.060	.030							
ET			9.1						972	1082
X1	2.227	20	976	1021	500	520	507			
GR	2228.5	957.	2228.5	959.	2223.5	972.	2219.0	973.	2216.5	976.
GR	2215.3	978.	2214.7	981.	2215.9	984.	2216.2	990.	2216.8	994.
GR	2216.8	998.	2216.9	1000.	2216.9	1005.	2216.9	1021.	2217.2	1037.
GR	2217.3	1056.	2217.5	1070.	2217.7	1078.	2223.6	1090.	2228.2	1108.
ET			9.1						829	1162
X1	2.320	53	945	1005	480	490	491			
GR	2240.6	795.	2234.3	808.	2232.3	817.	2231.1	824.	2229.6	827.
GR	2229.1	831.	2228.2	832.	2228.1	837.	2227.2	850.	2227.2	858.
GR	2226.4	861.	2226.7	875.	2228.3	884.	2228.8	896.	2229.3	908.
GR	2229.4	924.	2227.9	935.	2227.6	945.	2227.3	964.	2227.3	971.
GR	2227.2	980.	2227.2	987.	2227.2	991.	2227.6	995.	2227.6	1004.
GR	2227.6	1005.	2227.8	1016.	2227.9	1020.	2228.1	1028.	2228.5	1034.
GR	2228.8	1036.	2229.1	1045.	2229.3	1053.	2229.4	1059.	2229.4	1064.
GR	2229.4	1066.	2229.4	1076.	2229.7	1081.	2229.7	1090.	2229.7	1104.
GR	2229.2	1110.	2228.8	1117.	2228.5	1128.	2228.3	1141.	2227.9	1145.
GR	2227.6	1152.	2227.5	1157.	2229.9	1163.	2231.6	1168.	2232.9	1176.
GR	2233.7	1182.	2236.4	1194.	2240.8	1226.				

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ET                      9.1                                                968      1236
X1    2.393       45     980     1019      390      400      385
GR   2248.1     921.   2247.5    927.   2245.4     935.   2244.8     941.   2244.0     943.
GR   2243.2     948.   2242.8    955.   2242.8     958.   2240.3     963.   2238.4     966.
GR   2236.5     971.   2235.9    979.   2235.2     980.   2235.2     986.   2235.2     991.
GR   2235.2    1005.   2235.2   1006.   2235.2    1008.   2235.2    1010.   2235.2    1019.
GR   2235.5    1048.   2235.9   1069.   2236.0    1078.   2236.0    1114.   2236.1    1127.
GR   2236.3    1138.   2236.4   1152.   2236.5    1161.   2236.6    1185.   2236.9    1196.
GR   2237.1    1200.   2237.1   1209.   2237.1    1217.   2237.4    1226.   2237.6    1236.
GR   2237.6    1241.   2237.8   1246.   2238.0    1251.   2238.1    1257.   2238.2    1263.
GR   2238.2    1271.   2239.6   1286.   2242.1    1293.   2245.7    1307.   2248.4    1318.

QT       2     1739     1739
ET                      9.1                                                809      1152
X1    2.464       81     988     1037      385      360      375
GR   2266.5     763.   2256.9    778.   2252.6     787.   2248.4     798.   2246.7     801.
GR   2245.7     808.   2244.3    813.   2243.5     815.   2243.5     816.   2244.0     821.
GR   2244.3     825.   2244.3    831.   2244.3     840.   2244.3     847.   2244.3     851.
GR   2244.3     861.   2244.3    870.   2244.8     882.   2244.5     896.   2244.0     908.
GR   2244.0     921.   2244.0    926.   2244.0     946.   2243.8     954.   2243.8     963.
GR   2243.7     968.   2243.7    973.   2243.7     983.   2243.7     988.   2243.5     997.
GR   2243.5    1000.   2243.4   1005.   2243.3    1012.   2243.1    1019.   2243.1    1026.
GR   2243.1    1031.   2243.7   1037.   2244.2    1041.   2244.2    1042.   2244.2    1046.
GR   2244.2    1056.   2244.4   1069.   2244.8    1082.   2244.4    1099.   2244.6    1110.
     2244.7    1135.   2245.1   1143.   2245.5    1155.   2245.7    1166.   2245.7    1173.
     2246.1    1174.   2246.8   1183.   2247.7    1186.   2248.4    1192.   2248.4    1193.
GR   2248.9    1195.   2249.7   1205.   2250.7    1209.   2250.7    1218.   2250.7    1219.
GR   2250.7    1220.   2250.7   1222.   2250.7    1224.   2250.7    1225.   2250.7    1227.
GR   2251.3    1230.   2251.3   1244.   2251.3    1255.   2251.6    1260.   2251.7    1278.
GR   2251.8    1282.   2251.8   1287.   2252.2    1288.   2252.4    1294.   2252.8    1300.
GR   2253.0    1305.   2253.6   1309.   2254.1    1313.   2254.9    1315.   2255.1    1320.
GR   2256.1    1324.

ET                7.1      9.1                                      780      1053      780      1053
          ET-CARDS USED TO SPECIFY INEFFECTIVE FLOW AREAS. HOWEVER, THE
          AREA IS SUBJECT TO HIGH VELOCITIES AND EROSION AND IS THEREFORE
          INCLUDED IN THE FLOODWAY.
X1    2.526       66     971     1029      320      300      327
GR   2264.8     588.   2262.6    594.   2261.7     603.   2259.3     607.   2257.4     614.
GR   2256.6     626.   2256.5    638.   2255.7     648.   2255.1     657.   2255.1     665.
GR   2255.2     679.   2254.8    686.   2253.0     690.   2252.6     695.   2251.9     704.
GR   2251.0     710.   2250.4    714.   2250.1     722.   2249.7     724.   2248.8     725.
GR   2249.1     752.   2248.6    792.   2249.0     864.   2249.0     870.   2249.9     887.
GR   2250.0     910.   2250.0    926.   2251.1     941.   2251.1     945.   2251.2     955.
GR   2251.3     963.   2251.0    968.   2250.7     971.   2250.3     974.   2249.8     978.
GR   2249.7     985.   2249.8    988.   2249.9     992.   2249.9     998.   2249.8    1000.
GR   2249.8    1003.   2249.8   1004.   2249.8    1005.   2250.3    1022.   2251.0    1029.
GR   2251.1    1042.   2251.0   1045.   2252.0    1052.   2254.8    1056.   2255.8    1061.
GR   2256.5    1067.   2257.4   1069.   2258.3    1072.   2258.5    1077.   2258.9    1082.
     2258.9    1087.   2258.8   1091.   2258.6    1098.   2258.6    1102.   2257.9    1108.
     2257.9    1119.   2258.8   1122.   2259.5    1127.   2260.7    1133.   2262.4    1137.
GR   2265.1    1141.
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ET                          9.1                                                   947       1156
          DIVIDED FLOW 200 FEET UPSTREAM OF SECTION 2.614
X1    2.614       43       959      1007       430       500       465
GR   2276.4      902.    2276.1      905.    2273.5      910.    2270.3      919.    2269.1      925.
GR   2266.5      932.    2265.7      940.    2263.6      943.    2262.7      949.    2262.2      952.
GR   2261.8      954.    2261.5      958.    2261.3      959.    2260.8      960.    2260.2      968.
GR   2260.2      976.    2260.2      977.    2260.2      980.    2260.2      982.    2260.2      991.
GR   2261.0      996.    2261.6      998.    2261.9     1007.    2261.8     1013.    2261.8     1014.
GR   2261.0     1015.    2260.9     1032.    2260.9     1040.    2260.9     1046.    2260.9     1051.
GR   2260.9     1059.    2260.9     1062.    2261.4     1069.    2261.5     1082.    2261.6     1102.
GR   2262.0     1125.    2262.2     1135.    2262.3     1143.    2262.3     1148.    2262.5     1155.
GR   2270.0     1165.    2272.2     1177.    2276.2     1190.

ET                          9.1                                                   968       1113
X1    2.700       57       971      1008       450       500       454
GR   2288.6      939.    2287.7      940.    2286.4      941.    2284.9      947.    2284.0      955.
GR   2283.5      959.    2282.7      961.    2276.8      965.    2269.4      970.    2268.8      971.
GR   2268.2      977.    2267.8      978.    2267.9      984.    2268.0      988.    2268.5     1000.
GR   2269.4     1008.    2269.9     1019.    2270.4     1030.    2270.4     1046.    2270.7     1052.
GR   2270.9     1062.    2271.4     1082.    2271.5     1090.    2271.6     1106.    2271.6     1107.
GR   2271.7     1108.    2271.7     1111.    2274.5     1118.    2273.1     1132.    2273.2     1153.
GR   2273.8     1161.    2274.3     1169.    2274.3     1172.    2274.9     1178.    2275.5     1189.
GR   2275.5     1192.    2275.6     1198.    2275.6     1201.    2275.6     1203.    2276.0     1209.
GR   2275.9     1217.    2275.9     1222.    2275.3     1235.    2274.7     1254.    2274.8     1274.
     2274.7     1290.    2275.1     1308.    2275.7     1320.    2276.0     1328.    2276.2     1337.
     2276.4     1339.    2277.2     1348.    2280.9     1355.    2282.8     1356.    2283.4     1372.
GR   2287.8     1384.    2292.0     1392.

ET                7.1        9.1                                   873       1016       873       1016
NC     .065      .065       .035       .1        .3
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1    2.798       63       975      1013       625       475       523
GR   2298.2      534.    2296.9      535.    2294.0      539.    2290.7      551.    2288.6      558.
GR   2285.5      563.    2284.4      569.    2282.7      571.    2281.9      573.    2281.4      601.
GR   2282.9      630.    2282.8      648.    2282.6      666.    2282.5      699.    2282.4      730.
GR   2282.3      746.    2282.5      755.    2282.4      775.    2284.1      789.    2284.4      800.
GR   2284.6      810.    2283.8      826.    2283.8      838.    2283.4      843.    2283.4      844.
GR   2282.9      870.    2282.5      893.    2282.3      907.    2282.1      916.    2281.9      923.
GR   2281.6      933.    2281.4      934.    2280.9      938.    2280.5      943.    2280.6      949.
GR   2280.6      961.    2279.4      975.    2279.4      981.    2279.4      987.    2279.4      990.
GR   2279.4      994.    2279.4      995.    2279.4      996.    2279.4      997.    2279.4     1000.
GR   2279.4     1013.    2282.8     1015.    2286.8     1019.    2289.1     1026.    2289.8     1031.
GR   2290.9     1036.    2291.9     1039.    2292.4     1040.    2294.7     1048.    2294.7     1065.
GR   2293.1     1070.    2292.0     1075.    2291.8     1077.    2291.9     1082.    2292.8     1085.
GR   2294.5     1087.    2294.7     1091.    2296.4     1105.
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ET                          9.1                                                     745       1247
        CONFLUENCE WITH TRIBUTARY IS APPROXIMATELY 150 FEET UPSTREAM OF
        SECTION 2.985. TRIBUTARY IS MODELED WITH THIS RUN.
X1    2.895       50       948      1007       320       525       512
GR   2304.6      698.     2302.8     712.     2299.2     714.     2296.1     728.     2294.2     736.
GR   2292.0      741.     2291.3     748.     2290.5     751.     2290.0     758.     2289.4     763.
GR   2289.2      766.     2290.1     787.     2290.1     790.     2290.1     807.     2290.2     835.
GR   2290.6      862.     2291.0     890.     2291.0     901.     2291.0     905.     2291.0     933.
GR   2291.0      948.     2290.7     966.     2290.6     977.     2291.0     980.     2291.0     994.
GR   2291.6     1007.     2291.6    1020.     2291.6    1044.     2291.5    1053.     2291.5    1073.
GR   2291.3     1104.     2291.3    1133.     2290.7    1146.     2290.4    1159.     2290.2    1165.
GR   2290.2     1176.     2290.9    1190.     2291.0    1205.     2291.0    1218.     2291.0    1227.
GR   2291.3     1237.     2291.4    1245.     2291.8    1249.     2292.2    1252.     2292.2    1260.
GR   2292.5     1265.     2295.1    1273.     2297.2    1278.     2300.3    1285.     2304.1    1297.

QT       2       955       955
ET               7.1       9.1                                     861       1019       861       1019
NC    .065      .065      .040
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
X1    2.966       77       904       991       355       500       375
GR   2316.3      585.     2316.2     586.     2315.0     609.     2313.9     626.     2312.7     641.
GR   2310.9      647.     2309.4     657.     2306.9     662.     2305.7     670.     2304.4     677.
     2303.8      683.     2303.7     693.     2303.7     705.     2302.9     722.     2302.9     733.
     2302.9      748.     2302.9     759.     2302.9     761.     2302.9     764.     2302.9     791.
GR   2302.7      810.     2302.7     838.     2301.3     880.     2300.6     904.     2300.4     932.
GR   2300.4      952.     2300.4     974.     2300.4     985.     2300.4     991.     2300.5     993.
GR   2300.5     1004.     2300.7    1014.     2302.0    1019.     2306.8    1027.     2308.4    1030.
GR   2308.8     1037.     2308.9    1040.     2308.9    1045.     2308.9    1049.     2308.5    1065.
GR   2308.0     1069.     2306.8    1073.     2305.6    1081.     2304.2    1088.     2303.3    1090.
GR   2302.6     1092.     2301.3    1095.     2301.3    1096.     2300.2    1126.     2300.2    1171.
GR   2300.2     1225.     2299.8    1249.     2299.8    1263.     2299.8    1285.     2299.3    1302.
GR   2299.2     1315.     2298.9    1334.     2298.9    1356.     2298.9    1367.     2298.9    1378.
GR   2298.9     1382.     2298.9    1390.     2298.9    1400.     2298.9    1410.     2298.9    1412.
GR   2298.3     1415.     2298.3    1420.     2298.3    1429.     2298.3    1432.     2299.5    1438.
GR   2302.2     1451.     2305.4    1460.     2308.5    1466.     2309.2    1467.     2312.0    1470.
GR   2312.7     1475.     2316.0    1487.

NC    .065      .065      .035
ET                          9.1                                                     926       1083
X1    3.032       35       931       969       260       360       359
GR   2324.1      871.     2323.2     880.     2320.4     886.     2318.8     900.     2315.9     907.
GR   2312.5      915.     2311.4     920.     2310.3     930.     2309.5     931.     2308.6     932.
GR   2307.8      933.     2307.9     934.     2307.9     938.     2307.9     940.     2307.9     943.
GR   2308.3      951.     2308.8     958.     2309.2     969.     2309.5     977.     2309.7     990.
GR   2309.6     1008.     2309.6    1042.     2309.6    1056.     2309.6    1060.     2309.7    1064.
GR   2309.8     1070.     2310.0    1076.     2310.2    1078.     2310.8    1083.     2312.9    1087.
GR   2314.0     1096.     2314.8    1098.     2317.4    1106.     2320.4    1120.     2324.3    1130.
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ET			9.1						948	1014
X1	3.087	29	981	1011	305	270	280			
GR	2328.4	917.	2324.9	924.	2322.7	931.	2320.6	936.	2319.1	940.
GR	2319.0	945.	2317.4	948.	2316.5	949.	2316.4	951.	2316.4	952.
GR	2315.8	953.	2315.6	965.	2315.2	974.	2315.2	975.	2315.2	980.
GR	2315.2	981.	2314.7	985.	2314.5	993.	2314.5	998.	2314.5	1003.
GR	2314.5	1005.	2314.5	1007.	2314.7	1011.	2317.3	1014.	2322.1	1016.
GR	2324.9	1017.	2325.5	1021.	2326.2	1031.	2328.3	1041.		
ET			9.1						976	1040
X1	3.134	42	980	1009	230	270	248			
GR	2346.9	952.	2343.2	953.	2341.9	956.	2338.7	963.	2334.6	964.
GR	2330.8	970.	2329.0	974.	2325.3	976.	2322.7	977.	2321.1	979.
GR	2320.0	980.	2320.0	988.	2320.0	989.	2320.0	996.	2320.0	1000.
GR	2320.0	1002.	2320.0	1003.	2320.0	1009.	2320.7	1012.	2321.4	1023.
GR	2322.1	1034.	2323.2	1041.	2323.2	1047.	2327.6	1053.	2329.5	1057.
GR	2330.5	1059.	2331.2	1061.	2331.6	1065.	2332.1	1067.	2332.3	1068.
GR	2332.8	1070.	2333.4	1078.	2333.7	1102.	2333.1	1122.	2333.1	1126.
GR	2334.4	1127.	2334.7	1146.	2334.7	1149.	2334.7	1162.	2335.2	1172.
GR	2335.4	1182.	2336.5	1205.						
ET			9.1						923	1055
X1	3.225	35	1000	1040	530	450	480			
GR	2348.3	881.	2347.6	888.	2344.8	889.	2342.3	894.	2340.2	899.
	2339.9	905.	2337.8	911.	2336.3	913.	2335.6	915.	2335.2	916.
	2334.8	922.	2332.9	927.	2332.9	945.	2332.9	956.	2332.9	968.
GR	2332.8	975.	2332.8	987.	2332.7	993.	2332.8	995.	2333.0	996.
GR	2333.0	997.	2332.8	998.	2332.8	1000.	2332.8	1002.	2332.5	1010.
GR	2332.1	1015.	2332.2	1021.	2332.5	1028.	2333.0	1040.	2332.9	1051.
GR	2333.4	1054.	2339.8	1057.	2342.2	1070.	2345.8	1080.	2348.3	1096.
QT	2	890	890							
ET			9.1						969	1051
X1	3.306	44	975	1005	240	480	428			
GR	2353.0	944.	2351.7	947.	2349.2	952.	2347.7	954.	2345.8	964.
GR	2343.1	966.	2340.5	969.	2339.1	972.	2338.4	974.	2337.1	975.
GR	2336.9	976.	2336.3	979.	2336.4	982.	2336.5	985.	2337.3	989.
GR	2337.8	996.	2338.1	1005.	2338.5	1010.	2338.8	1014.	2339.3	1021.
GR	2339.7	1031.	2340.0	1042.	2340.1	1049.	2340.5	1055.	2341.0	1060.
GR	2341.2	1064.	2341.6	1077.	2342.8	1088.	2345.3	1091.	2347.4	1099.
GR	2348.9	1103.	2349.2	1108.	2349.3	1112.	2349.3	1115.	2349.6	1118.
GR	2349.7	1125.	2349.7	1136.	2349.7	1148.	2349.7	1157.	2349.7	1162.
GR	2349.8	1169.	2350.7	1179.	2351.2	1182.	2352.2	1194.		
ET			9.1						839	1052
X1	3.383	46	1016	1044	475	300	407			
GR	2364.4	736.	2363.4	737.	2361.6	738.	2359.7	745.	2358.4	752.
GR	2354.7	758.	2353.4	762.	2351.3	768.	2350.1	769.	2349.3	775.
GR	2348.9	780.	2348.9	793.	2348.6	811.	2348.6	831.	2348.6	835.
	2348.2	836.	2348.0	852.	2347.7	870.	2347.3	880.	2347.1	889.
	2346.9	893.	2346.9	894.	2346.9	908.	2346.6	918.	2346.6	937.
GR	2346.6	941.	2346.6	943.	2346.6	948.	2346.6	954.	2348.1	983.
GR	2348.1	1000.	2347.9	1016.	2346.9	1021.	2346.6	1026.	2346.5	1032.

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     2346.4     1034.     2346.5     1037.     2346.5     1040.     2346.8     1044.     2348.9     1056.
GR   2351.8     1058.     2352.7     1060.     2353.7     1064.     2353.9     1065.     2354.0     1079.
GR   2353.8     1085.

ET                7.1       9.1                                     958       1169       958       1169
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1    3.466       47       971     1025       310       420       438
GR   2380.8      911.     2379.2      913.     2377.1      916.     2366.8      929.     2361.8      936.
GR   2359.4      950.     2357.5      953.     2356.2      955.     2355.0      960.     2354.5      962.
GR   2354.4      971.     2354.0      976.     2353.9      998.     2353.9     1000.     2353.9     1001.
GR   2353.9     1010.     2354.2     1025.     2354.2     1040.     2354.5     1051.     2354.5     1061.
GR   2354.5     1074.     2354.6     1100.     2354.7     1118.     2354.9     1134.     2354.9     1150.
GR   2355.0     1165.     2356.0     1173.     2357.0     1175.     2357.7     1176.     2357.9     1184.
GR   2359.7     1187.     2359.7     1197.     2359.7     1208.     2358.8     1210.     2355.8     1214.
GR   2354.2     1218.     2353.3     1220.     2353.3     1224.     2353.3     1244.     2353.3     1257.
GR   2353.3     1274.     2352.4     1290.     2352.7     1291.     2358.2     1296.     2359.3     1305.
GR   2361.0     1309.     2368.2     1327.

ET                          9.1                                                            972       1027
X1    3.559       37       984     1024       510       400       491
GR   2380.2      909.     2380.2      911.     2379.6      916.     2377.8      919.     2375.6      927.
GR   2375.4      935.     2373.2      940.     2372.1      948.     2371.1      952.     2371.0      957.
GR   2369.4      959.     2368.0      963.     2366.8      966.     2367.1      969.     2365.0      973.
     2364.0      975.     2363.5      978.     2363.7      982.     2363.7      984.     2363.1      987.
GR   2362.9      988.     2362.7      990.     2362.8      992.     2362.9      996.     2362.8      998.
GR   2362.7     1000.     2363.0     1005.     2363.1     1011.     2363.2     1014.     2363.4     1017.
GR   2363.4     1022.     2363.6     1024.     2368.2     1030.     2374.6     1034.     2377.3     1039.
GR   2378.3     1042.     2380.1     1051.

QT        2      810       810
ET                          9.1                                                            874       1131
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1    3.661       46       973     1032       480       440       539
GR   2392.5      797.     2391.6      804.     2388.9      807.     2387.2      818.     2384.6      827.
GR   2382.8      838.     2380.2      846.     2379.5      856.     2377.9      864.     2375.7      869.
GR   2374.6      875.     2374.3      878.     2374.4      884.     2374.6      891.     2374.9      898.
GR   2374.9      908.     2374.9      918.     2374.9      926.     2374.6      932.     2374.5      947.
GR   2374.0      956.     2374.0      961.     2373.6      973.     2373.2      983.     2373.1      987.
GR   2373.1      990.     2373.2      993.     2373.2      996.     2373.2      999.     2373.2     1006.
GR   2373.2     1011.     2373.2     1032.     2374.3     1048.     2374.9     1067.     2374.6     1080.
GR   2373.9     1102.     2373.7     1112.     2373.5     1121.     2373.4     1127.     2374.6     1130.
GR   2374.9     1131.     2376.5     1140.     2379.3     1141.     2381.9     1145.     2386.8     1157.
GR   2388.5     1162.

ET                7.1       9.1                                     962       1094       962       1094
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      ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
      SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
      WSEL AND THE TOPOGRAPHY.
X1    3.716      67     964    1031     230     410     290
GR   2400.4    937.  2398.5     938.  2395.5    939.  2394.7    941.  2390.5    945.
GR   2389.9    949.  2384.1     954.  2383.6    959.  2380.5    963.  2379.4    964.
GR   2378.4    965.  2378.4     966.  2378.4    970.  2378.7    975.  2379.3    988.
GR   2379.6    997.  2379.7    1000.  2380.0   1007.  2380.0   1016.  2380.0   1023.
GR   2380.0   1031.  2380.3    1050.  2380.3   1060.  2380.3   1061.  2380.3   1064.
GR   2380.3   1065.  2380.2    1068.  2380.2   1081.  2381.1   1095.  2381.2   1113.
GR   2381.2   1127.  2381.2    1140.  2381.3   1152.  2381.3   1174.  2381.2   1187.
GR   2380.8   1202.  2380.9    1216.  2380.5   1230.  2380.3   1240.  2380.3   1246.
GR   2380.3   1259.  2380.3    1273.  2380.3   1278.  2380.2   1288.  2380.2   1300.
GR   2379.9   1324.  2379.9    1352.  2379.9   1373.  2380.4   1399.  2380.5   1423.
GR   2381.0   1436.  2381.3    1440.  2381.5   1449.  2381.6   1465.  2381.9   1481.
GR   2382.5   1489.  2382.7    1498.  2382.9   1505.  2383.1   1510.  2383.3   1512.
GR   2383.5   1516.  2384.6    1523.  2386.6   1529.  2389.2   1538.  2393.7   1549.
GR   2397.5   1559.  2400.4    1568.

ET                     9.1                                            861      1028
X1    3.798      56     975    1017     450     330     433
GR   2408.5    552.  2407.6     560.  2404.6    569.  2400.9    577.  2397.9    588.
GR   2397.6    596.  2395.6     604.  2394.8    614.  2393.9    624.  2393.7    632.
GR   2393.3    647.  2393.0     651.  2393.0    671.  2393.0    694.  2393.0    698.
GR   2393.0    718.  2393.9     730.  2394.6    742.  2394.6    745.  2394.6    766.
GR   2394.7    773.  2395.9     777.  2395.9    779.  2395.9    788.  2396.5    800.
GR   2396.5    809.  2395.5     817.  2393.8    826.  2392.5    830.  2392.0    835.
GR   2391.6    841.  2391.7     842.  2390.8    853.  2390.1    858.  2389.1    863.
GR   2388.9    874.  2388.9     895.  2388.6    910.  2388.5    925.  2388.4    942.
GR   2388.4    956.  2388.2     963.  2388.0    973.  2387.6    974.  2387.7    975.
GR   2387.7    985.  2387.7     990.  2387.7    994.  2387.7   1000.  2387.7   1004.
GR   2387.7   1009.  2387.7    1017.  2387.8   1025.  2397.4   1037.  2403.4   1040.
GR   2408.1   1047.

ET                     9.1                                            907      1035
X1    3.840      29     970    1017     222     222     222
GR   2404.2    792.  2404.2     802.  2403.3    810.  2400.4    817.  2400.1    830.
GR   2398.0    833.  2396.3     836.  2395.1    840.  2394.5    844.  2394.4    850.
GR   2394.2    863.  2393.9     874.  2394.0    879.  2393.9    901.  2393.0    914.
GR   2392.6    935.  2392.5     961.  2391.6    970.  2391.7    984.  2391.7   1000.
GR   2391.7   1005.  2391.7    1009.  2391.7   1011.  2391.7   1014.  2391.7   1017.
GR   2392.5   1034.  2399.6    1038.  2401.8   1051.  2404.3   1065.

QT       2   1739    1739
NC    .060   .060    .035
ET                     9.1                                            745      1247
      TRIBUTARY TO WASH K
X1   -2.895      50     948    1007     320     525     512
GR   2304.6    698.  2302.8     712.  2299.2    714.  2296.1    728.  2294.2    736.
GR   2292.0    741.  2291.3     748.  2290.5    751.  2290.0    758.  2289.4    763.
GR   2289.2    766.  2290.1     787.  2290.1    790.  2290.1    807.  2290.2    835.
GR   2290.6    862.  2291.0     890.  2291.0    901.  2291.0    905.  2291.0    933.
GR   2291.0    948.  2290.7     966.  2290.6    977.  2291.0    980.  2291.0    994.
GR   2291.6   1007.  2291.6    1020.  2291.6   1044.  2291.5   1053.  2291.5   1073.
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     2291.3     1104.     2291.3     1133.     2290.7     1146.     2290.4     1159.     2290.2     1165.
GR   2290.2     1176.     2290.9     1190.     2291.0     1205.     2291.0     1218.     2291.0     1227.
GR   2291.3     1237.     2291.4     1245.     2291.8     1249.     2292.2     1252.     2292.2     1260.
GR   2292.5     1265.     2295.1     1273.     2297.2     1278.     2300.3     1285.     2304.1     1297.

QT       2       848       848
ET               7.1       9.1                                     951       1271       951       1271
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
X1    .032        56       956      1200       360       370       370
GR   2316.3      445.     2316.2      446.     2315.0      469.     2313.9      486.     2312.7      501.
GR   2310.9      507.     2309.4      517.     2306.9      522.     2305.7      530.     2304.4      537.
GR   2303.8      543.     2303.7      553.     2303.7      565.     2302.9      582.     2302.9      593.
GR   2302.9      608.     2302.9      619.     2302.9      621.     2302.9      624.     2302.9      651.
GR   2302.7      670.     2302.7      698.     2301.3      740.     2300.6      764.     2300.4      792.
GR   2300.4      812.     2300.4      834.     2300.4      845.     2300.4      851.     2300.5      853.
GR   2300.5      864.     2300.7      874.     2302.0      879.     2306.8      887.     2308.4      890.
GR   2308.8      897.     2308.9      900.     2308.9      905.     2308.9      909.     2308.5      925.
GR   2308.0      929.     2306.8      933.     2305.6      941.     2304.2      948.     2303.3      950.
GR   2302.6      952.     2301.3      955.     2301.3      956.     2300.2      986.     2301.8     1000.
GR   2302.4     1100.     2303.0     1200.     2302.6     1270.     2304.0     1278.     2308.0     1288.
GR   2316.0     1302.

ET                         9.1                                                            926       1059
     .097        32       993      1033       340       320       343
     2320.7      917.     2320.4      918.     2319.2      920.     2316.2      924.     2309.9      927.
GR   2309.0      930.     2308.9      939.     2308.9      952.     2308.8      963.     2308.9      964.
GR   2308.9      969.     2308.9      973.     2308.8      982.     2308.8      993.     2308.1     1004.
GR   2308.1     1010.     2308.2     1012.     2308.5     1020.     2308.6     1023.     2308.8     1033.
GR   2308.9     1045.     2308.9     1048.     2308.9     1052.     2308.9     1055.     2308.9     1057.
GR   2310.3     1059.     2312.2     1060.     2314.8     1062.     2316.3     1066.     2317.5     1070.
GR   2318.8     1071.     2320.3     1074.

ET                         9.1                                                            931       1091
X1    .131        49      1000      1033       210       200       180
GR   2328.6      883.     2327.5      895.     2324.2      902.     2320.9      909.     2319.1      917.
GR   2316.5      924.     2315.3      927.     2314.6      930.     2313.7      933.     2313.4      934.
GR   2313.3      937.     2313.3      944.     2313.3      952.     2313.3      962.     2313.3      963.
GR   2313.3      971.     2313.2      972.     2312.6      978.     2312.6      988.     2312.5      993.
GR   2312.4     1000.     2312.3     1005.     2312.3     1010.     2312.3     1013.     2312.3     1033.
GR   2313.1     1035.     2313.1     1038.     2313.1     1042.     2313.6     1052.     2314.0     1068.
GR   2314.0     1073.     2314.0     1083.     2314.0     1085.     2314.4     1094.     2314.6     1100.
GR   2314.6     1105.     2315.2     1115.     2315.2     1132.     2315.2     1143.     2315.3     1154.
GR   2315.5     1161.     2315.7     1168.     2315.7     1179.     2316.5     1182.     2319.9     1185.
GR   2322.7     1194.     2325.3     1206.     2326.4     1211.     2328.0     1215.

ET                         9.1                                                            986       1020
X1    .182        30       991      1016       260       250       270
GR   2340.1      955.     2338.7      957.     2335.6      961.     2335.0      964.     2332.7      969.
     2330.9      974.     2328.0      979.     2326.1      983.     2323.1      986.     2321.3      987.
     2319.9      988.     2319.5      989.     2318.6      991.     2318.2      993.     2318.2      994.
GR   2318.1      996.     2318.1      999.     2318.5     1004.     2318.7     1006.     2318.7     1008.
GR   2318.8     1010.     2318.7     1011.     2319.2     1016.     2320.5     1019.     2322.9     1021.
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	2325.2	1025.	2327.2	1027.	2330.6	1036.	2333.7	1041.	2340.2	1049.
QT	2	480	480							
NC	.060	.060	.045							
ET			9.1						956	1083
X1	.212	34	1000	1078	160	140	158			
GR	2340.3	908.	2337.9	920.	2333.4	929.	2329.6	936.	2327.8	941.
GR	2325.7	947.	2325.0	950.	2324.4	956.	2323.8	960.	2323.7	962.
GR	2323.6	968.	2323.5	976.	2323.2	980.	2323.1	983.	2322.8	988.
GR	2322.7	991.	2322.7	993.	2322.7	996.	2322.7	998.	2322.7	1000.
GR	2322.7	1008.	2322.7	1017.	2322.5	1026.	2322.5	1033.	2322.8	1047.
GR	2322.6	1056.	2322.5	1062.	2322.5	1066.	2322.4	1068.	2322.4	1072.
GR	2322.4	1078.	2330.0	1095.	2334.5	1103.	2340.1	1115.		
NC	.060	.060	.035							
ET			9.1						981	1028
X1	.259	29	987	1013	220	240	248			
GR	2332.8	967.	2332.8	968.	2331.3	975.	2330.0	981.	2328.9	984.
GR	2328.3	987.	2328.0	992.	2327.7	994.	2326.4	995.	2326.4	1000.
GR	2326.4	1003.	2327.6	1004.	2328.1	1007.	2328.8	1013.	2329.3	1023.
GR	2330.0	1029.	2330.9	1034.	2331.6	1038.	2333.3	1043.	2333.7	1047.
GR	2335.1	1050.	2335.6	1055.	2337.5	1059.	2339.0	1060.	2339.9	1066.
GR	2340.3	1085.	2340.3	1088.	2340.3	1094.	2340.3	1104.		
ET			9.1						955	1039
	.318	27	966	1011	340	280	311			
	2348.6	921.	2348.2	925.	2345.1	930.	2342.9	934.	2340.8	944.
GR	2338.6	952.	2337.2	956.	2336.4	959.	2336.5	960.	2336.2	966.
GR	2335.7	975.	2335.9	978.	2335.9	986.	2335.9	991.	2335.9	1000.
GR	2335.9	1001.	2336.2	1011.	2336.5	1018.	2336.6	1028.	2337.0	1037.
GR	2337.5	1039.	2337.9	1043.	2338.2	1045.	2338.5	1049.	2339.3	1050.
GR	2342.8	1056.	2348.2	1071.						
ET			9.1						988	1010
X1	.416	22	993	1007	505	520	517			
GR	2360.4	972.	2356.7	978.	2353.8	983.	2350.7	987.	2348.5	988.
GR	2347.0	990.	2345.5	993.	2344.6	994.	2344.5	995.	2344.8	998.
GR	2344.9	1002.	2345.2	1005.	2345.2	1006.	2345.7	1007.	2346.3	1008.
GR	2349.1	1010.	2352.2	1012.	2353.7	1016.	2355.3	1019.	2355.5	1022.
GR	2358.7	1045.	2360.6	1049.						
ET			9.1						948	1021
X1	.506	39	950	978	490	490	475			
GR	2372.1	917.	2372.1	920.	2372.1	922.	2372.1	925.	2369.7	933.
GR	2365.4	937.	2362.7	943.	2361.8	946.	2357.9	949.	2357.0	950.
GR	2356.4	951.	2355.6	952.	2355.2	954.	2355.5	959.	2355.9	963.
GR	2356.7	966.	2357.0	969.	2357.2	978.	2357.2	982.	2357.1	996.
GR	2357.1	999.	2357.1	1000.	2357.1	1001.	2357.1	1002.	2357.1	1012.
GR	2357.8	1015.	2357.8	1019.	2357.9	1020.	2359.3	1021.	2360.7	1023.
GR	2362.2	1025.	2362.9	1029.	2363.2	1034.	2363.9	1037.	2364.8	1039.
	2365.6	1045.	2366.9	1052.	2367.6	1055.	2372.1	1069.		

QT	2	400	400							
ET			9.1						924	1024
X1	.604	38	979	1005	510	530	517			
GR	2380.4	776.	2379.8	782.	2377.3	791.	2375.7	801.	2374.6	813.
GR	2373.6	827.	2373.5	838.	2373.1	851.	2373.1	859.	2372.9	867.
GR	2372.9	871.	2372.8	879.	2372.8	888.	2372.8	892.	2372.5	916.
GR	2372.2	921.	2371.6	925.	2371.1	927.	2371.1	932.	2371.1	939.
GR	2371.1	941.	2371.1	955.	2370.5	962.	2370.5	979.	2370.2	993.
GR	2370.2	1000.	2370.2	1002.	2370.2	1005.	2371.1	1016.	2372.2	1030.
GR	2373.9	1044.	2375.0	1064.	2375.6	1083.	2376.7	1094.	2377.7	1103.
GR	2379.5	1113.	2380.2	1116.	2384.8	1138.				
NC	.065	.065	.045							
ET			9.1						909	1018
X1	.705	32	955	1011	560	510	533			
GR	2390.2	870.	2390.1	879.	2389.2	882.	2388.4	886.	2387.1	894.
GR	2386.3	901.	2385.3	904.	2384.6	908.	2384.3	909.	2383.8	913.
GR	2383.5	918.	2383.5	939.	2383.4	947.	2383.4	955.	2383.4	956.
GR	2383.4	959.	2383.4	971.	2383.4	982.	2383.4	989.	2383.4	992.
GR	2383.2	995.	2383.1	998.	2383.1	1000.	2383.1	1002.	2383.2	1007.
GR	2383.3	1011.	2384.0	1017.	2385.1	1020.	2389.4	1030.	2390.8	1031.
GR	2395.5	1040.	2400.1	1050.						
QT	2	330	330							
			9.1						968	1040
	.795	22	987	1037	490	465	475			
GR	2408.4	937.	2405.9	944.	2402.8	948.	2399.0	951.	2397.5	954.
GR	2396.5	960.	2396.1	968.	2395.8	976.	2395.3	987.	2395.0	1002.
GR	2394.7	1015.	2394.7	1026.	2394.7	1031.	2394.8	1037.	2394.9	1038.
GR	2395.7	1039.	2397.7	1044.	2399.0	1052.	2400.6	1062.	2403.2	1069.
GR	2404.4	1070.	2408.3	1084.						

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

1490 NH CARD USED
CCHV= .100 CEHV= .300
*SECNO 47.520

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 47.52(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH K - UNNAMED WASH # 6, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
THE STARTING WATER SURFACE ELEVATION WAS DETERMINED BY THE
SLOPE AREA METHOD IN THE HEC-2 INPUT (J1, FIELD 5)

47.520	5.37	1933.37	1932.43	1943.38	1933.64	.28	.00	.00	1928.10
2508.0	382.6	866.8	1258.6	228.7	128.7	695.8	.0	.0	1928.00
.00	1.67	6.74	1.81	.070	.035	.070	.000	1928.00	1081.64
.002698	0.	0.	0.	0	14	8	.00	627.61	1761.13

FLOW DISTRIBUTION FOR SECNO= 47.52 CWSEL= 1933.37

STA=	1082.	1084.	1234.	1320.	1345.	1367.	1415.	1505.	1589.	1635.	1721.	1761.
PER Q=	.0	1.6	13.6	34.6	5.2	.0	11.7	10.6	1.3	18.7	2.7	
AREA=	.9	65.3	162.4	128.7	61.4	3.3	172.0	157.6	25.5	224.1	51.9	
VEL=	.6	.6	2.1	6.7	2.1	.2	1.7	1.7	1.3	2.1	1.3	
DEPTH=	.4	.4	1.9	5.3	2.7	.1	1.9	1.9	.5	2.6	1.3	

CCHV= .600 CEHV= .800
*SECNO .095

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION;
UNLESS OTHERWISE NOTED.
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS
SECTION CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
UNLESS OTHERWISE NOTED.

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
.095	3.09	1949.39	1949.39	.00	1950.21	.82	4.22	.44	1947.90
2508.0	131.4	1821.2	555.4	75.2	217.8	177.8	15.3	9.3	1947.60
.04	1.75	8.36	3.12	.070	.035	.070	.000	1946.30	730.05
.010731	650.	880.	950.	0	11	0	.00	333.18	1063.22

FLOW DISTRIBUTION FOR SECNO= .09 CWSEL= 1949.39

STA=	730.	803.	843.	926.	943.	964.	979.	991.	1000.	1015.	1063.
PER Q=	3.5	1.8	72.6	3.9	3.9	3.1	3.9	3.2	3.1	1.0	
AREA=	50.6	24.6	217.8	30.4	33.1	25.3	26.2	20.9	24.8	17.2	
VEL=	1.7	1.8	8.4	3.2	3.0	3.1	3.7	3.9	3.1	1.4	
DEPTH=	.7	.6	2.6	1.8	1.6	1.7	2.2	2.3	1.7	.4	

CCHV= .600 CEHV= .800
*SECNO .099
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
DOWNSTREAM SECTION:EAST BOUND CULVERT

.099	3.68	1949.48	1949.48	.00	1950.46	.98	.12	.12	1946.50
2508.0	292.6	1394.7	820.7	189.1	132.9	366.5	15.6	9.4	1945.80
.04	1.55	10.49	2.24	.070	.020	.070	.000	1945.80	698.93
.003626	21.	21.	21.	0	11	0	.00	397.19	1096.13

FLOW DISTRIBUTION FOR SECNO= .10 CWSEL= 1949.48

STA=	699.	803.	858.	895.	915.	943.	964.	979.	991.	1005.	1056.	1096.
PER Q=	5.2	6.5	55.6	7.6	6.6	3.9	3.0	3.4	4.0	3.9	.5	
AREA=	102.9	86.2	132.9	66.6	69.9	45.5	34.2	33.3	39.1	61.9	16.1	
VEL=	1.3	1.9	10.5	2.8	2.4	2.1	2.2	2.5	2.5	1.6	.8	
DEPTH=	1.0	1.6	3.6	3.3	2.5	2.2	2.3	2.8	2.8	1.2	.4	

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	2.54	10.00	81.70	8	1	1947.00	1945.80

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

5130, EGIC= 1990.75..MAY BE TOO LARGE IF INLET CONTROLS.

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

5135, EGOC= 1988.79 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .115

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1958.96

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.33

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1990.75	1988.79	8.51	1292.	1223.	6.754	76.2	1958.50	226.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1955.60 ELREA= 1958.50

UPSTREAM SECTION: EAST BOUND CULVERT
(3-10' x 8'x 81.7' CBCs), 5.5' OF SEDIMENT ON BOTTOM
HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 790 REPRESENTS
THE LIMIT OF THE EFFECTIVE FLOW AREA

.115	11.28	1958.28	.00	.00	1958.96	.68	8.51	.00	1947.00
2508.0	91.7	2416.3	.0	190.7	357.7	.0	16.7	10.0	1947.00
.04	.48	6.75	.00	.070	.020	.000	.000	1947.00	789.94
.000326	82.	82.	82.	2	0	0	.00	205.43	1015.85

FLOW DISTRIBUTION FOR SECNO= .12 CWSEL= 1958.28

STA=	790.	865.	964.	1016.
PER Q=	3.2	.5	96.3	
AREA=	139.5	51.1	357.7	
VEL=	.6	.2	6.8	
DEPTH=	1.9	.5	11.3	

*SECNO .121
DOWNSTREAM SECTION:WEST BOUND CULVERT
HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 800 REPRESENTS
THE LIMIT OF THE EFFECTIVE FLOW AREA

.121	9.54	1958.64	1955.20	.00	1959.10	.47	.01	.13	1949.10
2508.0	549.4	1899.5	59.0	609.0	302.5	76.1	17.3	10.2	1949.10
.04	.90	6.28	.78	.070	.020	.070	.000	1949.10	799.97
.000353	32.	32.	32.	2	11	0	.00	243.32	1043.29

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= .12 CWSEL= 1958.64

STA=	800.	880.	900.	984.	1016.	1043.
PER Q=	6.3	1.6	14.0	75.7	2.4	
AREA=	211.5	52.9	344.5	302.5	76.0	
VEL=	.7	.8	1.0	6.3	.8	
DEPTH=	2.6	2.6	4.1	9.5	2.8	

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	2.79	10.00	86.20	8	1	1950.50	1949.10

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

5130, EGIC= 1987.30..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1990.64 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
SECNO .136

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 1965.55

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.26

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1987.30	1990.64	6.45	1355.	1166.	1.929	83.7	1964.80	315.

WEST BOUND CULVERT AT UPSTREAM SECTION;
(3-10' x 8'x 86.2' CBCs), APPROX. 5.2' OF SEDIMENT ON BOTTOM

.136	15.83	1965.53	.00	.00	1965.55	.03	6.45	.00	1950.80
2508.0	895.7	1006.2	606.1	1787.0	521.7	1291.4	21.8	10.7	1952.90
.06	.50	1.93	.47	.070	.020	.070	.000	1949.70	826.95
.000019	86.	86.	86.	2	0	0	.00	321.42	1148.36

FLOW DISTRIBUTION FOR SECNO= .14 CWSEL= 1965.53

STA=	827.	899.	913.	934.	950.	965.	976.	991.	1027.	1074.	1097.	1112.	1129.
PER Q=	6.4	4.6	6.7	4.8	4.7	3.6	5.0	40.1	11.6	5.3	3.1	3.1	
AREA=	460.5	204.8	301.9	222.8	213.4	161.5	222.1	521.7	581.7	272.0	167.7	174.7	
VEL=	.3	.6	.6	.5	.5	.6	.6	1.9	.5	.5	.5	.4	
DEPTH=	6.4	14.6	14.4	13.9	14.2	14.7	14.8	14.5	12.4	11.8	11.2	10.3	

STA=	1129.	1148.
PER Q=	1.1	
AREA=	95.3	

VEL= .3
DEPTH= 4.9

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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


CCHV=     .600 CEHV=     .800
*SECNO  .152
     .152     13.95   1965.55   1956.50       .00   1965.56       .01       .00       .01   1952.50
   2508.0    1116.2     669.8     722.0    2152.9     485.7    1167.7      30.0      11.6   1952.00
     .10       .52      1.38       .62      .065      .035      .065      .000   1951.60    673.52
  .000033      105.       85.       85.         0        17         0       .00    460.53   1134.05


FLOW DISTRIBUTION FOR SECNO=       .15          CWSEL=   1965.55

STA=     674.     755.     779.     806.     827.     849.     873.     915.     941.     962.     972.    1008.    1021.
  PER Q=      6.4      3.6      4.6      4.5      5.2      4.2      5.9      4.0      3.7      2.3     26.7      4.7
   AREA=    368.9    179.9    219.5    195.3    217.7    197.0    302.6    198.8    172.1    101.1    485.7    166.3
    VEL=       .4       .5       .5       .6       .6       .5       .5       .5       .5       .6      1.4       .7
  DEPTH=      4.5      7.5      8.1      9.3      9.9      8.2      7.2      7.6      8.2     10.1     13.5     12.8

STA=    1021.    1037.    1052.    1071.    1107.    1134.
  PER Q=      5.2      4.5      5.2      7.6      1.6
   AREA=    191.1    170.9    204.1    329.8    105.3
    VEL=       .7       .7       .6       .6       .4
  DEPTH=     11.9     11.4     10.7      9.2      3.9

CCHV=     .100 CEHV=     .300
*SECNO  .190

3265 DIVIDED FLOW


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

          STRUCTURE BLOCKED OUT WITH GR POINTS.
     .190     10.32   1965.52   1959.44       .00   1965.59       .07       .01       .02   1956.00
   2508.0    1169.1    1161.7     177.2    1090.2     399.9     148.1      42.3      13.3   1956.10
     .13      1.07      2.91      1.20      .065      .035      .065      .000   1955.20    740.56
  .000218      195.      201.      200.         2        17         0       .00    274.17   1048.65


FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1965.52

STA=     741.     776.     806.     882.     903.     923.     944.     968.     982.    1022.    1028.    1046.    1049.
  PER Q=      4.7      4.1      7.2      4.3      3.3      4.2     11.3      7.6     46.3      3.4      3.7       .0
   AREA=    138.2    120.5    196.9    107.6     89.5    105.4    203.8    128.4    399.9     56.4     89.8      1.9
    VEL=       .9       .9       .9      1.0       .9      1.0      1.4      1.5      2.9      1.5      1.0       .2
  DEPTH=      3.9      4.0      2.6      5.1      4.5      5.0      8.5      9.2     10.0      9.4      5.0       .7
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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 .258

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 866.0 1042.0 TYPE= 1 TARGET= 176.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

.258	3.69	1966.99	1966.99	.00	1968.15	1.16	.22	.33	1964.00
2508.0	982.1	1303.7	222.2	206.8	117.2	51.0	49.5	14.8	1964.20
.14	4.75	11.13	4.36	.065	.035	.065	.000	1963.30	866.10
.013755	280.	359.	380.	0	22	0	.00	160.17	1041.44

FLOW DISTRIBUTION FOR SECNO= .26 CWSEL= 1966.99

STA=	866.	882.	888.	892.	898.	915.	933.	945.	972.	977.	979.	1014.	1022.
PER Q=	3.7	5.3	3.3	3.7	6.2	4.8	4.0	3.3	3.4	1.3	52.0	4.2	
AREA=	23.2	21.2	13.7	17.3	35.4	31.3	23.8	19.6	15.2	6.0	117.2	20.7	
VEL=	4.0	6.2	6.1	5.4	4.4	3.9	4.2	4.3	5.6	5.6	11.1	5.0	
DEPTH=	1.5	3.5	3.4	2.9	2.1	1.7	2.0	.7	3.0	3.0	3.3	2.6	

STA=	1022.	1032.	1041.
PER Q=	3.8	.9	
AREA=	21.4	8.9	
VEL=	4.4	2.5	
DEPTH=	2.1	.9	

*SECNO .373
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.373	5.82	1982.82	1982.82	.00	1984.07	1.26	6.79	.03	1979.90
2508.0	872.4	1549.3	86.4	217.4	140.5	31.2	54.5	16.8	1980.70
.16	4.01	11.03	2.77	.065	.035	.065	.000	1977.00	880.80
.009798	560.	607.	600.	0	14	0	.00	150.76	1031.55

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= .37 CWSEL= 1982.82

STA=	881.	923.	940.	964.	976.	1007.	1030.	1032.
PER Q=	19.4	5.2	6.2	3.9	61.8	3.4	.0	
AREA=	110.7	35.4	45.3	26.0	140.5	30.5	.7	
VEL=	4.4	3.7	3.5	3.8	11.0	2.8	1.2	
DEPTH=	2.6	2.1	1.9	2.2	4.5	1.3	.5	

CCHV= .100 CEHV= .300
*SECNO .409

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.409	7.67	1989.47	1989.47	.00	1992.18	2.71	2.02	.44	1982.60
2508.0	5.0	1475.8	1027.2	3.5	90.6	152.3	55.9	17.3	1983.20
.16	1.44	16.28	6.74	.070	.035	.070	.000	1981.80	978.98
.011485	195.	190.	190.	0	11	0	.00	45.45	1024.43

FLOW DISTRIBUTION FOR SECNO= .41 CWSEL= 1989.47

STA=	979.	980.	993.	1000.	1002.	1003.	1006.	1014.	1020.	1021.	1024.
PER Q=	.2	58.8	13.5	3.9	1.9	4.7	10.0	5.6	.8	.6	
AREA=	3.5	90.6	43.9	12.5	6.3	17.0	38.5	24.4	3.6	6.1	
VEL=	1.4	16.3	7.7	7.7	7.7	6.9	6.5	5.7	5.3	2.6	
DEPTH=	3.4	7.0	6.3	6.3	6.3	5.7	4.8	4.1	3.6	1.8	

*SECNO .504
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.504	7.96	1999.66	1999.66	.00	2002.33	2.67	5.17	.00	1992.90
2508.0	120.6	1541.0	846.4	24.8	96.2	134.7	58.6	17.8	1993.30
.17	4.86	16.01	6.28	.070	.035	.070	.000	1991.70	984.78
.010362	480.	502.	430.	0	8	0	.00	47.65	1032.43

FLOW DISTRIBUTION FOR SECNO= .50 CWSEL= 1999.66

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

STA=	985.	986.	987.	991.	1004.	1009.	1017.	1023.	1030.	1032.
PER Q=	.1	.5	4.2	61.4	8.9	12.2	6.8	5.6	.4	
AREA=	1.7	3.1	20.0	96.2	30.8	44.8	28.2	26.6	4.2	
VEL=	1.5	4.3	5.2	16.0	7.2	6.8	6.0	5.3	2.2	
DEPTH=	1.4	3.1	5.0	7.4	6.2	5.6	4.7	3.8	1.7	

*SECNO .568

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.568	3.92	2005.82	2005.82	.00	2007.34	1.52	4.78	.12	2002.60
2508.0	1048.0	908.5	551.5	150.6	65.1	96.7	60.8	18.3	2002.70
.18	6.96	13.95	5.70	.070	.035	.070	.000	2001.90	940.31
.020962	320.	338.	340.	0	8	0	.00	103.22	1043.53

FLOW DISTRIBUTION FOR SECNO= .57 CWSEL= 2005.82

STA=	940.	953.	964.	970.	974.	980.	985.	1004.	1009.	1023.	1032.	1039.	1044.
PER Q=	12.8	11.5	5.7	3.3	4.5	4.0	36.2	3.8	8.8	4.7	3.9	.9	
AREA=	44.5	39.8	20.5	12.6	17.7	15.4	65.1	14.9	37.4	21.4	17.3	5.7	
VEL=	7.2	7.2	7.0	6.6	6.3	6.5	13.9	6.3	5.9	5.5	5.6	3.7	
DEPTH=	3.5	3.6	3.4	3.1	2.9	3.1	3.4	3.0	2.7	2.4	2.5	1.3	

*SECNO .663

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
DIVIDED FLOW 280 FEET UPSTREAM OF SECTION 0.663. SMALLER
LOW FLOW CHANNEL IS MODELED SEPARATELY USING MANNINGS OPEN
CHANNEL FLOW EQUATION TO DETERMINE DEPTH OF FLOW.

.663	6.77	2021.57	2021.57	.00	2023.84	2.27	6.80	.22	2016.60
2430.0	90.3	2048.9	290.8	22.1	157.4	61.0	63.8	19.2	2016.80
.19	4.09	13.02	4.77	.070	.035	.070	.000	2014.80	973.76
.009810	460.	502.	480.	0	14	0	.00	56.72	1030.48

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= .66 CWSEL= 2021.57

STA=	974.	976.	978.	982.	1010.	1015.	1018.	1020.	1022.	1030.
PER Q=	.2	.7	2.9	84.3	5.4	2.7	1.3	1.1	1.5	
AREA=	2.3	4.6	15.1	157.4	22.9	12.2	6.8	5.9	13.0	
VEL=	1.8	3.6	4.6	13.0	5.8	5.3	4.6	4.3	2.8	
DEPTH=	1.0	2.3	3.8	5.6	4.6	4.1	3.4	3.0	1.6	

CCHV= .100 CEHV= .300
*SECNO .758

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.758	5.40	2047.70	2047.70	.00	2049.45	1.75	5.19	.05	2044.30
2430.0	91.4	1876.6	462.1	21.7	159.0	94.6	66.8	20.0	2044.20
.21	4.20	11.80	4.88	.065	.035	.065	.000	2042.30	948.22
.010919	510.	502.	502.	0	15	0	.00	81.52	1029.74

FLOW DISTRIBUTION FOR SECNO= .76 CWSEL= 2047.70

STA=	948.	953.	955.	959.	995.	1000.	1002.	1007.	1009.	1014.	1028.	1030.
PER Q=	.5	.7	2.6	77.2	4.0	1.6	3.8	1.4	3.5	4.7	.0	
AREA=	4.8	4.5	12.4	159.0	17.5	7.0	17.0	6.6	16.2	29.4	.9	
VEL=	2.5	3.8	5.0	11.8	5.5	5.5	5.4	5.3	5.2	3.9	1.4	
DEPTH=	1.0	2.2	3.1	4.4	3.5	3.5	3.4	3.3	3.2	2.1	.5	

*SECNO .852
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.852	4.21	2061.31	2061.31	.00	2063.16	1.85	5.57	.03	2058.10
2430.0	13.4	2234.1	182.6	4.8	197.9	36.4	69.7	20.8	2058.10
.22	2.78	11.29	5.01	.065	.035	.065	.000	2057.10	962.48
.011686	470.	496.	480.	0	15	0	.00	67.71	1030.19

FLOW DISTRIBUTION FOR SECNO= .85 CWSEL= 2061.31

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

STA=	962.	964.	966.	1017.	1019.	1024.	1027.	1029.	1030.
PER Q=	.0	.5	91.9	1.4	3.6	1.9	.6	.0	
AREA=	.7	4.1	197.9	6.4	16.1	9.0	4.1	.8	
VEL=	1.3	3.0	11.3	5.4	5.4	5.1	3.4	1.4	
DEPTH=	.5	2.1	3.9	3.2	3.2	3.0	2.1	.7	

CCHV= .100 CEHV= .300
*SECNO .947
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.947	4.15	2075.35	2075.35	.00	2076.96	1.60	5.43	.02	2072.10
2430.0	26.3	1470.0	933.7	8.5	118.0	189.7	72.8	21.8	2071.30
.23	3.11	12.46	4.92	.065	.030	.065	.000	2071.20	947.45
.010295	505.	502.	475.	0	5	0	.00	99.26	1046.71

FLOW DISTRIBUTION FOR SECNO= .95 CWSEL= 2075.35

STA=	947.	950.	953.	983.	998.	1003.	1012.	1042.	1047.
PER Q=	.1	.9	60.5	12.7	3.6	6.1	15.5	.5	
AREA=	1.9	6.6	118.0	55.5	16.8	29.3	82.6	5.5	
VEL=	1.9	3.4	12.5	5.5	5.2	5.1	4.6	2.4	
DEPTH=	.7	2.2	3.9	3.7	3.4	3.3	2.8	1.2	

*SECNO 1.042
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.042	4.46	2085.66	2085.66	.00	2087.15	1.49	4.24	.01	2083.20
2430.0	228.6	2194.4	7.0	84.6	213.7	3.9	76.3	23.0	2083.60
.25	2.70	10.27	1.81	.065	.030	.065	.000	2081.20	916.07
.007148	500.	502.	485.	0	8	0	.00	117.68	1033.75

FLOW DISTRIBUTION FOR SECNO= 1.04 CWSEL= 2085.66

STA=	916.	923.	927.	946.	960.	967.	975.	1030.	1034.
PER Q=	.0	.3	2.5	2.1	1.7	2.8	90.3	.3	
AREA=	1.6	3.6	25.9	20.5	13.7	19.3	213.7	3.9	
VEL=	.7	1.8	2.4	2.5	3.0	3.5	10.3	1.8	
DEPTH=	.2	.9	1.4	1.5	2.0	2.4	3.9	1.0	

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 1.136
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.136	3.88	2096.28	2096.28	.00	2097.84	1.56	3.81	.02	2093.20
2290.0	201.2	2070.6	18.1	56.7	197.5	6.7	79.5	24.2	2093.00
.26	3.55	10.48	2.70	.065	.030	.065	.000	2092.40	972.17
.008348	490.	496.	510.	0	11	0	.00	87.93	1060.10

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 2096.28

STA=	972.	973.	976.	982.	994.	1000.	1056.	1057.	1060.
PER Q=	.0	.3	1.0	4.1	3.3	90.4	.5	.3	
AREA=	.4	3.2	8.9	26.7	17.6	197.5	2.9	3.8	
VEL=	.9	2.2	2.7	3.6	4.3	10.5	3.6	2.0	
DEPTH=	.4	1.1	1.5	2.2	2.9	3.5	2.9	1.2	

*SECNO 1.227
7185 MINIMUM SPECIFIC ENERGY
[illegible]0 CRITICAL DEPTH ASSUMED

1.227	3.99	2106.79	2106.79	.00	2108.04	1.26	4.03	.03	2104.30
2290.0	15.3	1936.1	338.6	6.2	199.7	107.6	82.7	25.4	2104.50
.28	2.46	9.69	3.15	.065	.030	.065	.000	2102.80	965.91
.008439	430.	480.	510.	0	8	0	.00	134.18	1100.09

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 2106.79

STA=	966.	971.	1035.	1045.	1049.	1055.	1066.	1076.	1083.	1091.	1097.	1100.
PER Q=	.7	84.5	3.9	1.6	2.2	3.0	1.8	.9	.8	.5	.1	
AREA=	6.2	199.7	23.9	9.8	13.7	21.3	14.9	8.3	8.3	5.9	1.5	
VEL=	2.5	9.7	3.8	3.8	3.6	3.3	2.7	2.4	2.2	2.1	1.3	
DEPTH=	1.2	3.1	2.4	2.4	2.3	1.9	1.5	1.2	1.0	1.0	.5	

*SECNO 1.311
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.311	3.20	2117.90	2117.90	.00	2119.07	1.17	4.35	.01	2115.10
2290.0	702.3	1565.0	22.7	171.9	154.6	8.8	86.1	26.9	2115.60
.29	4.08	10.13	2.57	.065	.030	.065	.000	2114.70	880.81
.011051	500.	444.	435.	0	15	0	.00	151.87	1032.68

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

FLOW DISTRIBUTION FOR SECNO= 1.31 CWSEL= 2117.90

STA=	881.	901.	907.	928.	934.	943.	957.	968.	1025.	1033.
PER Q=	4.3	3.5	4.7	3.9	6.6	3.5	4.1	68.3	1.0	
AREA=	27.4	16.8	33.2	18.0	28.8	24.0	23.7	154.6	8.8	
VEL=	3.6	4.8	3.3	5.0	5.2	3.3	4.0	10.1	2.6	
DEPTH=	1.4	2.8	1.6	3.0	3.2	1.7	2.2	2.7	1.2	

*SECNO 1.383
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.383	3.58	2124.58	2124.58	.00	2125.89	1.30	3.41	.04	2121.20
2290.0	200.7	1805.6	283.7	51.7	177.5	95.0	88.9	28.2	2121.20
.31	3.89	10.17	2.99	.065	.030	.065	.000	2121.00	955.28
.007790	330.	380.	390.	0	8	0	.00	141.32	1096.61

FLOW DISTRIBUTION FOR SECNO= 1.38 CWSEL= 2124.58

STA=	955.	960.	966.	975.	1025.	1037.	1045.	1053.	1066.	1077.	1085.	1097.
PER Q=	.8	3.1	4.9	78.8	6.2	2.3	1.3	1.3	.9	.4	.1	
AREA=	7.5	17.3	26.9	177.5	34.6	16.3	11.5	14.1	10.3	5.5	2.8	
VEL=	2.4	4.1	4.2	10.2	4.1	3.2	2.6	2.1	1.9	1.6	.8	
DEPTH=	1.6	2.9	3.0	3.5	2.9	2.0	1.4	1.1	.9	.7	.2	

CCHV= .100 CEHV= .300
*SECNO 1.477
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.477	3.86	2136.66	2136.66	.00	2137.80	1.14	4.50	.02	2133.90
2290.0	346.1	1649.0	295.0	83.0	168.4	77.2	92.6	29.8	2133.80
.32	4.17	9.79	3.82	.060	.035	.060	.000	2132.80	902.60
.010835	480.	496.	490.	0	8	0	.00	153.86	1056.46

FLOW DISTRIBUTION FOR SECNO= 1.48 CWSEL= 2136.66

STA=	903.	926.	940.	949.	1000.	1006.	1012.	1021.	1056.
PER Q=	4.2	5.8	5.2	72.0	3.6	3.0	3.4	2.9	
AREA=	28.7	30.4	23.9	168.4	16.3	14.8	18.5	27.7	
VEL=	3.3	4.3	4.9	9.8	5.0	4.7	4.2	2.4	
DEPTH=	1.2	2.2	2.7	3.3	2.7	2.5	2.1	.8	

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

*SECNO 1.553
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.553	2.36	2142.36	2142.36	.00	2143.30	.94	5.45	.02	2140.20
2150.0	31.7	2003.8	114.5	8.9	251.3	28.4	95.4	31.2	2140.00
.34	3.54	7.97	4.04	.060	.040	.060	.000	2140.00	976.21
.018166	390.	401.	380.	0	14	0	.00	160.28	1136.49

FLOW DISTRIBUTION FOR SECNO= 1.55 CWSEL= 2142.36

STA=	976.	983.	986.	1111.	1130.	1136.
PER Q=	.4	1.1	93.2	5.2	.1	
AREA=	4.0	5.0	251.3	26.9	1.5	
VEL=	2.3	4.5	8.0	4.2	1.3	
DEPTH=	.6	1.7	2.0	1.4	.2	

CCHV= .100 CEHV= .300
*SECNO 1.631
[illegible]5 MINIMUM SPECIFIC ENERGY
[illegible]20 CRITICAL DEPTH ASSUMED

1.631	2.56	2152.56	2152.56	.00	2153.13	.57	7.75	.04	2150.80
2150.0	550.7	877.1	722.2	126.0	108.8	177.1	98.6	33.7	2150.80
.36	4.37	8.06	4.08	.055	.040	.060	.000	2150.00	826.18
.019924	425.	412.	380.	0	8	0	.00	367.20	1193.38

FLOW DISTRIBUTION FOR SECNO= 1.63 CWSEL= 2152.56

STA=	826.	845.	853.	872.	896.	918.	938.	995.	1005.	1015.	1037.	1055.	1081.
PER Q=	4.4	4.3	5.9	3.9	3.3	3.7	40.8	4.2	4.2	7.9	4.6	5.4	
AREA=	20.6	15.6	26.7	22.9	19.9	20.2	108.8	17.6	17.6	35.3	23.5	30.1	
VEL=	4.6	6.0	4.8	3.7	3.6	3.9	8.1	5.1	5.1	4.8	4.2	3.9	
DEPTH=	1.1	2.0	1.4	1.0	.9	1.0	1.9	1.8	1.8	1.6	1.3	1.2	

STA=	1081.	1100.	1136.	1193.
PER Q=	3.4	3.8	.3	
AREA=	20.1	27.6	5.4	
VEL=	3.6	3.0	1.0	
DEPTH=	1.1	.8	.1	

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

CCHV= .100 CEHV= .300
*SECNO 1.693

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.693	3.72	2161.42	2161.42	.00	2162.60	1.18	4.79	.18	2158.60
2150.0	559.8	1563.9	26.3	139.4	157.8	6.9	101.5	35.7	2158.20
.37	4.02	9.91	3.83	.060	.035	.060	.000	2157.70	894.35
.010237	430.	327.	275.	0	14	0	.00	145.10	1039.45

FLOW DISTRIBUTION FOR SECNO= 1.69 CWSEL= 2161.42

STA=	894.	912.	934.	945.	963.	972.	979.	991.	1036.	1038.	1039.
PER Q=	.1	1.3	2.3	5.7	4.1	4.5	8.1	72.7	1.1	.1	
AREA=	1.9	14.8	15.6	32.8	20.4	19.4	34.4	157.8	5.3	1.5	
VEL=	.6	1.9	3.2	3.7	4.3	4.9	5.1	9.9	4.4	1.8	
DEPTH=	.1	.7	1.4	1.8	2.3	2.8	2.9	3.5	2.7	1.1	

CCHV= .100 CEHV= .300
*SECNO 1.740
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.740	3.46	2165.46	2165.46	.00	2166.32	.87	2.95	.03	2163.50
2150.0	136.9	1488.4	524.6	38.7	172.8	136.9	103.3	36.7	2163.00
.38	3.54	8.61	3.83	.060	.040	.060	.000	2162.00	861.42
.014332	220.	248.	260.	0	11	0	.00	206.35	1067.76

FLOW DISTRIBUTION FOR SECNO= 1.74 CWSEL= 2165.46

STA=	861.	899.	963.	976.	988.	1004.	1020.	1038.	1058.	1068.
PER Q=	6.4	69.2	6.4	3.3	3.7	3.7	4.1	3.1	.1	
AREA=	38.7	172.8	28.0	18.3	21.7	21.7	24.4	21.1	1.7	
VEL=	3.5	8.6	4.9	3.9	3.6	3.6	3.6	3.2	.9	
DEPTH=	1.0	2.7	2.2	1.5	1.4	1.4	1.4	1.1	.2	

CCHV= .100 CEHV= .300

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 1.831

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.831	3.93	2174.53	2174.53	.00	2175.99	1.46	5.05	.18	2170.60
2150.0	7.3	1998.3	144.3	3.5	199.6	45.7	106.7	38.4	2171.70
.39	2.09	10.01	3.16	.055	.030	.060	.000	2170.60	947.21
.007862	390.	480.	540.	0	8	0	.00	101.39	1048.60

FLOW DISTRIBUTION FOR SECNO= 1.83 CWSEL= 2174.53

STA=	947.	949.	1007.	1011.	1018.	1020.	1022.	1025.	1038.	1048.
PER Q=	.3	92.9	1.9	2.6	.7	.6	.4	.5	.1	
AREA=	3.5	199.6	10.1	15.3	4.1	3.7	3.7	6.9	1.8	
VEL=	2.1	10.0	4.1	3.7	3.5	3.3	2.4	1.4	.7	
DEPTH=	2.0	3.4	2.5	2.2	2.0	1.8	1.2	.5	.2	

*SECNO 1.941

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.941	2.69	2186.79	2186.79	.00	2187.59	.81	5.42	.07	2184.90
2150.0	4.5	886.9	1258.6	1.8	88.7	296.0	110.3	40.3	2184.60
.41	2.47	10.00	4.25	.055	.030	.060	.000	2184.10	980.06
.014125	600.	581.	410.	0	19	0	.00	251.67	1249.95

FLOW DISTRIBUTION FOR SECNO= 1.94 CWSEL= 2186.79

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

STA=	980.	982.	1022.	1042.	1113.	1128.	1144.	1155.	1161.	1167.	1172.	1183.	1203.
PER Q=	.2	41.3	3.6	3.2	5.2	8.4	6.0	3.3	3.8	3.4	5.4	7.2	
AREA=	1.8	88.7	23.0	28.5	26.1	35.8	25.2	13.7	14.9	13.2	23.7	35.8	
VEL=	2.5	10.0	3.4	2.4	4.3	5.0	5.1	5.1	5.4	5.6	4.9	4.3	
DEPTH=	.9	2.2	1.2	.4	1.7	2.2	2.3	2.3	2.5	2.6	2.2	1.8	

STA=	1203.	1216.	1240.	1250.
PER Q=	3.9	4.6	.6	
AREA=	20.7	29.4	5.9	
VEL=	4.0	3.4	2.2	
DEPTH=	1.6	1.2	.6	

CCHV= .100 CEHV= .300
*SECNO 2.036

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .69

2.036	4.12	2195.62	2195.58	.00	2196.23	.61	8.61	.02	2194.70
1945.0	1322.4	622.6	.0	242.5	81.0	.1	114.2	43.4	2194.60
.44	5.45	7.68	.04	.060	.035	.055	.000	2191.50	722.55
.023935	495.	502.	445.	2	11	0	.00	310.90	1068.15

FLOW DISTRIBUTION FOR SECNO= 2.04 CWSEL= 2195.62

STA=	723.	812.	822.	839.	853.	860.	865.	898.	998.	1004.	1068.	1068.
PER Q=	10.7	3.5	8.3	18.6	13.4	6.1	3.9	3.0	.5	32.0	.0	
AREA=	59.9	14.2	29.3	44.0	27.5	15.4	23.6	25.4	3.3	81.0	.1	
VEL=	3.5	4.8	5.5	8.2	9.5	7.7	3.2	2.3	2.7	7.7	.0	
DEPTH=	.7	1.4	1.7	3.1	3.9	3.1	.7	.3	.6	1.3	.5	

*SECNO 2.131
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.131	4.38	2208.08	2208.08	.00	2209.07	.99	6.85	.11	2204.40
1945.0	62.7	1542.4	339.9	18.0	174.6	117.8	117.7	46.0	2206.20
.45	3.48	8.84	2.88	.060	.035	.060	.000	2203.70	987.19
.009556	400.	502.	630.	0	8	0	.00	171.92	1159.11

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= 2.13 CWSEL= 2208.08

STA=	987.	997.	1053.	1078.	1099.	1118.	1159.
PER Q=	3.2	79.3	6.5	5.0	3.3	2.7	
AREA=	18.0	174.6	38.7	31.0	23.1	24.9	
VEL=	3.5	8.8	3.2	3.1	2.8	2.1	
DEPTH=	1.8	3.1	1.5	1.5	1.2	.6	

*SECNO 2.227
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.227	4.78	2219.48	2219.48	.00	2220.73	1.25	4.99	.08	2216.50
1945.0	15.6	1393.8	535.6	5.2	135.9	128.8	121.1	47.7	2216.90
.47	2.98	10.25	4.16	.060	.030	.060	.000	2214.70	972.89
.010015	500.	507.	520.	0	8	0	.00	108.73	1081.63

FLOW DISTRIBUTION FOR SECNO= 2.23 CWSEL= 2219.48

STA=	973.	976.	1021.	1037.	1056.	1070.	1078.	1082.
PER Q=	.8	71.7	9.0	9.2	6.1	2.9	.4	
AREA=	5.2	135.9	38.9	42.4	29.2	15.1	3.2	
VEL=	3.0	10.3	4.5	4.2	4.0	3.8	2.1	
DEPTH=	1.7	3.0	2.4	2.2	2.1	1.9	.9	

*SECNO 2.320

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.320	2.93	2229.33	2229.33	.00	2230.07	.74	5.53	.05	2227.60
1945.0	610.7	1024.8	309.5	144.4	116.9	97.2	124.6	49.8	2227.60
.49	4.23	8.77	3.18	.060	.030	.060	.000	2226.40	829.19
.012885	480.	491.	490.	0	14	0	.00	266.16	1161.57

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= 2.32 CWSEL= 2229.33

STA=	829.	850.	858.	875.	884.	945.	1005.	1016.	1034.	1141.	1157.	1162.
PER Q=	5.5	4.1	13.1	3.5	5.3	52.7	3.6	3.9	3.1	4.9	.5	
AREA=	28.6	17.0	46.5	16.4	35.9	116.9	17.9	22.7	27.6	24.8	4.2	
VEL=	3.7	4.6	5.5	4.2	2.9	8.8	3.9	3.3	2.2	3.8	2.5	
DEPTH=	1.4	2.1	2.7	1.8	.6	1.9	1.6	1.3	.3	1.6	.9	

*SECNO 2.393
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.393	2.39	2237.59	2237.59	.00	2238.31	.72	4.69	.00	2235.20
1945.0	46.5	874.7	1023.8	14.8	93.3	288.9	128.0	52.2	2235.20
.51	3.15	9.38	3.54	.060	.030	.060	.000	2235.20	968.13
.011195	390.	385.	400.	0	15	0	.00	267.48	1235.61

FLOW DISTRIBUTION FOR SECNO= 2.39 CWSEL= 2237.59

STA=	968.	980.	1019.	1048.	1069.	1114.	1127.	1152.	1185.	1236.
PER Q=	2.4	45.0	15.0	8.2	13.3	3.6	5.3	5.0	2.3	
AREA=	14.8	93.3	65.0	39.7	72.1	20.0	32.7	35.3	24.0	
VEL=	3.2	9.4	4.5	4.0	3.6	3.5	3.1	2.7	1.8	
DEPTH=	1.2	2.4	2.2	1.9	1.6	1.5	1.3	1.1	.5	

*SECNO 2.464
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.464	2.28	2245.38	2245.38	.00	2245.96	.57	4.08	.01	2243.70
1739.0	685.2	826.9	226.9	223.3	100.2	94.2	131.5	54.8	2243.70
.53	3.07	8.25	2.41	.060	.030	.060	.000	2243.10	809.13
.010703	385.	375.	360.	0	11	0	.00	342.38	1151.51

FLOW DISTRIBUTION FOR SECNO= 2.46 CWSEL= 2245.38

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

STA=	809.	825.	847.	870.	908.	921.	946.	963.	973.	983.	988.	1037.	1056.
PER Q=	3.7	3.7	3.9	4.7	3.3	6.3	5.1	3.4	3.5	1.8	47.6	4.0	
AREA=	20.1	23.8	24.9	33.9	18.0	34.6	26.1	16.6	16.8	8.4	100.2	23.5	
VEL=	3.2	2.7	2.7	2.4	3.2	3.2	3.4	3.6	3.6	3.6	8.3	3.0	
DEPTH=	1.3	1.1	1.1	.9	1.4	1.4	1.5	1.7	1.7	1.7	2.0	1.2	

STA=	1056.	1082.	1135.	1152.
PER Q=	3.5	5.2	.4	
AREA=	24.3	41.4	5.1	
VEL=	2.5	2.2	1.4	
DEPTH=	.9	.8	.3	

*SECNO 2.526

3265 DIVIDED FLOW

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

70 ENCROACHMENT STATIONS= 780.0 1053.0 TYPE= 1 TARGET= 273.000
ET-CARDS USED TO SPECIFY INEFFECTIVE FLOW AREAS. HOWEVER, THE
AREA IS SUBJECT TO HIGH VELOCITIES AND EROSION AND IS THEREFORE
INCLUDED IN THE FLOODWAY.

2.526	2.16	2250.76	2250.71	.00	2251.38	.62	5.41	.01	2250.70
1739.0	1429.8	309.2	.0	235.1	42.8	.0	134.0	56.8	2251.00
.54	6.08	7.23	.00	.060	.030	.000	.000	2248.60	780.00
.030394	320.	327.	300.	2	11	0	.00	212.86	1026.69

FLOW DISTRIBUTION FOR SECNO= 2.53 CWSEL= 2250.76

STA=	780.	792.	864.	870.	887.	910.	926.	936.	1029.
PER Q=	9.2	55.3	3.9	6.7	4.1	2.6	.5	17.8	
AREA=	25.1	141.8	10.6	22.4	18.8	12.3	4.0	42.8	
VEL=	6.4	6.8	6.3	5.2	3.8	3.6	2.3	7.2	
DEPTH=	2.1	2.0	1.8	1.3	.8	.8	.4	.8	

*SECNO 2.614
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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    DIVIDED FLOW 200 FEET UPSTREAM OF SECTION 2.614
    2.614      2.73   2262.93   2262.93      .00   2263.71      .79      7.86      .05   2261.30
   1739.0      27.6     981.1     730.3     10.1     109.4    209.0     137.3     59.0   2261.90
      .56      2.74      8.97      3.49     .060      .030     .060      .000  2260.20    947.50
  .011016      430.      465.      500.        0        11        0       .00   208.07   1155.57


FLOW DISTRIBUTION FOR SECNO=      2.61          CWSEL=   2262.93

STA=     947.     959.    1007.    1032.    1040.    1051.    1059.    1069.    1082.    1102.    1125.    1156.
  PER Q=      1.6     56.4      9.4      3.9      5.3      3.9      4.2      3.7      5.1      4.2      2.4
   AREA=     10.1    109.4     42.7     16.2     22.3     16.2     18.5     19.2     27.5     25.9     20.6
    VEL=      2.7      9.0      3.8      4.2      4.2      4.2      3.9      3.4      3.2      2.8      2.0
  DEPTH=       .9      2.3      1.7      2.0      2.0      2.0      1.9      1.5      1.4      1.1       .7

*SECNO 2.700
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.700      4.36   2272.16   2272.16      .00   2273.28     1.12      3.81      .10   2268.80
   1739.0      15.6    1349.5     373.8      5.6     141.5    139.7     140.6     61.0   2269.40
      .58      2.77      9.54      2.67     .060      .030     .060      .000  2267.80    968.13
  .006235      450.      454.      500.        0        14        0       .00   144.02   1112.16


FLOW DISTRIBUTION FOR SECNO=      2.70          CWSEL=   2272.16

STA=     968.     971.    1008.    1019.    1030.    1046.    1062.    1106.    1112.
  PER Q=       .9     77.6      5.7      4.0      4.6      3.4      3.6       .2
   AREA=      5.6    141.5     27.6     22.1     28.2     23.3     35.7      2.7
    VEL=      2.8      9.5      3.6      3.1      2.9      2.5      1.8      1.2
  DEPTH=      2.0      3.8      2.5      2.0      1.8      1.5       .8       .4

CCHV=     .100 CEHV=     .300
*SECNO 2.798
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      873.0    1016.0  TYPE=      1  TARGET=      143.000
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
    2.798      3.44   2282.84   2282.84      .00   2283.95     1.11      4.13      .00   2279.40
   1739.0     467.0    1264.7       7.3    131.6     130.9      3.5     144.0     62.8   2279.40
      .60      3.55      9.66      2.10     .065      .035     .065      .000  2279.40    873.20
  .009956      625.      523.      475.        0        15        0       .00   141.85   1015.04
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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= 2.80 CWSEL= 2282.84

STA=	873.	933.	943.	949.	961.	975.	1013.	1015.
PER Q=	3.4	3.8	3.1	6.1	10.5	72.7	.4	
AREA=	32.3	18.8	13.8	26.9	39.8	130.9	3.5	
VEL=	1.8	3.5	4.0	3.9	4.6	9.7	2.1	
DEPTH=	.5	1.9	2.3	2.2	2.8	3.4	1.7	

*SECNO 2.895

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
CONFLUENCE WITH TRIBUTARY IS APPROXIMATELY 150 FEET UPSTREAM OF
SECTION 2.985. TRIBUTARY IS MODELED WITH THIS RUN.

2.895	2.35	2291.55	2291.55	.00	2291.96	.41	7.42	.07	2291.00
1739.0	1161.1	216.5	361.4	219.6	35.8	96.5	146.9	65.7	2291.60
.62	5.29	6.05	3.75	.065	.035	.065	.000	2289.20	745.49
.038680	320.	512.	525.	0	20	0	.00	458.51	1246.51

FLOW DISTRIBUTION FOR SECNO= 2.89 CWSEL= 2291.55

STA=	745.	758.	763.	787.	807.	835.	862.	890.	933.	948.	1007.	1159.	1176.
PER Q=	3.2	3.6	18.8	9.6	12.7	8.8	4.5	4.1	1.4	12.4	5.7	6.9	
AREA=	11.4	9.3	46.7	29.0	39.2	31.1	21.0	23.7	8.3	35.8	33.2	22.4	
VEL=	4.9	6.7	7.0	5.8	5.6	4.9	3.7	3.0	3.0	6.1	3.0	5.4	
DEPTH=	.9	1.9	1.9	1.5	1.4	1.2	.8	.6	.6	.6	.2	1.3	

STA=	1176.	1190.	1227.	1247.
PER Q=	3.6	3.8	.7	
AREA=	14.0	21.1	5.7	
VEL=	4.5	3.1	2.2	
DEPTH=	1.0	.6	.3	

*SECNO 2.966

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= 861.0 1019.0 TYPE= 1 TARGET= 158.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

2.966	3.60	2301.90	2301.75	.00	2302.38	.48	10.40	.02	2300.60
955.0	70.1	769.0	115.9	28.2	127.7	34.1	149.4	68.6	2300.40
.64	2.49	6.02	3.40	.065	.040	.065	.000	2298.30	861.99
.015733	355.	375.	500.	5	17	0	.00	156.63	1018.62

FLOW DISTRIBUTION FOR SECNO= 2.97 CWSEL= 2301.90

STA=	862.	880.	904.	991.	993.	1004.	1014.	1019.
PER Q=	.7	6.6	80.5	1.1	5.8	4.7	.6	
AREA=	5.4	22.8	127.7	2.9	15.4	13.0	2.8	
VEL=	1.3	2.8	6.0	3.7	3.6	3.4	2.0	
DEPTH=	.3	1.0	1.5	1.5	1.4	1.3	.6	

*SECNO 3.032
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.032	2.89	2310.69	2310.69	.00	2311.34	.66	4.67	.05	2309.50
955.0	1.9	659.8	293.2	1.5	86.2	116.6	151.0	69.8	2309.20
.65	1.31	7.65	2.52	.065	.035	.065	.000	2307.80	926.49
.011153	260.	359.	360.	0	15	0	.00	155.56	1082.05

FLOW DISTRIBUTION FOR SECNO= 3.03 CWSEL= 2310.69

STA=	926.	931.	969.	977.	990.	1008.	1042.	1056.	1070.	1082.
PER Q=	.2	69.1	3.3	3.8	4.8	9.9	4.1	3.6	1.3	
AREA=	1.5	86.2	10.7	14.1	18.6	36.9	15.2	14.1	6.9	
VEL=	1.3	7.7	2.9	2.6	2.5	2.6	2.6	2.4	1.8	
DEPTH=	.3	2.3	1.3	1.1	1.0	1.1	1.1	1.0	.6	

*SECNO 3.087
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.087	2.79	2317.29	2317.29	.00	2318.35	1.06	3.31	.12	2315.20
955.0	203.9	741.3	9.8	55.0	80.8	3.9	152.1	70.5	2314.70
.66	3.71	9.17	2.52	.065	.035	.065	.000	2314.50	948.12
.012463	305.	280.	270.	0	8	0	.00	65.88	1013.99

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= 3.09 CWSEL= 2317.29

STA=	948.	949.	951.	952.	953.	965.	974.	975.	980.	981.	1011.	1014.
PER Q=	.0	.4	.2	.3	7.0	7.0	.9	4.6	.9	77.6	1.0	
AREA=	.4	1.7	.9	1.2	19.1	17.0	2.1	10.5	2.1	80.8	3.9	
VEL=	1.1	2.3	2.4	2.6	3.5	3.9	4.2	4.2	4.2	9.2	2.5	
DEPTH=	.4	.8	.9	1.2	1.6	1.9	2.1	2.1	2.1	2.7	1.3	

*SECNO 3.134
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.134	2.93	2322.93	2322.93	.00	2324.08	1.15	2.96	.03	2320.00
955.0	12.4	792.0	150.6	4.5	85.0	43.6	152.9	70.9	2320.00
.67	2.78	9.32	3.46	.065	.035	.065	.000	2320.00	976.91
.011493	230.	248.	270.	0	8	0	.00	62.37	1039.28

FLOW DISTRIBUTION FOR SECNO= 3.13 CWSEL= 2322.93

A=	977.	979.	980.	1009.	1012.	1023.	1034.	1039.
PER Q=	.5	.8	82.9	3.7	8.1	3.7	.3	
AREA=	2.1	2.4	85.0	7.7	20.7	13.0	2.2	
VEL=	2.1	3.4	9.3	4.5	3.7	2.7	1.4	
DEPTH=	1.0	2.4	2.9	2.6	1.9	1.2	.4	

*SECNO 3.225
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.225	2.06	2334.16	2334.16	.00	2334.83	.67	7.06	.05	2332.80
955.0	361.4	536.2	57.4	97.2	65.9	16.5	154.6	72.0	2333.00
.69	3.72	8.14	3.47	.065	.035	.065	.000	2332.10	923.67
.018903	530.	480.	450.	0	19	0	.00	130.68	1054.36

FLOW DISTRIBUTION FOR SECNO= 3.22 CWSEL= 2334.16

STA=	924.	945.	956.	968.	975.	987.	993.	1000.	1040.	1051.	1054.
PER Q=	9.2	5.3	5.8	3.6	6.6	3.5	3.7	56.1	5.0	1.0	
AREA=	24.8	13.9	15.2	9.2	16.4	8.5	9.2	65.9	13.3	3.2	
VEL=	3.6	3.7	3.7	3.8	3.9	4.0	3.8	8.1	3.6	3.0	
DEPTH=	1.2	1.3	1.3	1.3	1.4	1.4	1.3	1.6	1.2	.9	

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 3.306

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3.306	3.93	2340.23	2340.23	.00	2341.27	1.03	5.28	.11	2337.10
890.0	17.8	778.8	93.5	6.8	89.8	37.2	156.0	72.9	2338.10
.71	2.60	8.67	2.51	.065	.035	.065	.000	2336.30	969.57
.009755	240.	428.	480.	0	17	0	.00	81.42	1050.99

FLOW DISTRIBUTION FOR SECNO= 3.31 CWSEL= 2340.23

STA=	970.	972.	974.	975.	1005.	1010.	1014.	1021.	1031.	1042.	1049.	1051.
PER Q=	.2	.9	.8	87.5	3.8	2.2	2.3	1.5	.6	.1	.0	
AREA=	1.4	3.0	2.5	89.8	9.7	6.3	8.3	7.3	4.2	1.3	.1	
VEL=	1.4	2.8	3.0	8.7	3.5	3.1	2.5	1.8	1.2	.7	.4	
DEPTH=	.6	1.5	2.5	3.0	1.9	1.6	1.2	.7	.4	.2	.1	

*SECNO 3.383

01 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3.383	1.78	2348.18	2348.18	.00	2348.68	.50	5.89	.05	2347.90
890.0	550.0	325.7	14.3	147.1	40.8	5.5	157.6	74.4	2346.80
.73	3.74	7.99	2.60	.065	.035	.065	.000	2346.40	837.23
.021583	475.	407.	300.	0	14	0	.00	214.68	1051.91

FLOW DISTRIBUTION FOR SECNO= 3.38 CWSEL= 2348.18

STA=	837.	880.	889.	908.	918.	937.	941.	948.	954.	983.	1016.	1044.	1052.
PER Q=	3.2	3.3	10.6	6.9	15.4	3.3	5.7	4.9	8.1	.5	36.6	1.6	
AREA=	14.2	8.9	24.0	14.3	30.1	6.3	11.1	9.5	24.2	4.4	40.8	5.5	
VEL=	2.0	3.3	3.9	4.3	4.6	4.6	4.6	4.6	3.0	.9	8.0	2.6	
DEPTH=	.3	1.0	1.3	1.4	1.6	1.6	1.6	1.6	.8	.1	1.5	.7	

*SECNO 3.466

3470 ENCROACHMENT STATIONS= 958.0 1169.0 TYPE= 1 TARGET= 211.000

ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT

SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

3.466	3.06	2355.46	2355.44	.00	2355.96	.50	7.27	.00	2354.40
890.0	29.6	545.6	314.8	10.8	78.9	118.0	159.3	76.2	2354.20
.75	2.74	6.92	2.67	.065	.035	.065	.000	2352.40	958.13
.016040	310.	438.	420.	3	20	0	.00	210.47	1168.60

FLOW DISTRIBUTION FOR SECNO= 3.47 CWSEL= 2355.46

STA=	958.	971.	1025.	1040.	1051.	1074.	1100.	1118.	1150.	1169.
PER Q=	3.3	61.3	7.1	4.2	6.9	7.1	4.0	4.5	1.6	
AREA=	10.8	78.9	18.8	12.1	21.8	23.4	14.4	19.2	8.3	
VEL=	2.7	6.9	3.4	3.1	2.8	2.7	2.5	2.1	1.8	
DEPTH=	.8	1.5	1.3	1.1	.9	.9	.8	.6	.4	

*SECNO 3.559

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.559	2.72	2365.42	2365.42	.00	2366.53	1.10	7.00	.18	2363.70
890.0	65.1	820.2	4.6	17.8	94.1	2.2	161.0	77.5	2363.60
.77	3.67	8.72	2.14	.065	.035	.065	.000	2362.70	972.20
.013534	510.	491.	400.	0	11	0	.00	54.18	1026.38

FLOW DISTRIBUTION FOR SECNO= 3.56 CWSEL= 2365.42

STA=	972.	973.	975.	978.	982.	984.	1024.	1026.
PER Q=	.0	.5	2.1	3.2	1.5	92.2	.5	
AREA=	.2	1.8	5.0	7.3	3.4	94.1	2.2	
VEL=	.9	2.3	3.7	4.0	3.8	8.7	2.1	
DEPTH=	.2	.9	1.7	1.8	1.7	2.4	.9	

*SECNO 3.661

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED

WSEL AND THE TOPOGRAPHY.

3.661	1.68	2374.78	2374.78	.00	2375.29	.51	6.96	.06	2373.60
810.0	58.1	597.7	154.1	30.3	92.0	63.4	162.8	79.0	2373.20
.79	1.92	6.50	2.43	.065	.035	.065	.000	2373.10	874.01
.012972	480.	539.	440.	0	14	0	.00	214.58	1130.61

FLOW DISTRIBUTION FOR SECNO= 3.66 CWSEL= 2374.78

STA=	874.	961.	973.	1032.	1048.	1112.	1121.	1127.	1131.
PER Q=	3.4	3.7	73.8	5.4	6.1	3.8	3.1	.6	
AREA=	18.5	11.8	92.0	16.5	25.9	10.6	8.0	2.4	
VEL=	1.5	2.6	6.5	2.7	1.9	2.9	3.2	2.1	
DEPTH=	.2	1.0	1.6	1.0	.4	1.2	1.3	.7	

*SECNO 3.716
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 962.0 1094.0 TYPE= 1 TARGET= 132.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

3.716	2.64	2381.04	2381.04	.00	2381.64	.61	4.05	.03	2379.40
810.0	2.5	703.5	104.0	1.3	105.8	46.6	164.0	80.4	2380.00
.81	1.97	6.65	2.23	.065	.035	.065	.000	2378.40	962.31
.013441	230.	290.	410.	0	14	0	.00	131.69	1094.00

FLOW DISTRIBUTION FOR SECNO= 3.72 CWSEL= 2381.04

STA=	962.	963.	964.	1031.	1050.	1060.	1061.	1064.	1065.	1068.	1081.	1094.
PER Q=	.0	.3	86.8	5.1	2.0	.2	.6	.2	.7	3.2	1.0	
AREA=	.2	1.1	105.8	16.8	7.4	.7	2.2	.7	2.4	10.9	5.4	
VEL=	.9	2.2	6.6	2.4	2.2	2.2	2.2	2.2	2.3	2.4	1.5	
DEPTH=	.3	1.1	1.6	.9	.7	.7	.7	.7	.8	.8	.4	

*SECNO 3.798
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.798	1.82	2389.42	2389.42	.00	2389.97	.55	5.78	.01	2387.70
810.0	239.2	517.1	53.7	94.3	72.3	15.0	165.6	81.8	2387.70
.83	2.54	7.15	3.58	.065	.035	.065	.000	2387.60	861.39
.013753	450.	433.	330.	0	19	0	.00	165.63	1027.03

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= 3.80 CWSEL= 2389.42

STA=	861.	895.	925.	942.	956.	973.	975.	1017.	1025.	1027.
PER Q=	3.2	6.5	5.4	4.8	8.1	1.6	63.8	6.2	.4	
AREA=	15.8	23.1	16.5	14.3	21.1	3.4	72.3	13.4	1.6	
VEL=	1.7	2.3	2.6	2.7	3.1	3.7	7.2	3.8	2.0	
DEPTH=	.5	.8	1.0	1.0	1.2	1.7	1.7	1.7	.8	

*SECNO 3.840
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.840	1.87	2393.47	2393.47	.00	2394.10	.63	3.01	.02	2391.60
810.0	131.3	603.0	75.7	52.1	83.7	23.5	166.5	82.5	2391.70
.84	2.52	7.21	3.22	.065	.035	.065	.000	2391.60	907.27
.013349	222.	222.	222.	0	5	0	.00	127.27	1034.54

FLOW DISTRIBUTION FOR SECNO= 3.84 CWSEL= 2393.47

STA=	907.	914.	935.	961.	970.	1017.	1034.	1035.
PER Q=	.2	3.5	7.3	5.2	74.5	9.3	.0	
AREA=	1.6	14.0	23.8	12.7	83.7	23.2	.3	
VEL=	1.0	2.0	2.5	3.3	7.2	3.2	1.0	
DEPTH=	.2	.7	.9	1.4	1.8	1.4	.5	

*SECNO -2.895
START TRIB COMP
-2.895 2.895 2291.551

3265 DIVIDED FLOW

TRIBUTARY TO WASH K

-2.895	2.35	2291.55	.00	.00	2291.95	.40	10.35	-7.32	2291.00
1739.0	1172.4	201.8	364.9	219.6	35.8	96.5	168.9	85.4	2291.60
.86	5.34	5.64	3.78	.060	.035	.060	.000	2289.20	745.49
.033599	320.	512.	525.	0	0	0	.00	458.51	1246.51

FLOW DISTRIBUTION FOR SECNO= -2.89 CWSEL= 2291.55

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

STA=	745.	758.	763.	766.	787.	807.	835.	862.	890.	933.	948.	1007.	1159.
PER Q=	3.2	3.6	3.0	16.0	9.7	12.8	8.9	4.5	4.2	1.4	11.6	5.8	
AREA=	11.4	9.3	6.8	39.9	29.0	39.2	31.1	21.0	23.7	8.3	35.8	33.2	
VEL=	4.9	6.8	7.8	7.0	5.8	5.7	5.0	3.7	3.1	3.1	5.6	3.0	
DEPTH=	.9	1.9	2.3	1.9	1.5	1.4	1.2	.8	.6	.6	.6	.2	

STA=	1159.	1176.	1190.	1227.	1247.
PER Q=	7.0	3.7	3.8	.7	
AREA=	22.4	14.0	21.1	5.7	
VEL=	5.5	4.5	3.1	2.2	
DEPTH=	1.3	1.0	.6	.3	

*SECNO .032

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

0 ENCROACHMENT STATIONS= 951.0 1271.0 TYPE= 1 TARGET= 320.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

.032	2.57	2302.77	2302.77	.00	2303.17	.40	10.14	.00	2301.30
848.0	13.6	832.8	1.6	4.0	163.4	2.5	171.1	88.4	2303.00
.88	3.43	5.10	.64	.060	.035	.060	.000	2300.20	951.52
.019558	360.	370.	370.	0	8	0	.00	240.19	1270.96

FLOW DISTRIBUTION FOR SECNO= .03 CWSEL= 2302.77

STA=	952.	955.	956.	1200.	1270.	1271.
PER Q=	.8	.8	98.2	.2	.0	
AREA=	2.5	1.5	163.4	2.5	.1	
VEL=	2.8	4.5	5.1	.7	.0	
DEPTH=	.7	1.5	.8	.0	.1	

*SECNO .097
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.097	1.91	2310.01	2310.01	.00	2310.62	.61	6.34	.06	2308.80
848.0	262.8	485.1	100.1	73.6	63.3	28.2	172.4	89.8	2308.80
.90	3.57	7.67	3.54	.060	.035	.060	.000	2308.10	926.95
.017700	340.	343.	320.	0	19	0	.00	131.65	1058.59

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= .10 CWSEL= 2310.01

STA=	927.	939.	952.	963.	973.	982.	993.	1033.	1045.	1052.	1059.
PER Q=	4.3	6.1	5.5	4.7	4.5	5.9	57.2	6.0	3.3	2.5	
AREA=	11.3	14.5	12.8	11.2	10.5	13.4	63.3	14.0	7.8	6.5	
VEL=	3.2	3.5	3.6	3.6	3.6	3.8	7.7	3.6	3.5	3.3	
DEPTH=	.9	1.1	1.2	1.1	1.2	1.2	1.6	1.2	1.1	1.0	

*SECNO .131
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.131	1.96	2314.26	2314.26	.00	2314.84	.57	2.88	.00	2312.40
848.0	283.1	486.1	78.8	83.8	64.5	33.0	173.2	90.5	2312.30
.91	3.38	7.53	2.39	.060	.035	.060	.000	2312.30	931.13
.012885	210.	180.	200.	0	5	0	.00	159.78	1090.91

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 2314.26

STA=	931.	944.	962.	972.	978.	988.	993.	1000.	1033.	1042.	1068.	1091.
PER Q=	3.3	5.6	3.1	3.3	7.7	4.1	6.3	57.3	4.3	4.3	.7	
AREA=	10.7	17.3	9.7	8.2	16.6	8.6	12.7	64.5	11.3	16.5	5.2	
VEL=	2.6	2.7	2.7	3.4	3.9	4.0	4.2	7.5	3.2	2.2	1.1	
DEPTH=	.8	1.0	1.0	1.4	1.7	1.7	1.8	2.0	1.3	.6	.2	

*SECNO .182

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.182	3.57	2321.67	2321.67	.00	2323.14	1.46	3.31	.27	2318.60
848.0	35.6	790.7	21.7	8.3	79.1	6.0	174.0	91.0	2319.20
.92	4.27	9.99	3.59	.060	.035	.060	.000	2318.10	986.79
.011974	260.	270.	250.	0	14	0	.00	33.19	1019.98

FLOW DISTRIBUTION FOR SECNO= .18 CWSEL= 2321.67

STA=	987.	988.	989.	991.	1016.	1019.	1020.
PER Q=	.3	.9	3.0	93.2	2.5	.1	
AREA=	1.1	2.0	5.2	79.1	5.5	.6	
VEL=	1.9	4.1	4.8	10.0	3.8	1.4	
DEPTH=	.9	2.0	2.6	3.2	1.8	.6	

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 .212

3301 HV CHANGED MORE THAN HVINS

.212	1.91	2324.31	2323.57	.00	2324.43	.12	1.16	.13	2322.70
480.0	79.4	394.9	5.8	45.5	134.1	4.1	174.5	91.3	2322.40
.93	1.74	2.95	1.41	.060	.045	.060	.000	2322.40	956.57
.003864	160.	158.	140.	3	17	0	.00	125.71	1082.28

FLOW DISTRIBUTION FOR SECNO= .21 CWSEL= 2324.31

STA=	957.	980.	988.	993.	998.	1000.	1078.	1082.
PER Q=	4.2	3.9	3.5	3.6	1.4	82.3	1.2	
AREA=	16.0	10.3	7.9	8.1	3.2	134.1	4.1	
VEL=	1.3	1.8	2.1	2.1	2.1	2.9	1.4	
DEPTH=	.7	1.3	1.6	1.6	1.6	1.7	1.0	

*SECNO .259

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.259	3.38	2329.78	2329.78	.00	2330.66	.88	1.55	.23	2328.30
480.0	12.2	450.8	17.0	4.6	58.2	8.2	175.3	91.8	2328.80
.94	2.66	7.74	2.06	.060	.035	.060	.000	2326.40	981.61
.012107	220.	248.	240.	0	14	0	.00	45.48	1027.09

FLOW DISTRIBUTION FOR SECNO= .26 CWSEL= 2329.78

STA=	982.	984.	987.	1013.	1023.	1027.
PER Q=	.3	2.2	93.9	3.3	.2	
AREA=	1.0	3.5	58.2	7.3	1.0	
VEL=	1.5	3.0	7.7	2.2	1.0	
DEPTH=	.4	1.2	2.2	.7	.2	

*SECNO .318
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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
.318	1.64	2337.34	2337.34	.00	2337.90	.56	4.12	.03	2336.20
480.0	23.2	406.1	50.6	8.5	63.1	19.9	175.8	92.2	2336.20
.96	2.74	6.43	2.54	.060	.035	.060	.000	2335.70	955.60
.014634	340.	311.	280.	0	11	0	.00	82.76	1038.36

FLOW DISTRIBUTION FOR SECNO= .32 CWSEL= 2337.34

STA=	956.	959.	960.	966.	1011.	1018.	1028.	1037.	1038.
PER Q=	.7	.5	3.7	84.6	4.3	4.2	2.0	.0	
AREA=	1.6	.9	5.9	63.1	6.9	7.9	4.9	.2	
VEL=	1.9	2.8	3.0	6.4	3.0	2.6	2.0	.9	
DEPTH=	.5	.9	1.0	1.4	1.0	.8	.5	.2	

*SECNO .416

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
[illegible]0 CRITICAL DEPTH ASSUMED

.416	3.63	2348.13	2348.13	.00	2349.56	1.43	6.84	.26	2345.50
480.0	23.0	446.3	10.7	6.5	45.0	3.3	176.7	92.9	2345.70
.97	3.54	9.91	3.24	.060	.035	.060	.000	2344.50	988.50
.012028	505.	517.	520.	0	17	0	.00	20.81	1009.30

FLOW DISTRIBUTION FOR SECNO= .42 CWSEL= 2348.13

STA=	988.	990.	993.	1007.	1008.	1009.
PER Q=	.3	4.5	93.0	1.8	.4	
AREA=	.8	5.6	45.0	2.1	1.2	
VEL=	1.6	3.8	9.9	4.1	1.8	
DEPTH=	.6	1.9	3.2	2.1	.9	

*SECNO .506

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.506	2.94	2358.14	2358.14	.00	2358.80	.66	6.04	.08	2357.00
480.0	1.3	373.5	105.2	.7	51.5	38.0	177.5	93.4	2357.20
.99	1.78	7.25	2.77	.060	.035	.060	.000	2355.20	948.82
.013345	490.	475.	490.	0	15	0	.00	71.35	1020.17

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= .51 CWSEL= 2358.14

STA=	949.	950.	978.	996.	1001.	1012.	1020.
PER Q=	.3	77.8	10.3	3.2	7.0	1.4	
AREA=	.7	51.5	17.6	5.2	11.4	3.7	
VEL=	1.8	7.3	2.8	2.9	2.9	1.8	
DEPTH=	.6	1.8	1.0	1.0	1.0	.5	

*SECNO .604
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.604	1.47	2371.67	2371.67	.00	2372.13	.46	7.46	.02	2370.50
400.0	121.4	240.5	38.2	42.6	36.1	13.3	178.6	94.4	2370.20
1.02	2.85	6.65	2.87	.060	.035	.060	.000	2370.20	924.53
.015826	510.	517.	530.	0	8	0	.00	98.74	1023.27

FLOW DISTRIBUTION FOR SECNO= .60 CWSEL= 2371.67

STA=	925.	927.	932.	939.	941.	955.	962.	979.	1005.	1016.	1023.
PER Q=	.2	1.5	2.1	.6	4.3	4.3	17.2	60.1	8.8	.7	
AREA=	.7	2.9	4.0	1.1	8.0	6.1	19.9	36.1	11.2	2.1	
VEL=	1.4	2.1	2.1	2.1	2.1	2.8	3.5	6.7	3.2	1.3	
DEPTH=	.3	.6	.6	.6	.6	.9	1.2	1.4	1.0	.3	

*SECNO .705
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.705	1.13	2384.23	2384.23	.00	2384.62	.40	11.98	.01	2383.40
400.0	107.0	283.0	9.9	31.7	50.3	3.5	179.7	95.7	2383.30
1.05	3.38	5.62	2.82	.065	.045	.065	.000	2383.10	909.59
.033400	560.	533.	510.	0	15	0	.00	108.02	1017.62

FLOW DISTRIBUTION FOR SECNO= .70 CWSEL= 2384.23

STA=	910.	913.	918.	939.	947.	955.	1011.	1017.	1018.
PER Q=	.3	2.1	12.9	5.5	6.1	70.8	2.5	.0	
AREA=	.7	2.9	15.2	6.2	6.6	50.3	3.5	.1	
VEL=	1.5	2.9	3.4	3.5	3.7	5.6	2.9	.0	
DEPTH=	.2	.6	.7	.8	.8	.9	.6	.1	

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 .795

.795	1.40	2396.10	2395.98	.00	2396.48	.38	11.85	.00	2395.30
330.0	13.5	310.0	6.5	7.2	60.9	2.2	180.5	96.7	2394.80
1.08	1.87	5.09	2.87	.065	.045	.065	.000	2394.70	968.05
.018255	490.	475.	465.	5	8	0	.00	71.95	1040.00

FLOW DISTRIBUTION FOR SECNO= .80 CWSEL= 2396.10

STA=	968.	976.	987.	1037.	1038.	1039.	1040.
PER Q=	.3	3.8	94.0	1.4	.5	.1	
AREA=	1.2	6.0	60.9	1.2	.8	.2	
VEL=	.9	2.1	5.1	3.6	2.3	1.0	
DEPTH=	.1	.5	1.2	1.2	.8	.2	

·FLOODWAY DETERMINATION

T2

T3 WASH K:UNNAMED WASH #6

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.00270	0	0	0	1943.38	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	-1	0	0	0

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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

1490 NH CARD USED
CCHV= .100 CEHV= .300
*SECNO 47.520

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 47.52(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH K - UNNAMED WASH # 6, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
THE STARTING WATER SURFACE ELEVATION WAS DETERMINED BY THE
SLOPE AREA METHOD IN THE HEC-2 INPUT (J1, FIELD 5)

47.520	5.37	1933.37	1932.43	1943.38	1933.64	.28	.00	.00	1928.10
2508.0	382.6	866.8	1258.6	228.7	128.7	695.8	.0	.0	1928.00
.00	1.67	6.74	1.81	.070	.035	.070	.000	1928.00	1081.64
.002698	0.	0.	0.	0	14	8	.00	627.61	1761.13

CCHV= .600 CEHV= .800
*SECNO .095

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 730.0 1064.0 TYPE= 1 TARGET= 334.000
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION;
UNLESS OTHERWISE NOTED.
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS
SECTION CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
UNLESS OTHERWISE NOTED.

.095	3.10	1949.41	1949.41	1949.39	1950.21	.81	4.18	.42	1947.90
2508.0	135.1	1815.4	557.5	77.3	219.3	180.4	15.4	9.3	1947.60
.04	1.75	8.28	3.09	.070	.035	.070	.000	1946.30	730.00
.010418	650.	880.	950.	0	11	0	.00	334.00	1064.00

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

CCHV= .600 CEHV= .800
*SECNO .099
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 698.0 1097.0 TYPE= 1 TARGET= 399.000
DOWNSTREAM SECTION:EAST BOUND CULVERT

.099	3.72	1949.52	1949.52	1949.48	1950.46	.93	.12	.10	1946.50
2508.0	300.0	1383.7	824.3	196.2	134.6	375.4	15.6	9.4	1945.80
.04	1.53	10.28	2.20	.070	.020	.070	.000	1945.80	698.00
.003427	21.	21.	21.	0	11	0	.00	399.00	1097.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	2.54	10.00	81.70	8	1	1947.00	1945.80

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

5130, EGIC= 1990.75..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1988.84 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .115
BTCARD, BRIDGE STENCL= 789.90 STENCR= 1016.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1958.95

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.23

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1990.75	1988.84	8.50	1280.	1223.	6.766	76.2	1958.50	225.

3470 ENCROACHMENT STATIONS= 789.9 1016.0 TYPE= 1 TARGET= 226.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1955.60 ELREA= 1958.50

UPSTREAM SECTION: EAST BOUND CULVERT
(3-10' x 8'x 81.7' CBCs), 5.5' OF SEDIMENT ON BOTTOM
HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 790 REPRESENTS
THE LIMIT OF THE EFFECTIVE FLOW AREA

.115	11.27	1958.27	.00	1958.28	1958.95	.69	8.50	.00	1947.00

2508.0	90.5	2417.5	.0	188.4	357.3	.0	16.8	10.0	1947.00
.04	.48	6.77	.00	.070	.020	.000	.000	1947.00	789.94
.000328	82.	82.	82.	2	0	0	.00	204.18	1015.85

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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  .121

3470 ENCROACHMENT STATIONS=      799.9    1044.0  TYPE=      1  TARGET=      244.100
         DOWNSTREAM SECTION:WEST BOUND CULVERT
         HIGHWAY SLOPES DOWNWARD TO THE SOUTH, STATION 800 REPRESENTS
         THE LIMIT OF THE EFFECTIVE FLOW AREA
     .121      9.52   1958.62   1955.20   1958.64   1959.09       .47       .01       .13   1949.10
   2508.0     547.7    1901.4      58.8     606.6     302.1      75.8      17.4      10.2   1949.10
     .04       .90      6.29       .78      .070      .020      .070      .000   1949.10    799.97
  .000355      32.       32.       32.         2        11         0       .00    243.26   1043.23



SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    3          .020      .40      2.90       .00      2.79     10.00     86.20      8         1      1950.50   1949.10

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

5130, EGIC= 1987.30..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1990.63 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO  .136
BTCARD, BRIDGE STENCL=     826.00   STENCR=    1149.00

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =   1965.55

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.28

SPECIAL CULVERT

    EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1987.30   1990.63      6.46     1355.     1167.     1.929      83.7   1964.80      315.



3470 ENCROACHMENT STATIONS=      826.0    1149.0  TYPE=      1  TARGET=      323.000
         WEST BOUND CULVERT AT UPSTREAM SECTION;
         (3-10' x 8'x 86.2' CBCs), APPROX. 5.2' OF SEDIMENT ON BOTTOM
     .136     15.83   1965.53       .00   1965.53   1965.55       .03      6.46       .00   1950.80
   2508.0     895.7    1006.2     606.1    1787.0     521.7    1291.4      21.9      10.7   1952.90
     .06       .50      1.93       .47      .070      .020      .070      .000   1949.70    826.95
  .000019      86.       86.       86.         2         0         0       .00    321.42   1148.36


CCHV=     .600 CEHV=     .800
*SECNO  .152

3470 ENCROACHMENT STATIONS=      673.0    1135.0  TYPE=      1  TARGET=      462.000
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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


   .152     13.95   1965.55   1956.50   1965.55   1965.56       .01       .00       .01   1952.50
 2508.0    1116.2     669.8     722.0    2152.9     485.7    1167.7      30.0      11.6   1952.00
    .10       .52      1.38       .62      .065      .035      .065      .000   1951.60    673.52
.000033      105.       85.       85.         0        17         0       .00    460.53   1134.05


CCHV=     .100 CEHV=     .300
*SECNO  .190

3265 DIVIDED FLOW


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


3470 ENCROACHMENT STATIONS=      740.0    1049.0  TYPE=      1  TARGET=      309.000
         STRUCTURE BLOCKED OUT WITH GR POINTS.
   .190     10.32   1965.52   1959.44   1965.52   1965.59       .07       .01       .02   1956.00
 2508.0    1169.1    1161.7     177.2    1090.2     399.9     148.1      42.4      13.3   1956.10
    .13      1.07      2.91      1.20      .065      .035      .065      .000   1955.20    740.56
.000218      195.      201.      200.         2        17         0       .00    274.17   1048.65


*SECNO  .258

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      866.0    1042.0  TYPE=      1  TARGET=      176.000
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
   .258      3.69   1966.99   1966.99   1966.99   1968.15      1.16       .22       .33   1964.00
 2508.0     982.1    1303.7     222.2     206.8     117.2      51.0      49.5      14.8   1964.20
    .14      4.75     11.13      4.36      .065      .035      .065      .000   1963.30    866.10
.013755      280.      359.      380.         0        22         0       .00    160.17   1041.44
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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  .373
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      880.0    1032.0  TYPE=      1  TARGET=      152.000
      .373      5.82   1982.82   1982.82   1982.82   1984.07      1.26      6.79       .03   1979.90
    2508.0     872.5    1549.0      86.4     217.4     140.5      31.2      54.6      16.8   1980.70
       .16      4.01     11.02      2.77      .065      .035      .065      .000   1977.00    880.80
   .009788      560.      607.      600.         0        14         0       .00    150.76   1031.55


CCHV=     .100 CEHV=     .300
*SECNO  .409

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      978.0    1025.0  TYPE=      1  TARGET=       47.000
      .409      7.67   1989.47   1989.47   1989.47   1992.18      2.71      2.02       .44   1982.60
    2508.0       5.0    1475.8    1027.2       3.5      90.7     152.4      56.0      17.3   1983.20
       .16      1.44     16.28      6.74      .070      .035      .070      .000   1981.80    978.98
   .011481      195.      190.      190.         0        11         0       .00     45.45   1024.43


*SECNO  .504
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      984.0    1033.0  TYPE=      1  TARGET=       49.000
      .504      7.95   1999.65   1999.65   1999.66   2002.33      2.67      5.17       .00   1992.90
    2508.0     120.5    1541.1     846.4      24.8      96.2     134.7      58.7      17.8   1993.30
       .17      4.86     16.02      6.29      .070      .035      .070      .000   1991.70    984.79
   .010371      480.      502.      430.         0         8         0       .00     47.64   1032.43


*SECNO  .568

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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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=      940.0    1044.0  TYPE=      1  TARGET=      104.000
      .568      3.92   2005.82   2005.82   2005.82   2007.34      1.52      4.78       .12   2002.60
    2508.0    1048.0     908.5     551.5     150.6      65.1      96.7      60.8      18.3   2002.70
       .18      6.96     13.95      5.70      .070      .035      .070      .000   2001.90    940.31
   .020962      320.      338.      340.         0         8         0       .00    103.22   1043.53


*SECNO  .663

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      973.0    1031.0  TYPE=      1  TARGET=       58.000
         DIVIDED FLOW 280 FEET UPSTREAM OF SECTION 0.663. SMALLER
         LOW FLOW CHANNEL IS MODELED SEPARATELY USING MANNINGS OPEN
         CHANNEL FLOW EQUATION TO DETERMINE DEPTH OF FLOW.
      .663      6.77   2021.57   2021.57   2021.57   2023.84      2.27      6.80       .22   2016.60
    2430.0      90.3    2048.9     290.8      22.1     157.4      61.0      63.9      19.2   2016.80
       .19      4.09     13.01      4.77      .070      .035      .070      .000   2014.80    973.76
   .009809      460.      502.      480.         0        14         0       .00     56.72   1030.48


CCHV=     .100 CEHV=     .300
*SECNO  .758

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      948.0    1030.0  TYPE=      1  TARGET=       82.000
      .758      5.40   2047.70   2047.70   2047.70   2049.45      1.75      5.18       .05   2044.30
    2430.0      91.5    1876.1     462.4      21.8     159.2      94.8      66.9      20.0   2044.20
       .21      4.20     11.79      4.88      .065      .035      .065      .000   2042.30    948.21
   .010874      510.      502.      502.         0        15         0       .00     81.53   1029.75


*SECNO  .852
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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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= 962.0 1031.0 TYPE= 1 TARGET= 69.000

.852	4.22	2061.32	2061.32	2061.31	2063.16	1.84	5.55	.03	2058.10
2430.0	13.4	2233.9	182.7	4.8	198.2	36.5	69.8	20.9	2058.10
.22	2.78	11.27	5.01	.065	.035	.065	.000	2057.10	962.47
.011638	470.	496.	480.	0	15	0	.00	67.72	1030.20

CCHV= .100 CEHV= .300
*SECNO .947
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 947.0 1047.0 TYPE= 1 TARGET= 100.000

.947	4.15	2075.35	2075.35	2075.35	2076.96	1.60	5.42	.02	2072.10
2430.0	26.3	1469.9	933.8	8.5	118.0	189.8	72.9	21.8	2071.30
.24	3.11	12.46	4.92	.065	.030	.065	.000	2071.20	947.45
.010283	505.	502.	475.	0	5	0	.00	99.26	1046.71

*SECNO 1.042
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 916.0 1034.0 TYPE= 1 TARGET= 118.000

1.042	4.47	2085.67	2085.67	2085.66	2087.15	1.48	4.22	.01	2083.20
2430.0	229.4	2193.5	7.0	85.0	214.0	3.9	76.4	23.0	2083.60
.25	2.70	10.25	1.80	.065	.030	.065	.000	2081.20	916.00
.007100	500.	502.	485.	0	8	0	.00	117.76	1033.76

*SECNO 1.136
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 972.0 1061.0 TYPE= 1 TARGET= 89.000

1.136	3.88	2096.28	2096.28	2096.28	2097.84	1.56	3.79	.02	2093.20
2290.0	201.4	2070.4	18.2	56.8	197.7	6.7	79.6	24.2	2093.00
.26	3.54	10.47	2.70	.065	.030	.065	.000	2092.40	972.16
.008322	490.	496.	510.	0	11	0	.00	87.94	1060.10

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 1.227
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 965.0 1101.0 TYPE= 1 TARGET= 136.000

1.227	3.99	2106.79	2106.79	2106.79	2108.04	1.26	4.02	.03	2104.30
2290.0	15.3	1936.1	338.6	6.2	199.7	107.6	82.8	25.4	2104.50
.28	2.46	9.69	3.15	.065	.030	.065	.000	2102.80	965.91
.008439	430.	480.	510.	0	8	0	.00	134.18	1100.09

*SECNO 1.311
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 880.0 1033.0 TYPE= 1 TARGET= 153.000

1.311	3.21	2117.91	2117.91	2117.90	2119.07	1.17	4.34	.01	2115.10
2290.0	702.5	1564.8	22.7	172.2	154.7	8.9	86.2	26.9	2115.60
.29	4.08	10.11	2.56	.065	.030	.065	.000	2114.70	880.80
.011015	500.	444.	435.	0	15	0	.00	151.89	1032.69

*SECNO 1.383
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 955.0 1097.0 TYPE= 1 TARGET= 142.000

1.383	3.58	2124.58	2124.58	2124.58	2125.89	1.30	3.41	.04	2121.20
2290.0	200.7	1805.5	283.7	51.7	177.5	95.0	89.0	28.2	2121.20
.31	3.88	10.17	2.99	.065	.030	.065	.000	2121.00	955.28
.007786	330.	380.	390.	0	8	0	.00	141.34	1096.62

CCHV= .100 CEHV= .300
*SECNO 1.477
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 902.0 1057.0 TYPE= 1 TARGET= 155.000

1.477	3.87	2136.67	2136.67	2136.66	2137.80	1.13	4.48	.02	2133.90
2290.0	346.6	1647.7	295.7	83.4	168.8	77.6	92.7	29.8	2133.80
.32	4.16	9.76	3.81	.060	.035	.060	.000	2132.80	902.56
.010738	480.	496.	490.	0	8	0	.00	154.00	1056.56

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


*SECNO 1.553
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      976.0    1137.0  TYPE=      1  TARGET=      161.000
     1.553      2.36   2142.36   2142.36   2142.36   2143.30       .94      5.42       .02   2140.20
    2150.0      31.7    2003.8     114.5       9.0     251.4      28.4      95.5      31.2   2140.00
       .34      3.54      7.97      4.03      .060      .040      .060      .000   2140.00    976.21
   .018135      390.      401.      380.         0        14         0       .00    160.30   1136.51


CCHV=     .100 CEHV=     .300
*SECNO 1.631
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      826.0    1194.0  TYPE=      1  TARGET=      368.000
     1.631      2.56   2152.56   2152.56   2152.56   2153.13       .58      7.75       .04   2150.80
    2150.0     550.7     877.2     722.1     125.9     108.8     177.0      98.7      33.7   2150.80
       .36      4.37      8.07      4.08      .055      .040      .060      .000   2150.00    826.19
   .019947      425.      412.      380.         0         8         0       .00    367.12   1193.30


CCHV=     .100 CEHV=     .300
*SECNO 1.693

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      894.0    1040.0  TYPE=      1  TARGET=      146.000
     1.693      3.72   2161.42   2161.42   2161.42   2162.60      1.18      4.80       .18   2158.60
    2150.0     559.5    1564.2      26.3     139.2     157.7       6.9     101.6      35.7   2158.20
       .37      4.02      9.92      3.83      .060      .035      .060      .000   2157.70    894.51
   .010260      430.      327.      275.         0        14         0       .00    144.94   1039.44


CCHV=     .100 CEHV=     .300
*SECNO 1.740
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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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=      861.0    1068.0  TYPE=      1  TARGET=      207.000
     1.740      3.46   2165.46   2165.46   2165.46   2166.32       .86      2.94       .03   2163.50
    2150.0     137.3    1487.2     525.5      38.9     173.1     137.3     103.4      36.7   2163.00
       .38      3.53      8.59      3.83      .060      .040      .060      .000   2162.00    861.34
   .014228      220.      248.      260.         0        11         0       .00    206.55   1067.89


CCHV=     .100 CEHV=     .300
*SECNO 1.831

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      947.0    1049.0  TYPE=      1  TARGET=      102.000
     1.831      3.94   2174.54   2174.54   2174.53   2175.99      1.46      5.03       .18   2170.60
    2150.0       7.3    1998.2     144.4       3.5     199.7      45.7     106.8      38.5   2171.70
       .39      2.09     10.01      3.16      .055      .030      .060      .000   2170.60    947.21
   .007854      390.      480.      540.         0         8         0       .00    101.41   1048.62


*SECNO 1.941

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      980.0    1250.0  TYPE=      1  TARGET=      270.000
     1.941      2.69   2186.79   2186.79   2186.79   2187.59       .80      5.41       .07   2184.90
    2150.0       4.5     886.6    1258.8       1.8      88.8     296.5     110.4      40.3   2184.60
       .41      2.47      9.99      4.25      .055      .030      .060      .000   2184.10    980.06
   .014070      600.      581.      410.         0        19         0       .00    251.87   1249.96


CCHV=     .100 CEHV=     .300
*SECNO 2.036
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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

3470 ENCROACHMENT STATIONS= 722.0 1069.0 TYPE= 1 TARGET= 347.000

2.036	4.14	2195.64	2195.64	2195.62	2196.23	.59	8.44	.02	2194.70
1945.0	1320.5	624.5	.0	247.2	82.2	.1	114.3	43.4	2194.60
.44	5.34	7.59	.04	.060	.035	.055	.000	2191.50	722.40
.022909	495.	502.	445.	0	8	0	.00	311.48	1068.16

*SECNO 2.131
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 987.0 1160.0 TYPE= 1 TARGET= 173.000

2.131	4.38	2208.08	2208.08	2208.08	2209.07	.99	6.74	.12	2204.40
1945.0	62.7	1542.7	339.6	18.0	174.5	117.7	117.9	46.0	2206.20
.45	3.48	8.84	2.89	.060	.035	.060	.000	2203.70	987.20
.009572	400.	502.	630.	0	8	0	.00	171.87	1159.06

*SECNO 2.227
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 972.0 1082.0 TYPE= 1 TARGET= 110.000

2.227	4.78	2219.48	2219.48	2219.48	2220.73	1.24	4.99	.08	2216.50
1945.0	15.6	1393.6	535.8	5.2	136.0	128.9	121.3	47.7	2216.90
.47	2.98	10.25	4.16	.060	.030	.060	.000	2214.70	972.89
.009994	500.	507.	520.	0	8	0	.00	108.74	1081.63

*SECNO 2.320

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

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

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 829.0 1162.0 TYPE= 1 TARGET= 333.000

2.320	2.93	2229.33	2229.33	2229.33	2230.07	.74	5.53	.05	2227.60
1945.0	610.7	1024.8	309.4	144.4	116.9	97.2	124.8	49.8	2227.60
.49	4.23	8.77	3.18	.060	.030	.060	.000	2226.40	829.19
.012885	480.	491.	490.	0	14	0	.00	266.16	1161.57

*SECNO 2.393
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 968.0 1236.0 TYPE= 1 TARGET= 268.000

2.393	2.39	2237.59	2237.59	2237.59	2238.31	.72	4.71	.00	2235.20
1945.0	46.4	875.6	1023.0	14.7	93.1	287.9	128.2	52.2	2235.20
.51	3.16	9.40	3.55	.060	.030	.060	.000	2235.20	968.14
.011291	390.	385.	400.	0	15	0	.00	267.24	1235.38

*SECNO 2.464
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 809.0 1152.0 TYPE= 1 TARGET= 343.000

2.464	2.29	2245.39	2245.39	2245.38	2245.96	.57	4.09	.02	2243.70
1739.0	685.4	826.4	227.2	223.6	100.3	94.5	131.7	54.8	2243.70
.53	3.07	8.24	2.41	.060	.030	.060	.000	2243.10	809.12
.010655	385.	375.	360.	0	11	0	.00	342.45	1151.57

*SECNO 2.526

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS= 780.0 1053.0 TYPE= 1 TARGET= 273.000
ET-CARDS USED TO SPECIFY INEFFECTIVE FLOW AREAS. HOWEVER, THE
AREA IS SUBJECT TO HIGH VELOCITIES AND EROSION AND IS THEREFORE
INCLUDED IN THE FLOODWAY.

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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

  2.526      2.16   2250.76   2250.71   2250.76   2251.38       .62      5.41       .01   2250.70
 1739.0    1430.6     308.4        .0     234.6      42.6        .0     134.2      56.8   2251.00
    .54      6.10      7.24       .00      .060      .030      .000      .000   2248.60    780.00
.030623      320.      327.      300.         2        11         0       .00    212.75   1026.66


*SECNO 2.614
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      947.0    1156.0  TYPE=      1  TARGET=      209.000
         DIVIDED FLOW 200 FEET UPSTREAM OF SECTION 2.614
  2.614      2.73   2262.93   2262.93   2262.93   2263.71       .78      7.87       .05   2261.30
 1739.0      27.6     980.9     730.5      10.1     109.5     209.2     137.4      59.1   2261.90
    .56      2.74      8.96      3.49      .060      .030      .060      .000   2260.20    947.49
.010992      430.      465.      500.         0        11         0       .00    208.08   1155.57


*SECNO 2.700
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      968.0    1113.0  TYPE=      1  TARGET=      145.000
  2.700      4.36   2272.16   2272.16   2272.16   2273.28      1.12      3.80       .10   2268.80
 1739.0      15.6    1349.3     374.1       5.6     141.6     139.9     140.8      61.0   2269.40
    .58      2.77      9.53      2.67      .060      .030      .060      .000   2267.80    968.13
.006225      450.      454.      500.         0        14         0       .00    144.03   1112.16


CCHV=     .100 CEHV=     .300
*SECNO 2.798
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      873.0    1016.0  TYPE=      1  TARGET=      143.000
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
  2.798      3.44   2282.84   2282.84   2282.84   2283.95      1.11      4.13       .00   2279.40
 1739.0     467.0    1264.7       7.3     131.6     130.9       3.5     144.2      62.8   2279.40
    .60      3.55      9.66      2.10      .065      .035      .065      .000   2279.40    873.20
.009956      625.      523.      475.         0        15         0       .00    141.85   1015.04
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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 2.895

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 745.0 1247.0 TYPE= 1 TARGET= 502.000
CONFLUENCE WITH TRIBUTARY IS APPROXIMATELY 150 FEET UPSTREAM OF
SECTION 2.985. TRIBUTARY IS MODELED WITH THIS RUN.

2.895	2.35	2291.55	2291.55	2291.55	2291.96	.41	7.42	.07	2291.00
1739.0	1160.9	216.6	361.5	219.7	35.8	96.6	147.1	65.7	2291.60
.62	5.29	6.05	3.74	.065	.035	.065	.000	2289.20	745.49
.038616	320.	512.	525.	0	20	0	.00	458.58	1246.51

*SECNO 2.966

3470 ENCROACHMENT STATIONS= 861.0 1019.0 TYPE= 1 TARGET= 158.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

2.966	3.60	2301.90	2301.75	2301.90	2302.38	.48	10.40	.02	2300.60
955.0	70.1	769.0	115.9	28.2	127.7	34.1	149.6	68.6	2300.40
.64	2.49	6.02	3.40	.065	.040	.065	.000	2298.30	862.01
.015761	355.	375.	500.	5	17	0	.00	156.60	1018.61

*SECNO 3.032
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 926.0 1083.0 TYPE= 1 TARGET= 157.000

3.032	2.89	2310.69	2310.69	2310.69	2311.34	.66	4.67	.05	2309.50
955.0	1.9	659.5	293.6	1.5	86.3	116.8	151.2	69.9	2309.20
.66	1.31	7.64	2.51	.065	.035	.065	.000	2307.80	926.47
.011104	260.	359.	360.	0	15	0	.00	155.60	1082.07

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 3.087
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 948.0 1014.0 TYPE= 1 TARGET= 66.000

3.087	2.79	2317.29	2317.29	2317.29	2318.35	1.06	3.30	.12	2315.20
955.0	203.9	741.3	9.8	55.0	80.8	3.9	152.3	70.6	2314.70
.67	3.71	9.17	2.52	.065	.035	.065	.000	2314.50	948.12
.012468	305.	280.	270.	0	8	0	.00	65.87	1013.99

*SECNO 3.134
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 976.0 1040.0 TYPE= 1 TARGET= 64.000

3.134	2.94	2322.94	2322.94	2322.93	2324.08	1.14	2.95	.02	2320.00
955.0	12.4	791.6	151.0	4.5	85.2	43.8	153.0	70.9	2320.00
.67	2.77	9.30	3.45	.065	.035	.065	.000	2320.00	976.91
.011396	230.	248.	270.	0	8	0	.00	62.42	1039.32

*SECNO 3.225
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 923.0 1055.0 TYPE= 1 TARGET= 132.000

3.225	2.06	2334.16	2334.16	2334.16	2334.83	.67	7.04	.05	2332.80
955.0	361.3	536.2	57.4	97.1	65.8	16.5	154.8	72.0	2333.00
.70	3.72	8.14	3.48	.065	.035	.065	.000	2332.10	923.68
.018956	530.	480.	450.	0	19	0	.00	130.68	1054.36

*SECNO 3.306
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 969.0 1051.0 TYPE= 1 TARGET= 82.000

3.306	3.93	2340.23	2340.23	2340.23	2341.27	1.03	5.28	.11	2337.10
890.0	17.8	778.7	93.5	6.8	89.8	37.3	156.2	72.9	2338.10
.71	2.60	8.67	2.51	.065	.035	.065	.000	2336.30	969.57
.009745	240.	428.	480.	0	17	0	.00	81.43	1051.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	OLOB	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 3.383

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 839.0 1052.0 TYPE= 1 TARGET= 213.000

3.383	1.79	2348.19	2348.19	2348.18	2348.68	.50	5.88	.05	2347.90
890.0	550.2	325.6	14.3	147.4	40.8	5.5	157.8	74.4	2346.80
.73	3.73	7.98	2.60	.065	.035	.065	.000	2346.40	839.00
.021480	475.	407.	300.	0	14	0	.00	212.92	1051.92

*SECNO 3.466

3470 ENCROACHMENT STATIONS= 958.0 1169.0 TYPE= 1 TARGET= 211.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

3.466	3.06	2355.46	2355.44	2355.46	2355.96	.50	7.27	.00	2354.40
890.0	29.6	545.8	314.5	10.8	78.8	117.8	159.5	76.2	2354.20
.75	2.74	6.93	2.67	.065	.035	.065	.000	2352.40	958.13
.016108	310.	438.	420.	3	20	0	.00	210.46	1168.59

*SECNO 3.559

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 972.0 1027.0 TYPE= 1 TARGET= 55.000

3.559	2.73	2365.43	2365.43	2365.42	2366.53	1.10	6.99	.18	2363.70
890.0	65.2	820.1	4.6	17.8	94.2	2.2	161.2	77.5	2363.60
.77	3.66	8.70	2.14	.065	.035	.065	.000	2362.70	972.19
.013466	510.	491.	400.	0	11	0	.00	54.19	1026.38

*SECNO 3.661

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

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 874.0 1131.0 TYPE= 1 TARGET= 257.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

3.661	1.68	2374.78	2374.78	2374.78	2375.29	.50	6.93	.06	2373.60
810.0	58.2	597.5	154.2	30.4	92.0	63.5	163.0	79.0	2373.20
.80	1.92	6.49	2.43	.065	.035	.065	.000	2373.10	874.00
.012930	480.	539.	440.	0	14	0	.00	214.73	1130.61

*SECNO 3.716
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 962.0 1094.0 TYPE= 1 TARGET= 132.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

3.716	2.64	2381.03	2381.03	2381.04	2381.64	.61	4.05	.03	2379.40
810.0	2.5	703.6	103.9	1.3	105.7	46.5	164.2	80.4	2380.00
.81	1.98	6.65	2.24	.065	.035	.065	.000	2378.40	962.31
.013488	230.	290.	410.	0	14	0	.00	131.67	1093.98

*SECNO 3.798
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 861.0 1028.0 TYPE= 1 TARGET= 167.000

3.798	1.82	2389.42	2389.42	2389.42	2389.97	.55	5.79	.01	2387.70
810.0	239.3	517.0	53.7	94.3	72.3	15.0	165.8	81.8	2387.70
.83	2.54	7.15	3.58	.065	.035	.065	.000	2387.60	861.39
.013736	450.	433.	330.	0	19	0	.00	165.64	1027.03

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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 3.840
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      907.0    1035.0  TYPE=      1  TARGET=      128.000
     3.840      1.87   2393.47   2393.47   2393.47   2394.10       .63      3.00       .02   2391.60
     810.0     131.3     603.0      75.7      52.1      83.7      23.5     166.7      82.5   2391.70
       .84      2.52      7.20      3.22      .065      .035      .065      .000   2391.60    907.27
   .013335      222.      222.      222.         0         5         0       .00    127.28   1034.54


*SECNO -2.895
START TRIB COMP
     -2.895     2.895  2291.551

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      745.0    1247.0  TYPE=      1  TARGET=      502.000
        TRIBUTARY TO WASH K
    -2.895      2.35   2291.55       .00   2291.55   2291.95       .40     10.34     -7.31   2291.00
    1739.0    1172.2     201.8     365.0     219.7      35.8      96.6     169.1      85.4   2291.60
       .87      5.34      5.64      3.78      .060      .035      .060      .000   2289.20    745.49
   .033543      320.      512.      525.         0         0         0       .00    458.58   1246.51


*SECNO  .032

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      951.0    1271.0  TYPE=      1  TARGET=      320.000
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
      .032      2.57   2302.77   2302.77   2302.77   2303.17       .40     10.13       .00   2301.30
     848.0      13.6     832.8       1.6       4.0     163.4       2.5     171.3      88.4   2303.00
       .89      3.43      5.10       .64      .060      .035      .060      .000   2300.20    951.52
   .019558      360.      370.      370.         0         8         0       .00    240.19   1270.96
```

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 .097
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 926.0 1059.0 TYPE= 1 TARGET= 133.000

.097	1.92	2310.02	2310.02	2310.01	2310.62	.60	6.32	.06	2308.80
848.0	263.0	484.8	100.2	73.8	63.4	28.3	172.6	89.8	2308.80
.90	3.56	7.65	3.54	.060	.035	.060	.000	2308.10	926.94
.017573	340.	343.	320.	0	19	0	.00	131.65	1058.60

*SECNO .131
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 931.0 1091.0 TYPE= 1 TARGET= 160.000

.131	1.96	2314.26	2314.26	2314.26	2314.84	.57	2.87	.00	2312.40
848.0	283.1	486.2	78.7	83.7	64.5	33.0	173.4	90.5	2312.30
.91	3.38	7.54	2.39	.060	.035	.060	.000	2312.30	931.13
.012906	210.	180.	200.	0	5	0	.00	159.76	1090.89

*SECNO .182

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 986.0 1020.0 TYPE= 1 TARGET= 34.000

.182	3.57	2321.67	2321.67	2321.67	2323.14	1.46	3.32	.27	2318.60
848.0	35.6	790.7	21.7	8.3	79.2	6.0	174.2	91.0	2319.20
.92	4.27	9.99	3.59	.060	.035	.060	.000	2318.10	986.79
.011962	260.	270.	250.	0	14	0	.00	33.19	1019.98

*SECNO .212

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 956.0 1083.0 TYPE= 1 TARGET= 127.000

.212	1.91	2324.31	2323.57	2324.31	2324.43	.12	1.16	.13	2322.70
480.0	79.3	394.9	5.8	45.5	134.0	4.1	174.7	91.3	2322.40
.93	1.75	2.95	1.41	.060	.045	.060	.000	2322.40	956.58
.003868	160.	158.	140.	3	17	0	.00	125.70	1082.28

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 .259

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 981.0 1028.0 TYPE= 1 TARGET= 47.000

.259	3.38	2329.78	2329.78	2329.78	2330.66	.88	1.55	.23	2328.30
480.0	12.2	450.8	17.0	4.6	58.2	8.2	175.4	91.8	2328.80
.94	2.66	7.74	2.06	.060	.035	.060	.000	2326.40	981.61
.012111	220.	248.	240.	0	14	0	.00	45.48	1027.08

*SECNO .318
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 955.0 1039.0 TYPE= 1 TARGET= 84.000

.318	1.64	2337.34	2337.34	2337.34	2337.90	.56	4.11	.03	2336.20
480.0	23.3	406.1	50.7	8.5	63.2	19.9	176.0	92.3	2336.20
.96	2.74	6.43	2.54	.060	.035	.060	.000	2335.70	955.60
.014578	340.	311.	280.	0	11	0	.00	82.77	1038.36

*SECNO .416

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 988.0 1010.0 TYPE= 1 TARGET= 22.000

.416	3.63	2348.13	2348.13	2348.13	2349.56	1.43	6.82	.26	2345.50
480.0	23.0	446.3	10.8	6.5	45.1	3.3	176.9	92.9	2345.70
.97	3.54	9.90	3.24	.060	.035	.060	.000	2344.50	988.49
.011999	505.	517.	520.	0	17	0	.00	20.81	1009.31

*SECNO .506

3301 HV CHANGED MORE THAN HVINS

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 948.0 1021.0 TYPE= 1 TARGET= 73.000

.506	2.94	2358.14	2358.14	2358.14	2358.80	.66	6.04	.08	2357.00
480.0	1.3	373.6	105.1	.7	51.5	37.9	177.7	93.4	2357.20
.99	1.78	7.26	2.77	.060	.035	.060	.000	2355.20	948.82
.013388	490.	475.	490.	0	15	0	.00	71.35	1020.17

*SECNO .604
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 924.0 1024.0 TYPE= 1 TARGET= 100.000

.604	1.47	2371.67	2371.67	2371.67	2372.13	.46	7.47	.02	2370.50
400.0	121.4	240.4	38.2	42.7	36.2	13.3	178.8	94.4	2370.20
1.02	2.85	6.65	2.87	.060	.035	.060	.000	2370.20	924.53
.015815	510.	517.	530.	0	8	0	.00	98.74	1023.27

*SECNO .705
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 909.0 1018.0 TYPE= 1 TARGET= 109.000

.705	1.13	2384.23	2384.23	2384.23	2384.62	.40	11.95	.01	2383.40
400.0	107.1	283.0	10.0	31.7	50.4	3.5	179.9	95.7	2383.30
1.05	3.38	5.61	2.82	.065	.045	.065	.000	2383.10	909.59
.033270	560.	533.	510.	0	15	0	.00	108.03	1017.62

*SECNO .795

3470 ENCROACHMENT STATIONS= 968.0 1040.0 TYPE= 1 TARGET= 72.000

.795	1.40	2396.10	2395.98	2396.10	2396.48	.38	11.86	.00	2395.30
330.0	13.5	310.1	6.5	7.2	60.8	2.2	180.7	96.7	2394.80
1.08	1.87	5.10	2.88	.065	.045	.065	.000	2394.70	968.08
.018334	490.	475.	465.	5	8	0	.00	71.91	1039.99

THIS RUN EXECUTED 04JUN92 09:44:55

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HEC-2 WATER SURFACE PROFILES

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

WASH K:UNNAMED WASH #6

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	47.520	.00	.00	.00	1928.00	2508.00	1933.37	1932.43	1933.64	26.98	6.74	1053.18	482.85
	47.520	.00	.00	.00	1928.00	2508.00	1933.37	1932.43	1933.64	26.98	6.74	1053.18	482.85
*	.095	880.00	.00	.00	1946.30	2508.00	1949.39	1949.39	1950.21	107.31	8.36	470.83	242.11
*	.095	880.00	.00	.00	1946.30	2508.00	1949.41	1949.41	1950.21	104.18	8.28	476.95	245.72
	.099	21.00	.00	.00	1945.80	2508.00	1949.48	1949.48	1950.46	36.26	10.49	688.56	416.49
*	.099	21.00	.00	.00	1945.80	2508.00	1949.52	1949.52	1950.46	34.27	10.28	706.18	428.43
*	.115	81.70	1958.50	1951.58	1947.00	2508.00	1958.28	.00	1958.96	3.26	6.75	548.45	1388.14
*	.115	81.70	1958.50	1951.58	1947.00	2508.00	1958.27	.00	1958.95	3.28	6.77	545.75	1384.79
	.121	31.70	.00	.00	1949.10	2508.00	1958.64	1955.20	1959.10	3.53	6.28	987.66	1335.51
	.121	31.70	.00	.00	1949.10	2508.00	1958.62	1955.20	1959.09	3.55	6.29	984.48	1331.15
*	.136	86.20	1964.80	1953.30	1949.70	2508.00	1965.53	.00	1965.55	.19	1.93	3600.13	5693.25
*	.136	86.20	1964.80	1953.30	1949.70	2508.00	1965.53	.00	1965.55	.19	1.93	3600.13	5693.25
	.152	85.00	.00	.00	1951.60	2508.00	1965.55	1956.50	1965.56	.33	1.38	3806.22	4372.59
	.152	85.00	.00	.00	1951.60	2508.00	1965.55	1956.50	1965.56	.33	1.38	3806.28	4372.68
*	.190	201.00	.00	.00	1955.20	2508.00	1965.52	1959.44	1965.59	2.18	2.91	1638.15	1699.58
*	.190	201.00	.00	.00	1955.20	2508.00	1965.52	1959.44	1965.59	2.18	2.91	1638.15	1699.58
*	.258	359.00	.00	.00	1963.30	2508.00	1966.99	1966.99	1968.15	137.55	11.13	374.88	213.84
*	.258	359.00	.00	.00	1963.30	2508.00	1966.99	1966.99	1968.15	137.55	11.13	374.88	213.84
*	.373	607.00	.00	.00	1977.00	2508.00	1982.82	1982.82	1984.07	97.98	11.03	389.06	253.37
*	.373	607.00	.00	.00	1977.00	2508.00	1982.82	1982.82	1984.07	97.88	11.02	389.21	253.50
	.409	190.00	.00	.00	1981.80	2508.00	1989.47	1989.47	1992.18	114.85	16.28	246.48	234.02
	.409	190.00	.00	.00	1981.80	2508.00	1989.47	1989.47	1992.18	114.81	16.28	246.51	234.07

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.504	502.00	.00	.00	1991.70	2508.00	1999.66	1999.66	2002.33	103.62	16.01	255.75	246.38
*	.504	502.00	.00	.00	1991.70	2508.00	1999.65	1999.65	2002.33	103.71	16.02	255.67	246.27
*	.568	338.00	.00	.00	2001.90	2508.00	2005.82	2005.82	2007.34	209.62	13.95	312.41	173.22
*	.568	338.00	.00	.00	2001.90	2508.00	2005.82	2005.82	2007.34	209.62	13.95	312.41	173.22
*	.663	502.00	.00	.00	2014.80	2430.00	2021.57	2021.57	2023.84	98.10	13.02	240.46	245.34
*	.663	502.00	.00	.00	2014.80	2430.00	2021.57	2021.57	2023.84	98.09	13.01	240.47	245.36
*	.758	502.00	.00	.00	2042.30	2430.00	2047.70	2047.70	2049.45	109.19	11.80	275.30	232.55
*	.758	502.00	.00	.00	2042.30	2430.00	2047.70	2047.70	2049.45	108.74	11.79	275.70	233.03
*	.852	496.00	.00	.00	2057.10	2430.00	2061.31	2061.31	2063.16	116.86	11.29	239.17	224.79
*	.852	496.00	.00	.00	2057.10	2430.00	2061.32	2061.32	2063.16	116.38	11.27	239.49	225.25
*	.947	502.00	.00	.00	2071.20	2430.00	2075.35	2075.35	2076.96	102.95	12.46	316.13	239.49
*	.947	502.00	.00	.00	2071.20	2430.00	2075.35	2075.35	2076.96	102.83	12.46	316.25	239.63
*	1.042	502.00	.00	.00	2081.20	2430.00	2085.66	2085.66	2087.15	71.48	10.27	302.16	287.43
*	1.042	502.00	.00	.00	2081.20	2430.00	2085.67	2085.67	2087.15	71.00	10.25	302.96	288.39
*	1.136	496.00	.00	.00	2092.40	2290.00	2096.28	2096.28	2097.84	83.48	10.48	260.98	250.63
*	1.136	496.00	.00	.00	2092.40	2290.00	2096.28	2096.28	2097.84	83.22	10.47	261.26	251.03
	1.227	480.00	.00	.00	2102.80	2290.00	2106.79	2106.79	2108.04	84.39	9.69	313.52	249.28
*	1.227	480.00	.00	.00	2102.80	2290.00	2106.79	2106.79	2108.04	84.39	9.69	313.52	249.28
*	1.311	444.00	.00	.00	2114.70	2290.00	2117.90	2117.90	2119.07	110.51	10.13	335.36	217.84
*	1.311	444.00	.00	.00	2114.70	2290.00	2117.91	2117.91	2119.07	110.15	10.11	335.73	218.19
*	1.383	380.00	.00	.00	2121.00	2290.00	2124.58	2124.58	2125.89	77.90	10.17	324.14	259.46
*	1.383	380.00	.00	.00	2121.00	2290.00	2124.58	2124.58	2125.89	77.86	10.17	324.20	259.53
*	1.477	496.00	.00	.00	2132.80	2290.00	2136.66	2136.66	2137.80	108.35	9.79	328.62	220.00
*	1.477	496.00	.00	.00	2132.80	2290.00	2136.67	2136.67	2137.80	107.38	9.76	329.75	220.99
*	1.553	401.00	.00	.00	2140.00	2150.00	2142.36	2142.36	2143.30	181.66	7.97	288.58	159.52
*	1.553	401.00	.00	.00	2140.00	2150.00	2142.36	2142.36	2143.30	181.35	7.97	288.73	159.65
*	1.631	412.00	.00	.00	2150.00	2150.00	2152.56	2152.56	2153.13	199.24	8.06	411.84	152.32
*	1.631	412.00	.00	.00	2150.00	2150.00	2152.56	2152.56	2153.13	199.47	8.07	411.66	152.23
*	1.693	327.00	.00	.00	2157.70	2150.00	2161.42	2161.42	2162.60	102.37	9.91	304.08	212.49
*	1.693	327.00	.00	.00	2157.70	2150.00	2161.42	2161.42	2162.60	102.60	9.92	303.80	212.25
*	1.740	248.00	.00	.00	2162.00	2150.00	2165.46	2165.46	2166.32	143.32	8.61	348.31	179.59
*	1.740	248.00	.00	.00	2162.00	2150.00	2165.46	2165.46	2166.32	142.28	8.59	349.27	180.25
	1.831	480.00	.00	.00	2170.60	2150.00	2174.53	2174.53	2175.99	78.62	10.01	248.83	242.48
	1.831	480.00	.00	.00	2170.60	2150.00	2174.54	2174.54	2175.99	78.54	10.01	248.93	242.61

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1.941	581.00	.00	.00	2184.10	2150.00	2186.79	2186.79	2187.59	141.25	10.00	386.56	180.90
*	1.941	581.00	.00	.00	2184.10	2150.00	2186.79	2186.79	2187.59	140.70	9.99	387.11	181.26
*	2.036	502.00	.00	.00	2191.50	1945.00	2195.62	2195.58	2196.23	239.35	7.68	323.63	125.72
*	2.036	502.00	.00	.00	2191.50	1945.00	2195.64	2195.64	2196.23	229.09	7.59	329.56	128.50
*	2.131	502.00	.00	.00	2203.70	1945.00	2208.08	2208.08	2209.07	95.56	8.84	310.44	198.96
*	2.131	502.00	.00	.00	2203.70	1945.00	2208.08	2208.08	2209.07	95.72	8.84	310.23	198.80
*	2.227	507.00	.00	.00	2214.70	1945.00	2219.48	2219.48	2220.73	100.15	10.25	269.91	194.36
*	2.227	507.00	.00	.00	2214.70	1945.00	2219.48	2219.48	2220.73	99.94	10.25	270.10	194.56
*	2.320	491.00	.00	.00	2226.40	1945.00	2229.33	2229.33	2230.07	128.85	8.77	358.45	171.35
*	2.320	491.00	.00	.00	2226.40	1945.00	2229.33	2229.33	2230.07	128.85	8.77	358.45	171.35
*	2.393	385.00	.00	.00	2235.20	1945.00	2237.59	2237.59	2238.31	111.95	9.38	396.98	183.82
*	2.393	385.00	.00	.00	2235.20	1945.00	2237.59	2237.59	2238.31	112.91	9.40	395.74	183.04
*	2.464	375.00	.00	.00	2243.10	1739.00	2245.38	2245.38	2245.96	107.03	8.25	417.70	168.10
*	2.464	375.00	.00	.00	2243.10	1739.00	2245.39	2245.39	2245.96	106.55	8.24	418.37	168.47
*	2.526	327.00	.00	.00	2248.60	1739.00	2250.76	2250.71	2251.38	303.94	7.23	277.85	99.75
*	2.526	327.00	.00	.00	2248.60	1739.00	2250.76	2250.71	2251.38	306.23	7.24	277.18	99.38
	2.614	465.00	.00	.00	2260.20	1739.00	2262.93	2262.93	2263.71	110.16	8.97	328.45	165.68
*	2.614	465.00	.00	.00	2260.20	1739.00	2262.93	2262.93	2263.71	109.92	8.96	328.71	165.86
*	2.700	454.00	.00	.00	2267.80	1739.00	2272.16	2272.16	2273.28	62.35	9.54	286.89	220.23
*	2.700	454.00	.00	.00	2267.80	1739.00	2272.16	2272.16	2273.28	62.25	9.53	287.11	220.41
*	2.798	523.00	.00	.00	2279.40	1739.00	2282.84	2282.84	2283.95	99.56	9.66	266.01	174.28
*	2.798	523.00	.00	.00	2279.40	1739.00	2282.84	2282.84	2283.95	99.56	9.66	266.01	174.28
*	2.895	512.00	.00	.00	2289.20	1739.00	2291.55	2291.55	2291.96	386.80	6.05	351.82	88.42
*	2.895	512.00	.00	.00	2289.20	1739.00	2291.55	2291.55	2291.96	386.16	6.05	352.04	88.49
	2.966	375.00	.00	.00	2298.30	955.00	2301.90	2301.75	2302.38	157.33	6.02	190.03	76.14
	2.966	375.00	.00	.00	2298.30	955.00	2301.90	2301.75	2302.38	157.61	6.02	189.92	76.07
*	3.032	359.00	.00	.00	2307.80	955.00	2310.69	2310.69	2311.34	111.53	7.65	204.24	90.43
*	3.032	359.00	.00	.00	2307.80	955.00	2310.69	2310.69	2311.34	111.04	7.64	204.58	90.63
*	3.087	280.00	.00	.00	2314.50	955.00	2317.29	2317.29	2318.35	124.63	9.17	139.69	85.54
*	3.087	280.00	.00	.00	2314.50	955.00	2317.29	2317.29	2318.35	124.68	9.17	139.67	85.53
*	3.134	248.00	.00	.00	2320.00	955.00	2322.93	2322.93	2324.08	114.93	9.32	133.02	89.08
*	3.134	248.00	.00	.00	2320.00	955.00	2322.94	2322.94	2324.08	113.96	9.30	133.43	89.46
	3.225	480.00	.00	.00	2332.10	955.00	2334.16	2334.16	2334.83	189.03	8.14	179.62	69.46
	3.225	480.00	.00	.00	2332.10	955.00	2334.16	2334.16	2334.83	189.56	8.14	179.46	69.36

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	3.306	428.00	.00	.00	2336.30	890.00	2340.23	2340.23	2341.27	97.55	8.67	133.84	90.11
*	3.306	428.00	.00	.00	2336.30	890.00	2340.23	2340.23	2341.27	97.45	8.67	133.90	90.16
*	3.383	407.00	.00	.00	2346.40	890.00	2348.18	2348.18	2348.68	215.83	7.99	193.32	60.58
*	3.383	407.00	.00	.00	2346.40	890.00	2348.19	2348.19	2348.68	214.80	7.98	193.67	60.73
	3.466	438.00	.00	.00	2352.40	890.00	2355.46	2355.44	2355.96	160.40	6.92	207.68	70.27
	3.466	438.00	.00	.00	2352.40	890.00	2355.46	2355.44	2355.96	161.08	6.93	207.37	70.12
*	3.559	491.00	.00	.00	2362.70	890.00	2365.42	2365.42	2366.53	135.34	8.72	114.01	76.50
*	3.559	491.00	.00	.00	2362.70	890.00	2365.43	2365.43	2366.53	134.66	8.70	114.20	76.70
*	3.661	539.00	.00	.00	2373.10	810.00	2374.78	2374.78	2375.29	129.72	6.50	185.68	71.12
*	3.661	539.00	.00	.00	2373.10	810.00	2374.78	2374.78	2375.29	129.30	6.49	185.94	71.23
*	3.716	290.00	.00	.00	2378.40	810.00	2381.04	2381.04	2381.64	134.41	6.65	153.67	69.87
*	3.716	290.00	.00	.00	2378.40	810.00	2381.03	2381.03	2381.64	134.88	6.65	153.47	69.75
*	3.798	433.00	.00	.00	2387.60	810.00	2389.42	2389.42	2389.97	137.53	7.15	181.57	69.07
*	3.798	433.00	.00	.00	2387.60	810.00	2389.42	2389.42	2389.97	137.36	7.15	181.65	69.11
*	3.840	222.00	.00	.00	2391.60	810.00	2393.47	2393.47	2394.10	133.49	7.21	159.25	70.11
*	3.840	222.00	.00	.00	2391.60	810.00	2393.47	2393.47	2394.10	133.35	7.20	159.31	70.14
	-2.895	512.00	.00	.00	2289.20	1739.00	2291.55	.00	2291.95	335.99	5.64	351.82	94.87
	-2.895	512.00	.00	.00	2289.20	1739.00	2291.55	.00	2291.95	335.43	5.64	352.04	94.95
*	.032	370.00	.00	.00	2300.20	848.00	2302.77	2302.77	2303.17	195.58	5.10	169.91	60.64
*	.032	370.00	.00	.00	2300.20	848.00	2302.77	2302.77	2303.17	195.58	5.10	169.91	60.64
*	.097	343.00	.00	.00	2308.10	848.00	2310.01	2310.01	2310.62	177.00	7.67	165.15	63.74
*	.097	343.00	.00	.00	2308.10	848.00	2310.02	2310.02	2310.62	175.73	7.65	165.53	63.97
*	.131	180.00	.00	.00	2312.30	848.00	2314.26	2314.26	2314.84	128.85	7.53	181.29	74.71
*	.131	180.00	.00	.00	2312.30	848.00	2314.26	2314.26	2314.84	129.06	7.54	181.17	74.64
*	.182	270.00	.00	.00	2318.10	848.00	2321.67	2321.67	2323.14	119.74	9.99	93.53	77.49
*	.182	270.00	.00	.00	2318.10	848.00	2321.67	2321.67	2323.14	119.62	9.99	93.56	77.54
	.212	158.00	.00	.00	2322.40	480.00	2324.31	2323.57	2324.43	38.64	2.95	183.65	77.22
	.212	158.00	.00	.00	2322.40	480.00	2324.31	2323.57	2324.43	38.68	2.95	183.58	77.18
*	.259	248.00	.00	.00	2326.40	480.00	2329.78	2329.78	2330.66	121.07	7.74	71.07	43.62
*	.259	248.00	.00	.00	2326.40	480.00	2329.78	2329.78	2330.66	121.11	7.74	71.06	43.62
*	.318	311.00	.00	.00	2335.70	480.00	2337.34	2337.34	2337.90	146.34	6.43	91.50	39.68
*	.318	311.00	.00	.00	2335.70	480.00	2337.34	2337.34	2337.90	145.78	6.43	91.62	39.76
	.416	517.00	.00	.00	2344.50	480.00	2348.13	2348.13	2349.56	120.28	9.91	54.82	43.77
	.416	517.00	.00	.00	2344.50	480.00	2348.13	2348.13	2349.56	119.99	9.90	54.87	43.82

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.506	475.00	.00	.00	2355.20	480.00	2358.14	2358.14	2358.80	133.45	7.25	90.17	41.55
*	.506	475.00	.00	.00	2355.20	480.00	2358.14	2358.14	2358.80	133.88	7.26	90.07	41.48
*	.604	517.00	.00	.00	2370.20	400.00	2371.67	2371.67	2372.13	158.26	6.65	92.09	31.80
*	.604	517.00	.00	.00	2370.20	400.00	2371.67	2371.67	2372.13	158.15	6.65	92.11	31.81
*	.705	533.00	.00	.00	2383.10	400.00	2384.23	2384.23	2384.62	334.00	5.62	85.54	21.89
*	.705	533.00	.00	.00	2383.10	400.00	2384.23	2384.23	2384.62	332.70	5.61	85.64	21.93
	.795	475.00	.00	.00	2394.70	330.00	2396.10	2395.98	2396.48	182.55	5.09	70.38	24.42
	.795	475.00	.00	.00	2394.70	330.00	2396.10	2395.98	2396.48	183.34	5.10	70.28	24.37

H K:UNNAMED WASH #6

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	47.520	2508.00	1933.37	.00	.00	-10.01	627.61	.00
	47.520	2508.00	1933.37	.00	.00	-10.01	627.61	.00
*	.095	2508.00	1949.39	.00	16.02	.00	333.18	880.00
*	.095	2508.00	1949.41	.02	16.04	.02	334.00	880.00
*	.099	2508.00	1949.48	.00	.09	.00	397.19	21.00
*	.099	2508.00	1949.52	.04	.12	.04	399.00	21.00
*	.115	2508.00	1958.28	.00	8.80	.00	205.43	81.70
*	.115	2508.00	1958.27	-.01	8.75	-.01	204.18	81.70
	.121	2508.00	1958.64	.00	.36	.00	243.32	31.70
	.121	2508.00	1958.62	-.01	.36	-.01	243.26	31.70
*	.136	2508.00	1965.53	.00	6.89	.00	321.42	86.20
*	.136	2508.00	1965.53	.00	6.90	.00	321.42	86.20
	.152	2508.00	1965.55	.00	.02	.00	460.53	85.00
	.152	2508.00	1965.55	.00	.02	.00	460.53	85.00
*	.190	2508.00	1965.52	.00	-.03	.00	274.17	201.00
*	.190	2508.00	1965.52	.00	-.03	.00	274.17	201.00
*	.258	2508.00	1966.99	.00	1.46	.00	160.17	359.00
*	.258	2508.00	1966.99	.00	1.46	.00	160.17	359.00
*	.373	2508.00	1982.82	.00	15.83	.00	150.76	607.00
*	.373	2508.00	1982.82	.00	15.83	.00	150.76	607.00
*	.409	2508.00	1989.47	.00	6.65	.00	45.45	190.00
*	.409	2508.00	1989.47	.00	6.65	.00	45.45	190.00
*	.504	2508.00	1999.66	.00	10.19	.00	47.65	502.00
*	.504	2508.00	1999.65	.00	10.18	.00	47.64	502.00
*	.568	2508.00	2005.82	.00	6.17	.00	103.22	338.00
*	.568	2508.00	2005.82	.00	6.17	.00	103.22	338.00
*	.663	2430.00	2021.57	.00	15.75	.00	56.72	502.00
*	.663	2430.00	2021.57	.00	15.75	.00	56.72	502.00
*	.758	2430.00	2047.70	.00	26.13	.00	81.52	502.00
	.758	2430.00	2047.70	.00	26.13	.00	81.53	502.00
*	.852	2430.00	2061.31	.00	13.61	.00	67.71	496.00
*	.852	2430.00	2061.32	.00	13.61	.00	67.72	496.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.947	2430.00	2075.35	.00	14.04	.00	99.26	502.00
*	.947	2430.00	2075.35	.00	14.04	.00	99.26	502.00
*	1.042	2430.00	2085.66	.00	10.31	.00	117.68	502.00
*	1.042	2430.00	2085.67	.01	10.32	.01	117.76	502.00
*	1.136	2290.00	2096.28	.00	10.61	.00	87.93	496.00
*	1.136	2290.00	2096.28	.00	10.61	.00	87.94	496.00
*	1.227	2290.00	2106.79	.00	10.51	.00	134.18	480.00
*	1.227	2290.00	2106.79	.00	10.51	.00	134.18	480.00
*	1.311	2290.00	2117.90	.00	11.12	.00	151.87	444.00
*	1.311	2290.00	2117.91	.00	11.12	.00	151.89	444.00
*	1.383	2290.00	2124.58	.00	6.68	.00	141.32	380.00
*	1.383	2290.00	2124.58	.00	6.68	.00	141.34	380.00
*	1.477	2290.00	2136.66	.00	12.08	.00	153.86	496.00
*	1.477	2290.00	2136.67	.01	12.08	.01	154.00	496.00
*	1.553	2150.00	2142.36	.00	5.70	.00	160.28	401.00
*	1.553	2150.00	2142.36	.00	5.70	.00	160.30	401.00
	1.631	2150.00	2152.56	.00	10.19	.00	367.20	412.00
*	1.631	2150.00	2152.56	.00	10.19	.00	367.12	412.00
*	1.693	2150.00	2161.42	.00	8.86	.00	145.10	327.00
*	1.693	2150.00	2161.42	.00	8.86	.00	144.94	327.00
*	1.740	2150.00	2165.46	.00	4.03	.00	206.35	248.00
*	1.740	2150.00	2165.46	.00	4.04	.00	206.55	248.00
*	1.831	2150.00	2174.53	.00	9.08	.00	101.39	480.00
*	1.831	2150.00	2174.54	.00	9.08	.00	101.41	480.00
*	1.941	2150.00	2186.79	.00	12.26	.00	251.67	581.00
*	1.941	2150.00	2186.79	.00	12.26	.00	251.87	581.00
*	2.036	1945.00	2195.62	.00	8.83	.00	310.90	502.00
*	2.036	1945.00	2195.64	.02	8.85	.02	311.48	502.00
*	2.131	1945.00	2208.08	.00	12.46	.00	171.92	502.00
*	2.131	1945.00	2208.08	.00	12.44	.00	171.87	502.00
*	2.227	1945.00	2219.48	.00	11.40	.00	108.73	507.00
*	2.227	1945.00	2219.48	.00	11.41	.00	108.74	507.00
*	2.320	1945.00	2229.33	.00	9.84	.00	266.16	491.00
	2.320	1945.00	2229.33	.00	9.84	.00	266.16	491.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	2.393	1945.00	2237.59	.00	8.27	.00	267.48	385.00
*	2.393	1945.00	2237.59	.00	8.26	.00	267.24	385.00
*	2.464	1739.00	2245.38	.00	7.79	.00	342.38	375.00
*	2.464	1739.00	2245.39	.00	7.80	.00	342.45	375.00
*	2.526	1739.00	2250.76	.00	5.38	.00	212.86	327.00
*	2.526	1739.00	2250.76	.00	5.38	.00	212.75	327.00
*	2.614	1739.00	2262.93	.00	12.16	.00	208.07	465.00
*	2.614	1739.00	2262.93	.00	12.16	.00	208.08	465.00
*	2.700	1739.00	2272.16	.00	9.24	.00	144.02	454.00
*	2.700	1739.00	2272.16	.00	9.24	.00	144.03	454.00
*	2.798	1739.00	2282.84	.00	10.68	.00	141.85	523.00
*	2.798	1739.00	2282.84	.00	10.68	.00	141.85	523.00
*	2.895	1739.00	2291.55	.00	8.71	.00	458.51	512.00
*	2.895	1739.00	2291.55	.00	8.71	.00	458.58	512.00
	2.966	955.00	2301.90	.00	10.35	.00	156.63	375.00
	2.966	955.00	2301.90	.00	10.35	.00	156.60	375.00
*	3.032	955.00	2310.69	.00	8.79	.00	155.56	359.00
*	3.032	955.00	2310.69	.00	8.79	.00	155.60	359.00
*	3.087	955.00	2317.29	.00	6.61	.00	65.88	280.00
*	3.087	955.00	2317.29	.00	6.61	.00	65.87	280.00
*	3.134	955.00	2322.93	.00	5.64	.00	62.37	248.00
*	3.134	955.00	2322.94	.01	5.64	.01	62.42	248.00
*	3.225	955.00	2334.16	.00	11.23	.00	130.68	480.00
*	3.225	955.00	2334.16	.00	11.23	.00	130.68	480.00
*	3.306	890.00	2340.23	.00	6.07	.00	81.42	428.00
*	3.306	890.00	2340.23	.00	6.07	.00	81.43	428.00
*	3.383	890.00	2348.18	.00	7.95	.00	214.68	407.00
*	3.383	890.00	2348.19	.00	7.95	.00	212.92	407.00
	3.466	890.00	2355.46	.00	7.27	.00	210.47	438.00
	3.466	890.00	2355.46	.00	7.27	.00	210.46	438.00
*	3.559	890.00	2365.42	.00	9.97	.00	54.18	491.00
*	3.559	890.00	2365.43	.00	9.97	.00	54.19	491.00
	3.661	810.00	2374.78	.00	9.36	.00	214.58	539.00
*	3.661	810.00	2374.78	.00	9.36	.00	214.73	539.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	3.716	810.00	2381.04	.00	6.25	.00	131.69	290.00
*	3.716	810.00	2381.03	.00	6.25	.00	131.67	290.00
*	3.798	810.00	2389.42	.00	8.39	.00	165.63	433.00
*	3.798	810.00	2389.42	.00	8.39	.00	165.64	433.00
*	3.840	810.00	2393.47	.00	4.04	.00	127.27	222.00
*	3.840	810.00	2393.47	.00	4.04	.00	127.28	222.00
	-2.895	1739.00	2291.55	.00	-101.91	.00	458.51	512.00
	-2.895	1739.00	2291.55	.00	-101.91	.00	458.58	512.00
*	.032	848.00	2302.77	.00	11.22	.00	240.19	370.00
*	.032	848.00	2302.77	.00	11.22	.00	240.19	370.00
*	.097	848.00	2310.01	.00	7.25	.00	131.65	343.00
*	.097	848.00	2310.02	.00	7.25	.00	131.65	343.00
*	.131	848.00	2314.26	.00	4.25	.00	159.78	180.00
*	.131	848.00	2314.26	.00	4.24	.00	159.76	180.00
*	.182	848.00	2321.67	.00	7.41	.00	33.19	270.00
*	.182	848.00	2321.67	.00	7.41	.00	33.19	270.00
	.212	480.00	2324.31	.00	2.64	.00	125.71	158.00
	.212	480.00	2324.31	.00	2.64	.00	125.70	158.00
*	.259	480.00	2329.78	.00	5.46	.00	45.48	248.00
*	.259	480.00	2329.78	.00	5.46	.00	45.48	248.00
*	.318	480.00	2337.34	.00	7.56	.00	82.76	311.00
*	.318	480.00	2337.34	.00	7.56	.00	82.77	311.00
*	.416	480.00	2348.13	.00	10.79	.00	20.81	517.00
*	.416	480.00	2348.13	.00	10.79	.00	20.81	517.00
*	.506	480.00	2358.14	.00	10.01	.00	71.35	475.00
*	.506	480.00	2358.14	.00	10.01	.00	71.35	475.00
*	.604	400.00	2371.67	.00	13.53	.00	98.74	517.00
*	.604	400.00	2371.67	.00	13.53	.00	98.74	517.00
*	.705	400.00	2384.23	.00	12.55	.00	108.02	533.00
*	.705	400.00	2384.23	.00	12.56	.00	108.03	533.00
	.795	330.00	2396.10	.00	11.87	.00	71.95	475.00
	.795	330.00	2396.10	.00	11.87	.00	71.91	475.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .095  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .095  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .095  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .095  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .099  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .099  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .099  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .099  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .115  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .115  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .136  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .136  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .190  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .190  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .258  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .258  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .258  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .258  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .373  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .373  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .373  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .373  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .409  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .409  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .409  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .409  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .504  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .504  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .504  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .504  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .568  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     1.693  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     2.227  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.227  PROFILE=  2  CRITICAL DEPTH ASSUMED
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WARNING SECNO=     2.526  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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FLOODWAY DATA, WASH K:UNNAMED WASH #6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
47.520	679.	1053.	2.4	1933.4	1933.4	.0
.095	334.	477.	5.3	1949.4	1949.4	.0
.099	399.	706.	3.6	1949.5	1949.5	.0
.115	226.	546.	4.6	1958.3	1958.3	.0
.121	243.	984.	2.5	1958.6	1958.6	.0
.136	321.	3600.	.7	1965.5	1965.5	.0
.152	461.	3806.	.7	1965.6	1965.6	.0
.190	308.	1638.	1.5	1965.5	1965.5	.0
.258	175.	375.	6.7	1967.0	1967.0	.0
.373	151.	389.	6.4	1982.8	1982.8	.0
.409	45.	247.	10.2	1989.5	1989.5	.0
.504	48.	256.	9.8	1999.7	1999.7	.0
.568	103.	312.	8.0	2005.8	2005.8	.0
.663	57.	240.	10.1	2021.6	2021.6	.0
.758	82.	276.	8.8	2047.7	2047.7	.0
.852	68.	239.	10.1	2061.3	2061.3	.0
.947	99.	316.	7.7	2075.4	2075.4	.0
1.042	118.	303.	8.0	2085.7	2085.7	.0
1.136	88.	261.	8.8	2096.3	2096.3	.0
1.227	134.	314.	7.3	2106.8	2106.8	.0
1.311	152.	336.	6.8	2117.9	2117.9	.0
1.383	141.	324.	7.1	2124.6	2124.6	.0
1.477	154.	330.	6.9	2136.7	2136.7	.0
1.553	160.	289.	7.4	2142.4	2142.4	.0
1.631	367.	412.	5.2	2152.6	2152.6	.0
1.693	145.	304.	7.1	2161.4	2161.4	.0
1.740	207.	349.	6.2	2165.5	2165.5	.0
1.831	101.	249.	8.6	2174.5	2174.5	.0
1.941	270.	387.	5.6	2186.8	2186.8	.0
2.036	346.	330.	5.9	2195.6	2195.6	.0
2.131	172.	310.	6.3	2208.1	2208.1	.0
2.227	109.	270.	7.2	2219.5	2219.5	.0
2.320	332.	358.	5.4	2229.3	2229.3	.0
2.393	267.	396.	4.9	2237.6	2237.6	.0
2.464	342.	418.	4.2	2245.4	2245.4	.0
2.526	247.	277.	6.3	2250.8	2250.8	.0
2.614	208.	329.	5.3	2262.9	2262.9	.0
2.700	144.	287.	6.1	2272.2	2272.2	.0
2.798	142.	266.	6.5	2282.8	2282.8	.0
2.895	501.	352.	4.9	2291.6	2291.6	.0
2.966	157.	190.	5.0	2301.9	2301.9	.0
3.032	156.	205.	4.7	2310.7	2310.7	.0

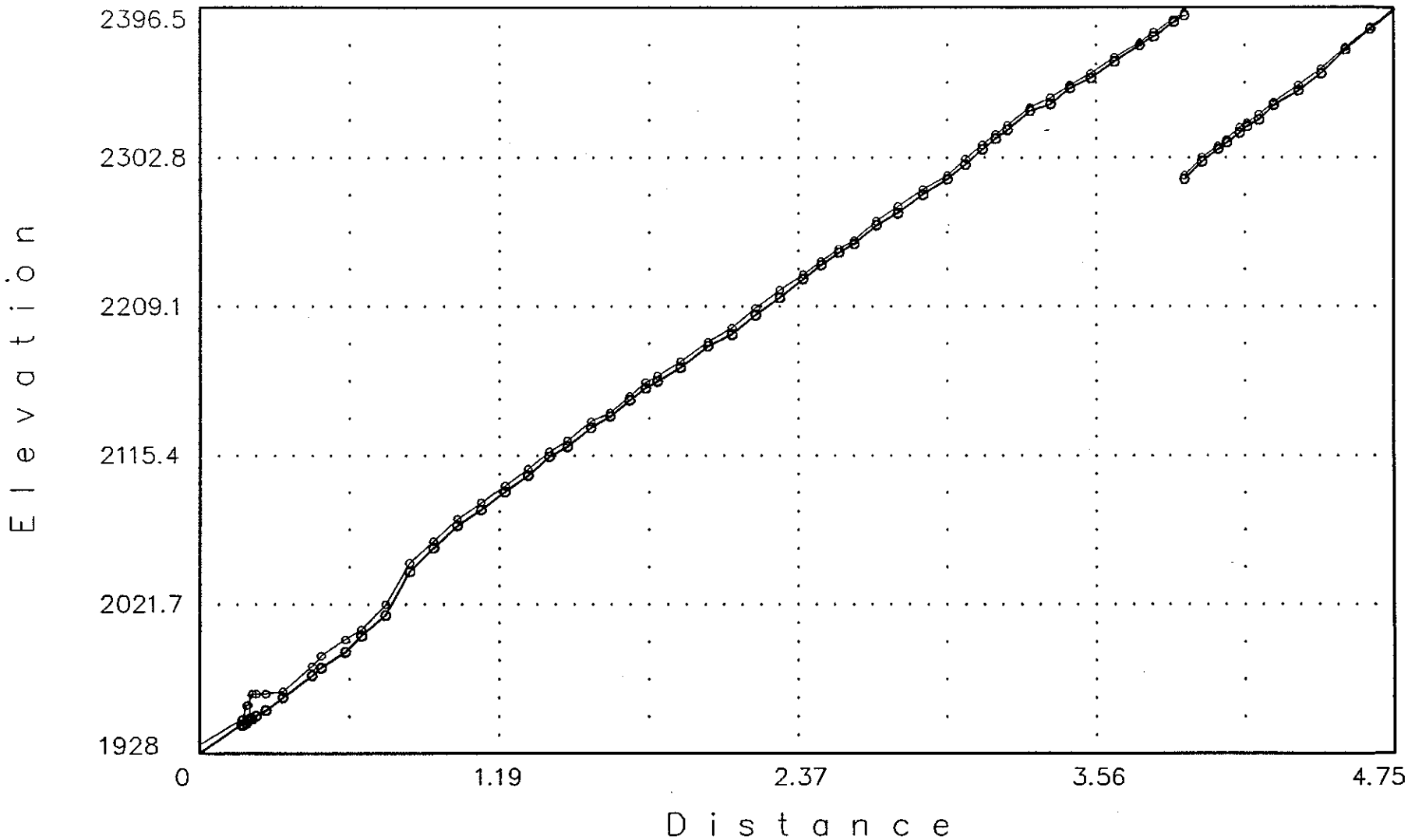
FLOODWAY DATA, WASH K:UNNAMED WASH #6
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
3.087	66.	140.	6.8	2317.3	2317.3	.0
3.134	62.	133.	7.2	2322.9	2322.9	.0
3.225	131.	179.	5.3	2334.2	2334.2	.0
3.306	81.	134.	6.6	2340.2	2340.2	.0
3.383	213.	194.	4.6	2348.2	2348.2	.0
3.466	210.	207.	4.3	2355.5	2355.5	.0
3.559	54.	114.	7.8	2365.4	2365.4	.0
3.661	257.	186.	4.4	2374.8	2374.8	.0
3.716	132.	153.	5.3	2381.0	2381.0	.0
3.798	166.	182.	4.5	2389.4	2389.4	.0
3.840	127.	159.	5.1	2393.5	2393.5	.0
-2.895	501.	352.	4.9	2291.6	2291.6	.0
.032	319.	170.	5.0	2302.8	2302.8	.0
.097	132.	166.	5.1	2310.0	2310.0	.0
.131	160.	181.	4.7	2314.3	2314.3	.0
.182	33.	94.	9.1	2321.7	2321.7	.0
.212	126.	184.	2.6	2324.3	2324.3	.0
.259	45.	71.	6.8	2329.8	2329.8	.0
.318	83.	92.	5.2	2337.3	2337.3	.0
.416	21.	55.	8.7	2348.1	2348.1	.0
.506	71.	90.	5.3	2358.1	2358.1	.0
.604	99.	92.	4.3	2371.7	2371.7	.0
.705	108.	86.	4.7	2384.2	2384.2	.0
.795	72.	70.	4.7	2396.1	2396.1	.0

<<<<<< WS ELEV. & BED ELEV. vs DISTANCE(mi) >>>>>>

Profile No. 1
Profile No. 2

(FN=WASHK.FWO)



<<<<<< Cross Section: 47.52: (FN = WASHK.FWO) >>>>>>

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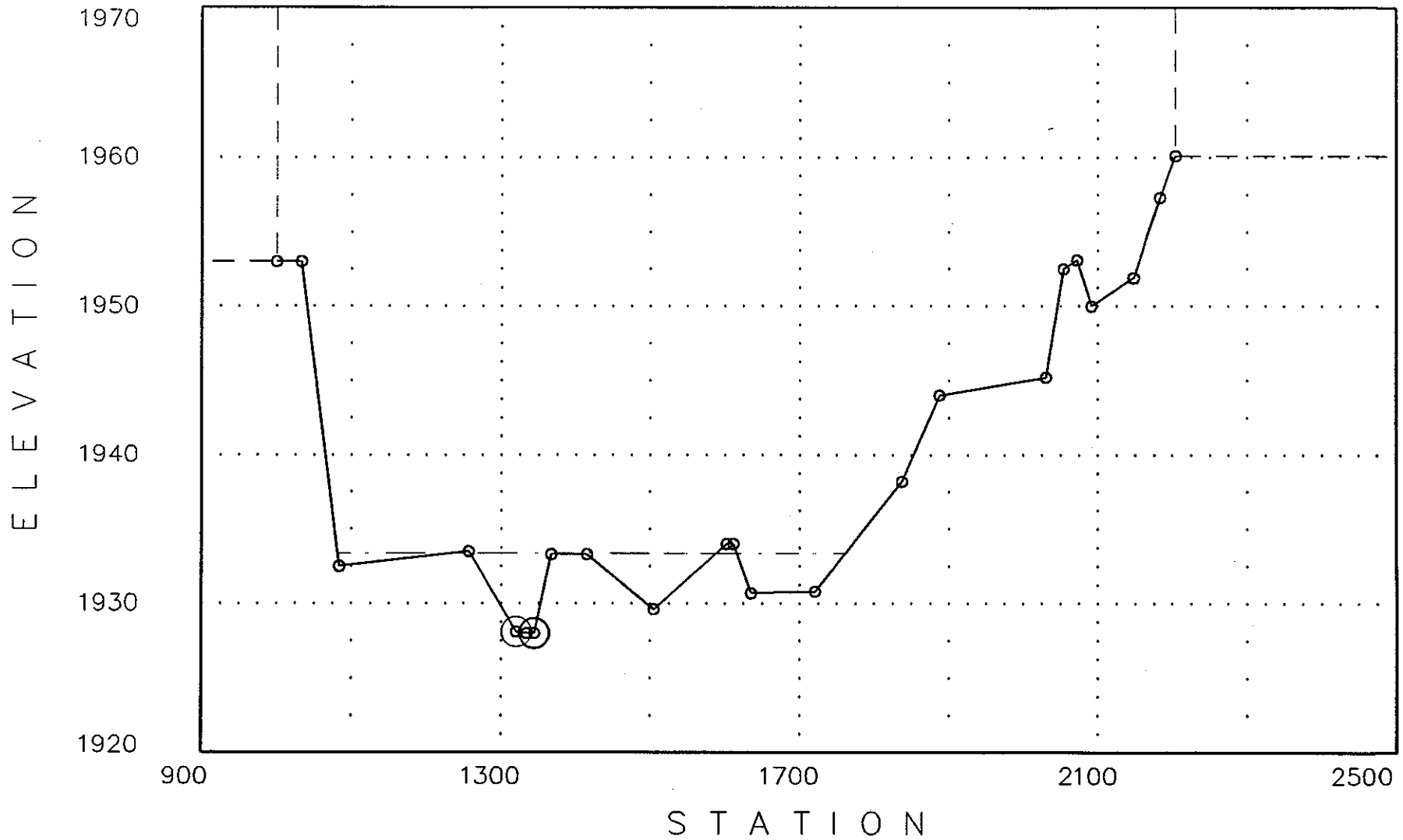
Q2= 2508 WS2= 1933.37

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



08-11-1992

<<<<<< Cross Section: .095: (FN = WASHK.FWO) >>>>>>

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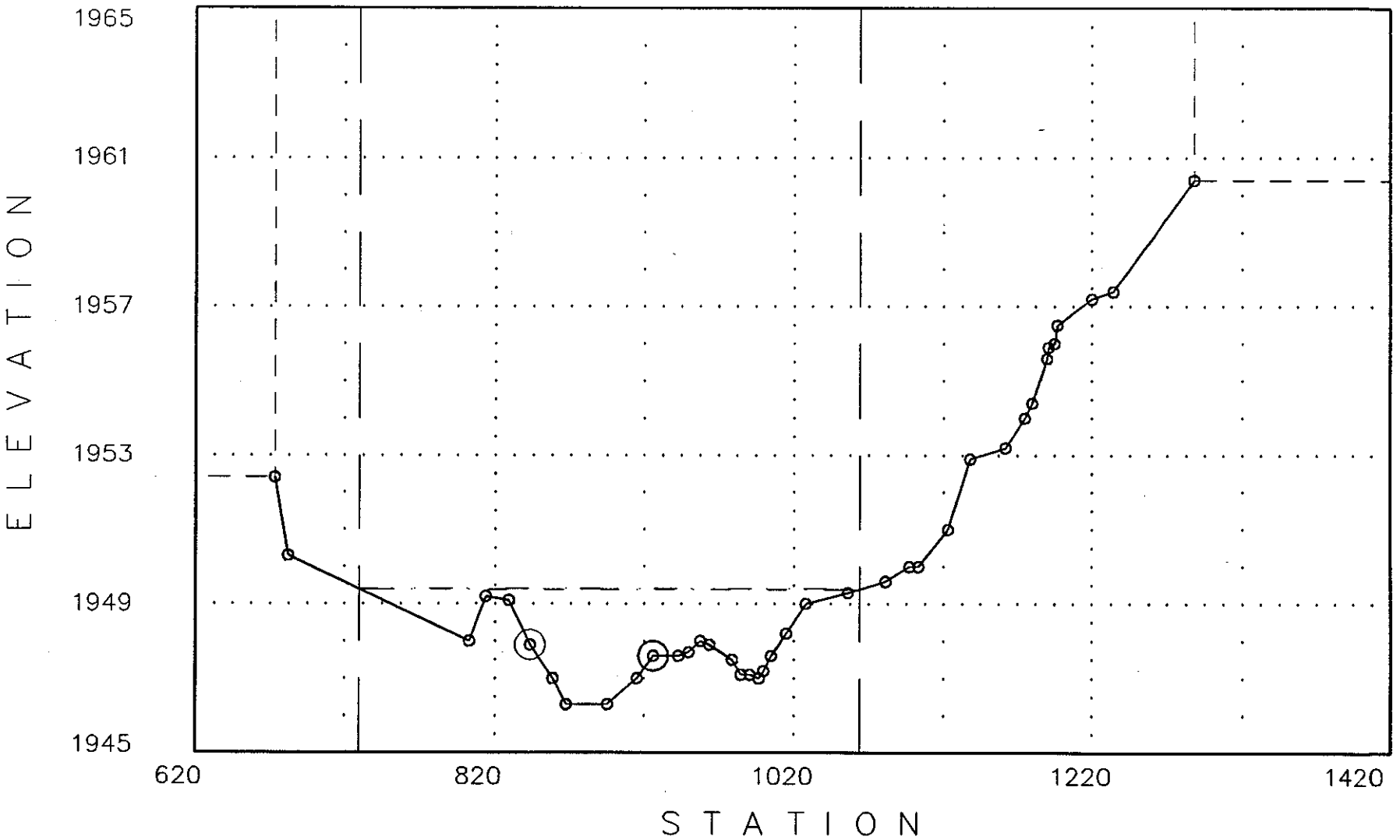
Q2= 2508 WS2= 1949.41

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

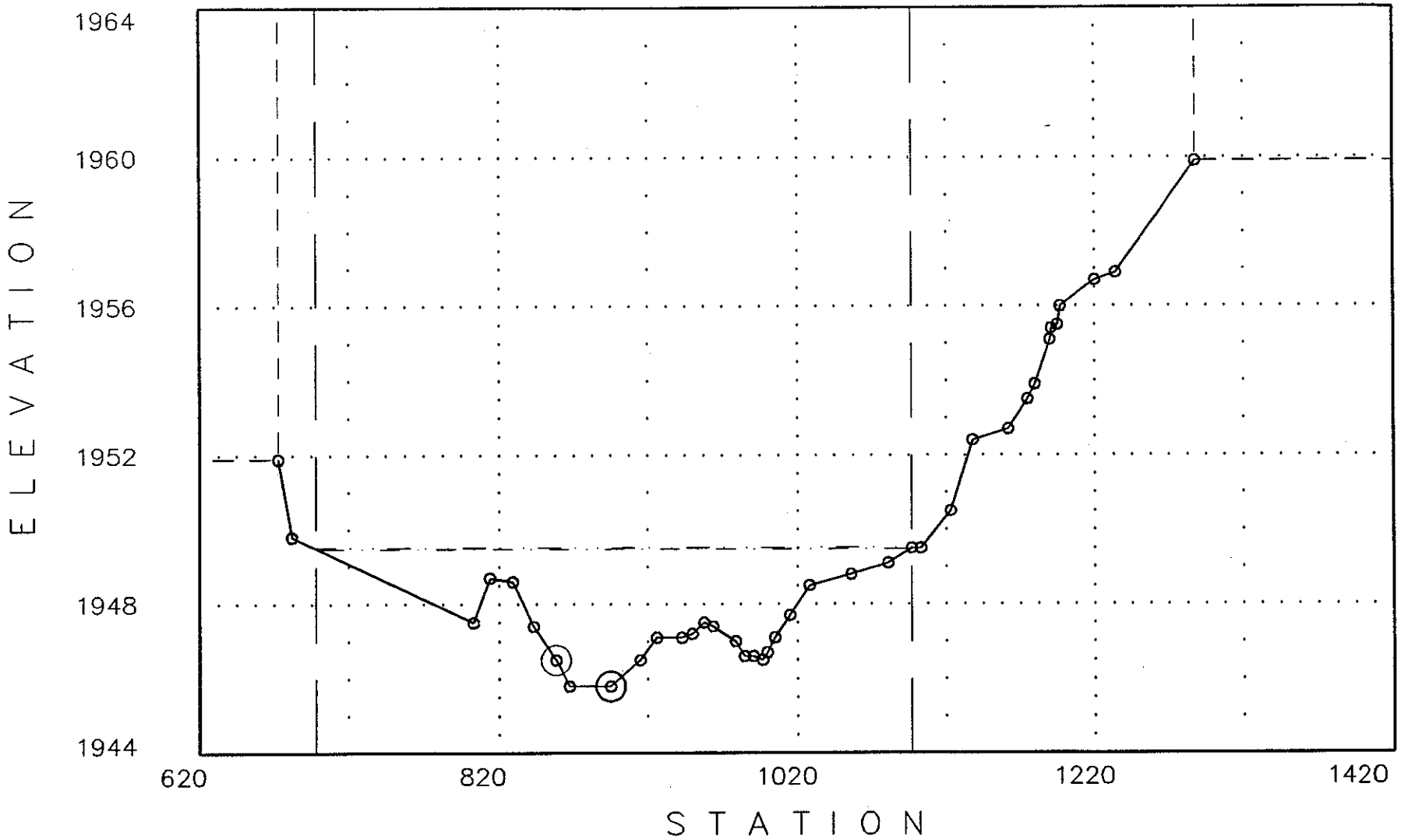


08-11-1992

<<<<<< Cross Section: .099: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1949.48
Q2= 2508 WS2= 1949.52

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07



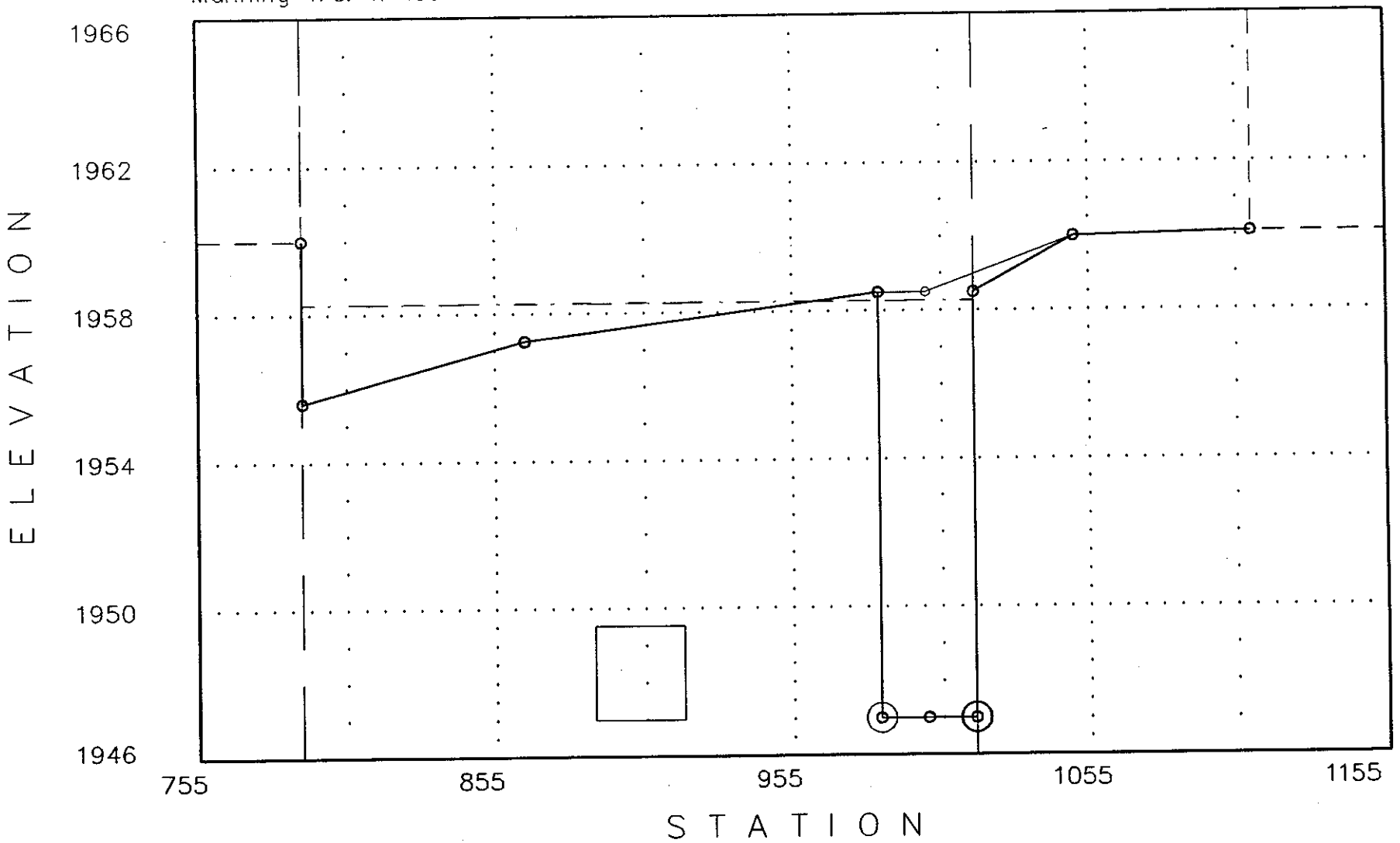
08-11-1992

<<<<<< Cross Section: .115: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1958.28
Q2= 2508 WS2= 1958.27

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07

SPECIAL CULVERT

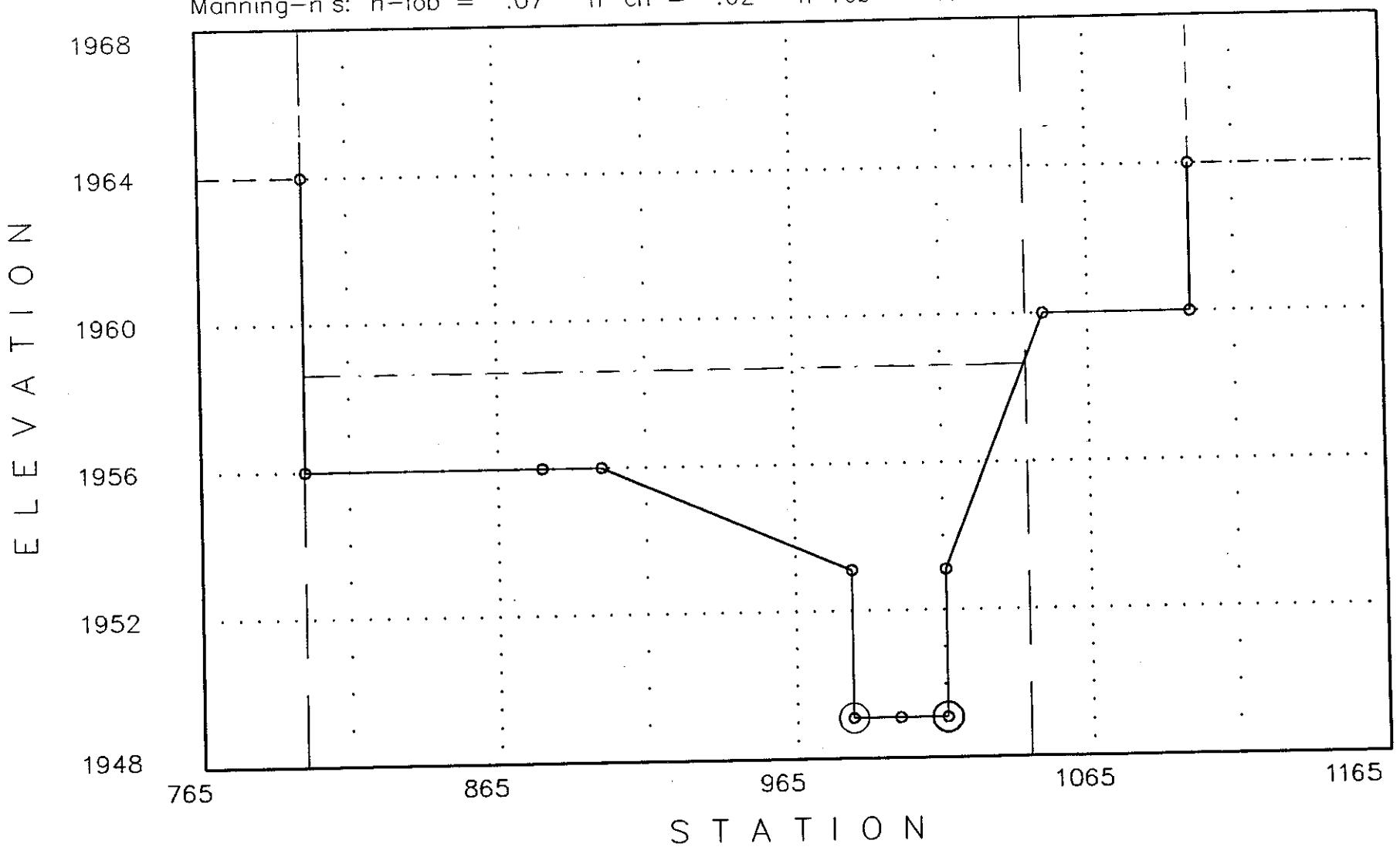


08-11-1992

<<<<<< Cross Section: .121: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1958.64
Q2= 2508 WS2= 1958.62

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07



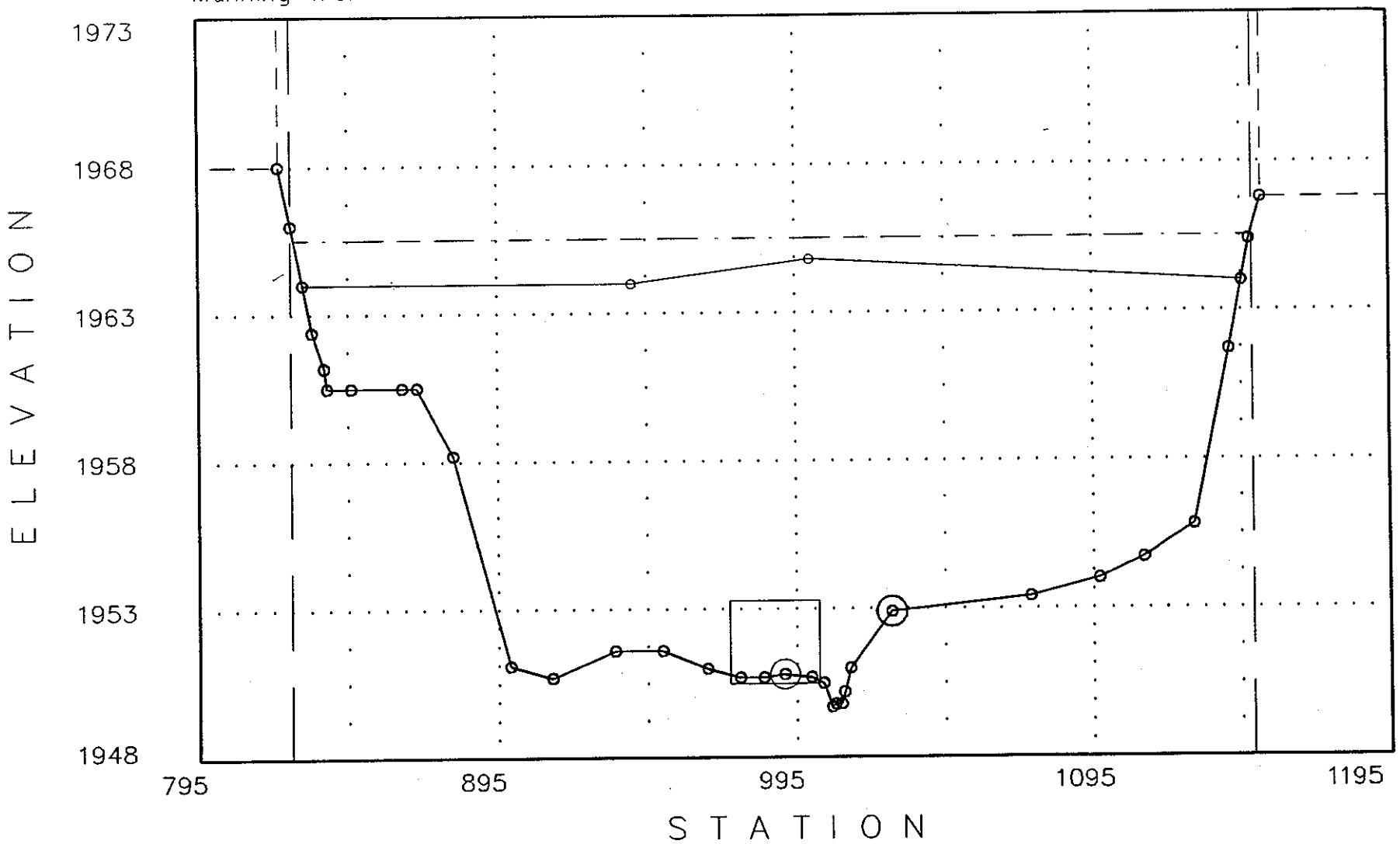
08-11-1992

<<<<<< Cross Section: .136: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1965.53
Q2= 2508 WS2= 1965.53

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07

SPECIAL CULVERT

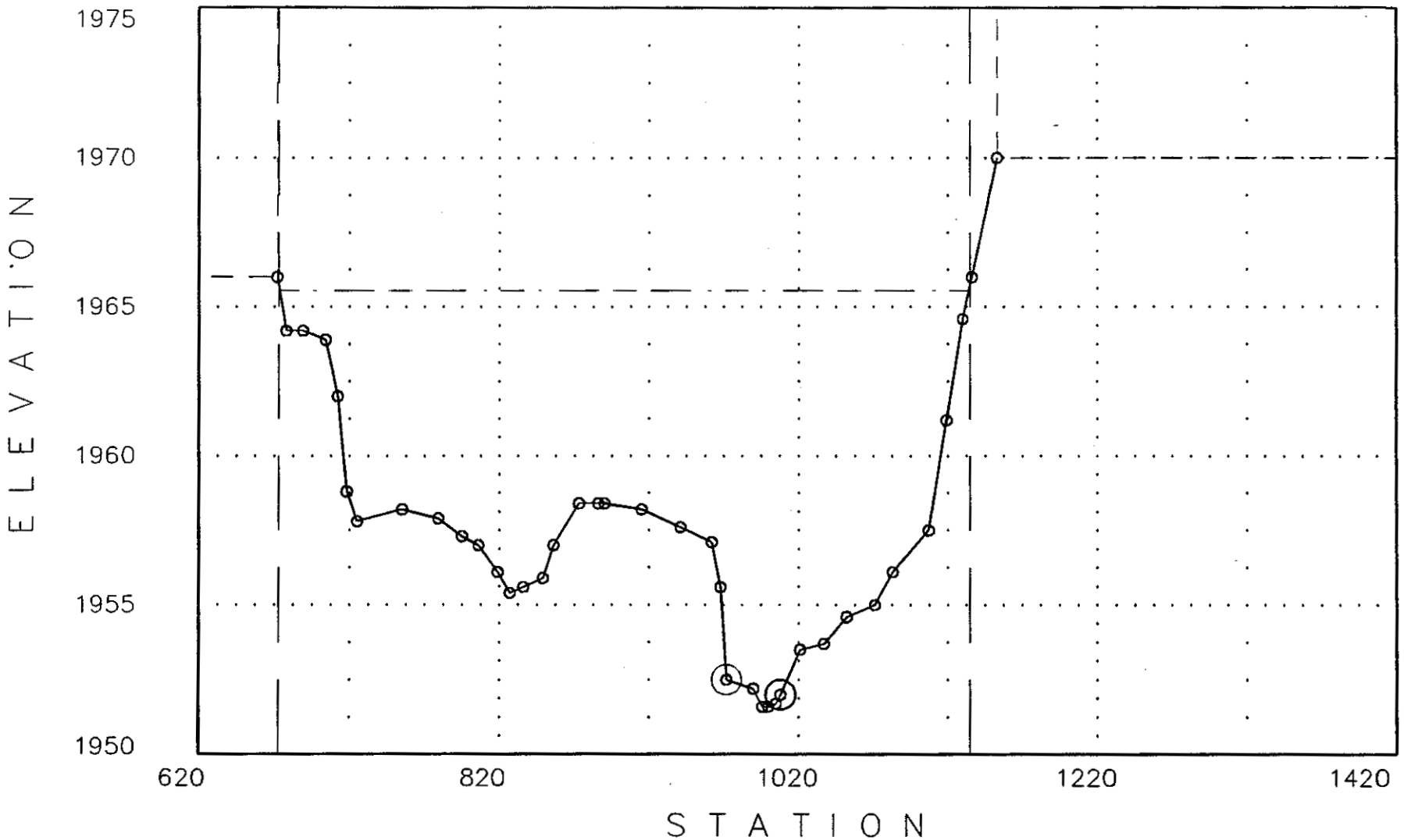


08-11-1992

<<<<<< Cross Section: .152: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1965.55
Q2= 2508 WS2= 1965.55

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

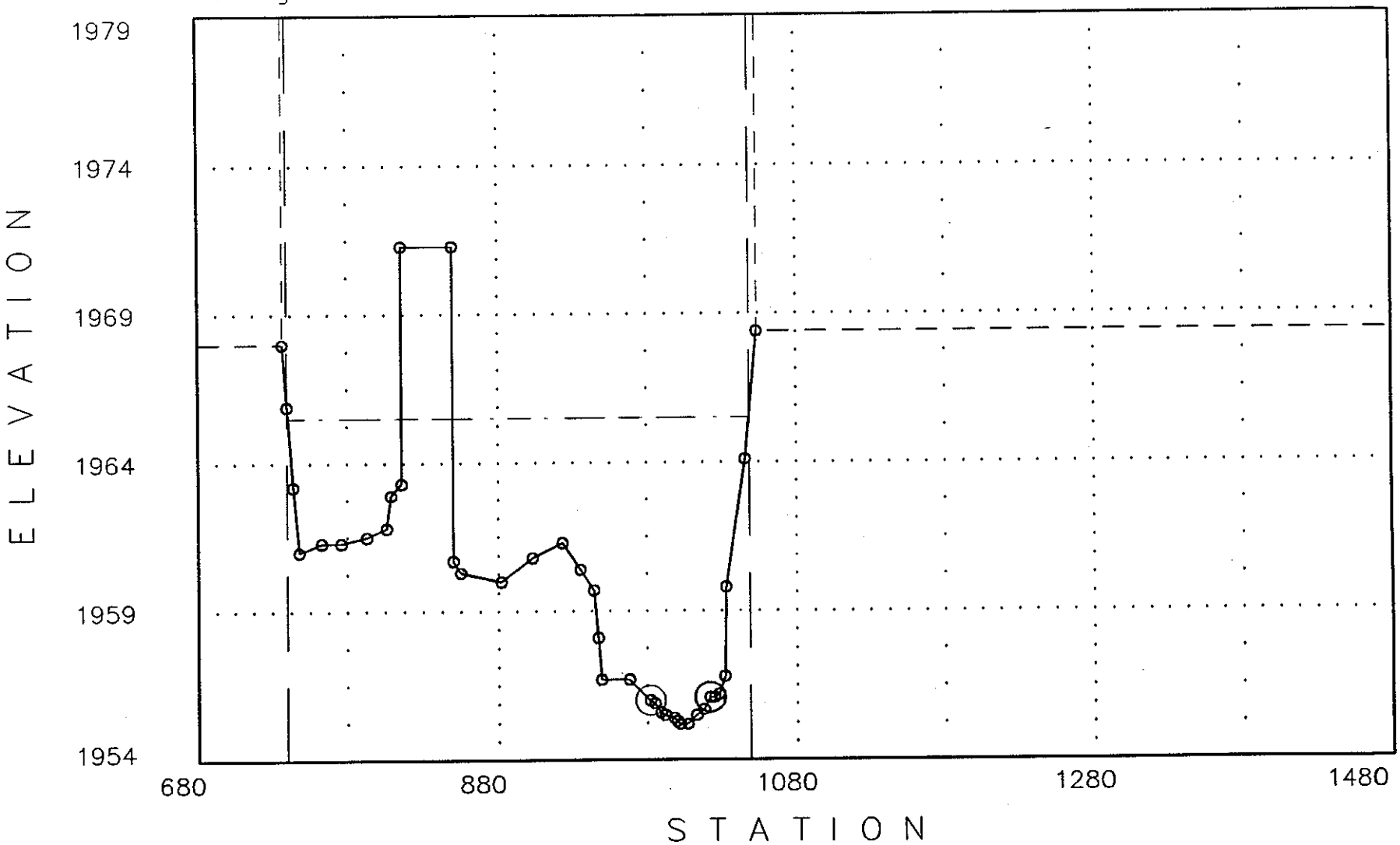


08-11-1992

<<<<<< Cross Section: .19: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1965.52
Q2= 2508 WS2= 1965.52

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

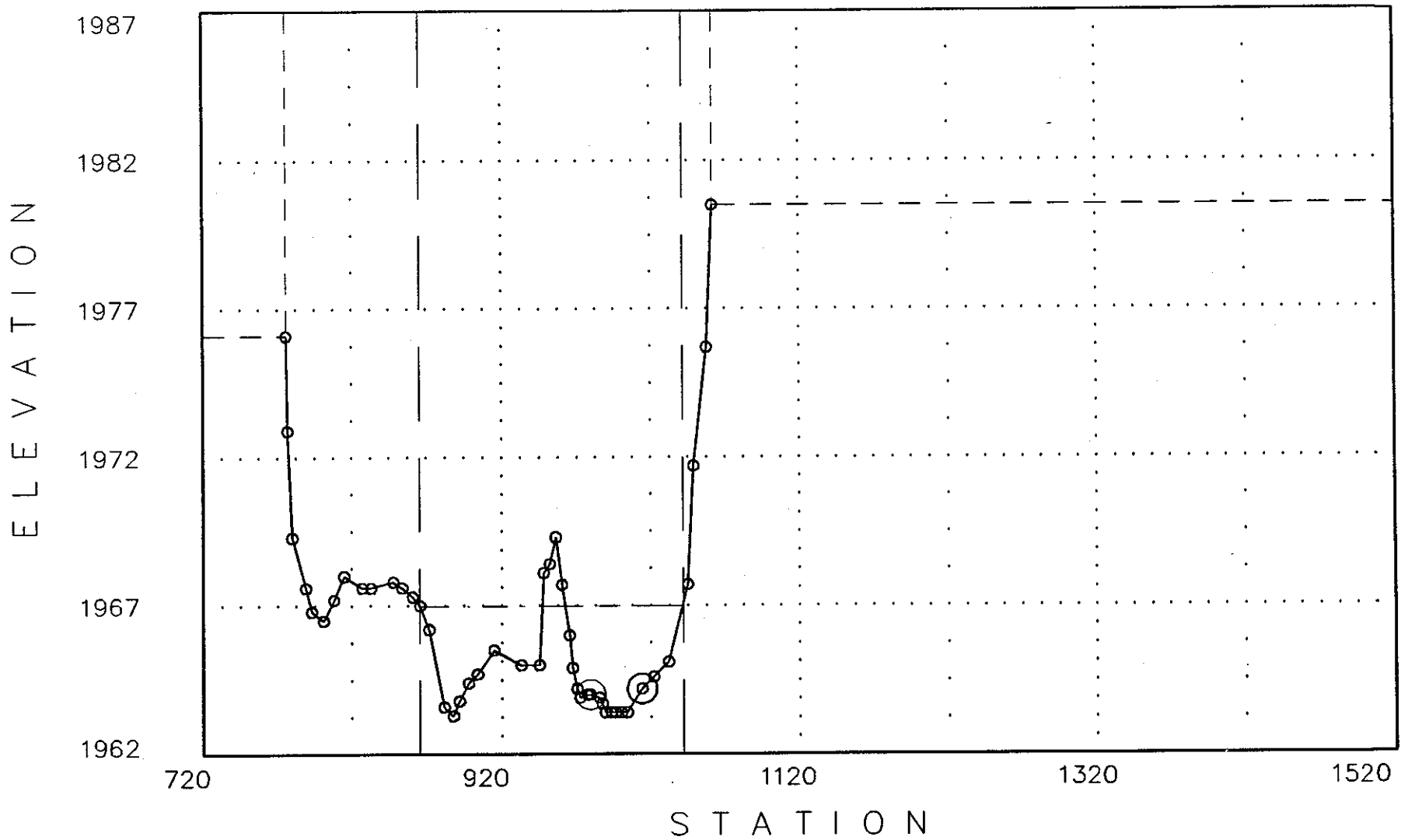


08-11-1992

<<<<<< Cross Section: .258: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1966.99
Q2= 2508 WS2= 1966.99

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

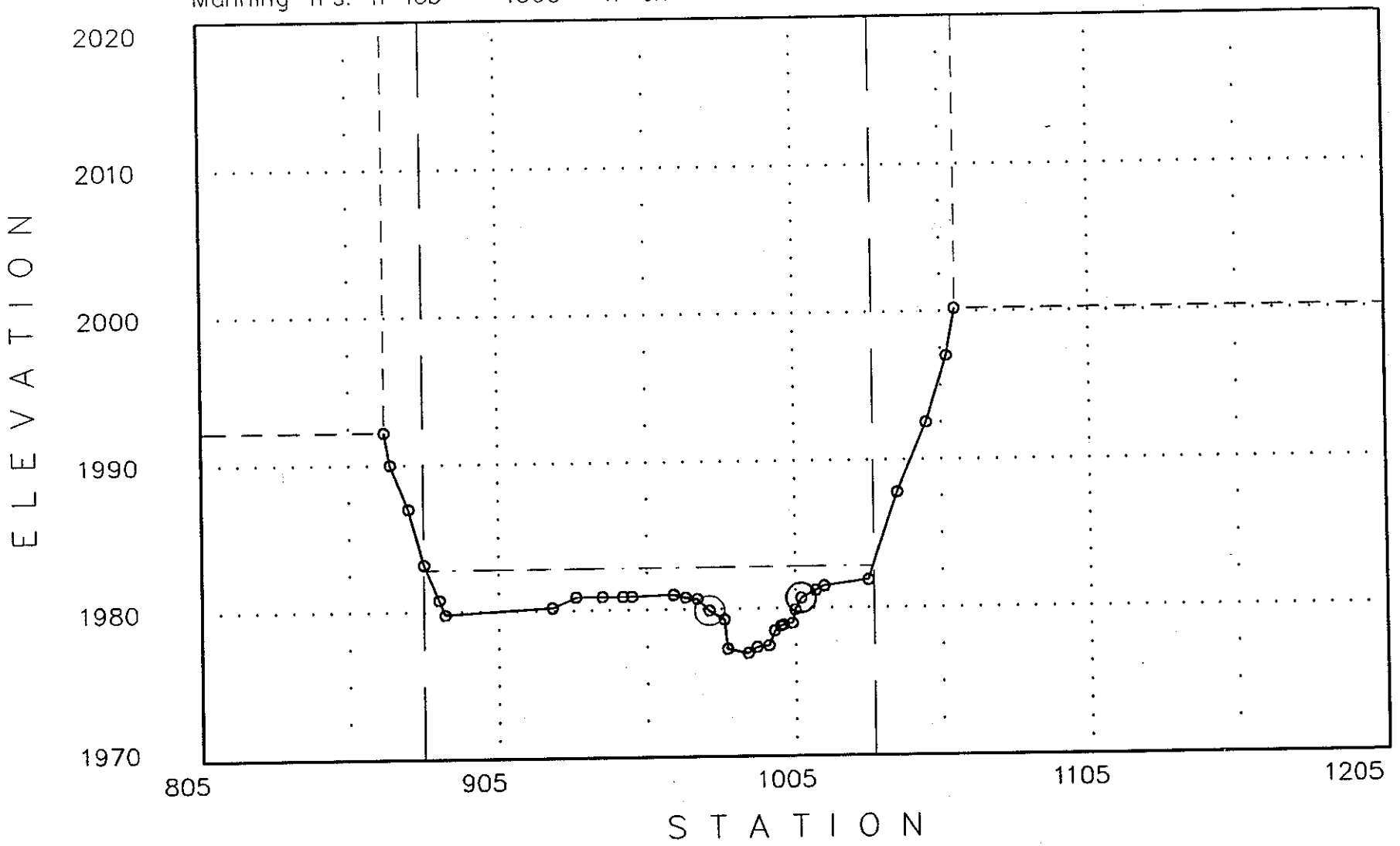


08-11-1992

<<<<<< Cross Section: .373: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1982.82
Q2= 2508 WS2= 1982.82

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

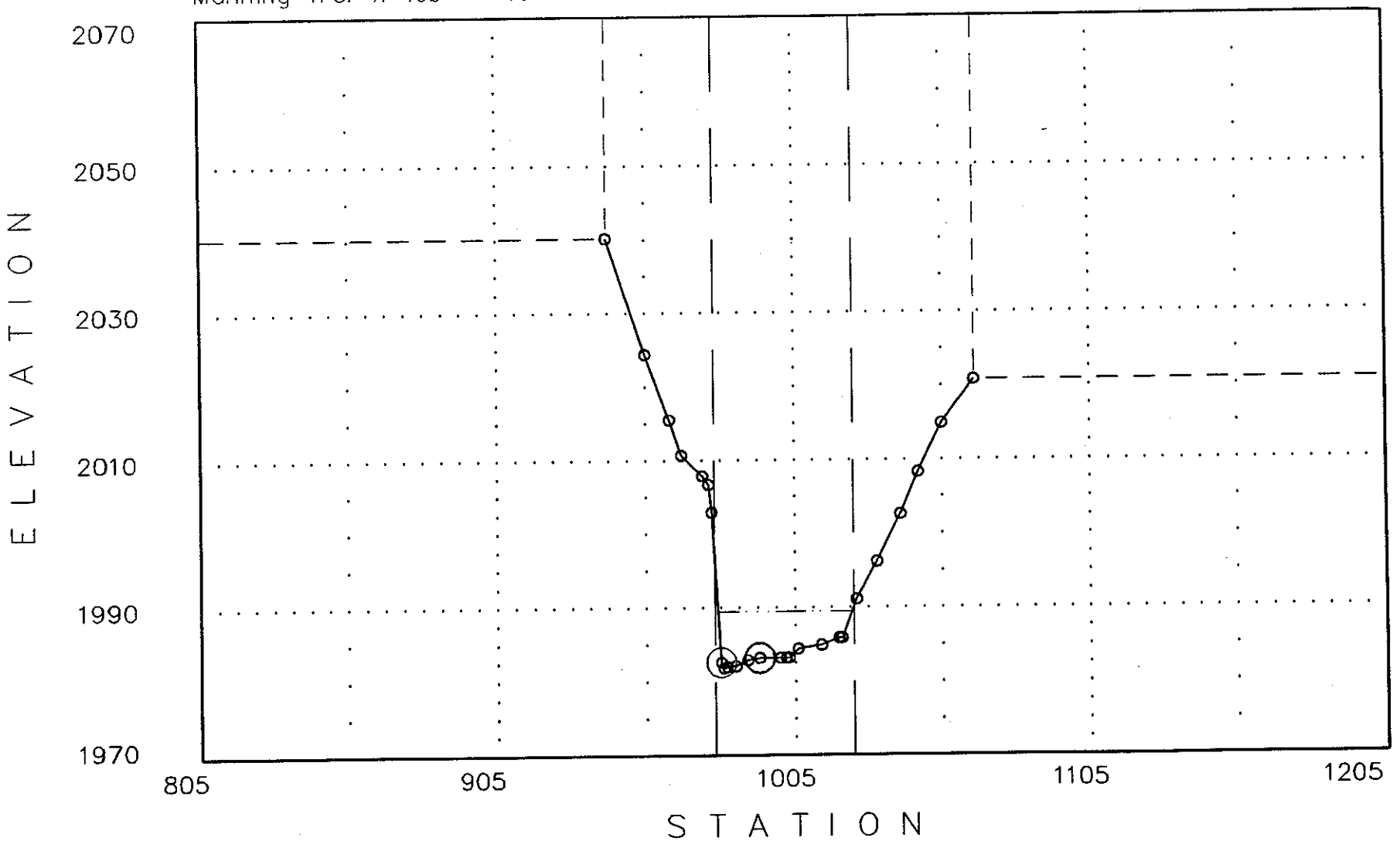


08-11-1992

<<<<<< Cross Section: .409: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1989.47
Q2= 2508 WS2= 1989.47

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

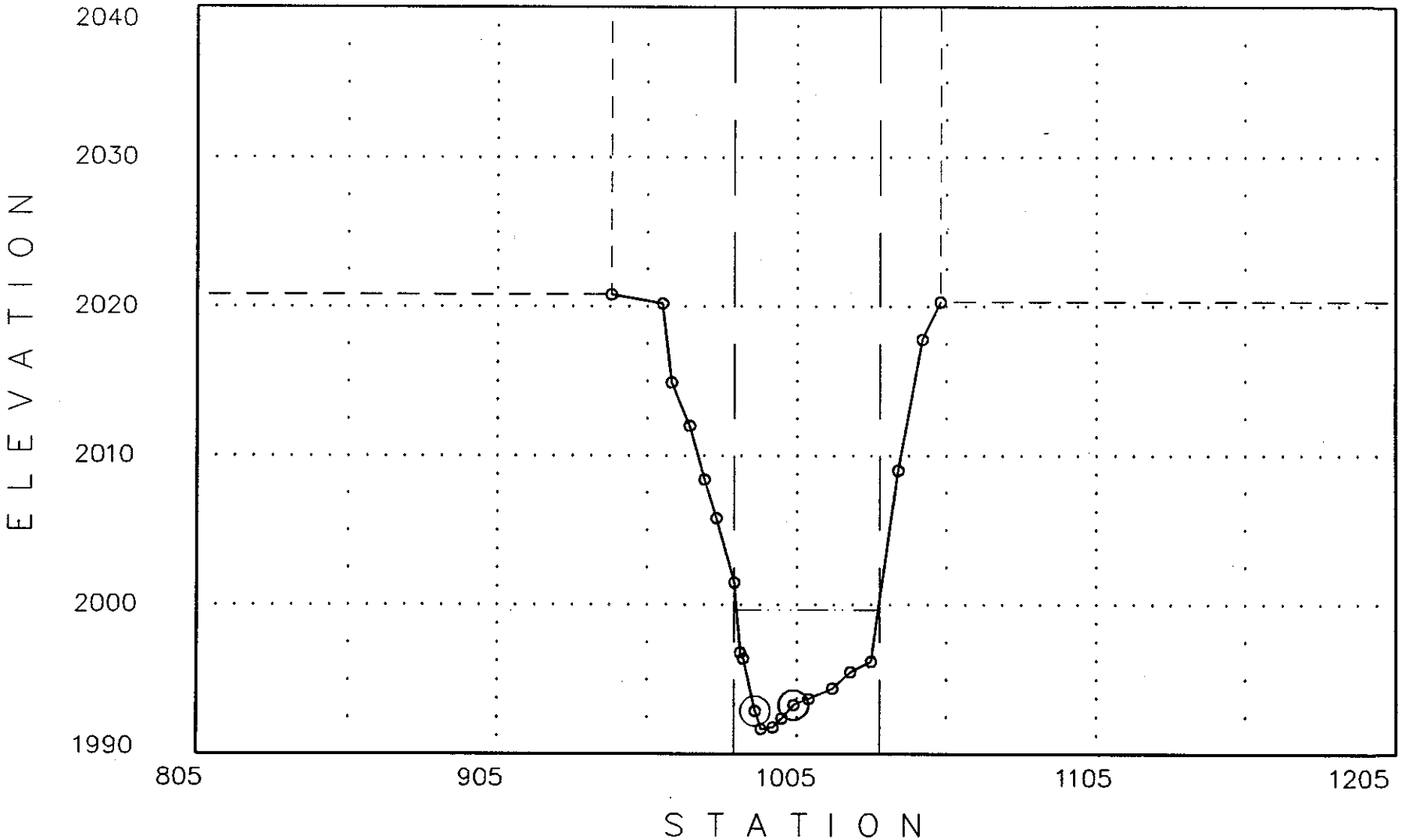


08-11-1992

<<<<<< Cross Section: .504: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 1999.66
Q2= 2508 WS2= 1999.65

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

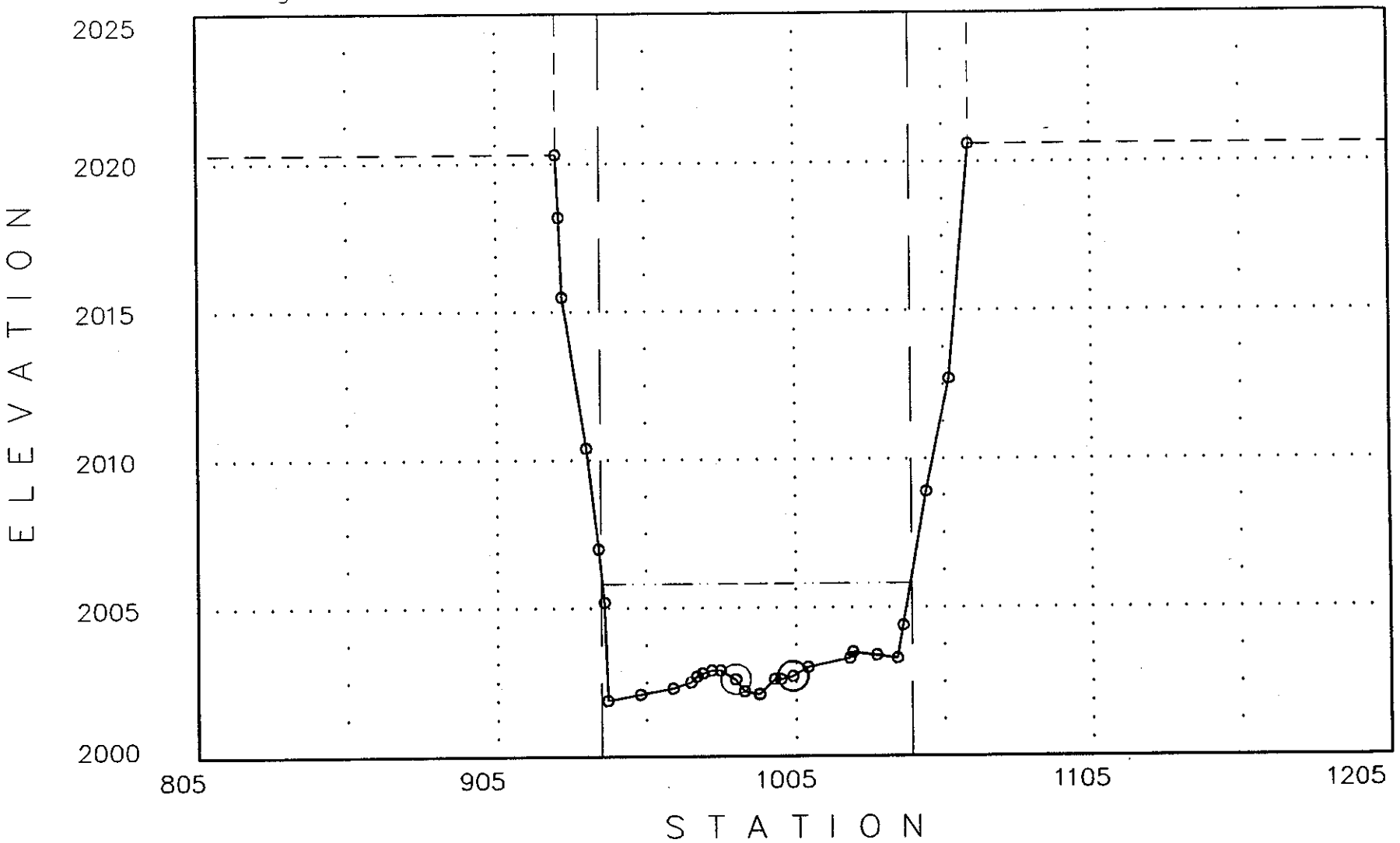


08-11-1992

<<<<<< Cross Section: .568: (FN = WASHK.FWO) >>>>>>

Q1= 2508 WS1= 2005.82
Q2= 2508 WS2= 2005.82

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

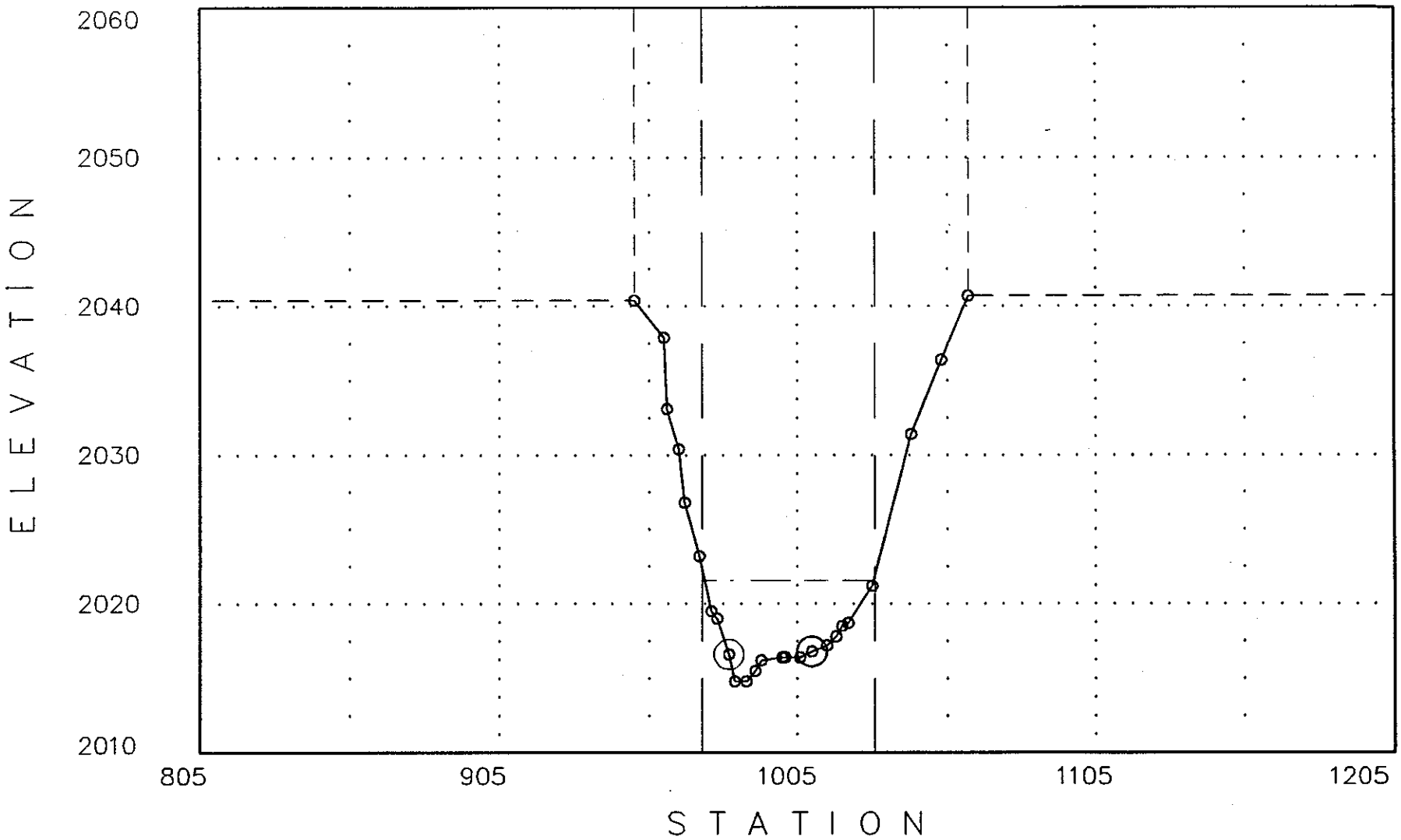


08-11-1992

<<<<<< Cross Section: .663: (FN = WASHK.FWO) >>>>>>

Q1= 2430 WS1= 2021.57
Q2= 2430 WS2= 2021.57

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



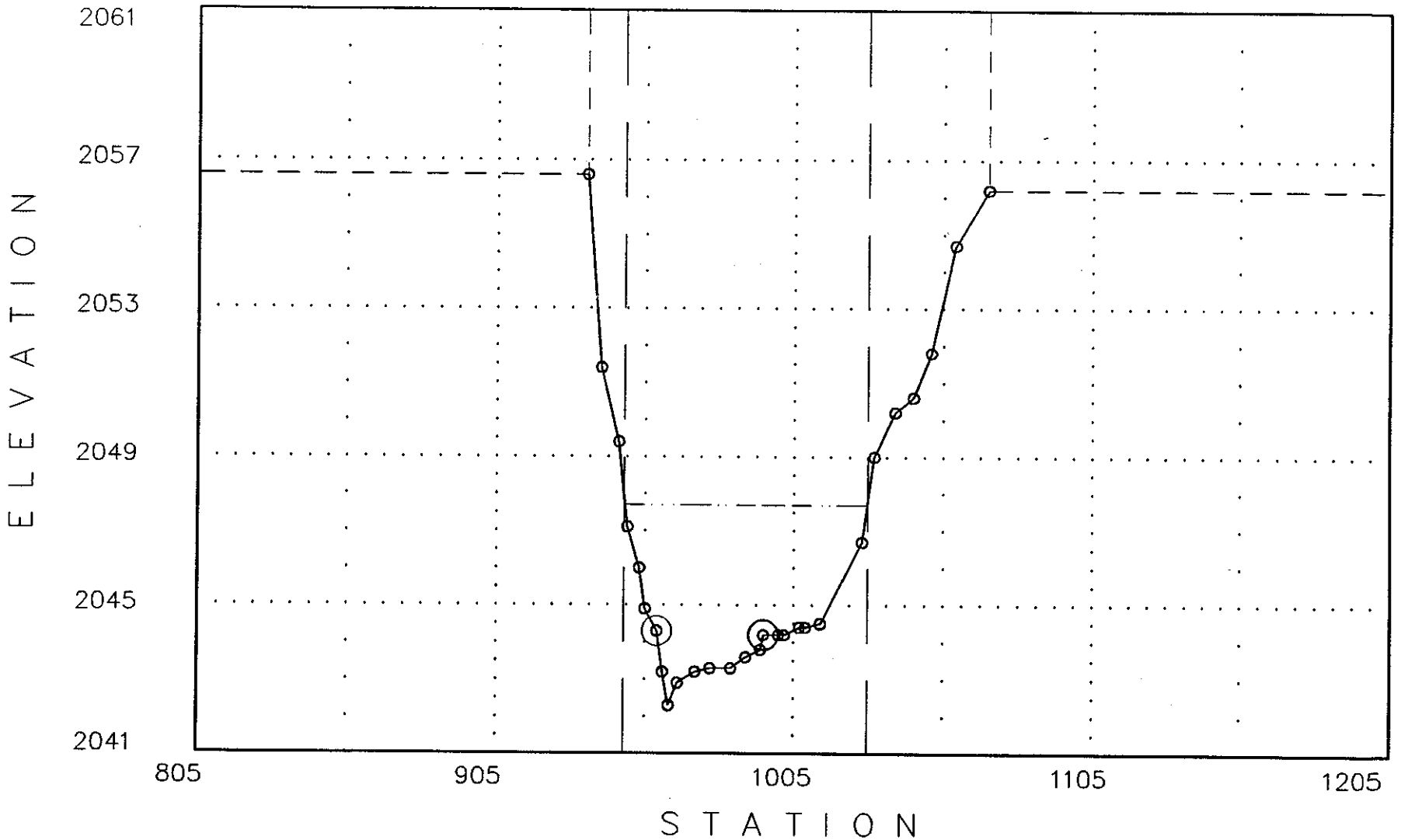
08-11-1992

<<<<<< Cross Section: .758: (FN = WASHK.FWO) >>>>>>

Q1= 2430 WS1= 2047.7

Q2= 2430 WS2= 2047.7

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

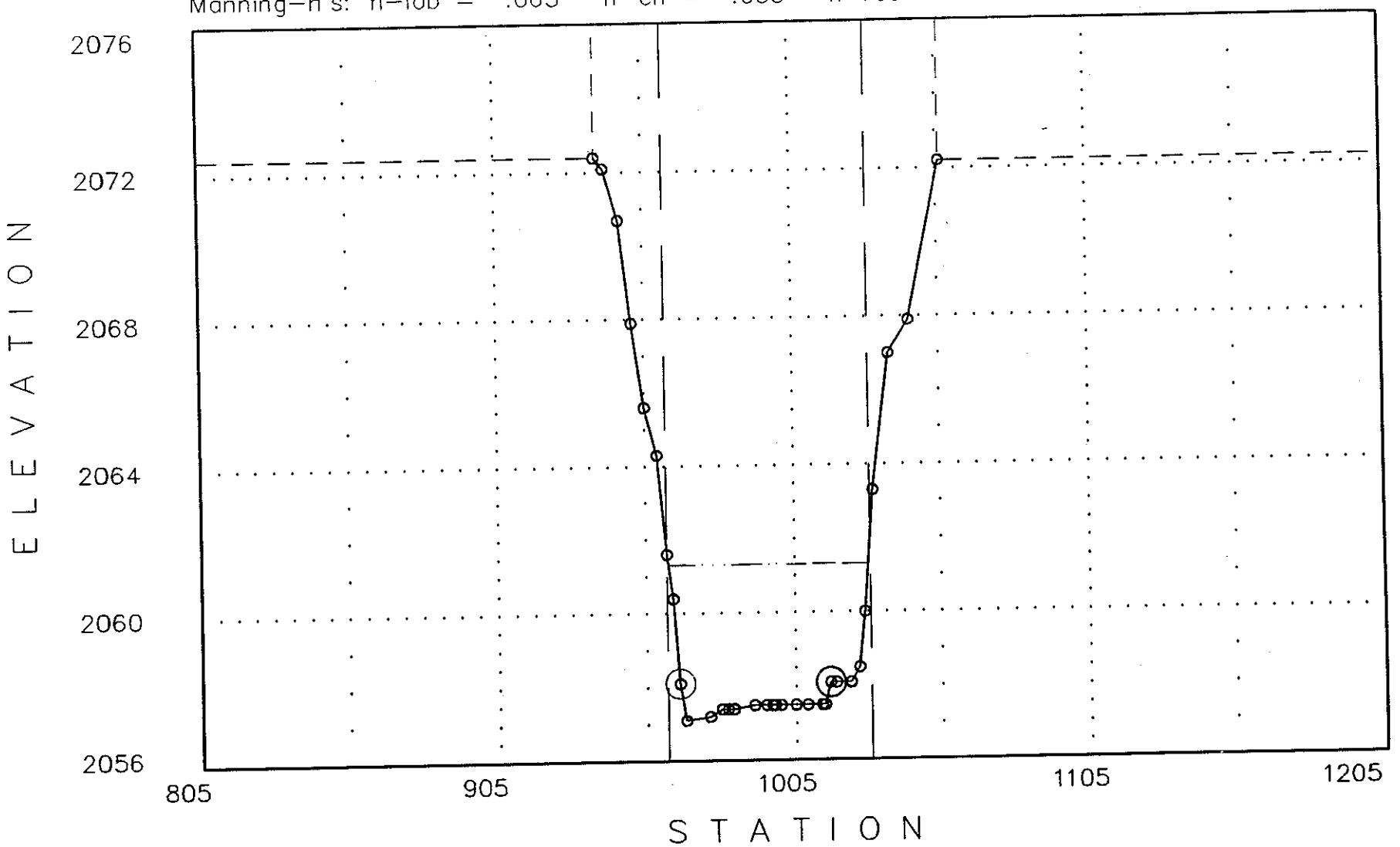


08-11-1992

<<<<<< Cross Section: .852: (FN = WASHK.FWO) >>>>>>

Q1= 2430 WS1= 2061.31
Q2= 2430 WS2= 2061.32

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

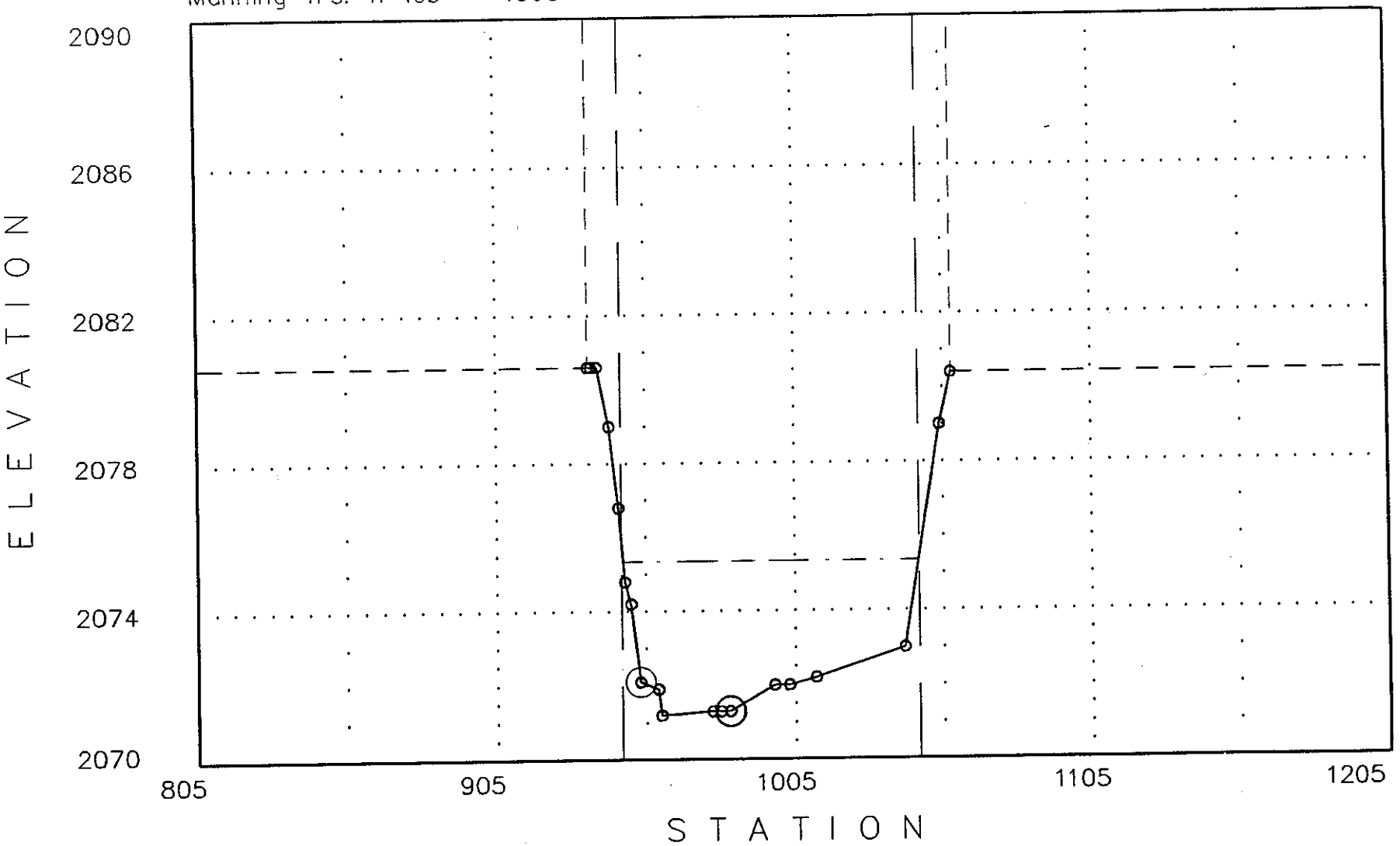


08-11-1992

<<<<<< Cross Section: .947: (FN = WASHK.FWO) >>>>>>

Q1= 2430 WS1= 2075.35
Q2= 2430 WS2= 2075.35

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

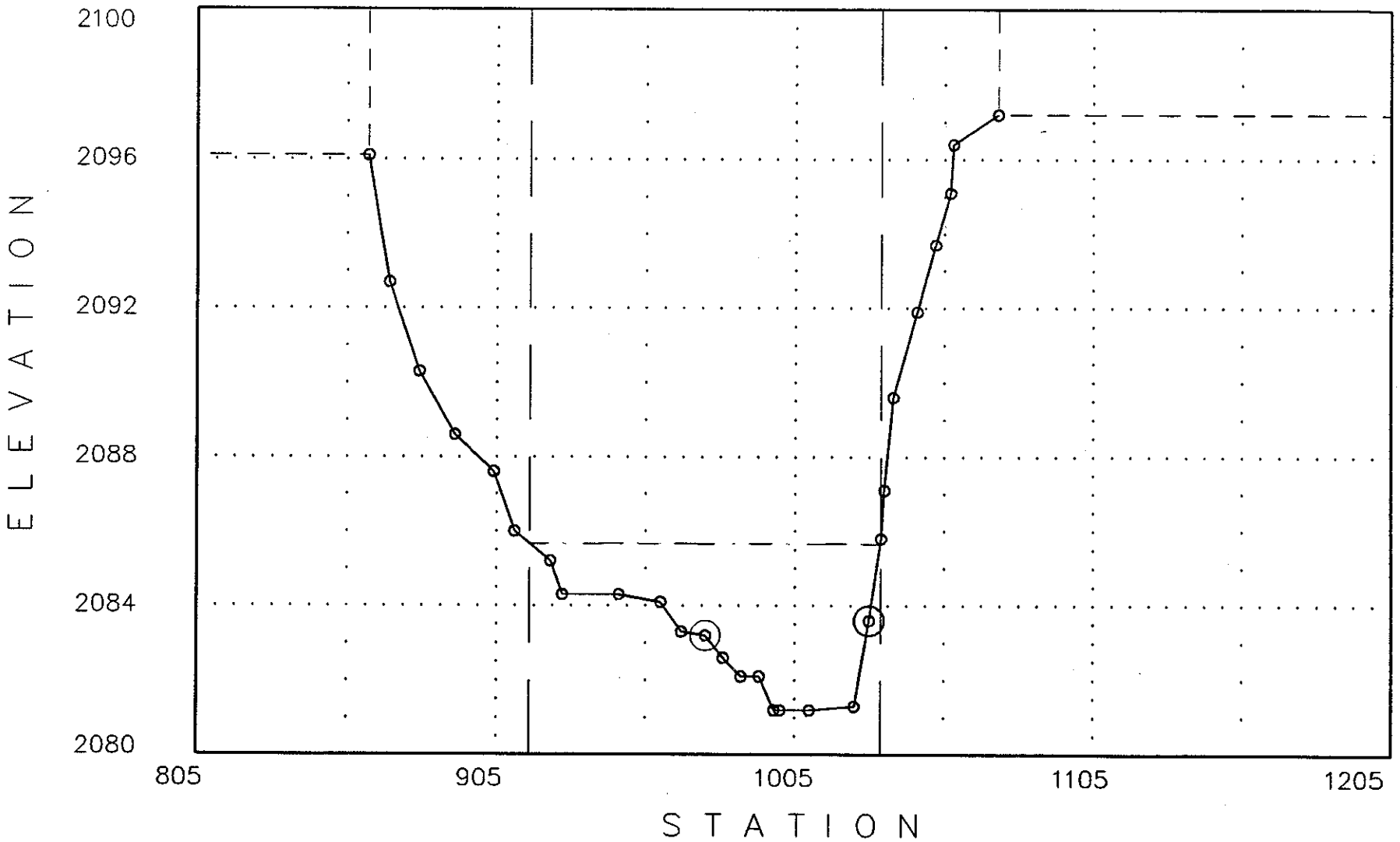


08-11-1992

<<<<<< Cross Section: 1.042: (FN = WASHK.FWO) >>>>>>

Q1= 2430 WS1= 2085.66
Q2= 2430 WS2= 2085.67

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

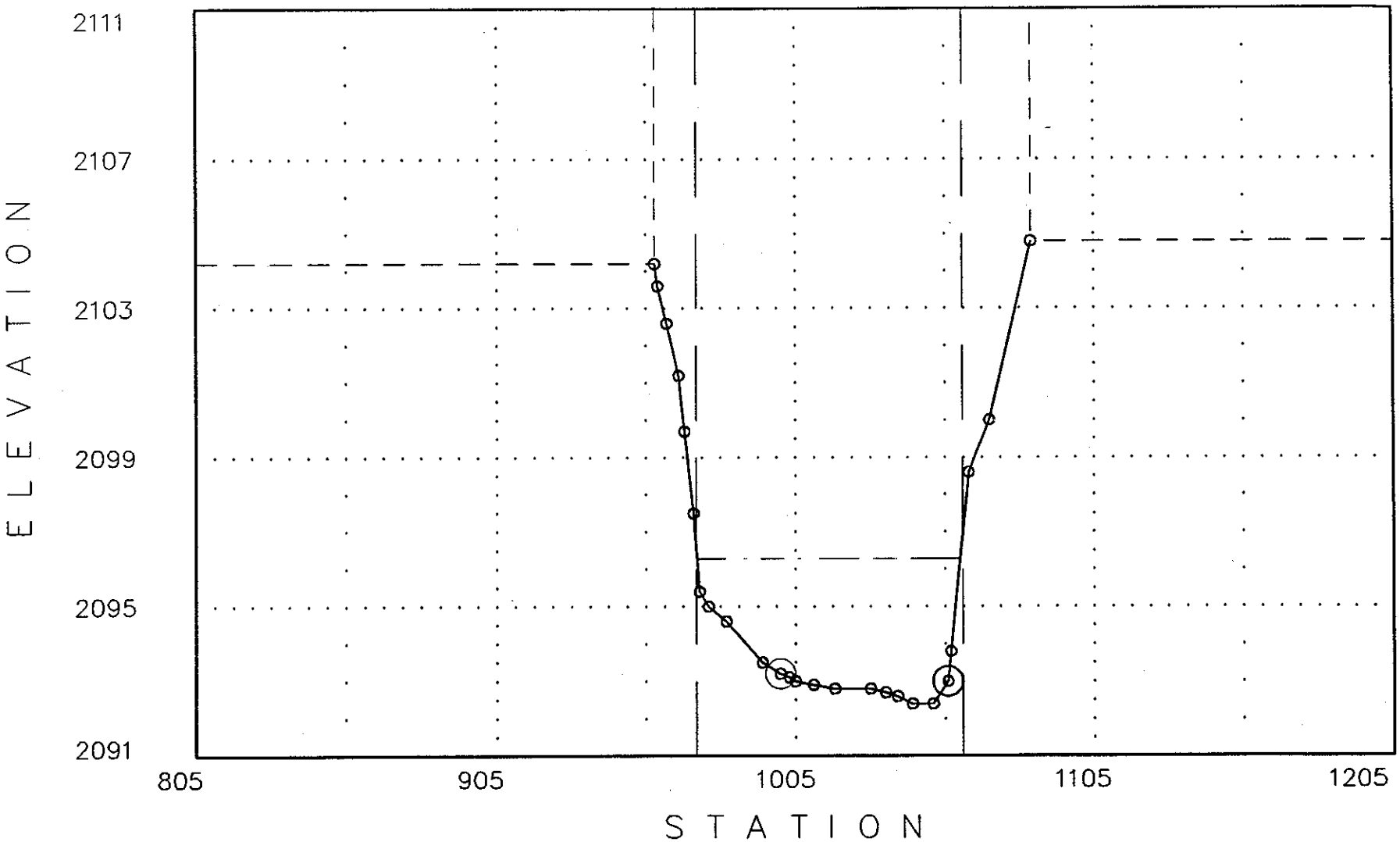


08-11-1992

<<<<<< Cross Section: 1.136: (FN = WASHK.FWO) >>>>>>

Q1= 2290 WS1= 2096.28
Q2= 2290 WS2= 2096.28

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

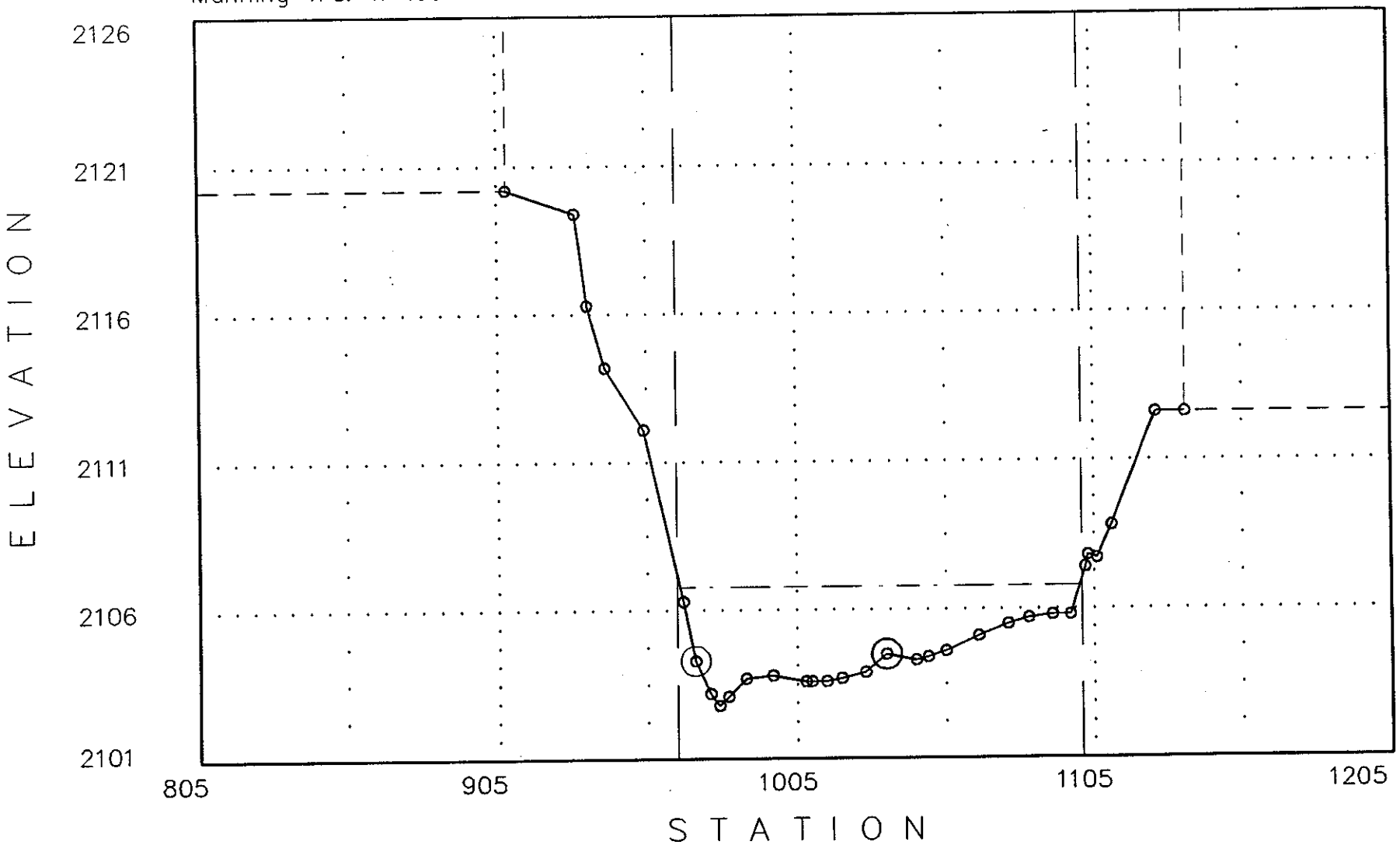


08-11-1992

<<<<<< Cross Section: 1.227: (FN = WASHK.FWO) >>>>>>

Q1= 2290 WS1= 2106.79
Q2= 2290 WS2= 2106.79

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

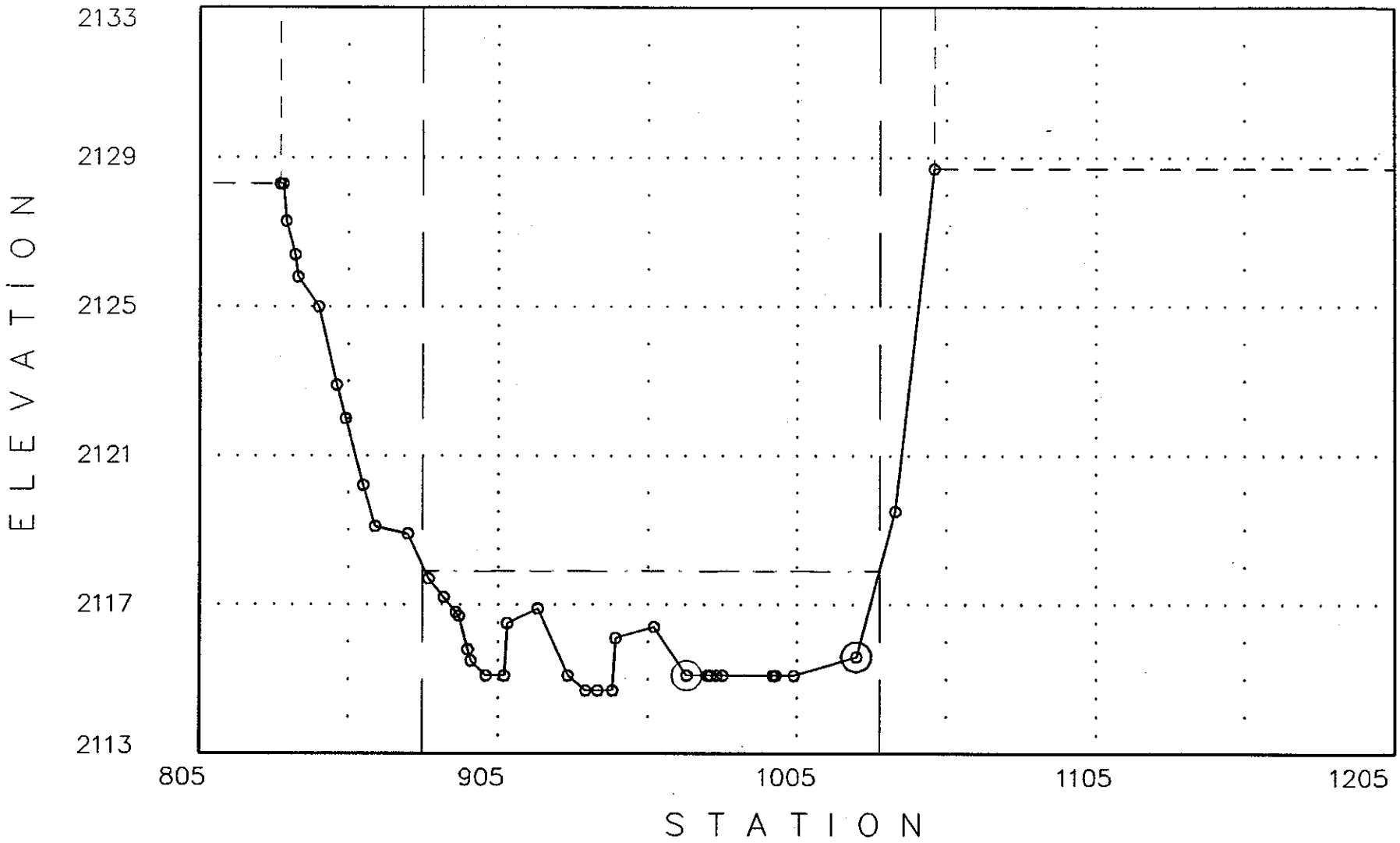


08-11-1992

<<<<<< Cross Section: 1.311: (FN = WASHK.FWO) >>>>>>

Q1= 2290 WS1= 2117.9
Q2= 2290 WS2= 2117.91

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

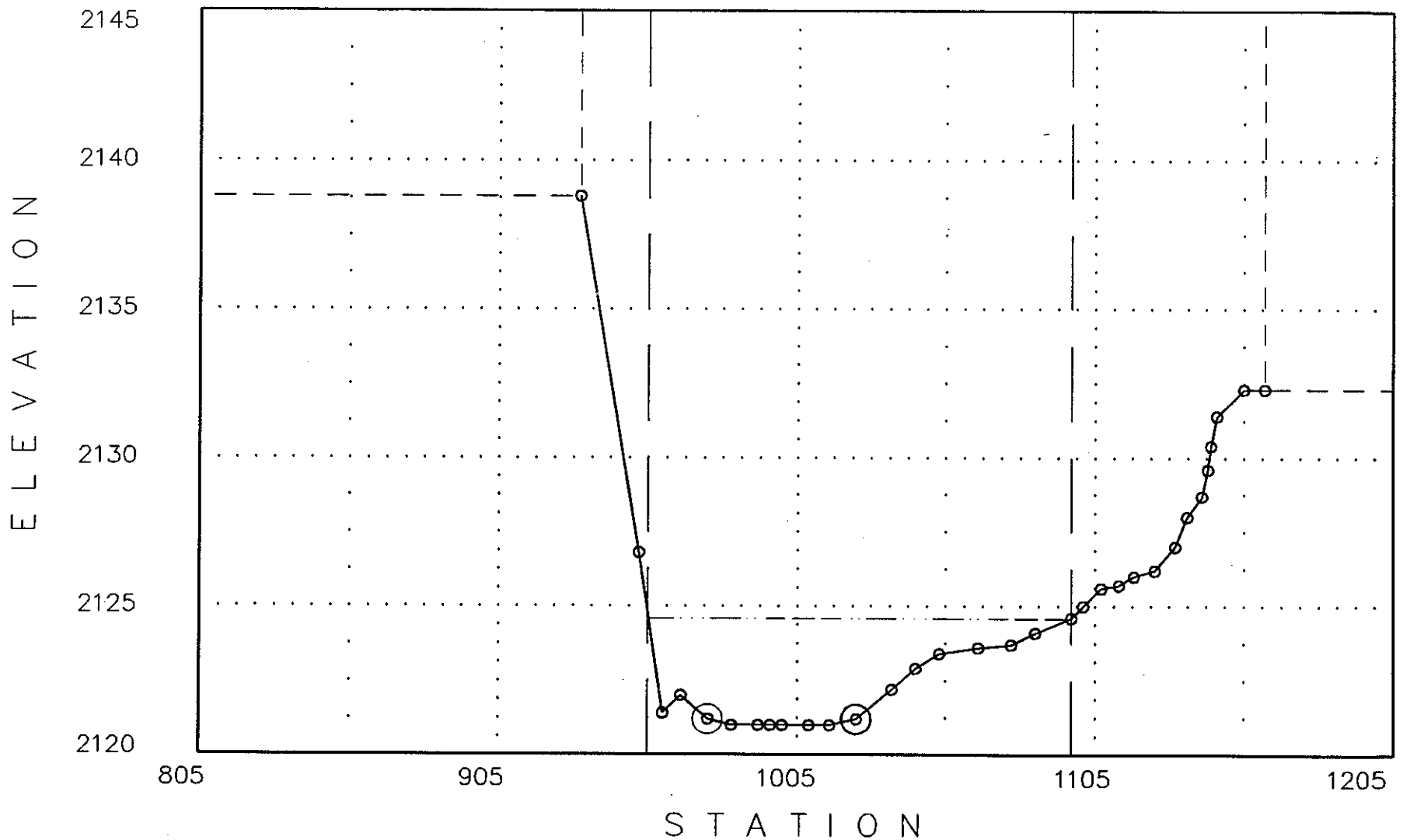


08-11-1992

<<<<<< Cross Section: 1.383: (FN = WASHK.FWO) >>>>>>

Q1= 2290 WS1= 2124.58
Q2= 2290 WS2= 2124.58

Manning-n's: n-lob = .065 n-ch = .03 n-rob = .065

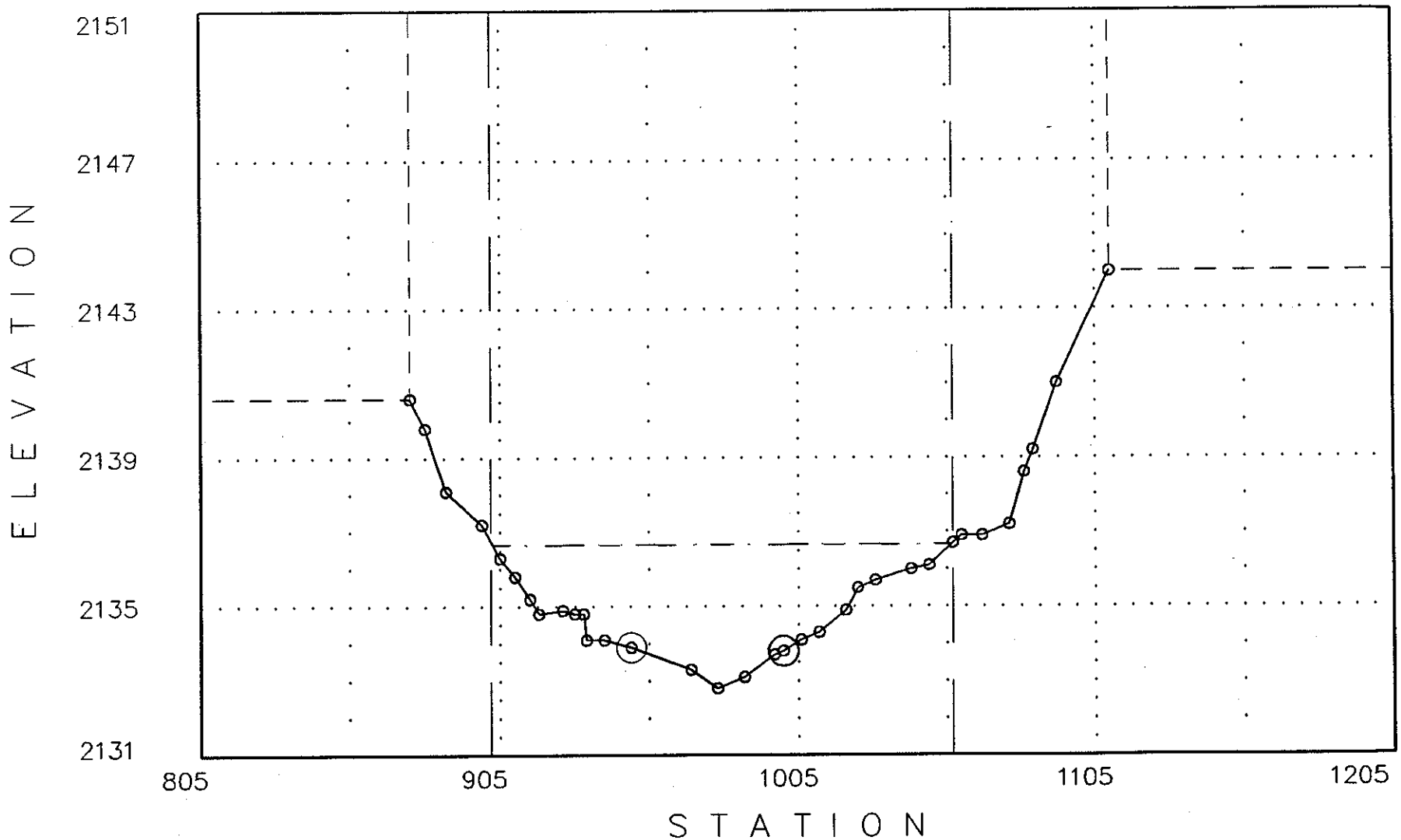


08-11-1992

<<<<<< Cross Section: 1.477: (FN = WASHK.FWO) >>>>>>

Q1= 2290 WS1= 2136.66
Q2= 2290 WS2= 2136.67

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

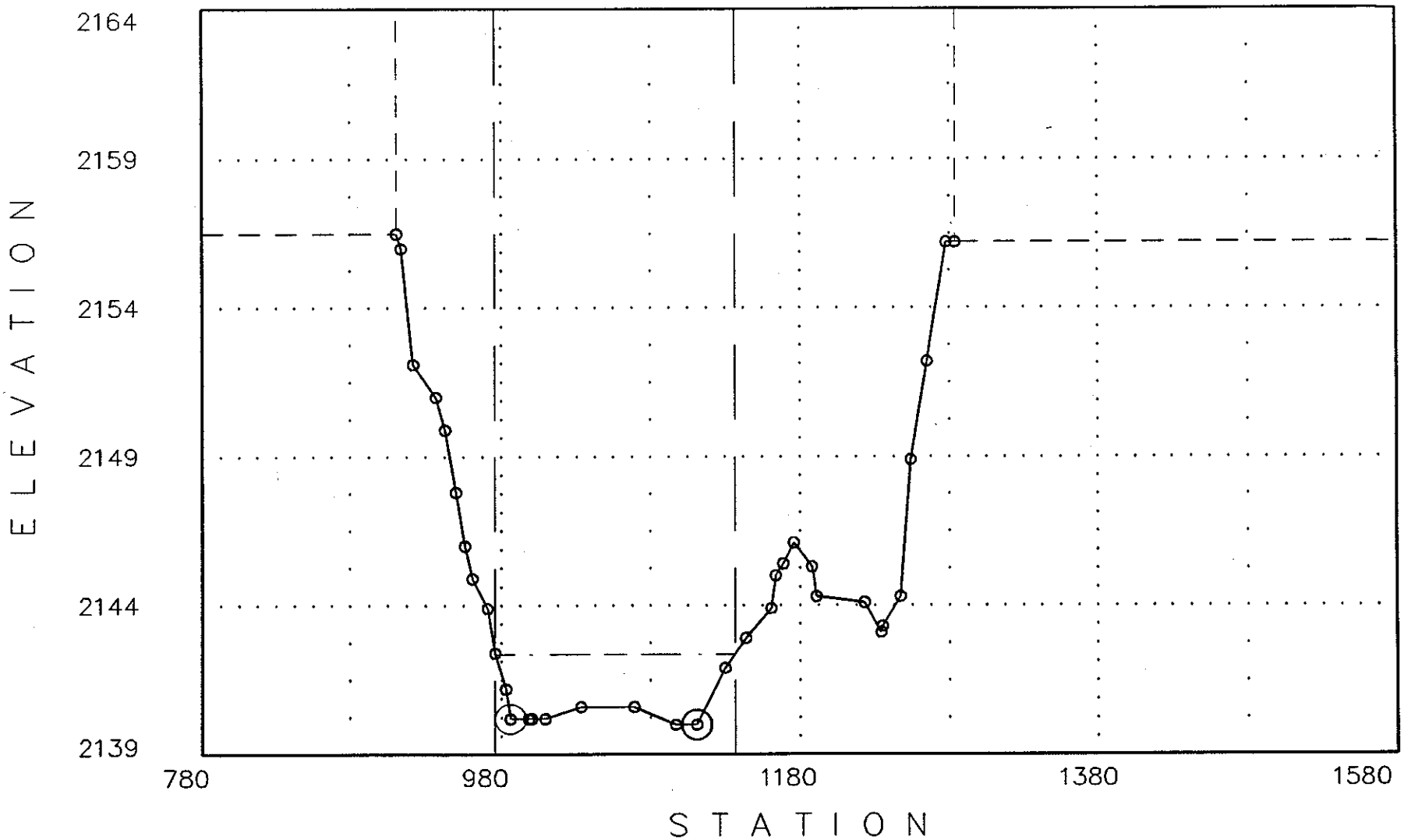


08-11-1992

<<<<<< Cross Section: 1.553: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2142.36
Q2= 2150 WS2= 2142.36

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

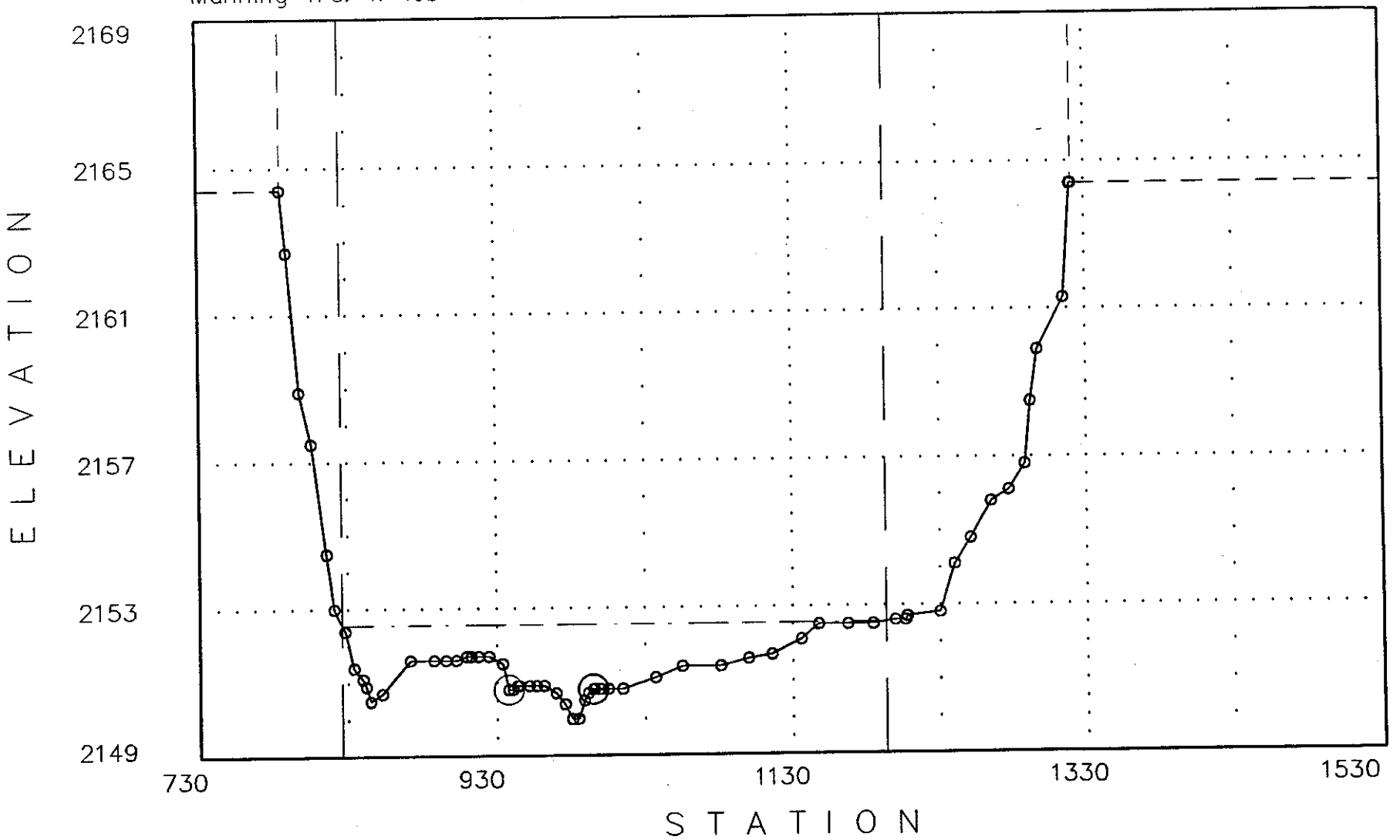


08-11-1992

<<<<<< Cross Section: 1.631: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2152.56
Q2= 2150 WS2= 2152.56

Manning-n's: n-lob = .055 n-ch = .04 n-rob = .06

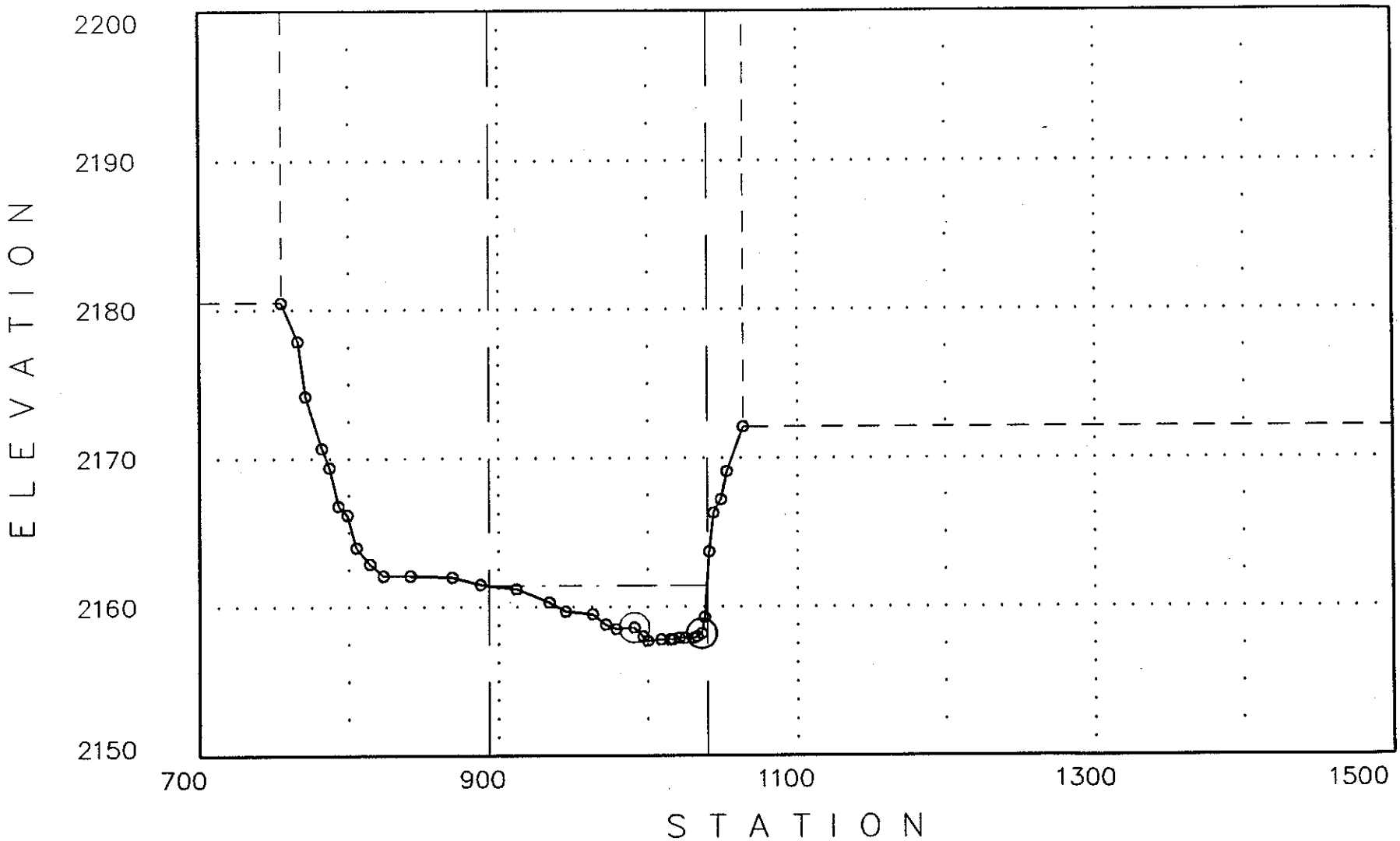


08-11-1992

<<<<<< Cross Section: 1.693: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2161.42
Q2= 2150 WS2= 2161.42

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

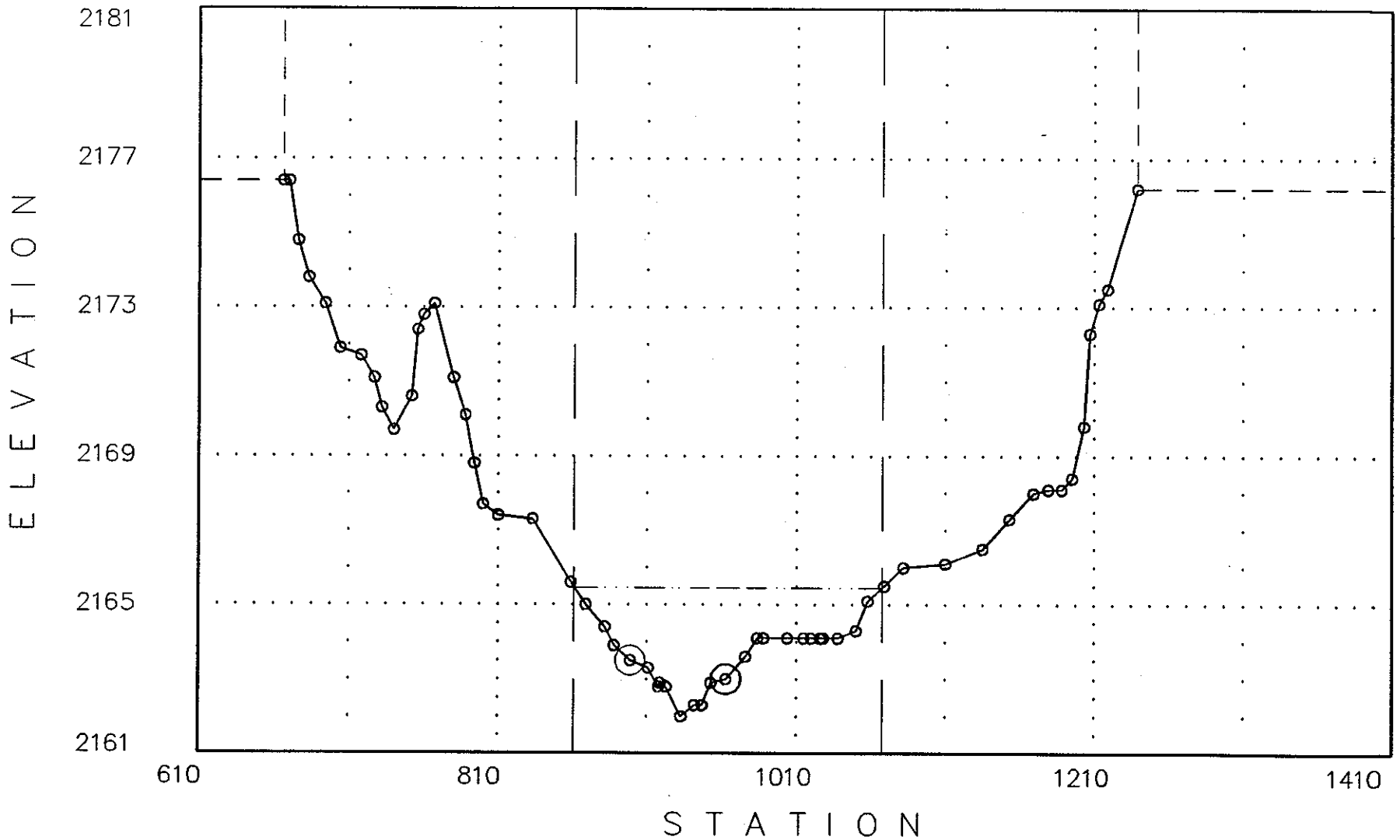


08-11-1992

<<<<<< Cross Section: 1.74: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2165.46
Q2= 2150 WS2= 2165.46

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

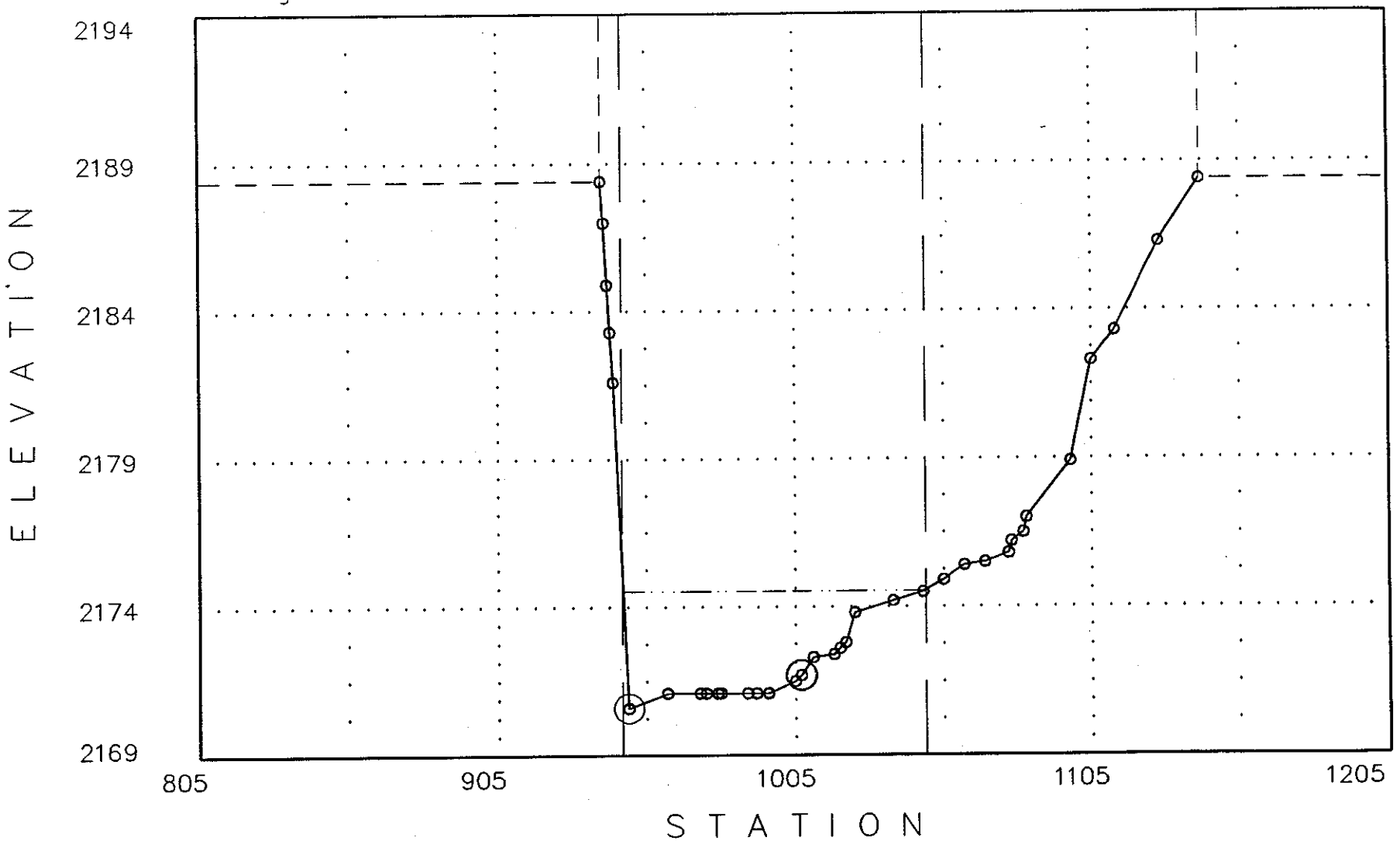


08-11-1992

<<<<<< Cross Section: 1.831: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2174.53
Q2= 2150 WS2= 2174.54

Manning-n's: n-lob = .055 n-ch = .03 n-rob = .06

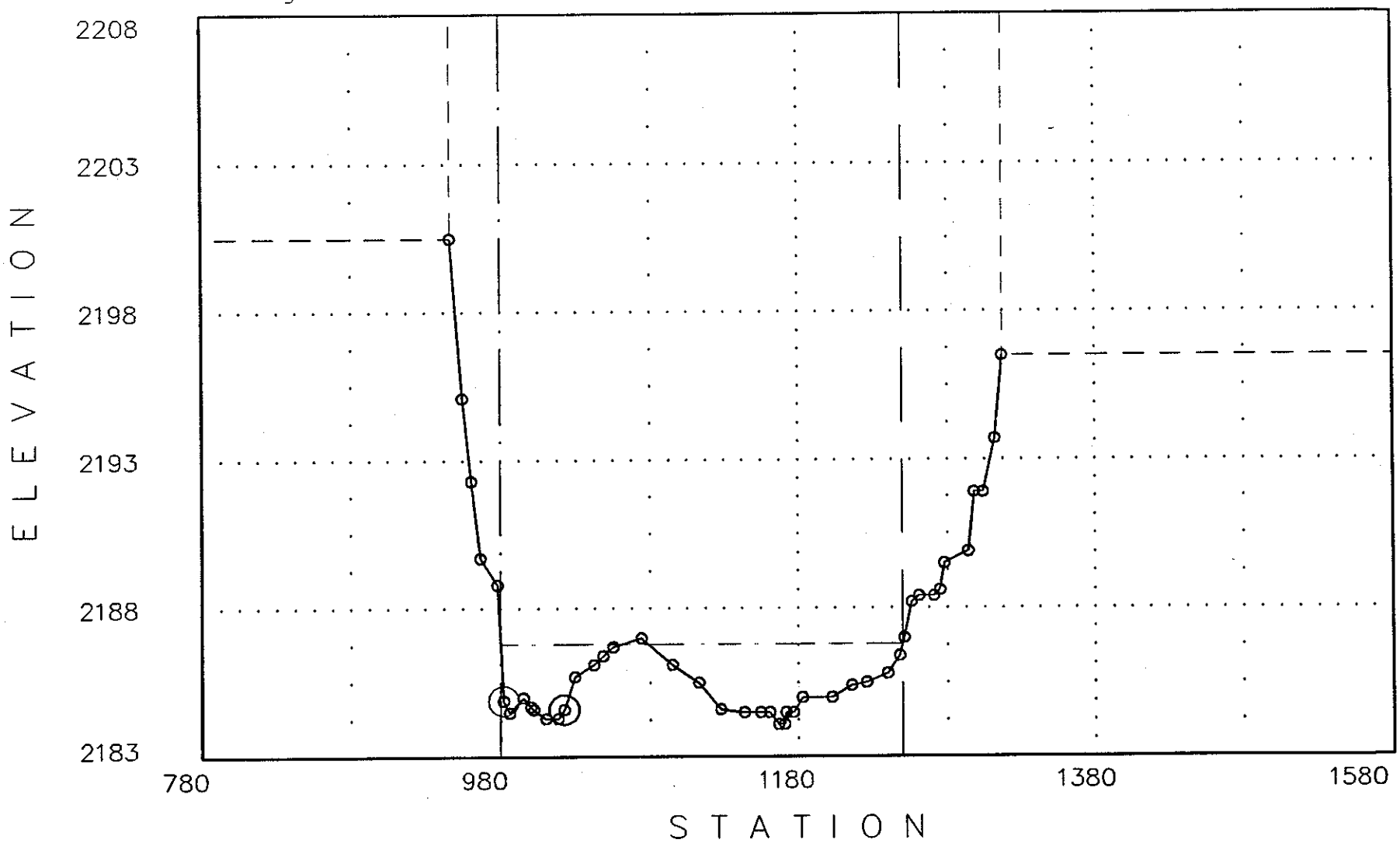


08-11-1992

<<<<<< Cross Section: 1.941: (FN = WASHK.FWO) >>>>>>

Q1= 2150 WS1= 2186.79
Q2= 2150 WS2= 2186.79

Manning-n's: n-lob = .055 n-ch = .03 n-rob = .06

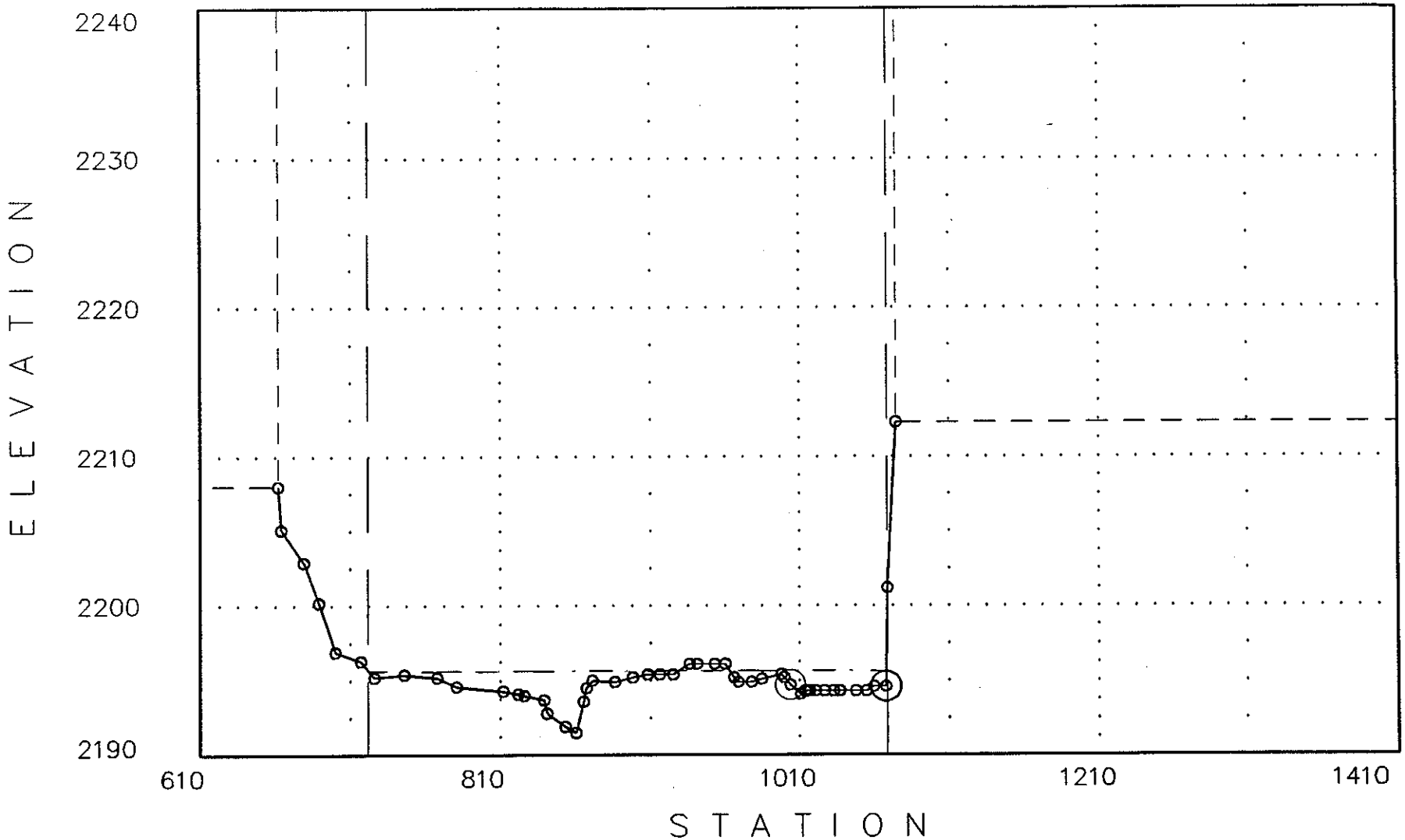


08-11-1992

<<<<<< Cross Section: 2.036: (FN = WASHK.FWO) >>>>>>

Q1= 1945 WS1= 2195.62
Q2= 1945 WS2= 2195.64

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .055

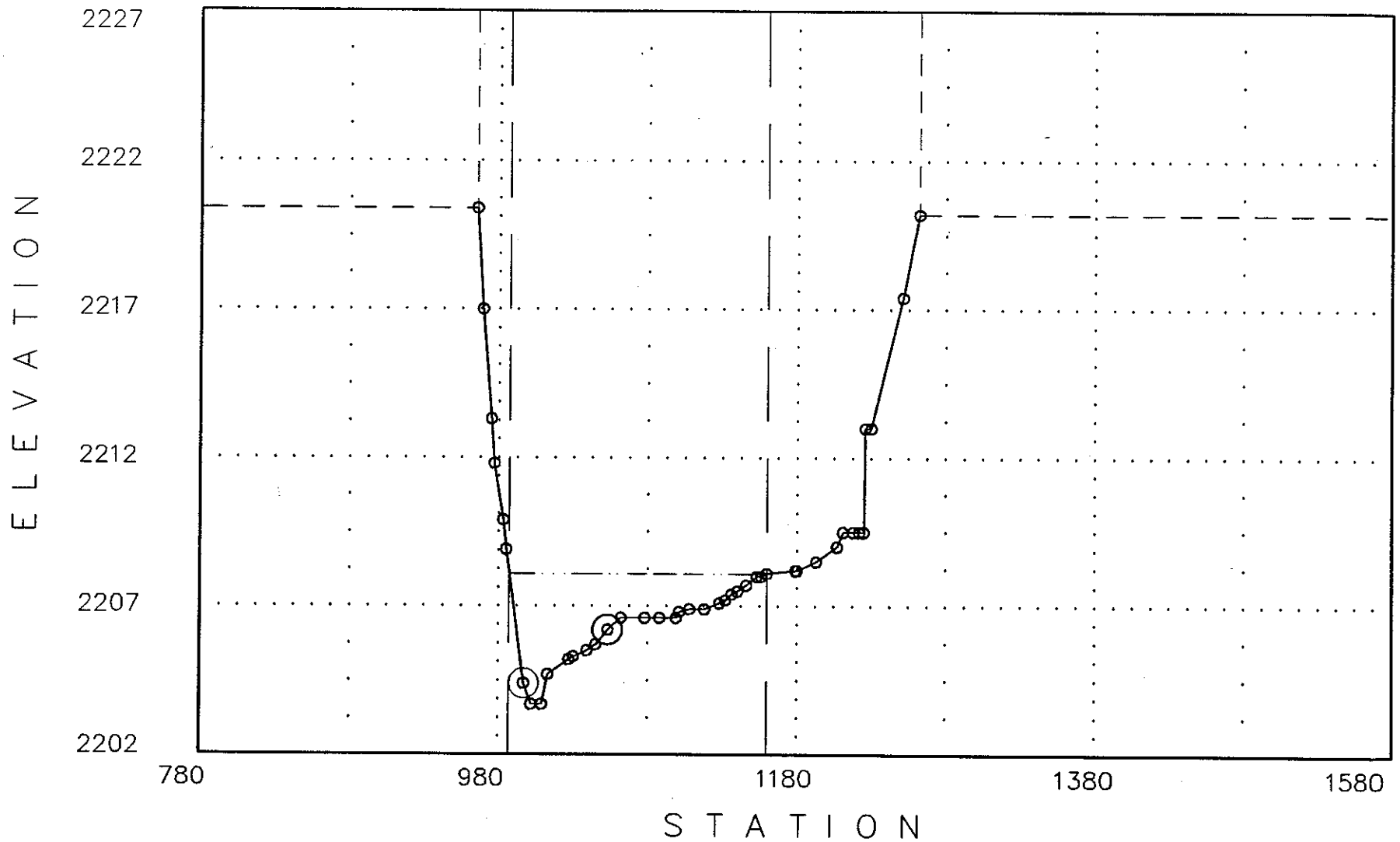


08-11-1992

<<<<<< Cross Section: 2.131: (FN = WASHK.FWO) >>>>>>

Q1= 1945 WS1= 2208.08
Q2= 1945 WS2= 2208.08

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

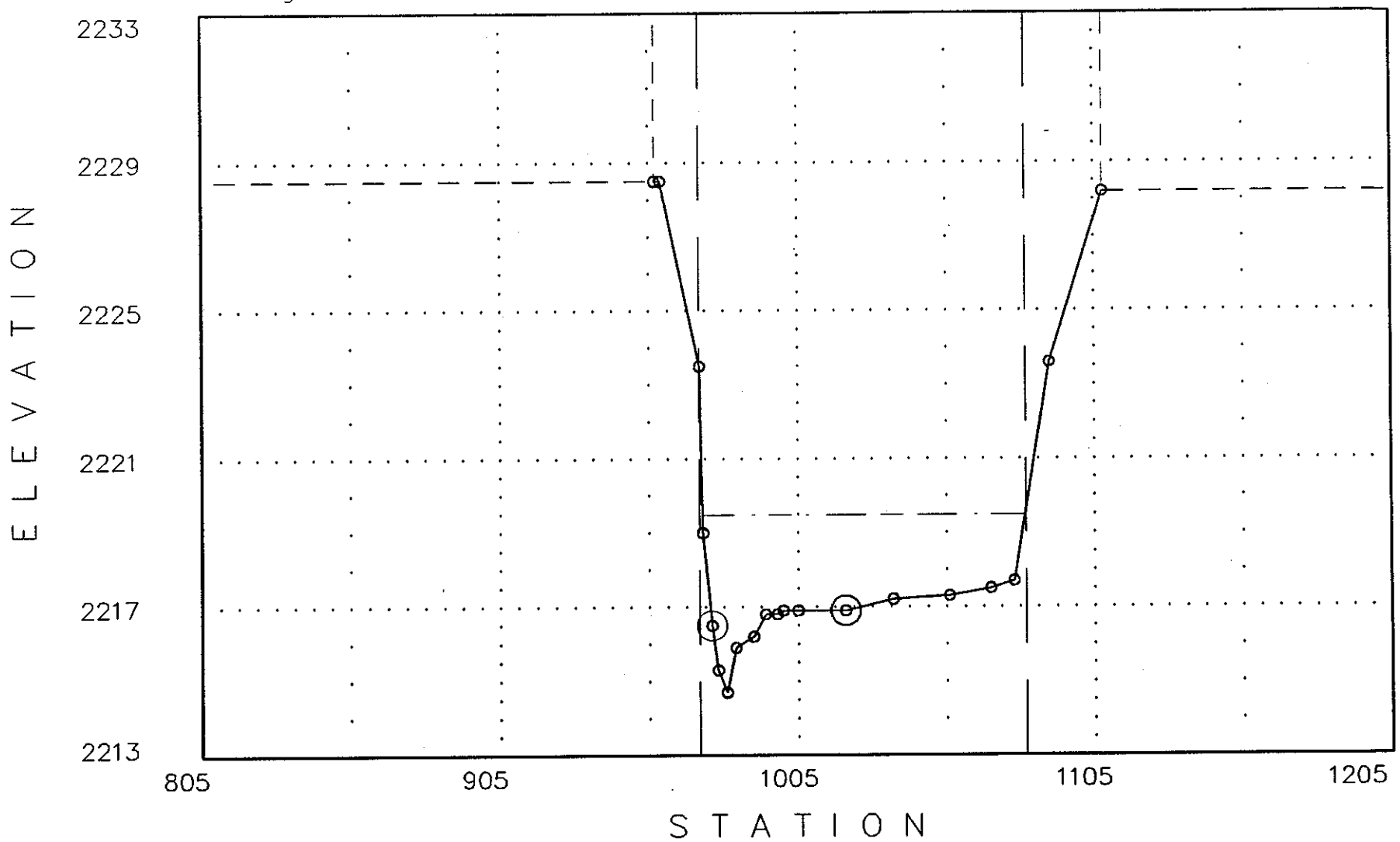


08-11-1992

<<<<<< Cross Section: 2.227: (FN = WASHK.FWO) >>>>>>

Q1= 1945 WS1= 2219.48
Q2= 1945 WS2= 2219.48

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

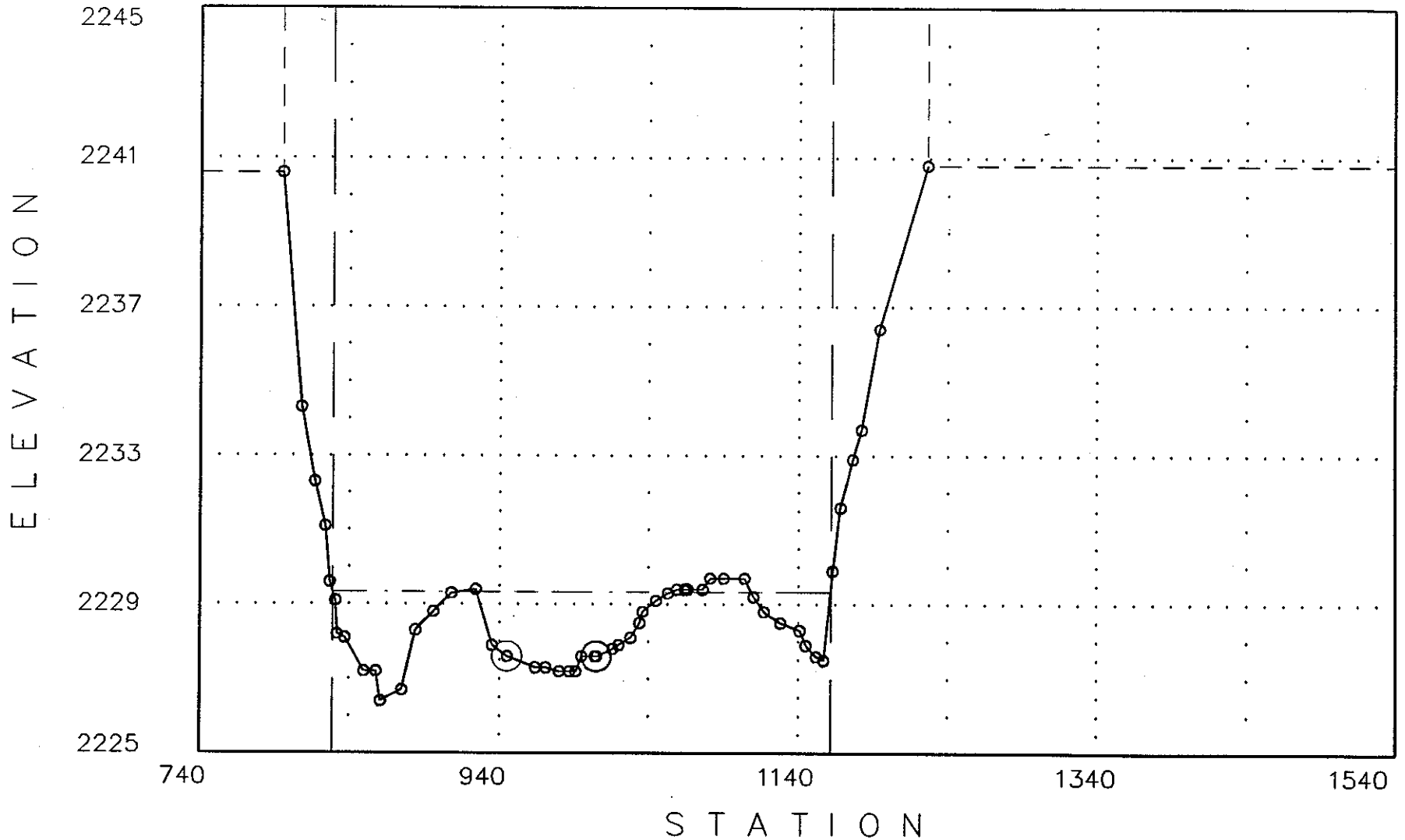


08-11-1992

<<<<<< Cross Section: 2.32: (FN = WASHK.FWO) >>>>>>

Q1= 1945 WS1= 2229.33
Q2= 1945 WS2= 2229.33

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

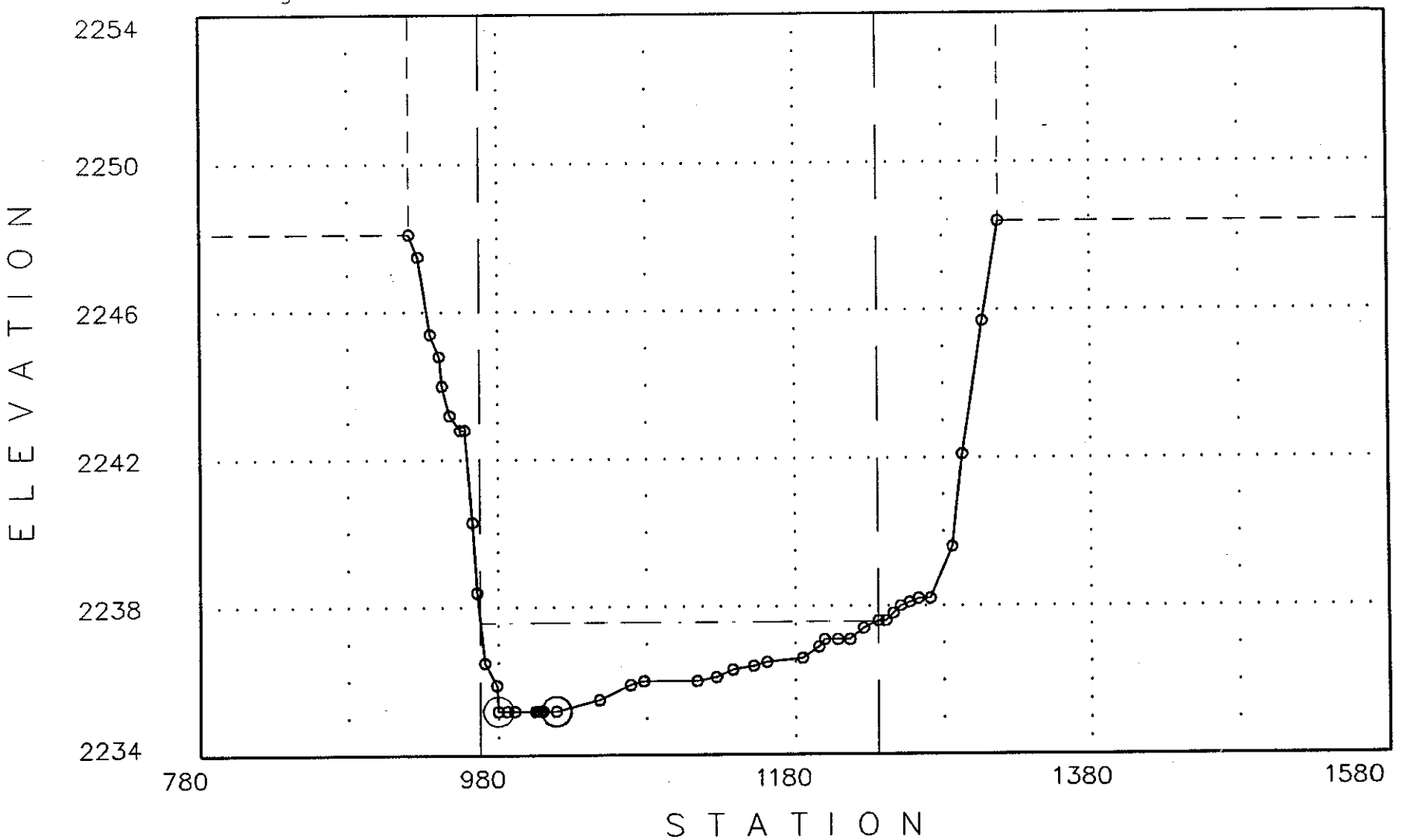


08-11-1992

<<<<<< Cross Section: 2.393: (FN = WASHK.FWO) >>>>>>

Q1= 1945 WS1= 2237.59
Q2= 1945 WS2= 2237.59

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

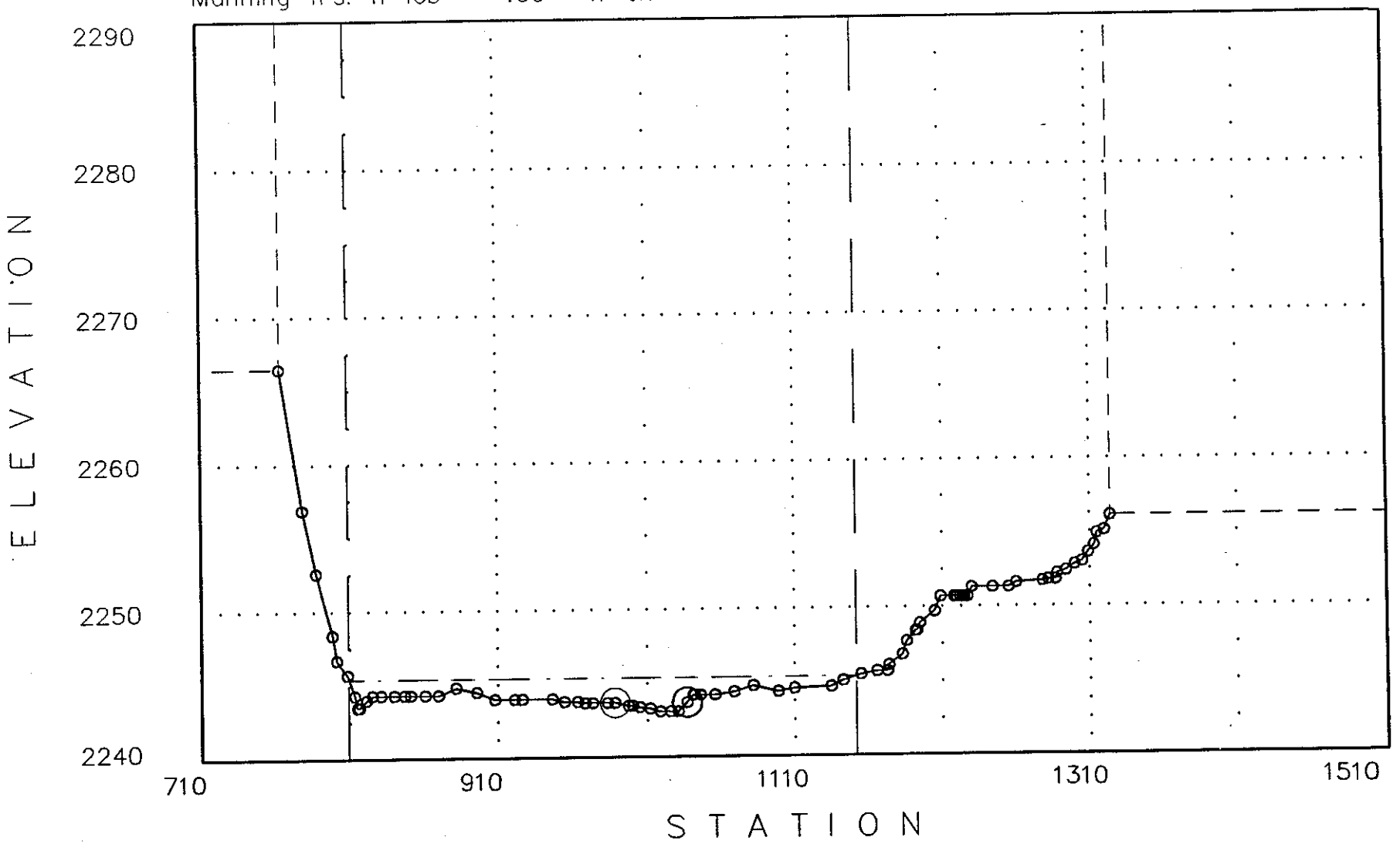


08-11-1992

<<<<<< Cross Section: 2.464: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2245.38
Q2= 1739 WS2= 2245.39

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

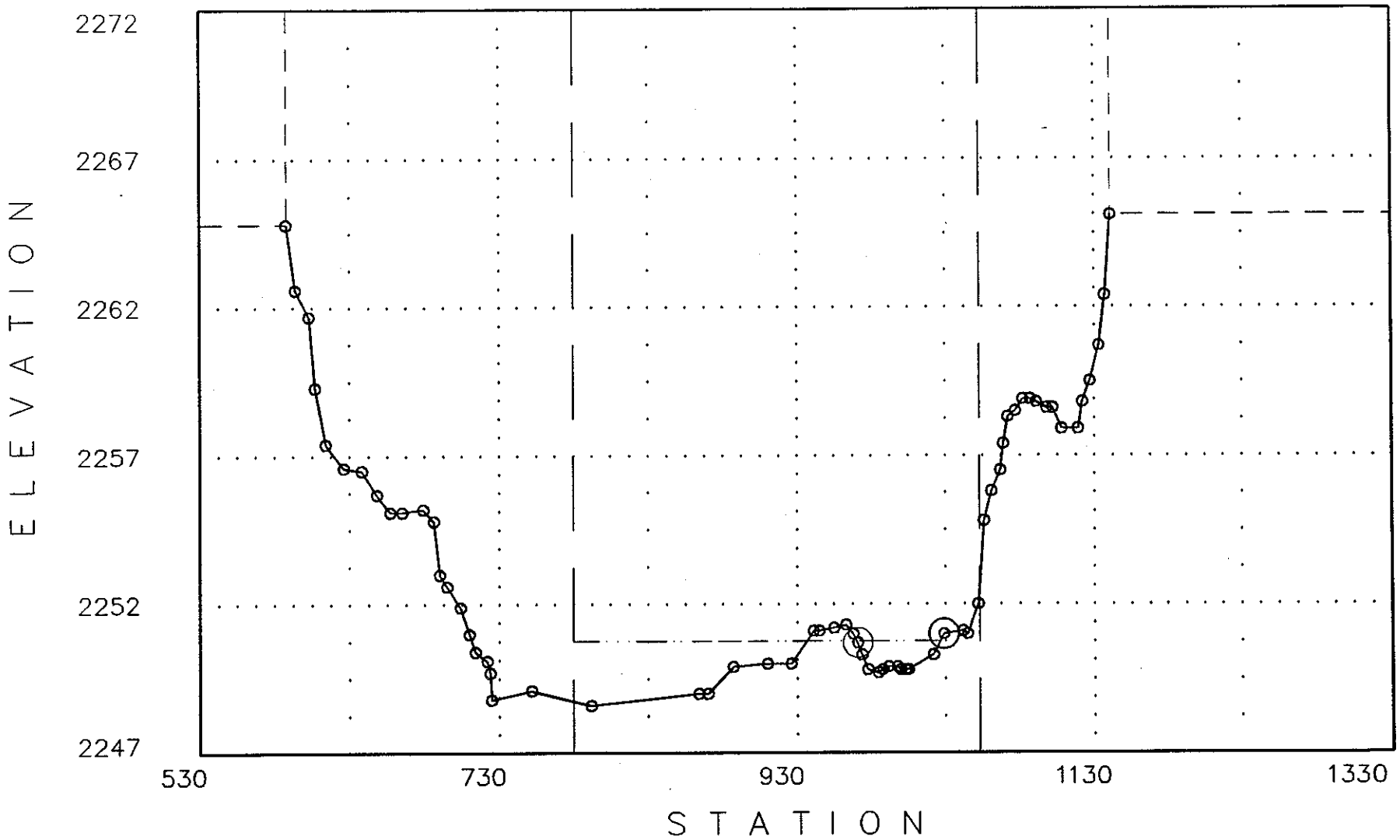


08-11-1992

<<<<<< Cross Section: 2.526: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2250.76
Q2= 1739 WS2= 2250.76

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

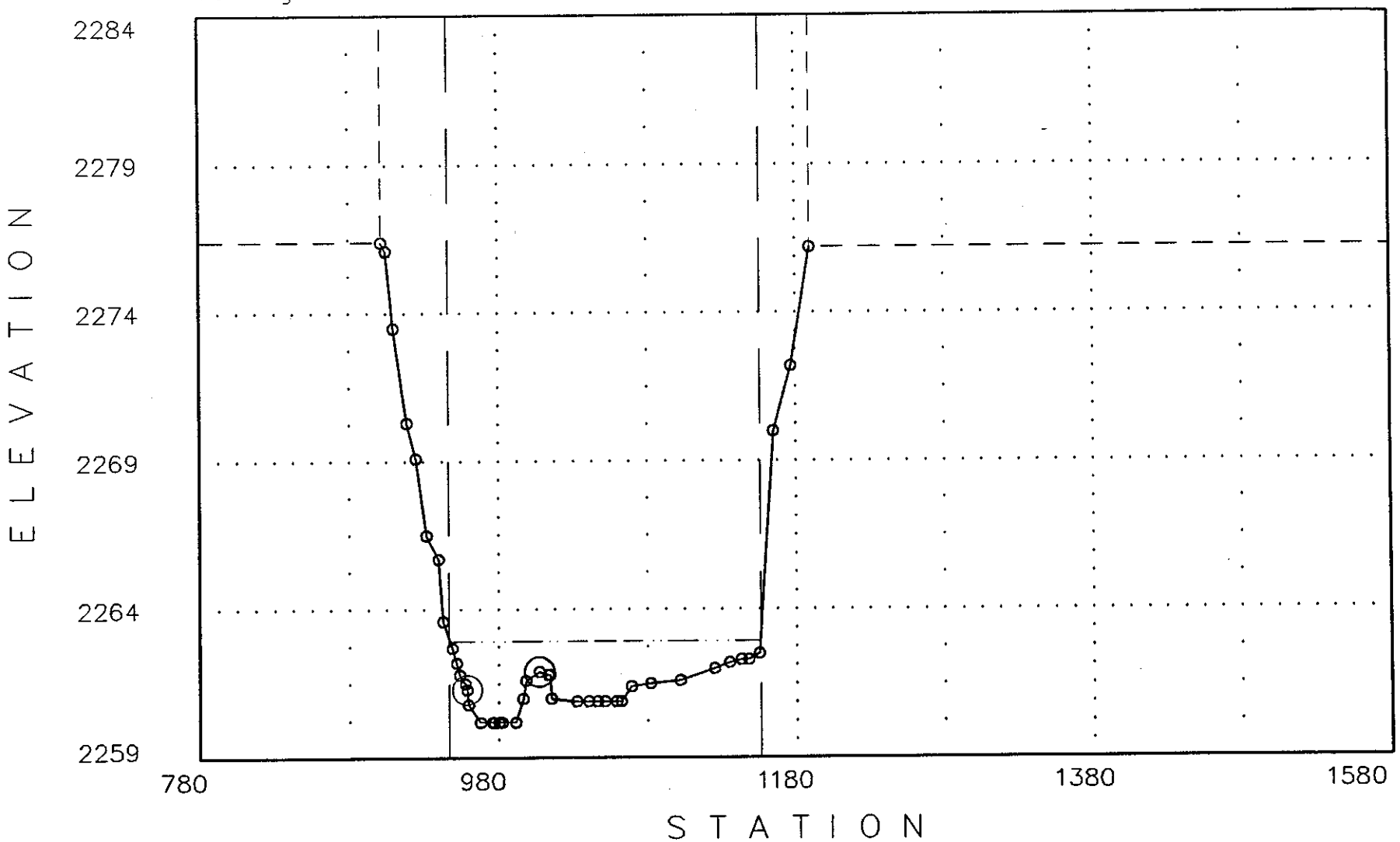


08-11-1992

<<<<<< Cross Section: 2.614: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2262.93
Q2= 1739 WS2= 2262.93

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

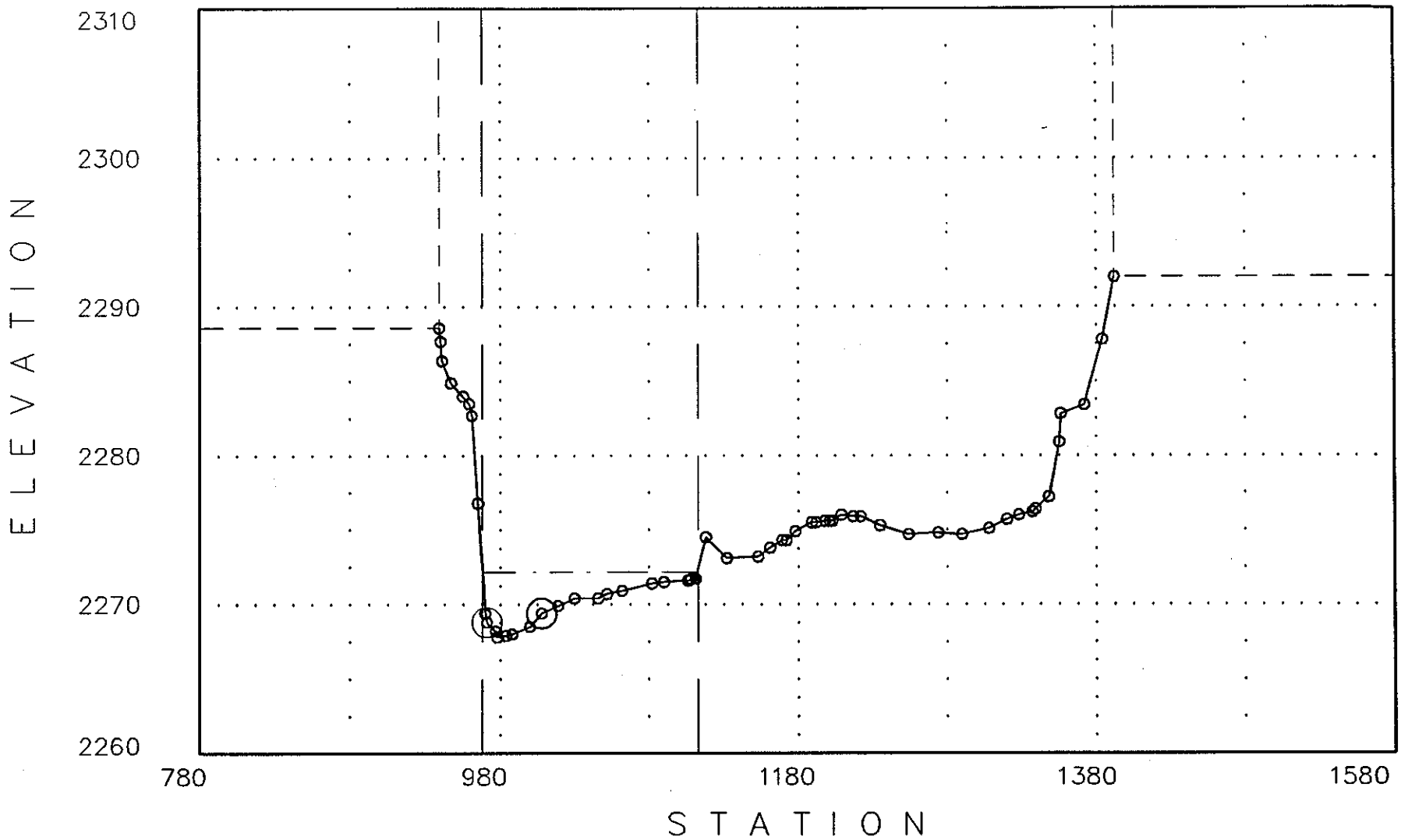


08-11-1992

<<<<<< Cross Section: 2.7: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2272.16
Q2= 1739 WS2= 2272.16

Manning-n's: n-lob = .06 n-ch = .03 n-rob = .06

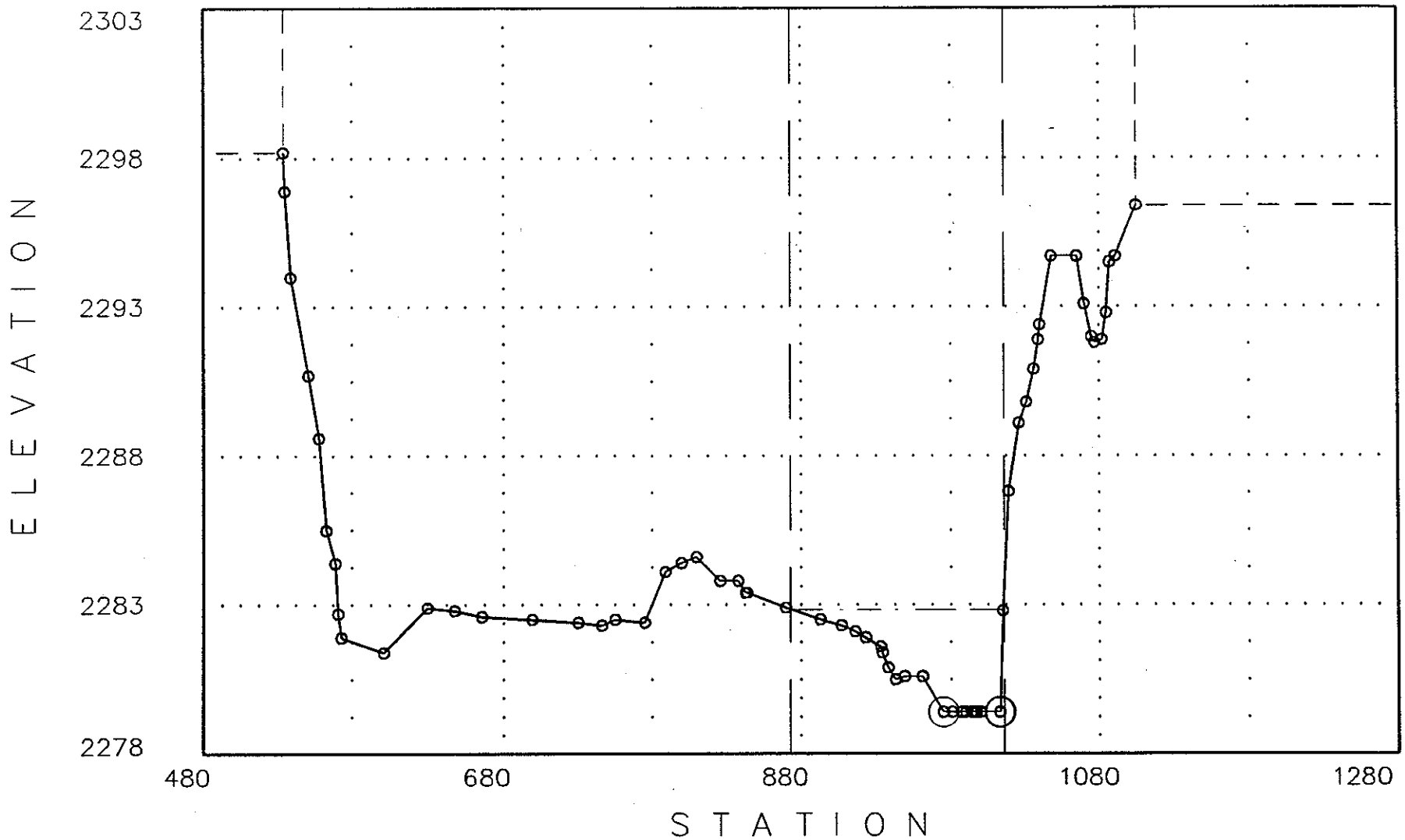


08-11-1992

<<<<<< Cross Section: 2.798: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2282.84
Q2= 1739 WS2= 2282.84

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

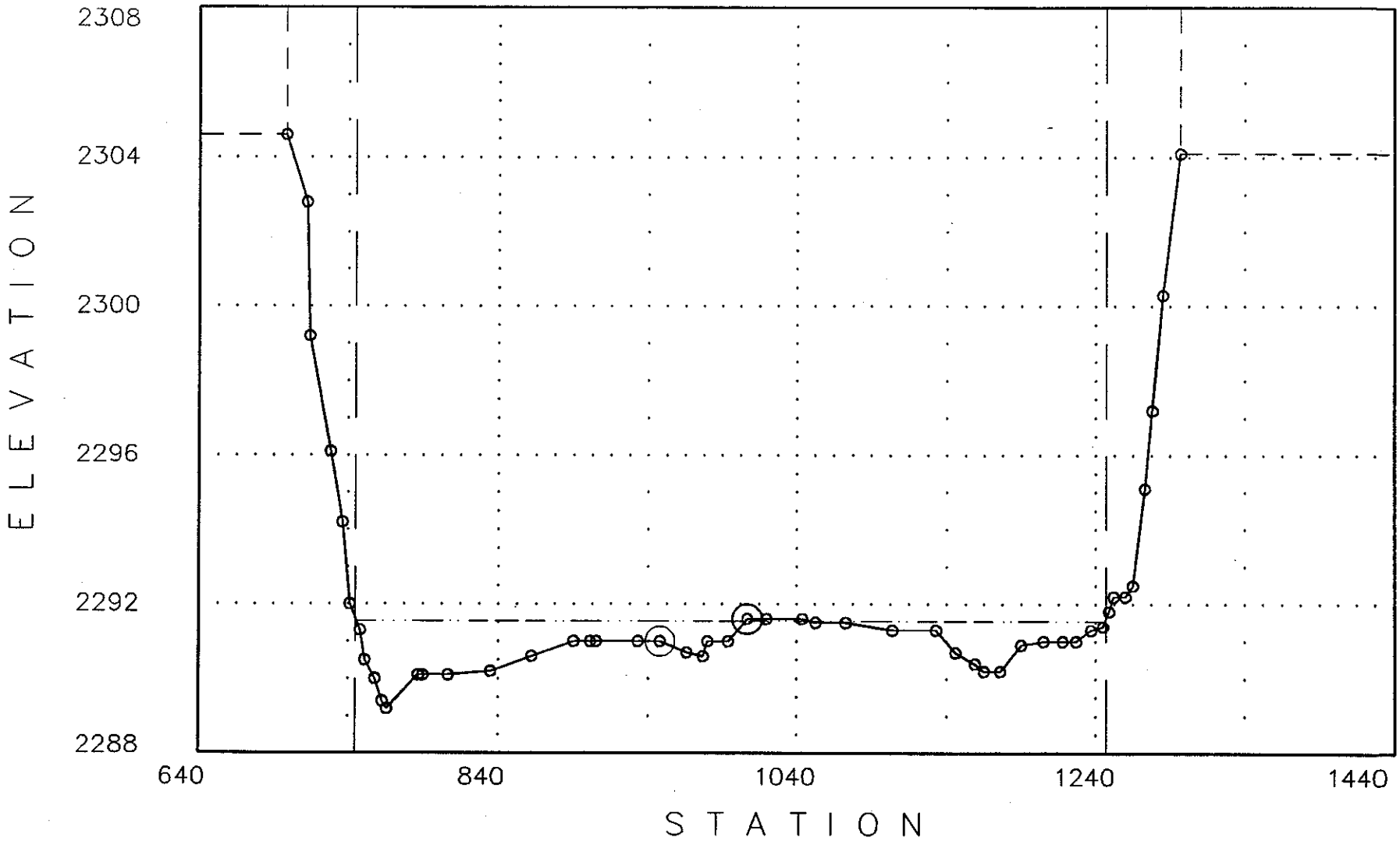


08-11-1992

<<<<<< Cross Section: 2.895: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2291.55
Q2= 1739 WS2= 2291.55

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

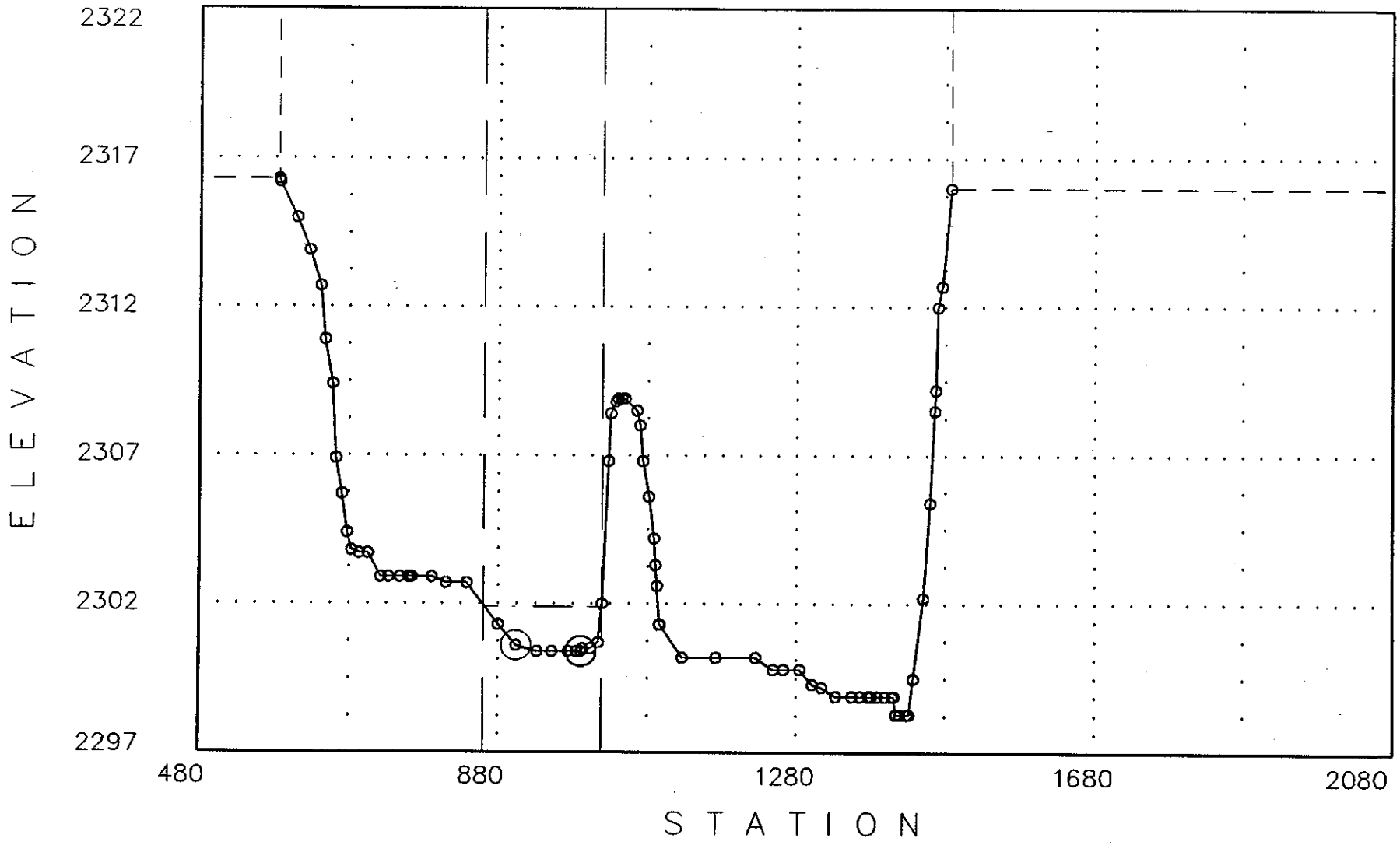


08-11-1992

<<<<<< Cross Section: 2.966: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2301.9
Q2= 955 WS2= 2301.9

Manning-n's: n-lob = .065 n-ch = .04 n-rob = .065

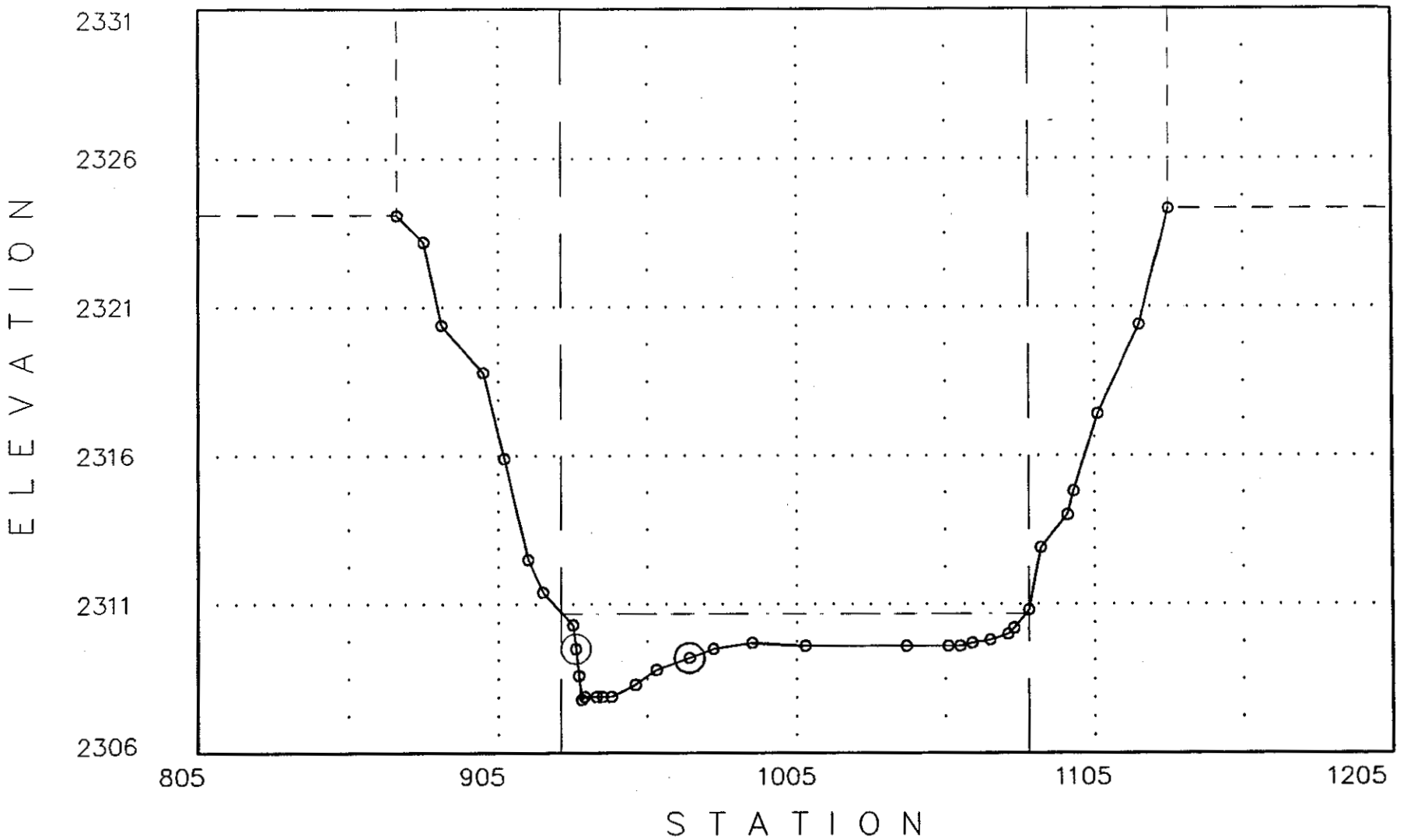


08-11-1992

<<<<<< Cross Section: 3.032: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2310.69
Q2= 955 WS2= 2310.69

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

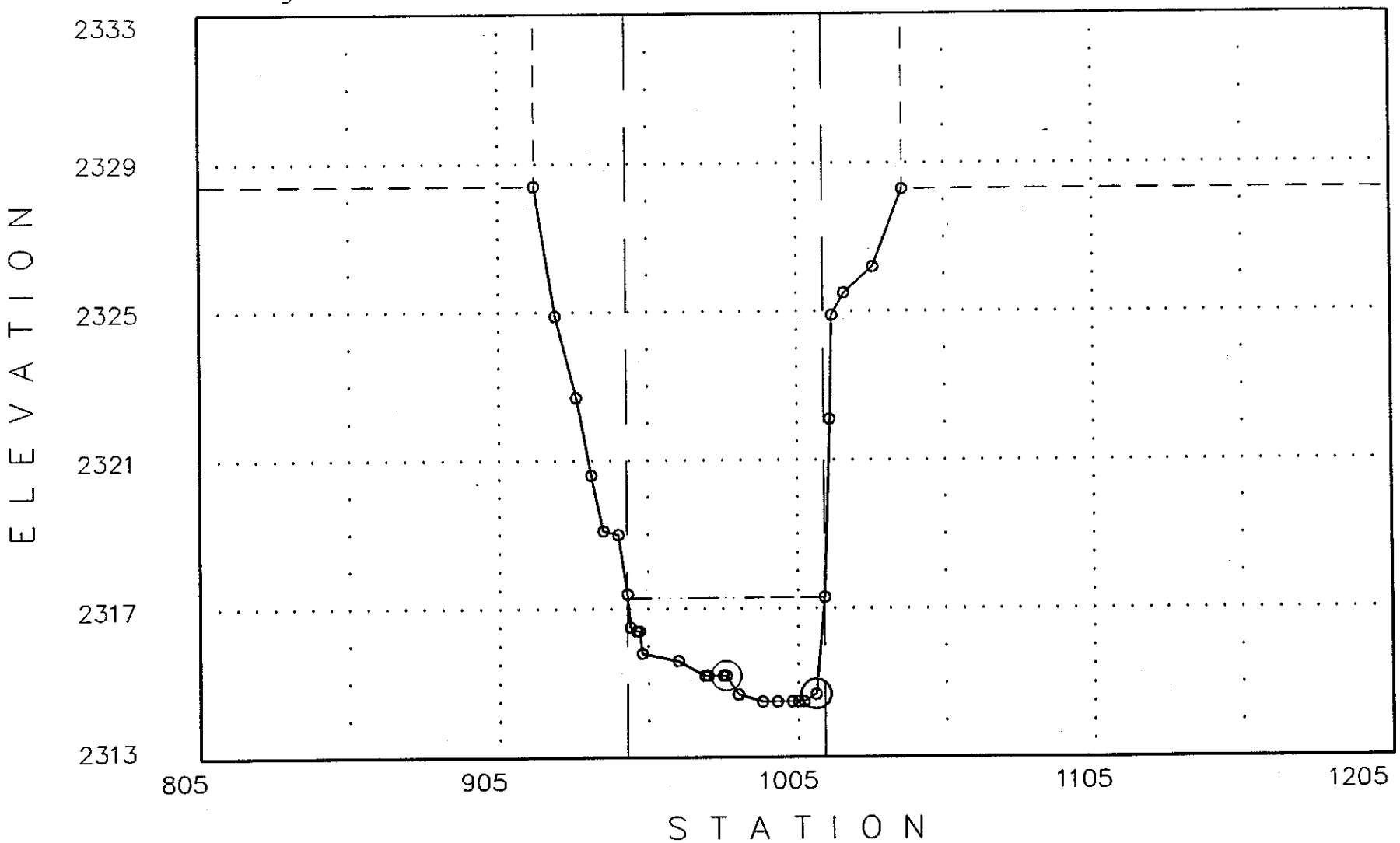


08-11-1992

<<<<<< Cross Section: 3.087: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2317.29
Q2= 955 WS2= 2317.29

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

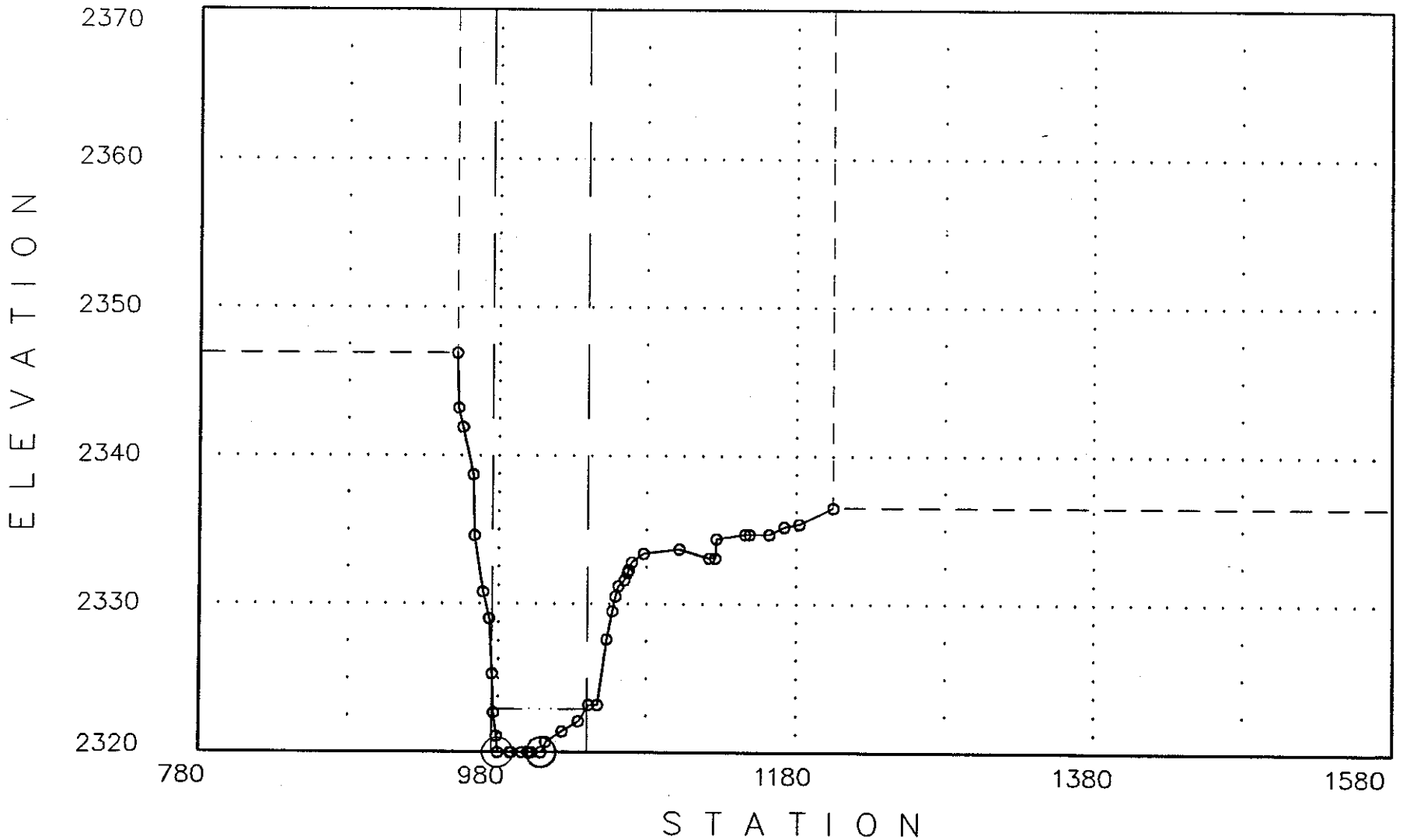


08-11-1992

<<<<<< Cross Section: 3.134: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2322.93
Q2= 955 WS2= 2322.94

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

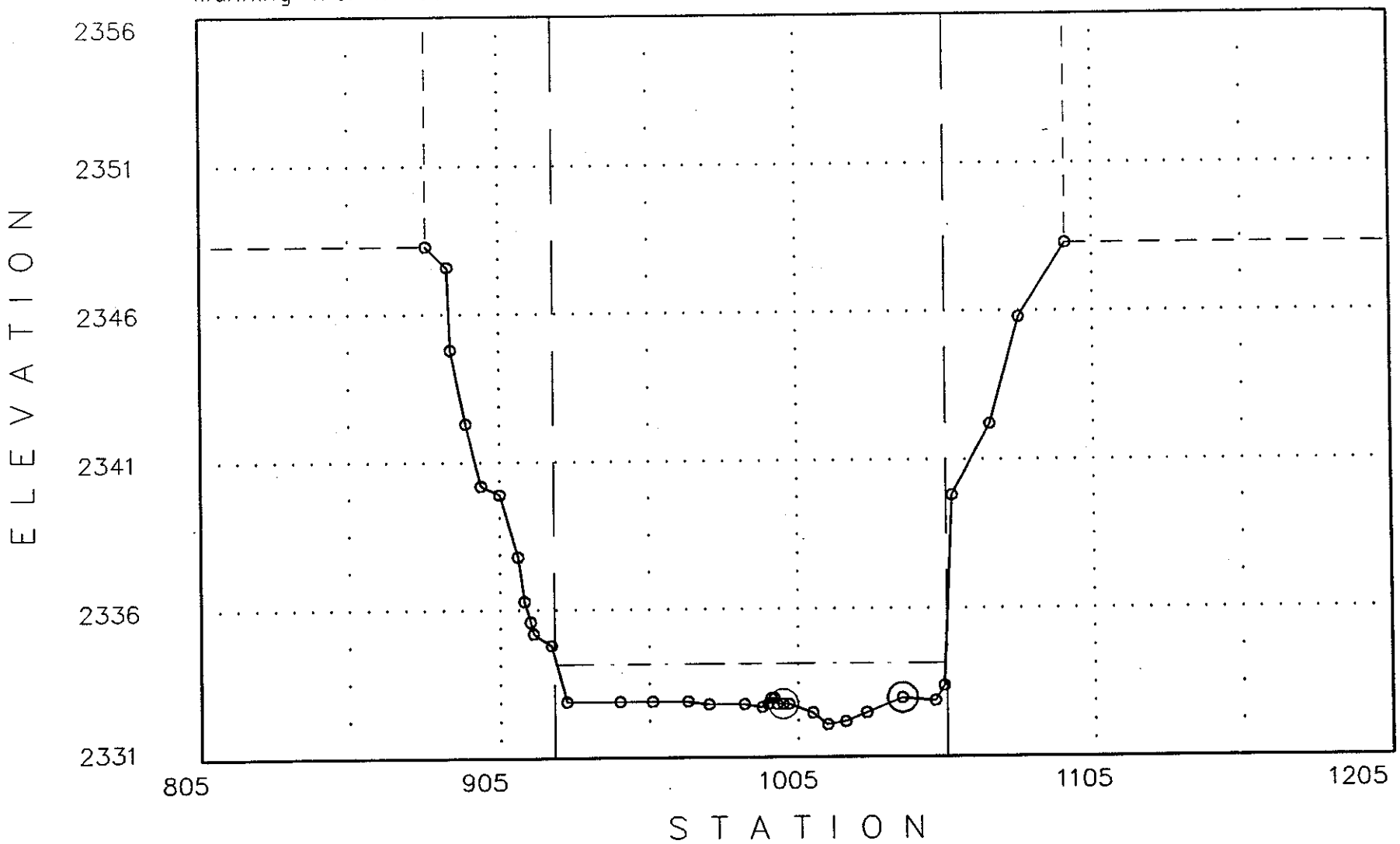


08-11-1992

<<<<<< Cross Section: 3.225: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2334.16
Q2= 955 WS2= 2334.16

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

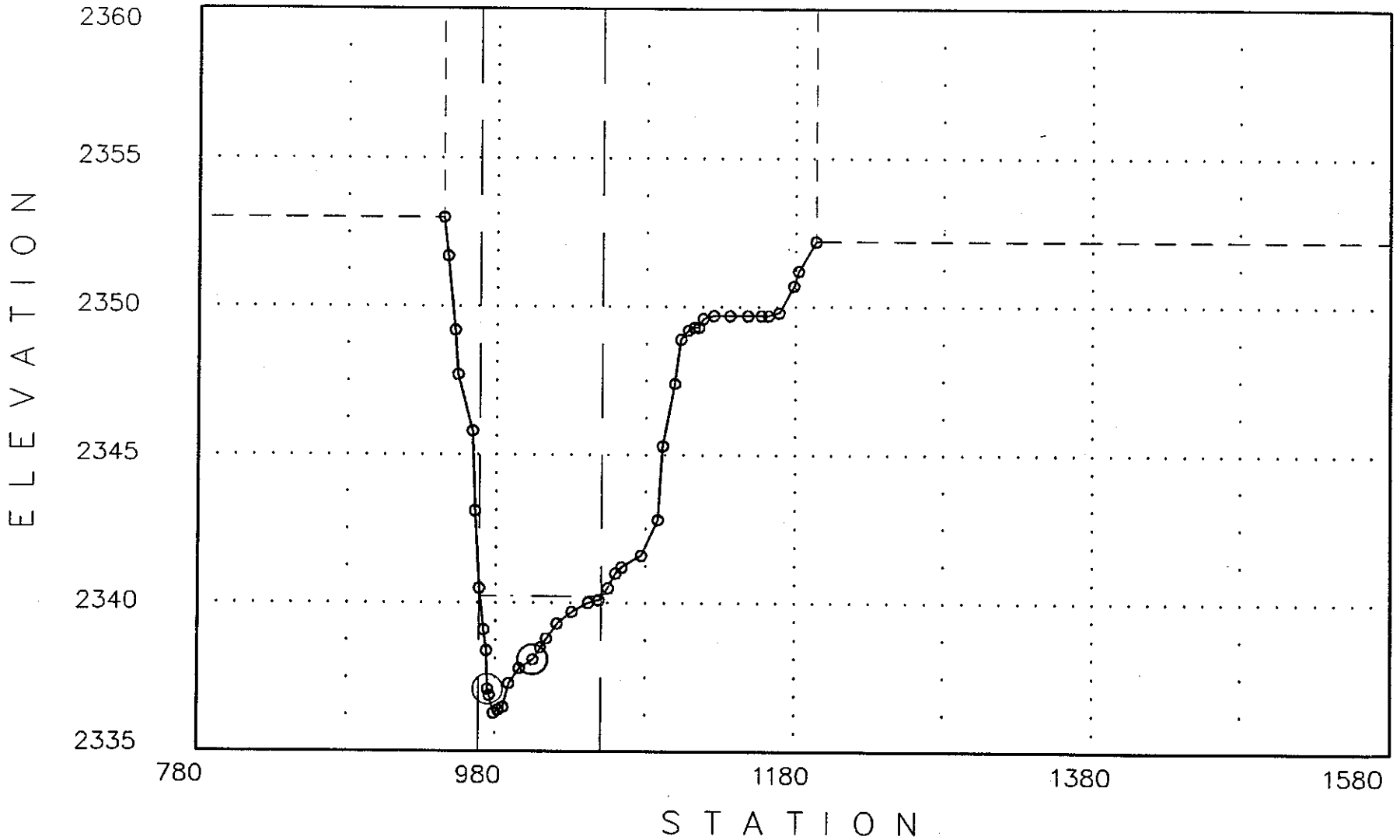


08-11-1992

<<<<<< Cross Section: 3.306: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2340.23
Q2= 890 WS2= 2340.23

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

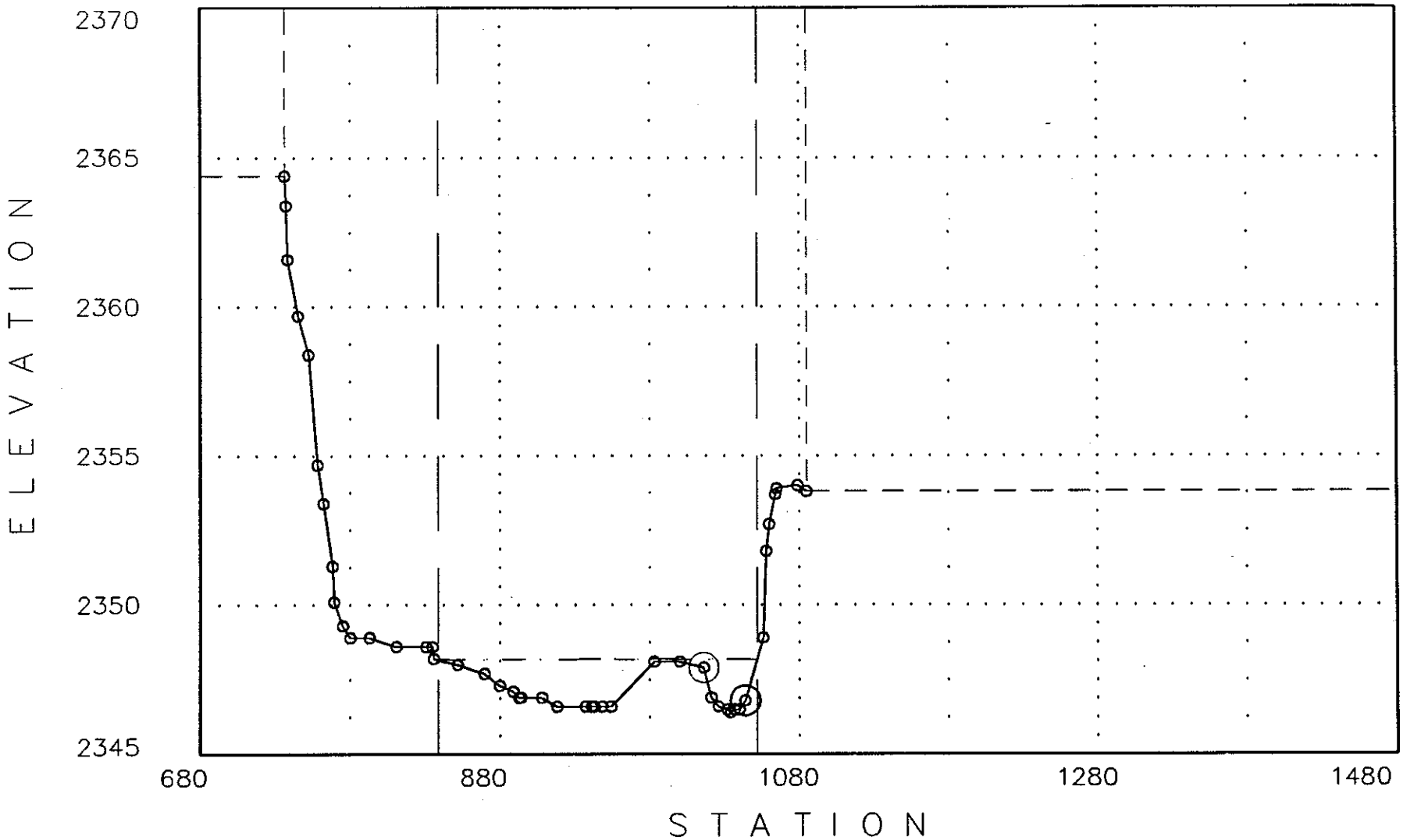


08-11-1992

<<<<<< Cross Section: 3.383: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2348.18
Q2= 890 WS2= 2348.19

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

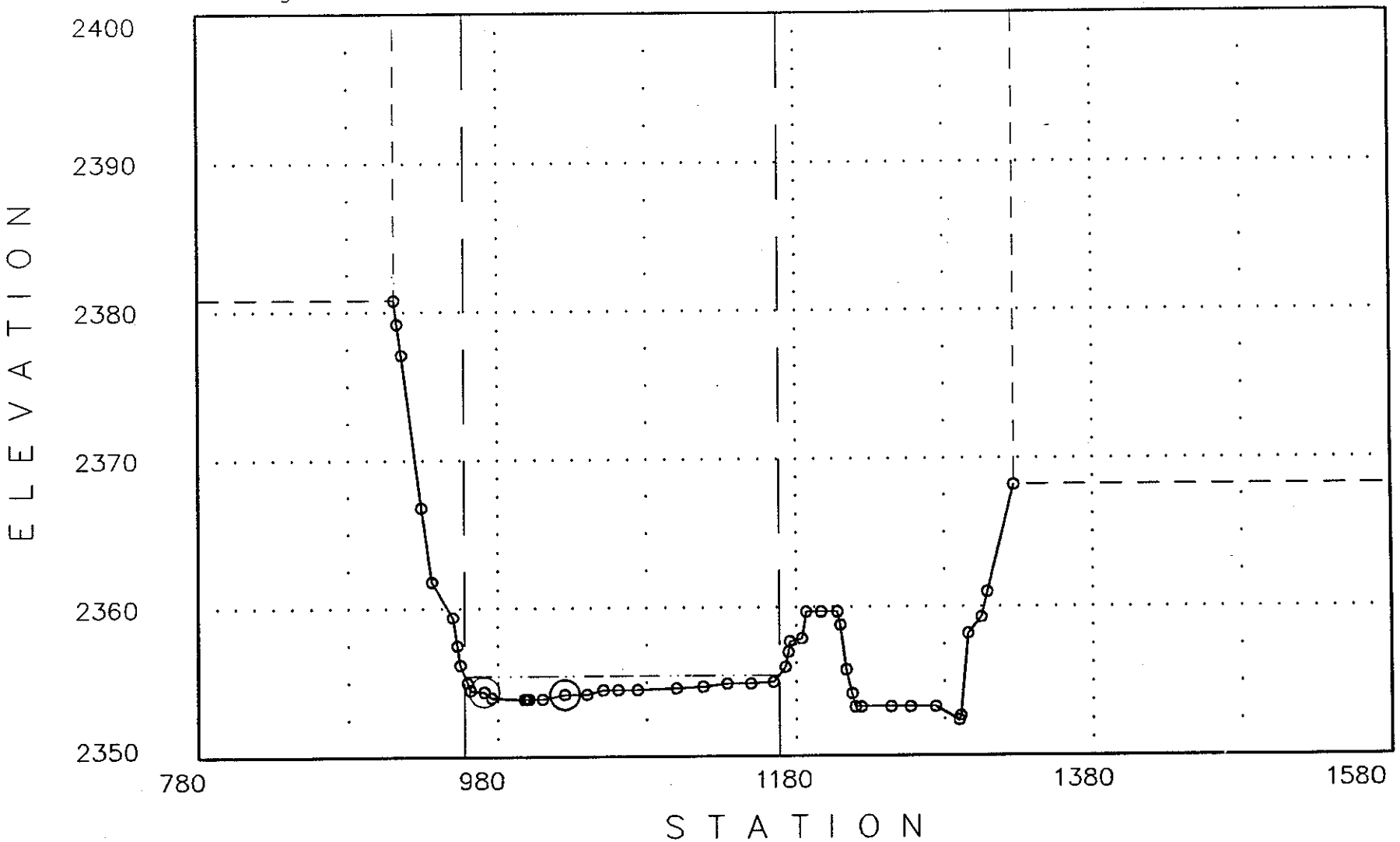


08-11-1992

<<<<<< Cross Section: 3.466: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2355.46
Q2= 890 WS2= 2355.46

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

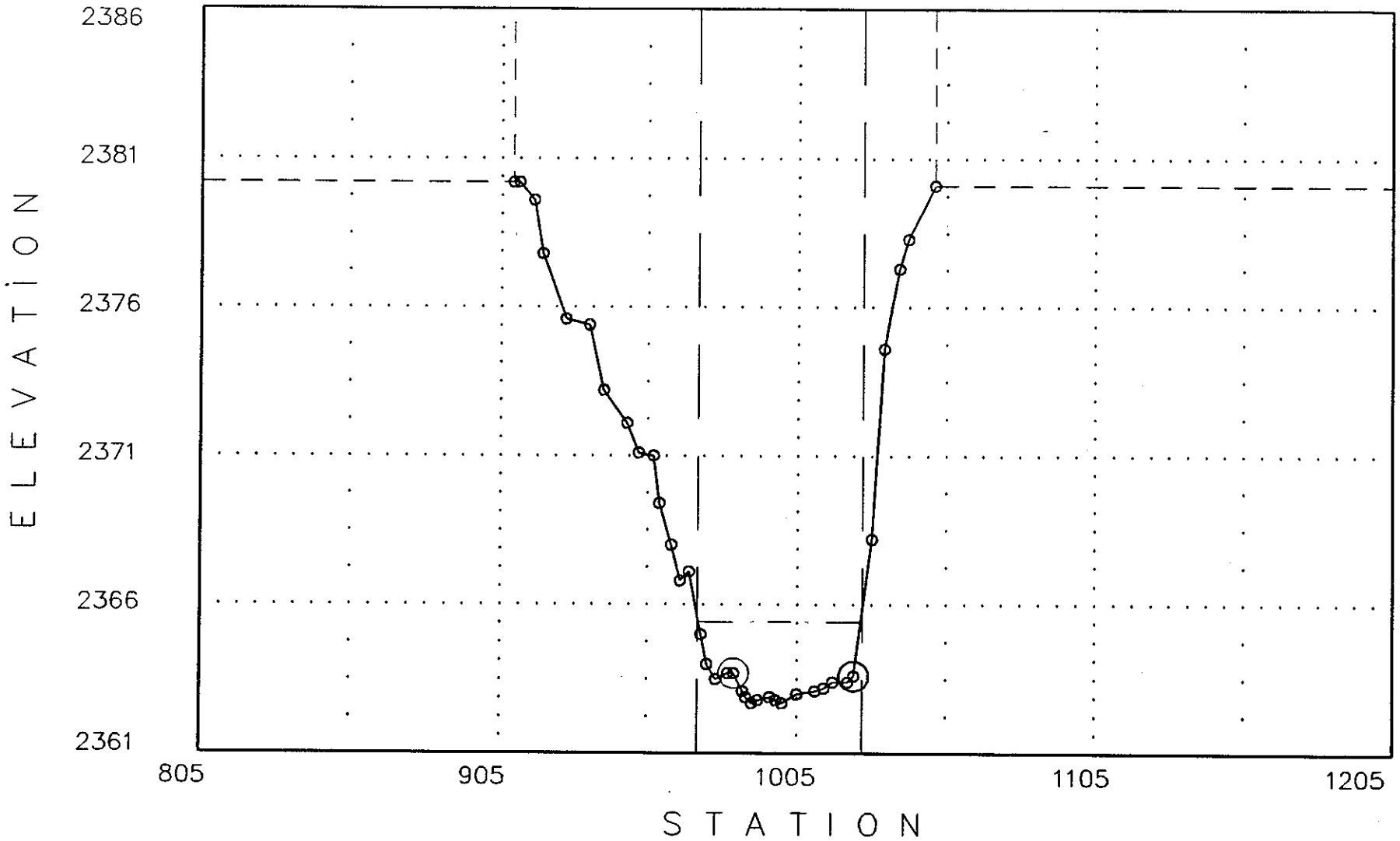


08-11-1992

<<<<<< Cross Section: 3.559: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2365.42
Q2= 890 WS2= 2365.43

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

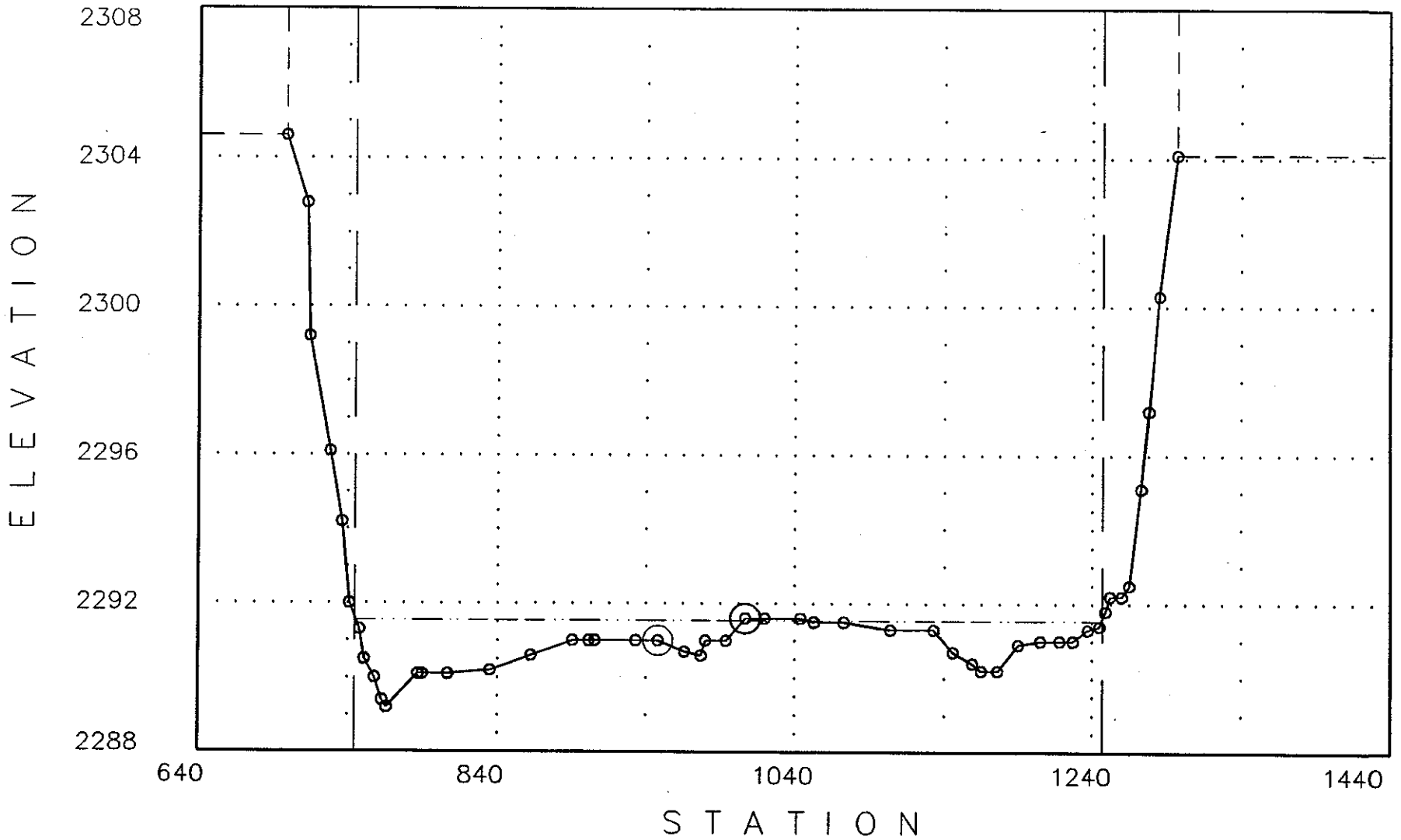


08-11-1992

<<<<<< Cross Section: 2.895: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2291.55
Q2= 1739 WS2= 2291.55

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

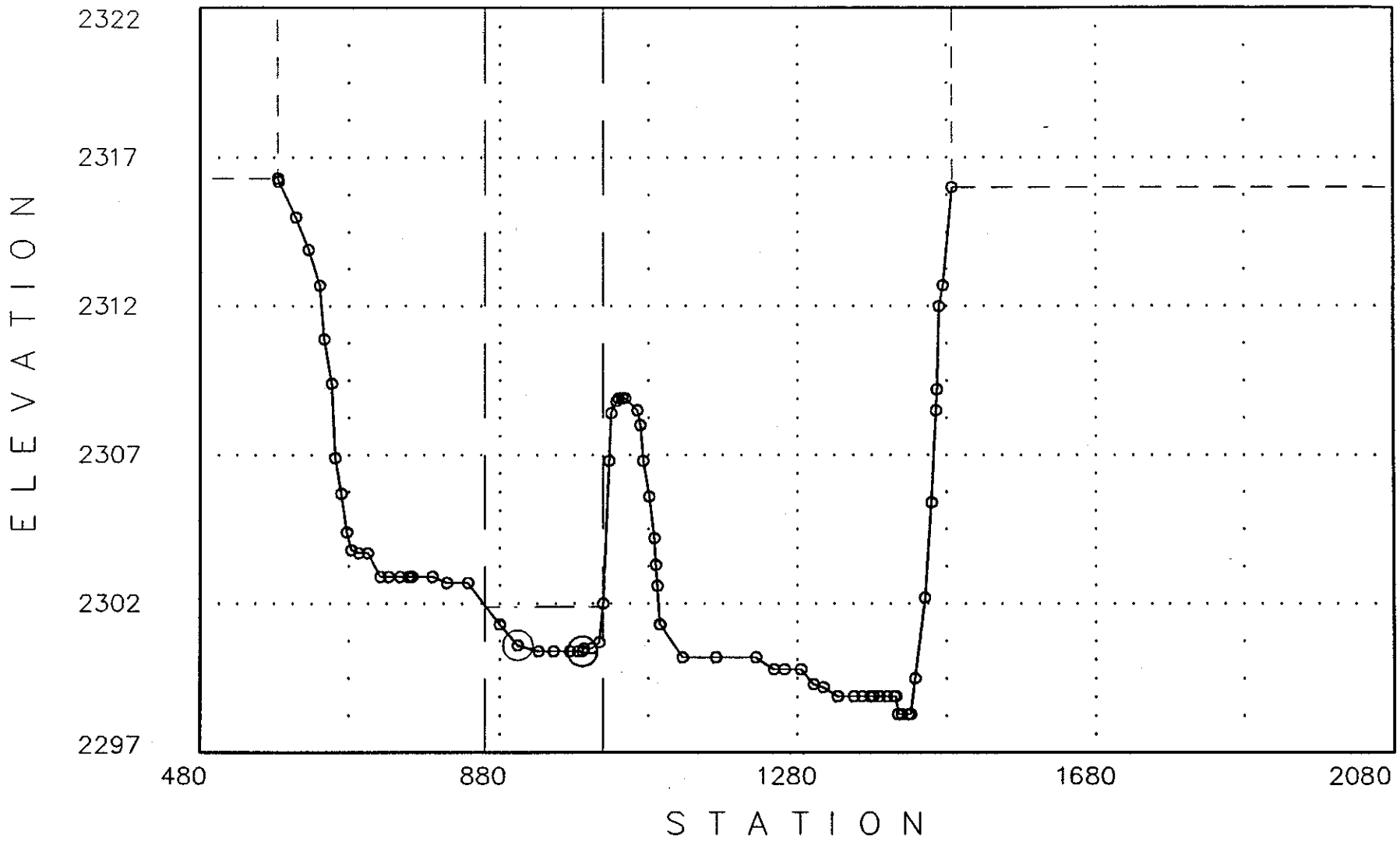


08-11-1992

<<<<<< Cross Section: 2.966: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2301.9
Q2= 955 WS2= 2301.9

Manning-n's: n-lob = .065 n-ch = .04 n-rob = .065

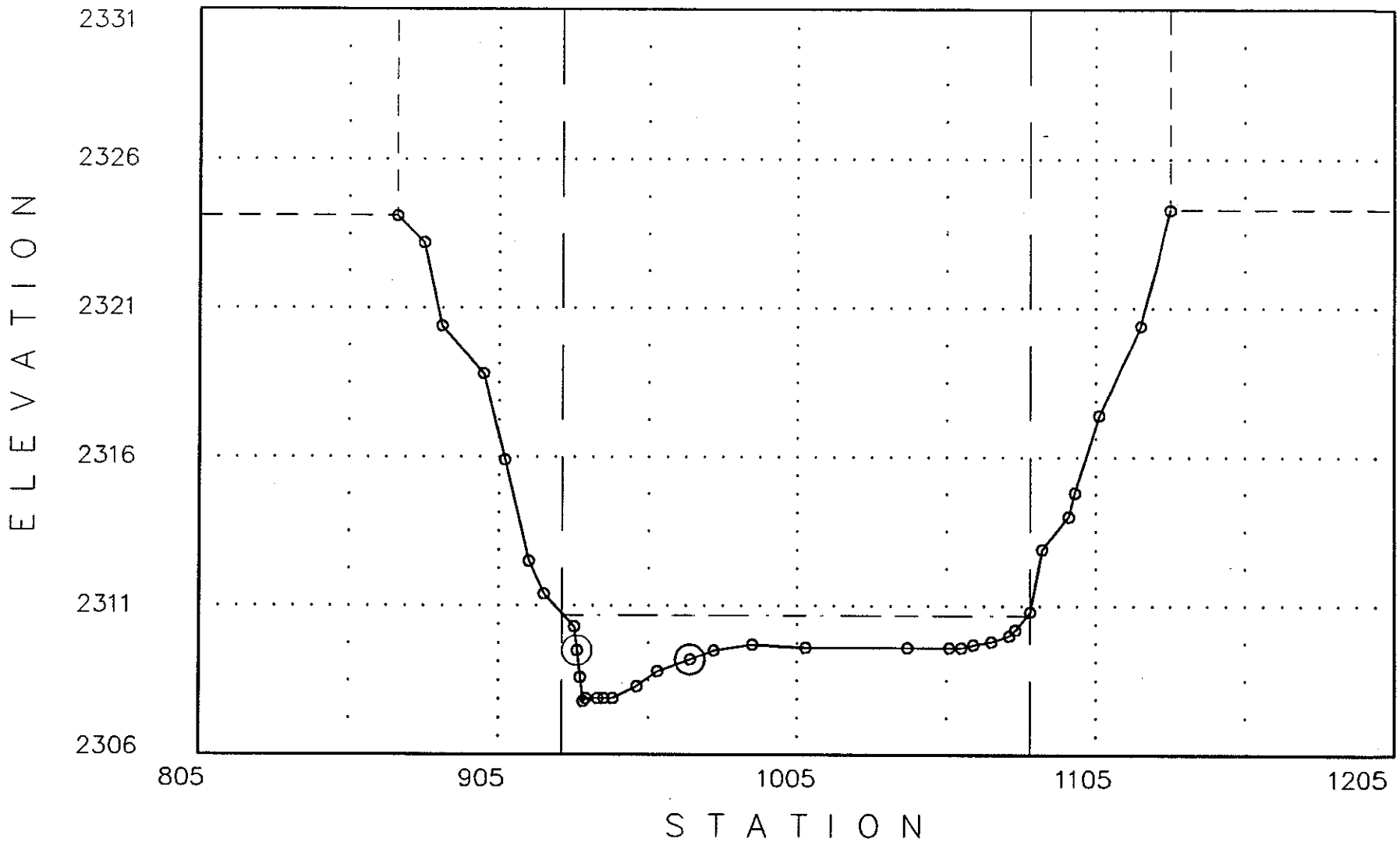


08-11-1992

<<<<<< Cross Section: 3.032: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2310.69
Q2= 955 WS2= 2310.69

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

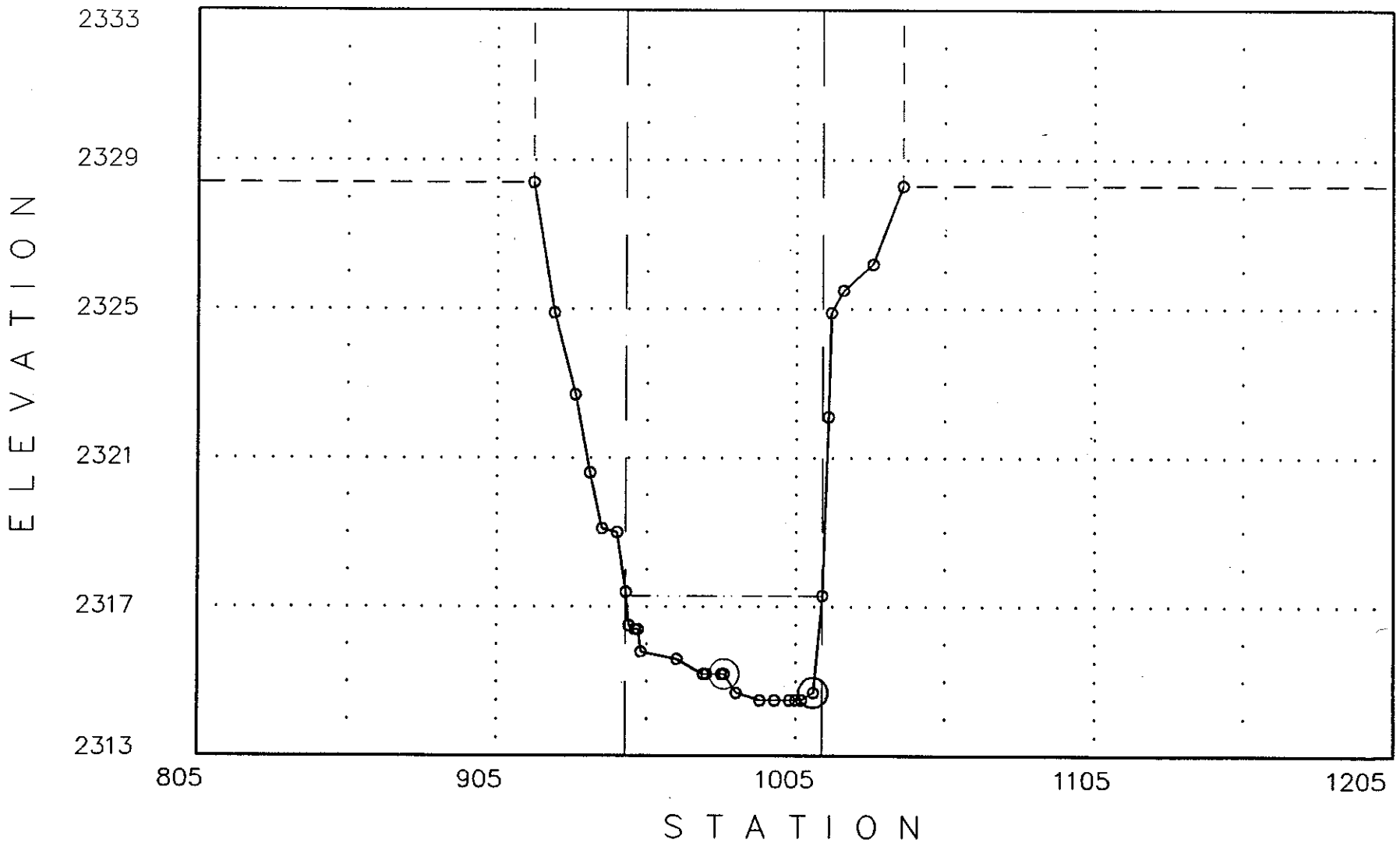


08-11-1992

<<<<<< Cross Section: 3.087: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2317.29
Q2= 955 WS2= 2317.29

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

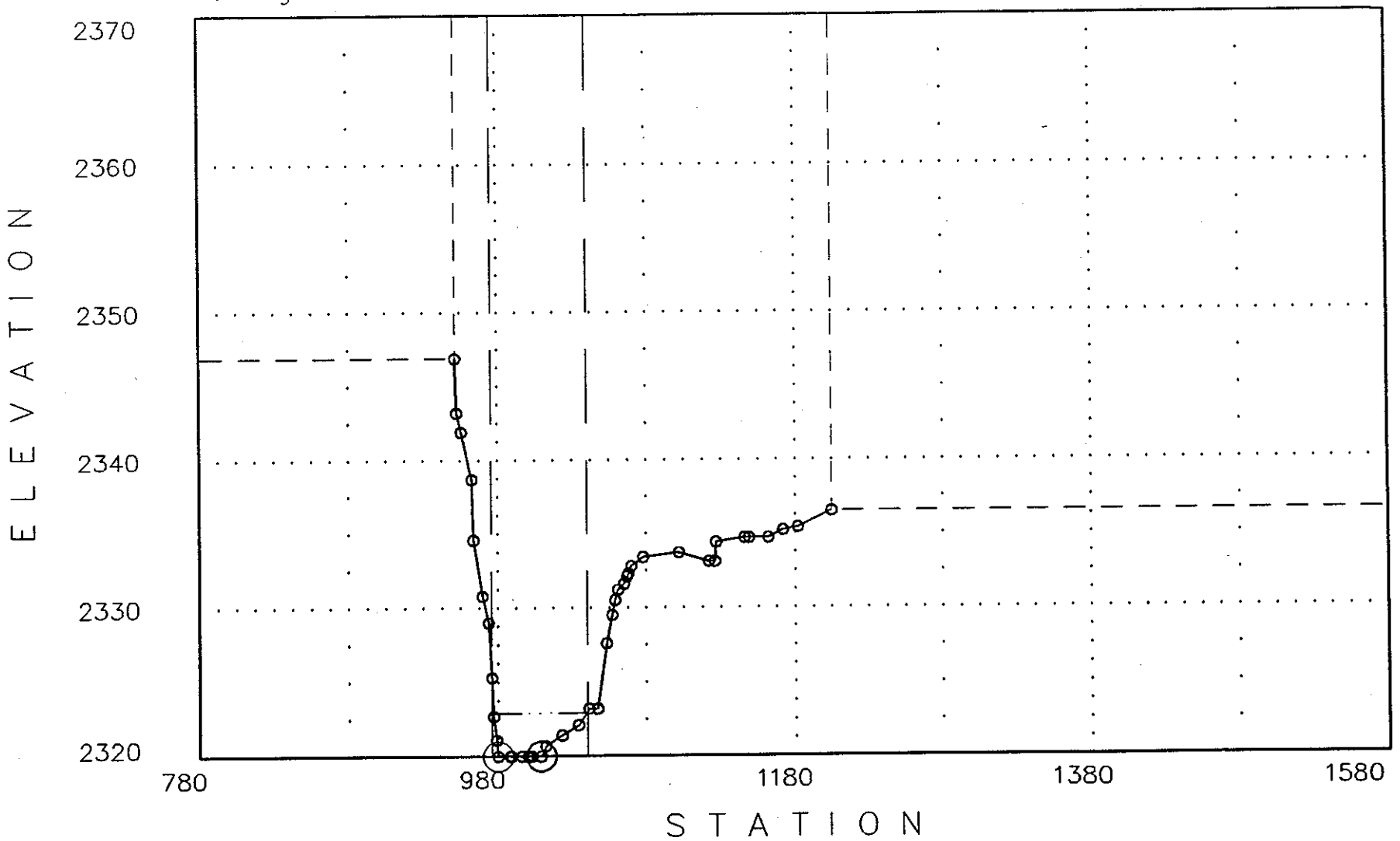


08-11-1992

<<<<<< Cross Section: 3.134: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2322.93
Q2= 955 WS2= 2322.94

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

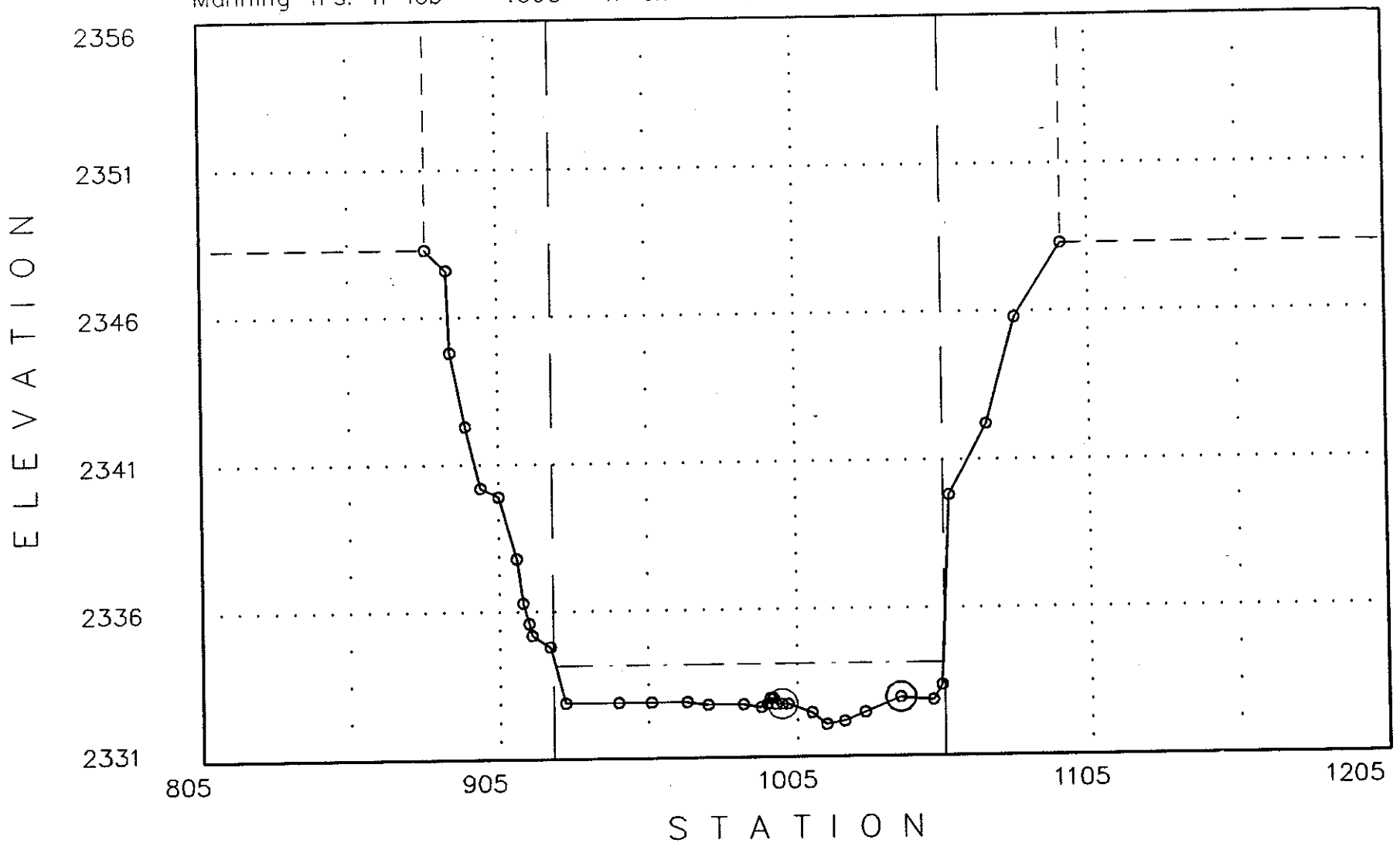


08-11-1992

<<<<<< Cross Section: 3.225: (FN = WASHK.FWO) >>>>>>

Q1= 955 WS1= 2334.16
Q2= 955 WS2= 2334.16

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

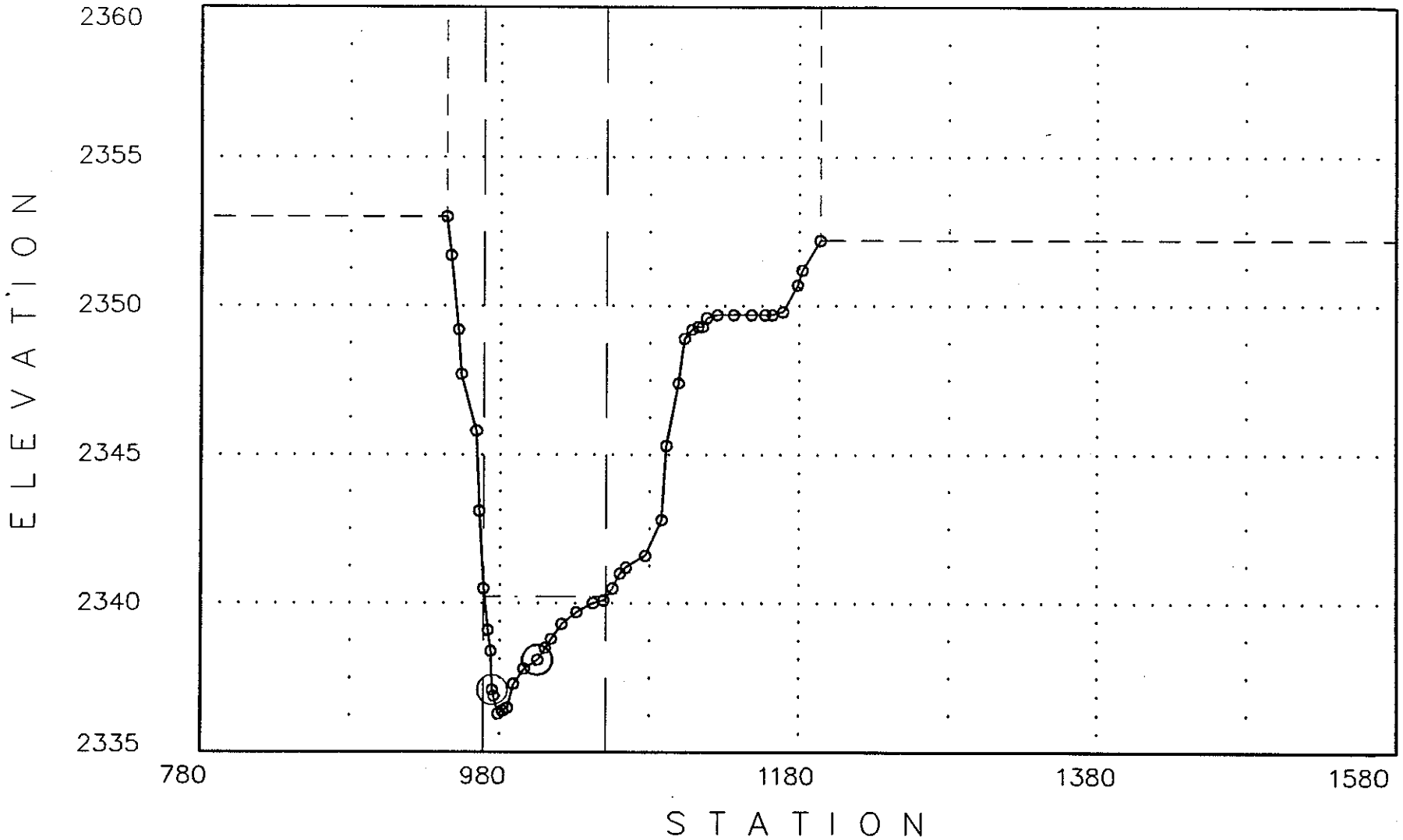


08-11-1992

<<<<<< Cross Section: 3.306: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2340.23
Q2= 890 WS2= 2340.23

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

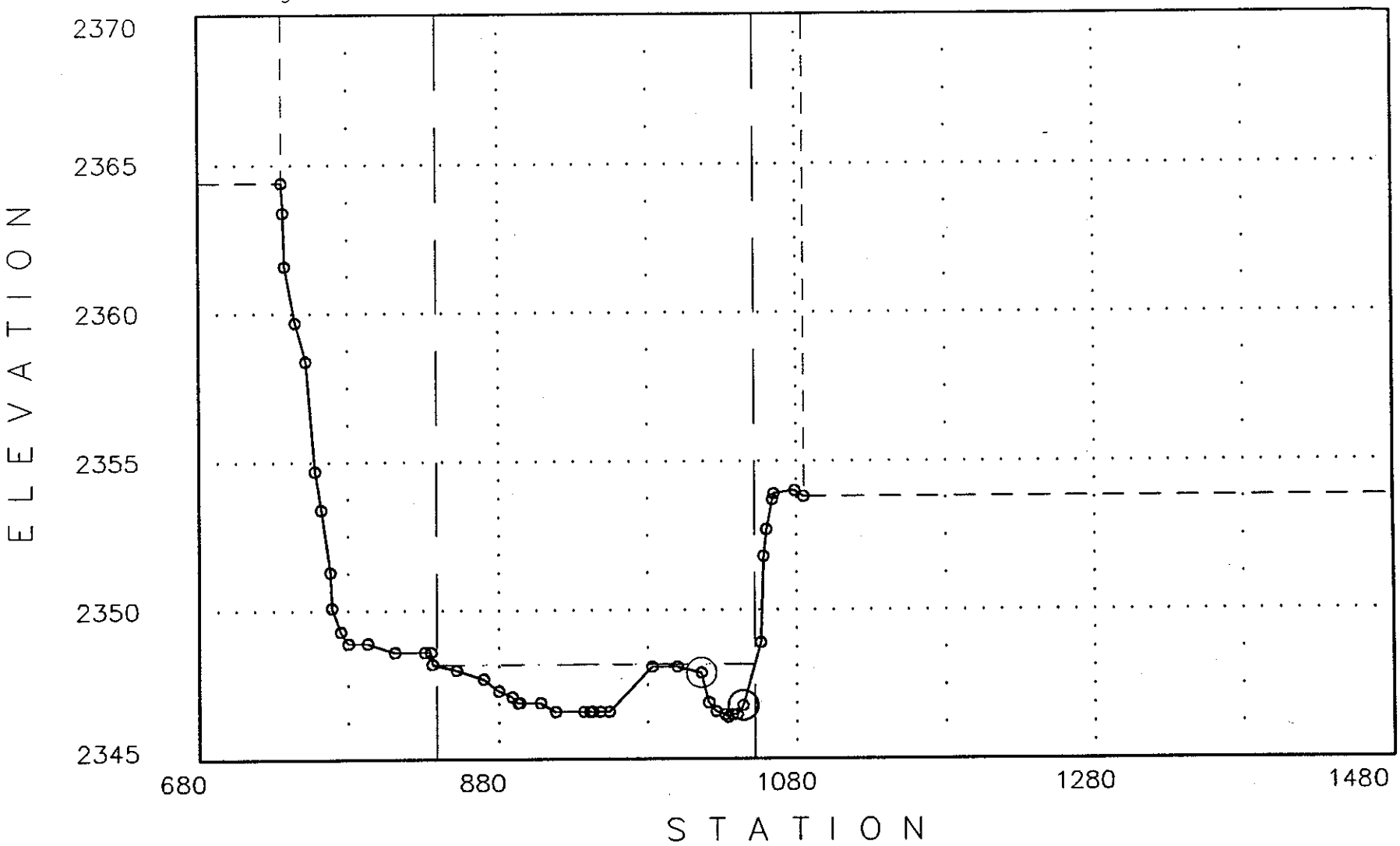


08-11-1992

<<<<<< Cross Section: 3.383: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2348.18
Q2= 890 WS2= 2348.19

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

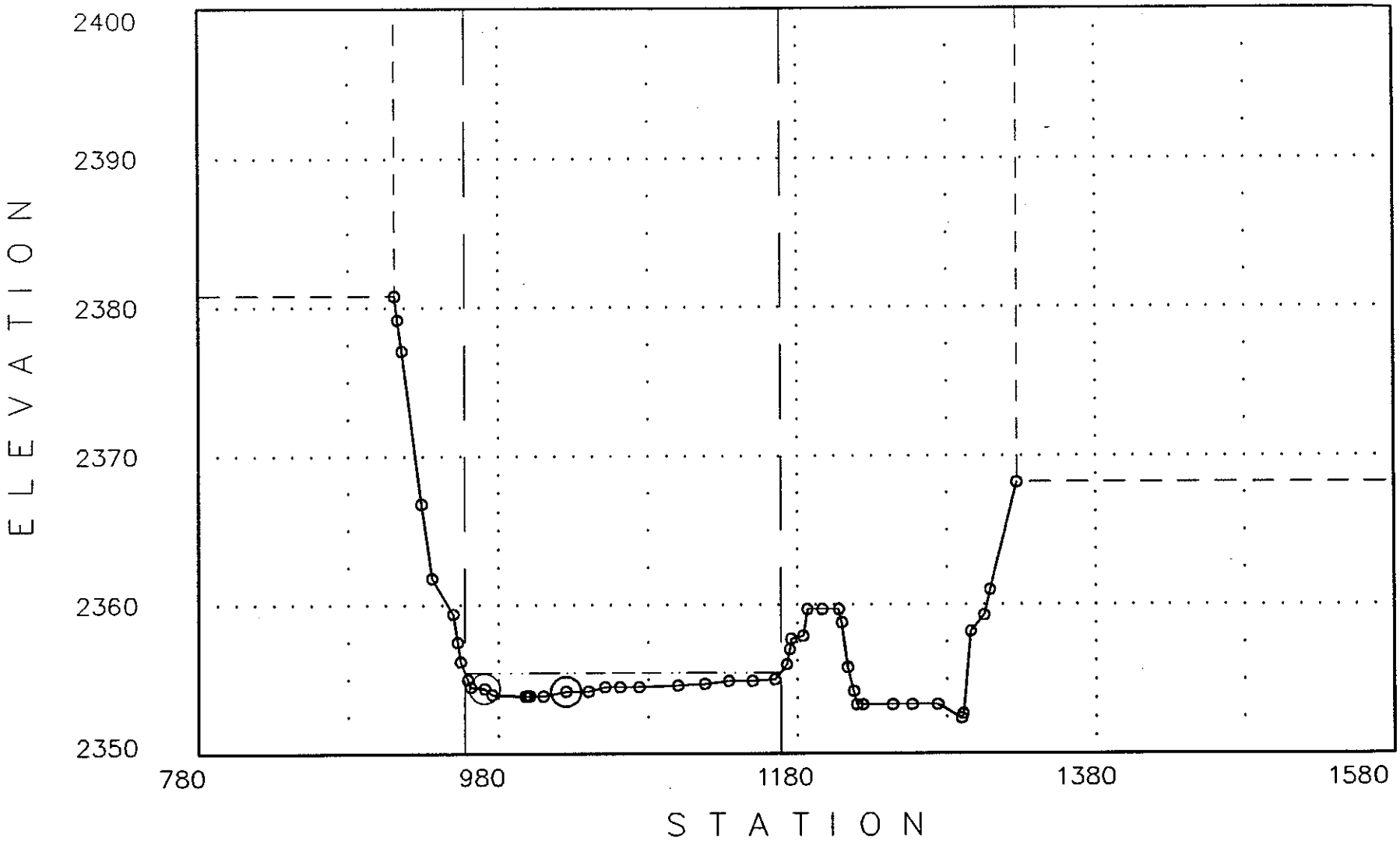


08-11-1992

<<<<<< Cross Section: 3.466: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2355.46
Q2= 890 WS2= 2355.46

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

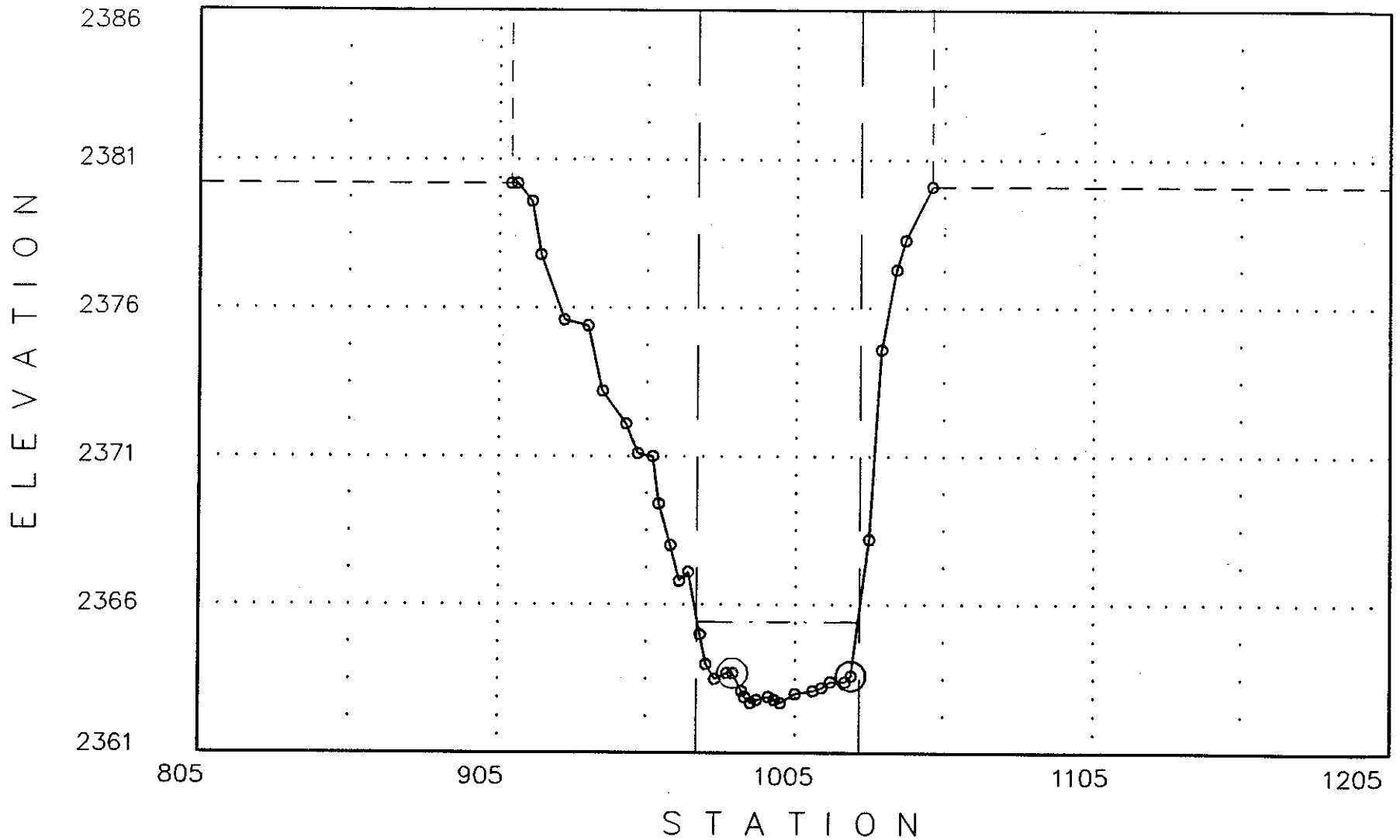


08-11-1992

<<<<<< Cross Section: 3.559: (FN = WASHK.FWO) >>>>>>

Q1= 890 WS1= 2365.42
Q2= 890 WS2= 2365.43

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

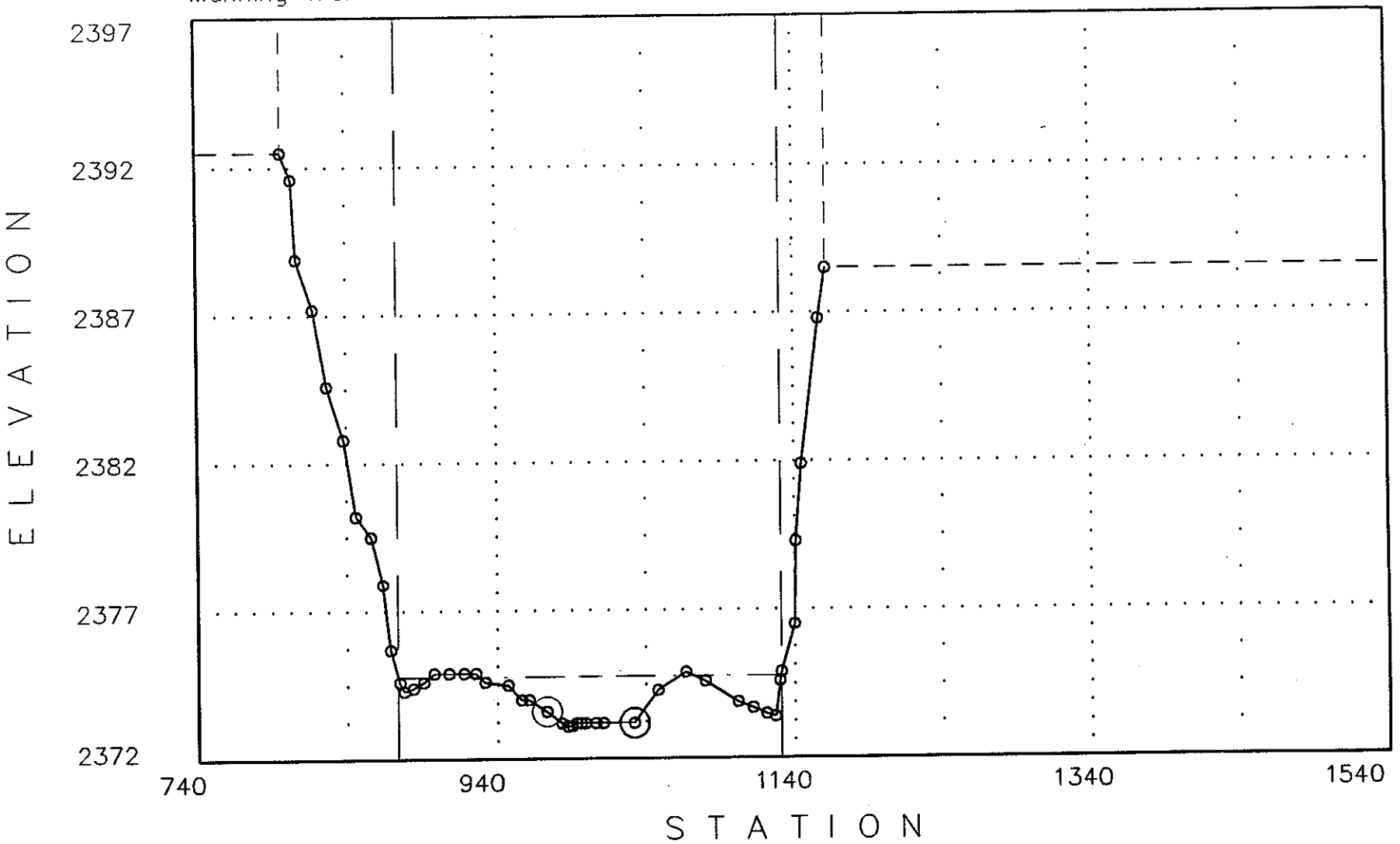


08-11-1992

<<<<<< Cross Section: 3.661: (FN = WASHK.FWO) >>>>>>

Q1= 810 WS1= 2374.78
Q2= 810 WS2= 2374.78

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

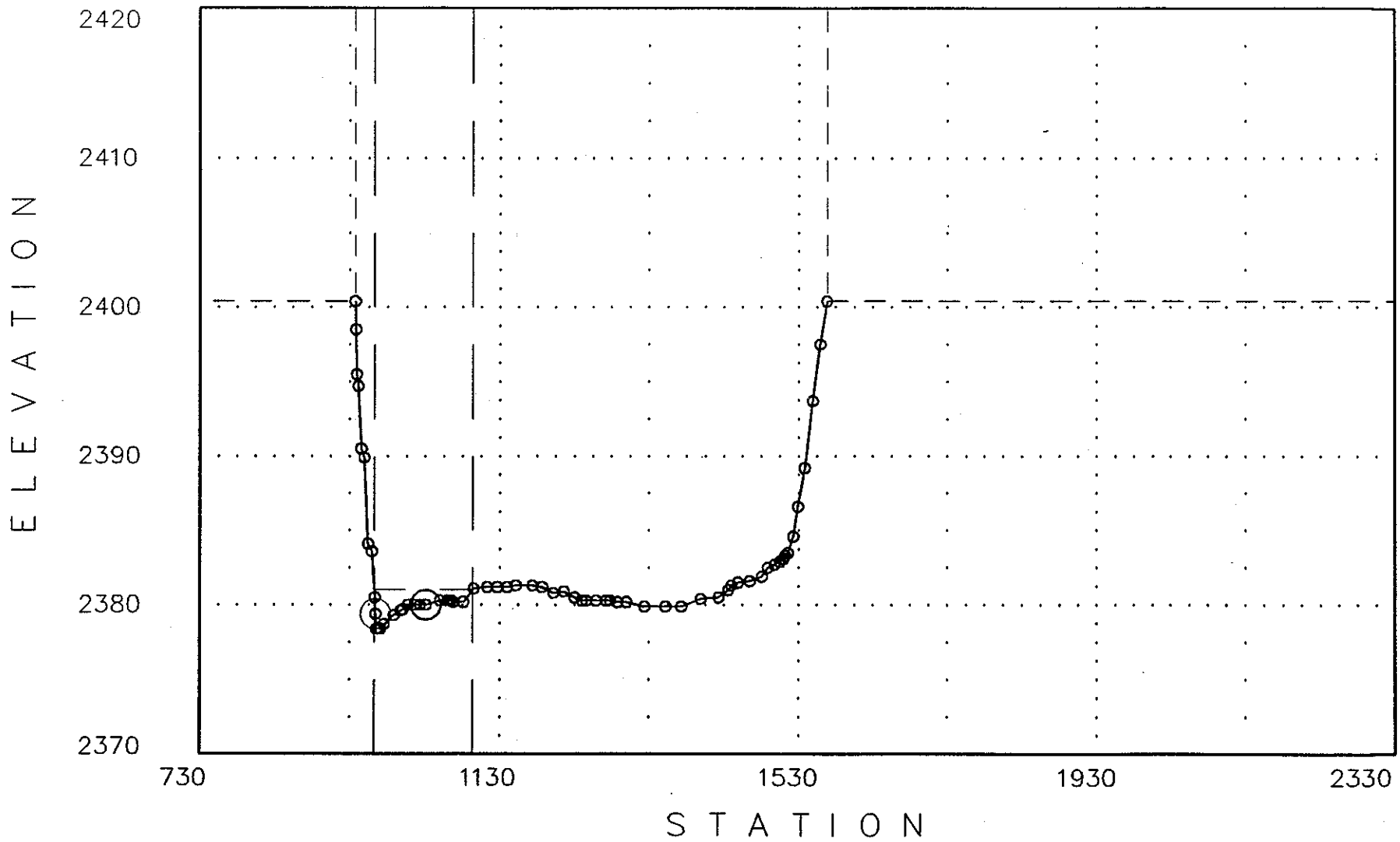


08-11-1992

<<<<<< Cross Section: 3.716: (FN = WASHK.FWO) >>>>>>

Q1= 810 WS1= 2381.04
Q2= 810 WS2= 2381.03

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

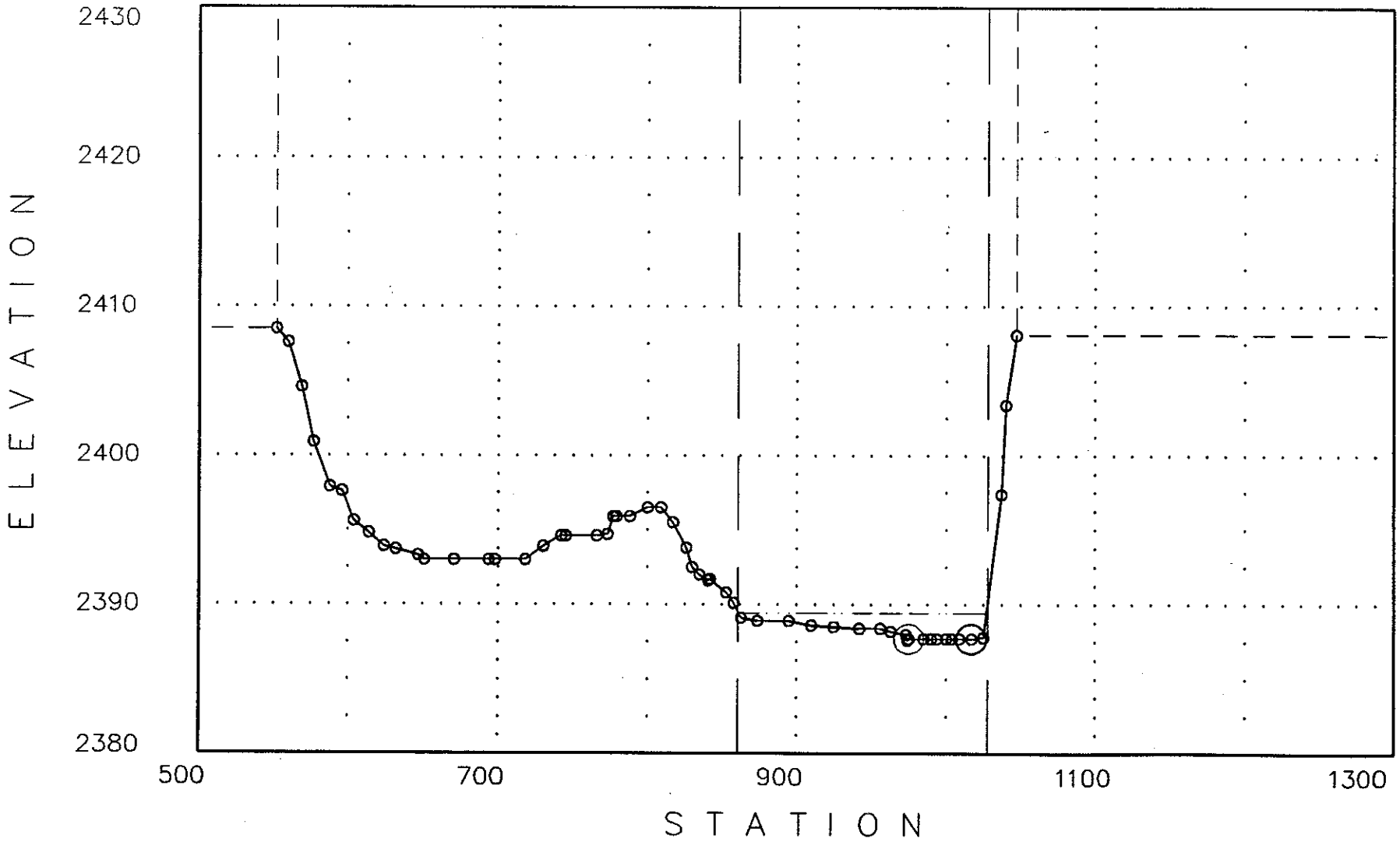


08-11-1992

<<<<<< Cross Section: 3.798: (FN = WASHK.FWO) >>>>>>

Q1= 810 WS1= 2389.42
Q2= 810 WS2= 2389.42

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

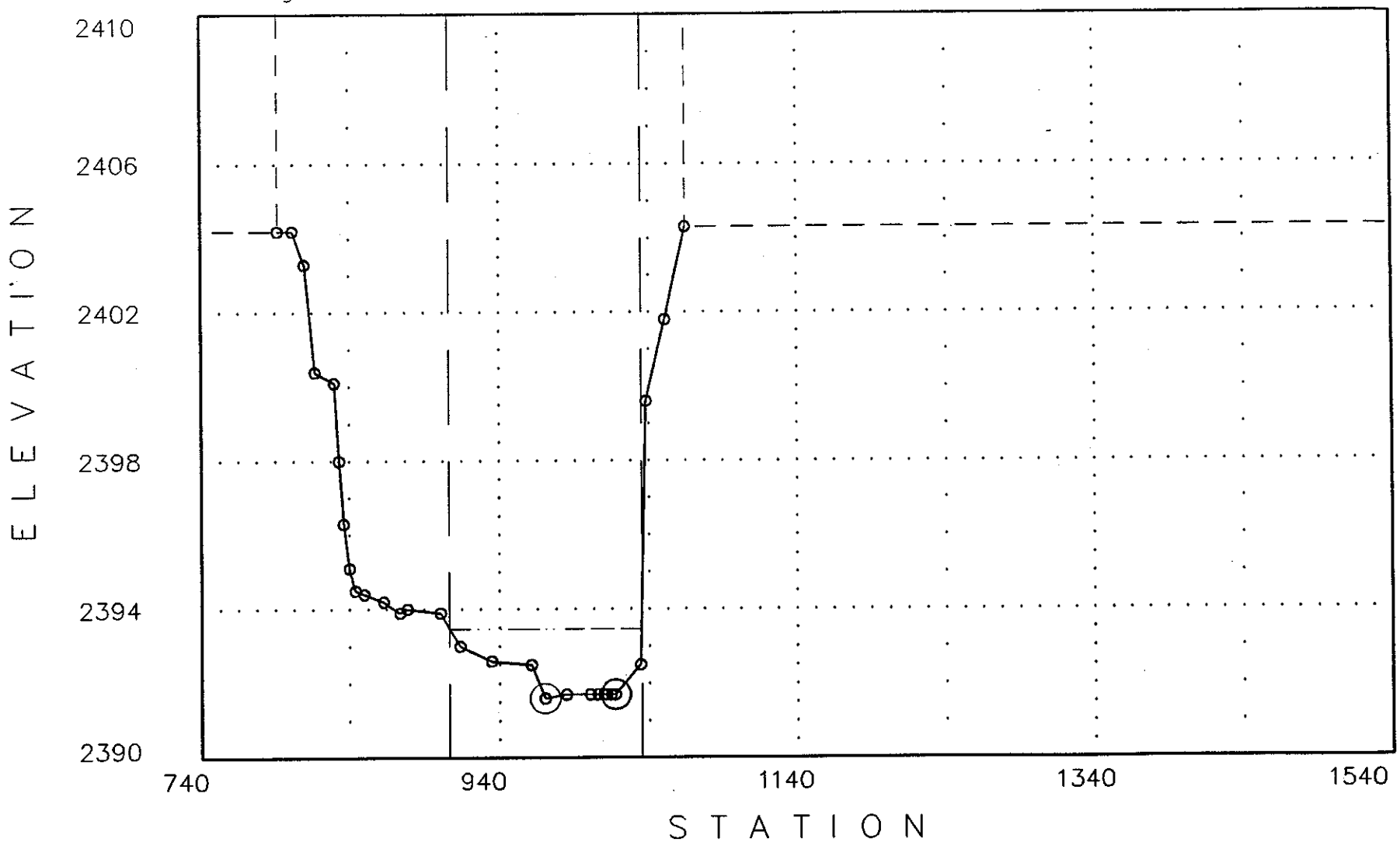


08-11-1992

<<<<<< Cross Section: 3.84: (FN = WASHK.FWO) >>>>>>

Q1= 810 WS1= 2393.47
Q2= 810 WS2= 2393.47

Manning-n's: n-lob = .065 n-ch = .035 n-rob = .065

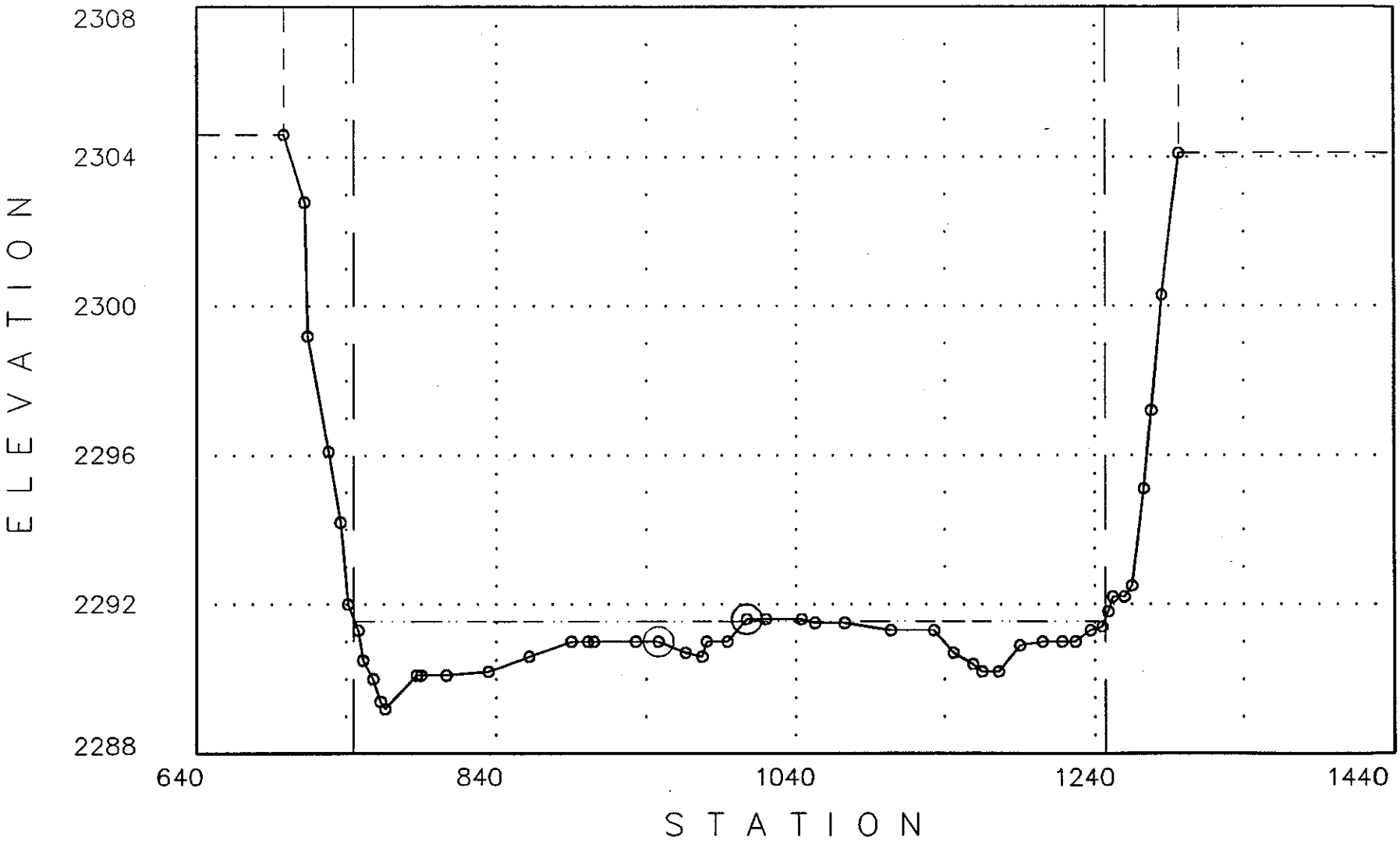


08-11-1992

<<<<<< Cross Section: -2.895: (FN = WASHK.FWO) >>>>>>

Q1= 1739 WS1= 2291.55
Q2= 1739 WS2= 2291.55

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

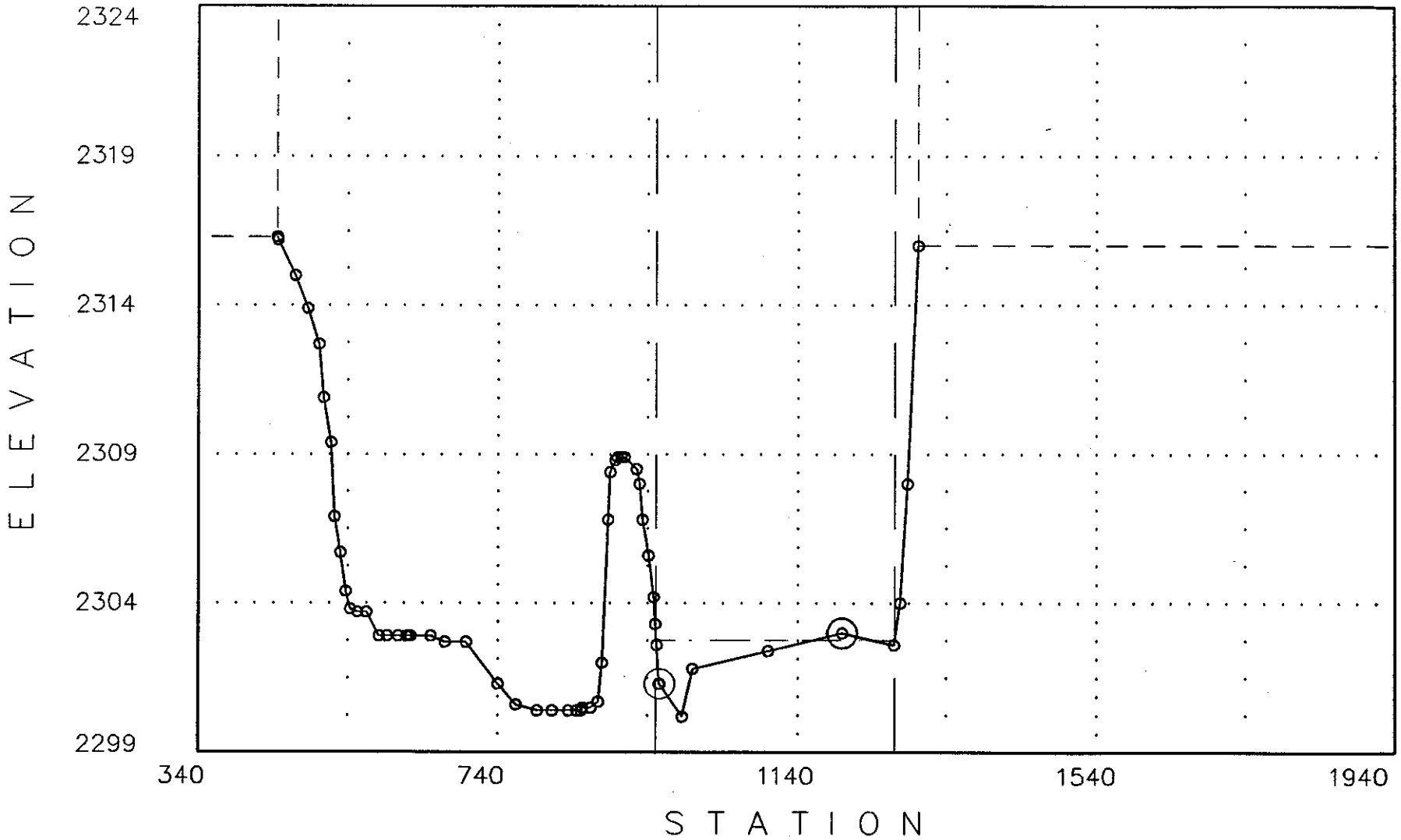


08-11-1992

<<<<<< Cross Section: .032: (FN = WASHK.FWO) >>>>>>

Q1= 848 WS1= 2302.77
Q2= 848 WS2= 2302.77

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

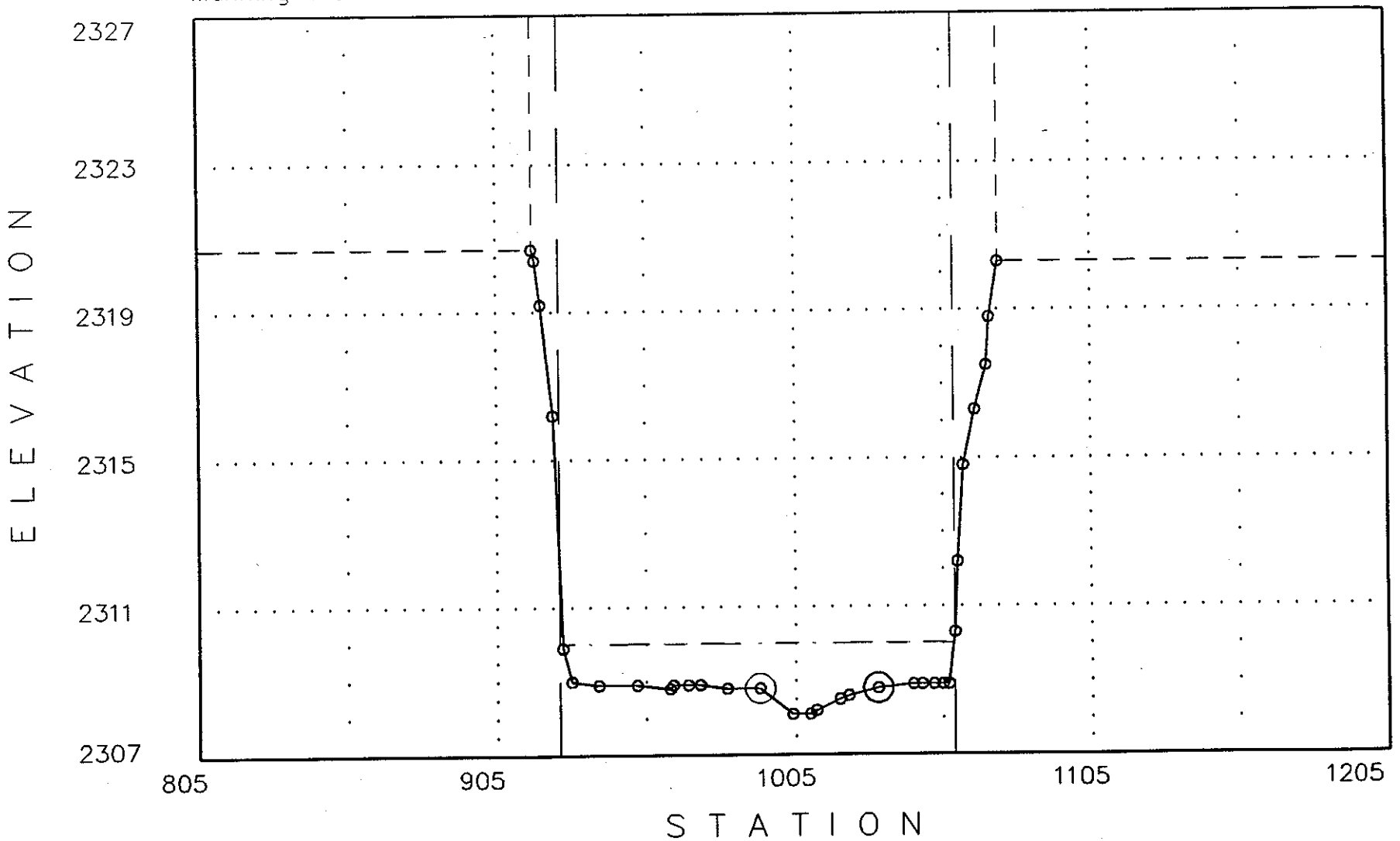


08-11-1992

<<<<<< Cross Section: .097: (FN = WASHK.FWO) >>>>>>

Q1= 848 WS1= 2310.01
Q2= 848 WS2= 2310.02

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

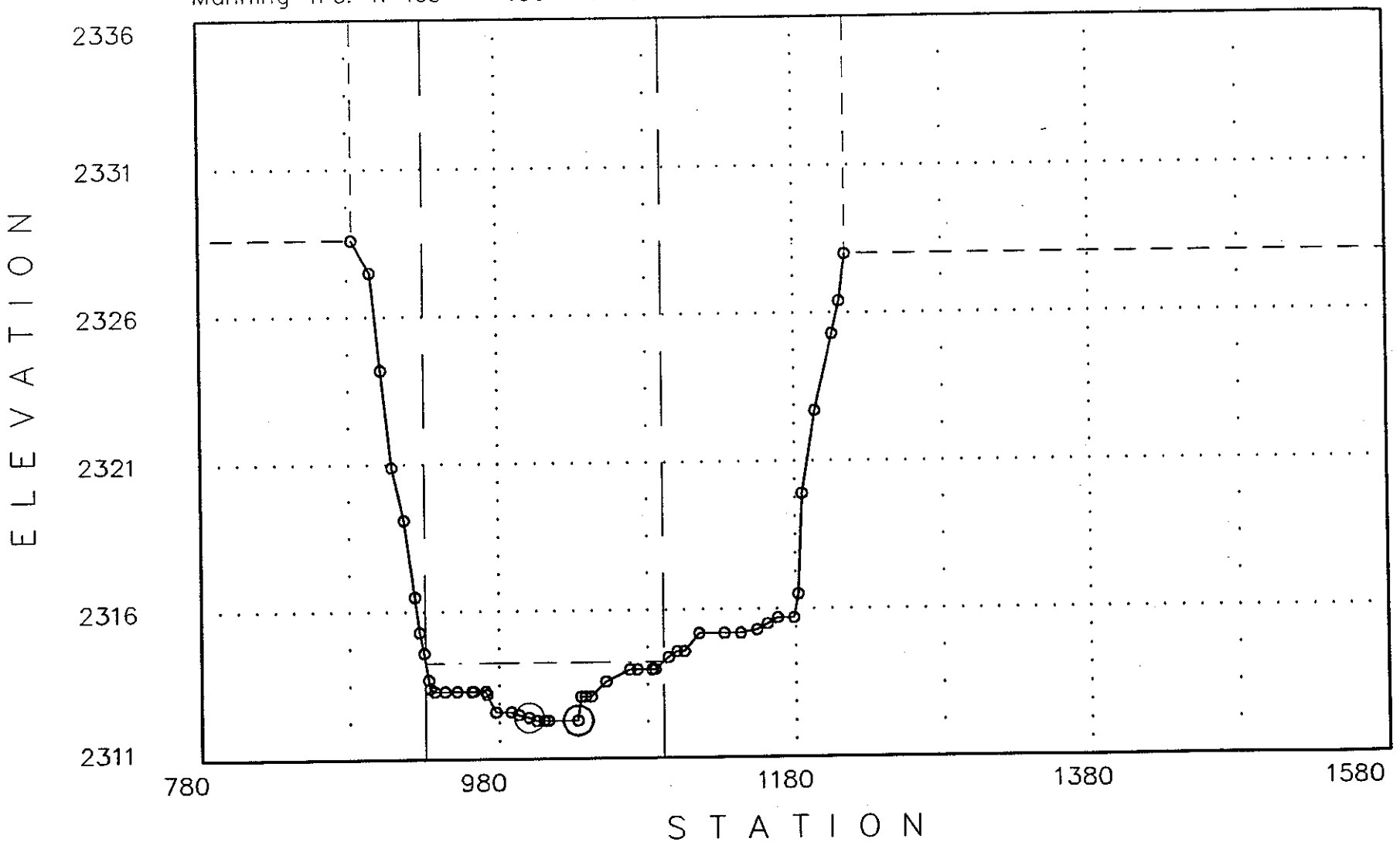


08-11-1992

<<<<<< Cross Section: .131: (FN = WASHK.FWO) >>>>>>

Q1= 848 WS1= 2314.26
Q2= 848 WS2= 2314.26

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06



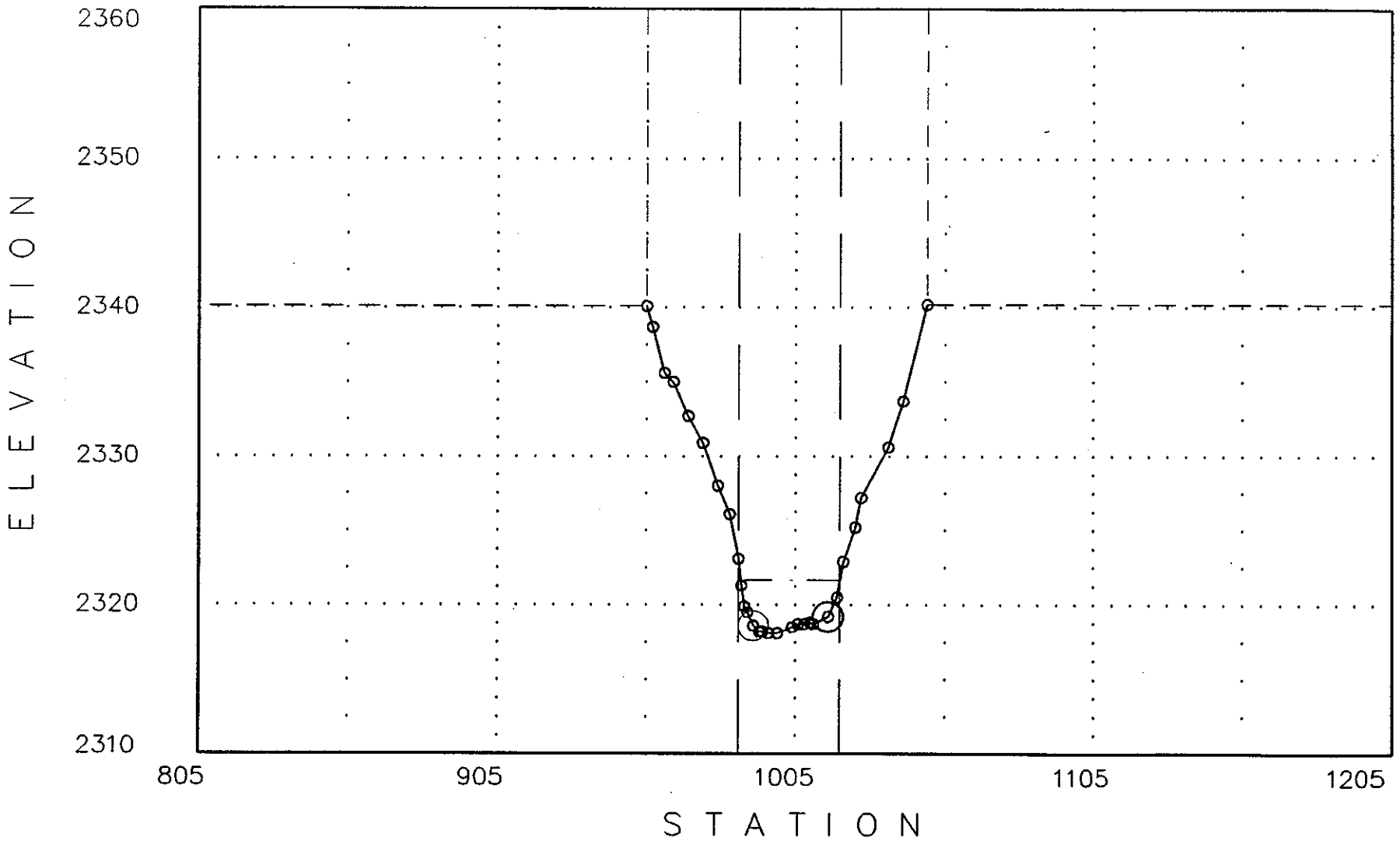
08-11-1992

<<<<<< Cross Section: .182: (FN = WASHK.FWO) >>>>>>

Q1= 848 WS1= 2321.67

Q2= 848 WS2= 2321.67

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

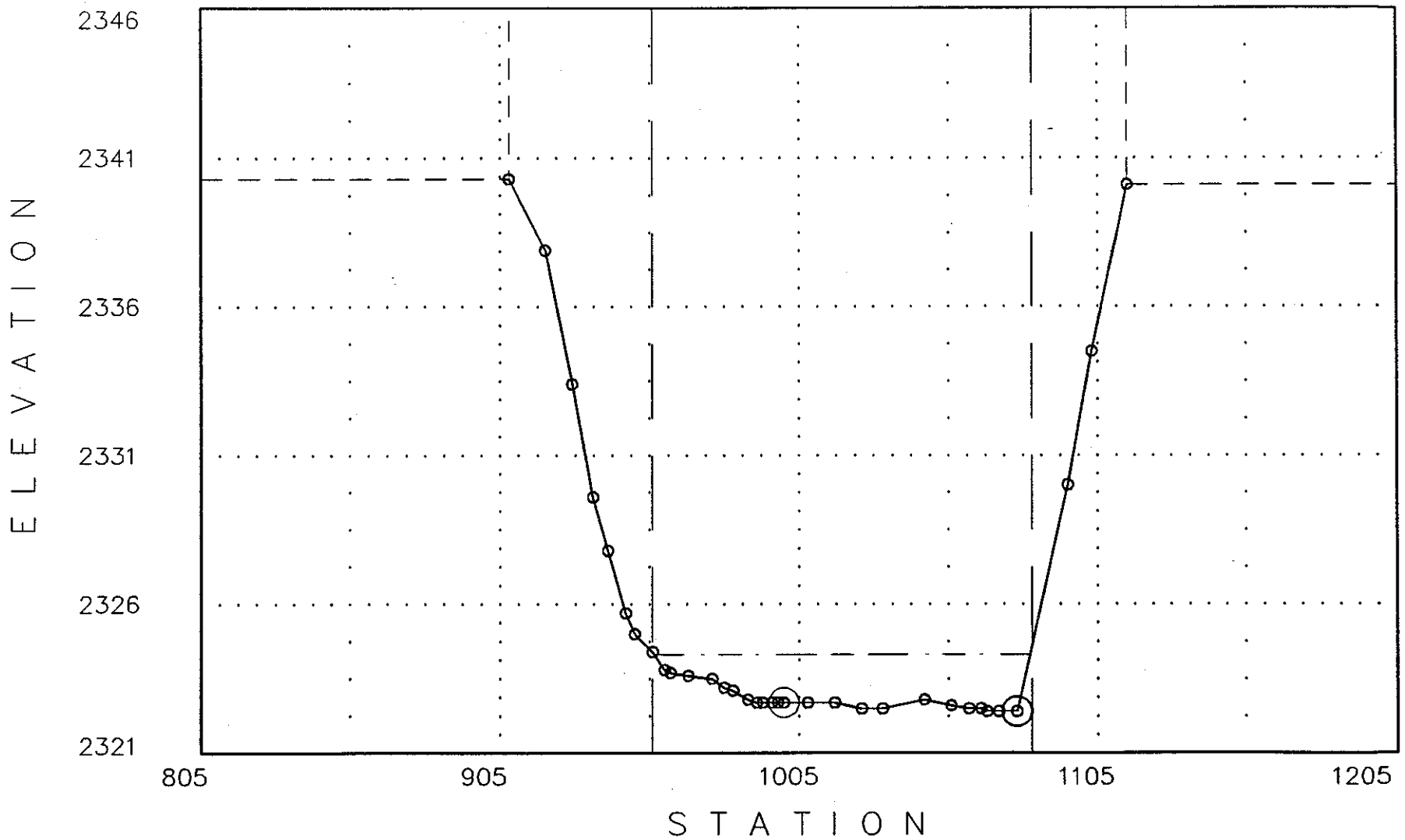


08-11-1992

<<<<<< Cross Section: .212: (FN = WASHK.FWO) >>>>>>

Q1= 480 WS1= 2324.31
Q2= 480 WS2= 2324.31

Manning-n's: n-lob = .06 n-ch = .045 n-rob = .06

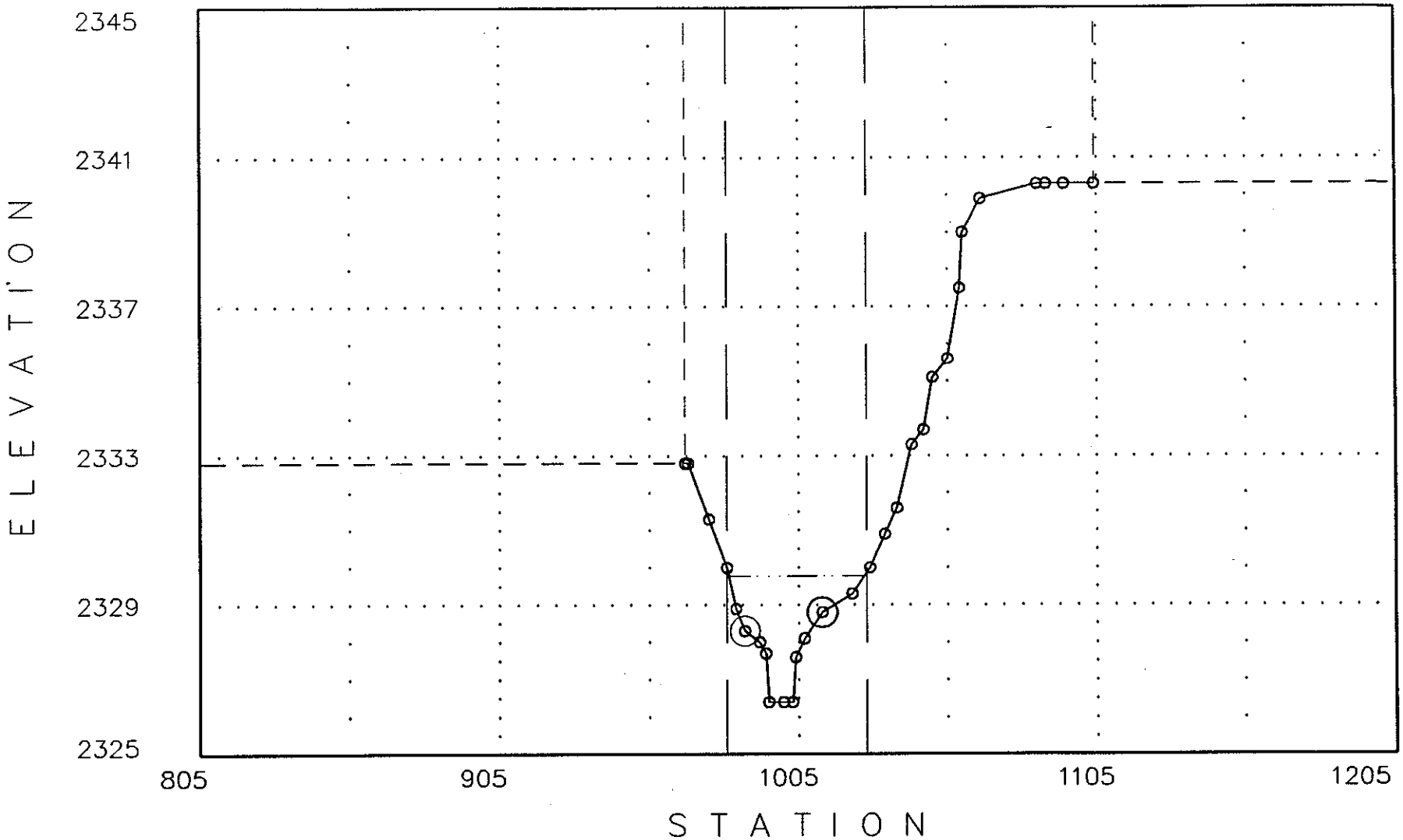


06-11-1992

<<<<<< Cross Section: .259: (FN = WASHK.FWO) >>>>>>

Q1= 480 WS1= 2329.78
Q2= 480 WS2= 2329.78

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

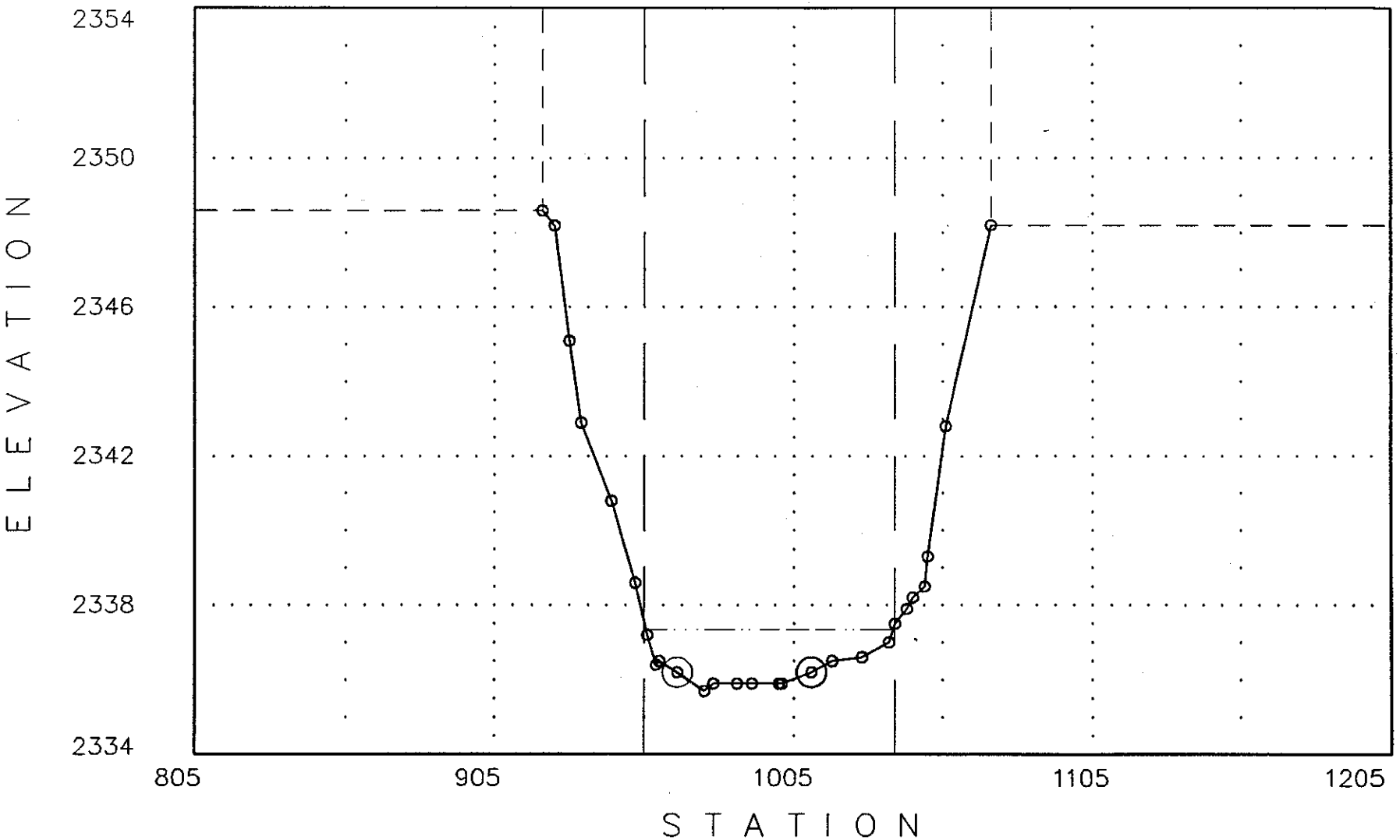


08-11-1992

<<<<<< Cross Section: .318: (FN = WASHK.FWO) >>>>>>

Q1= 480 WS1= 2337.34
Q2= 480 WS2= 2337.34

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

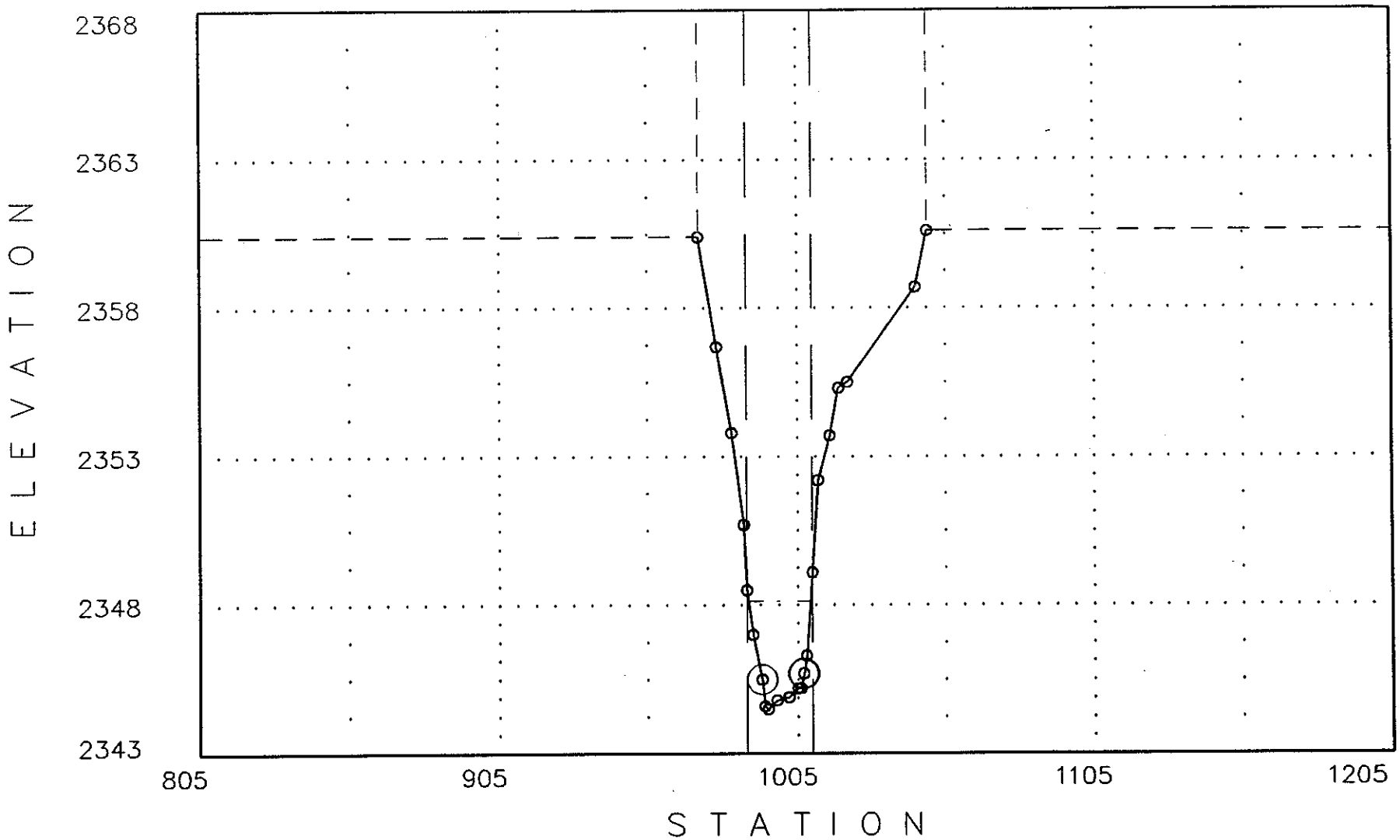


08-11-1992

<<<<<< Cross Section: .416: (FN = WASHK.FWO) >>>>>>

Q1= 480 WS1= 2348.13
Q2= 480 WS2= 2348.13

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

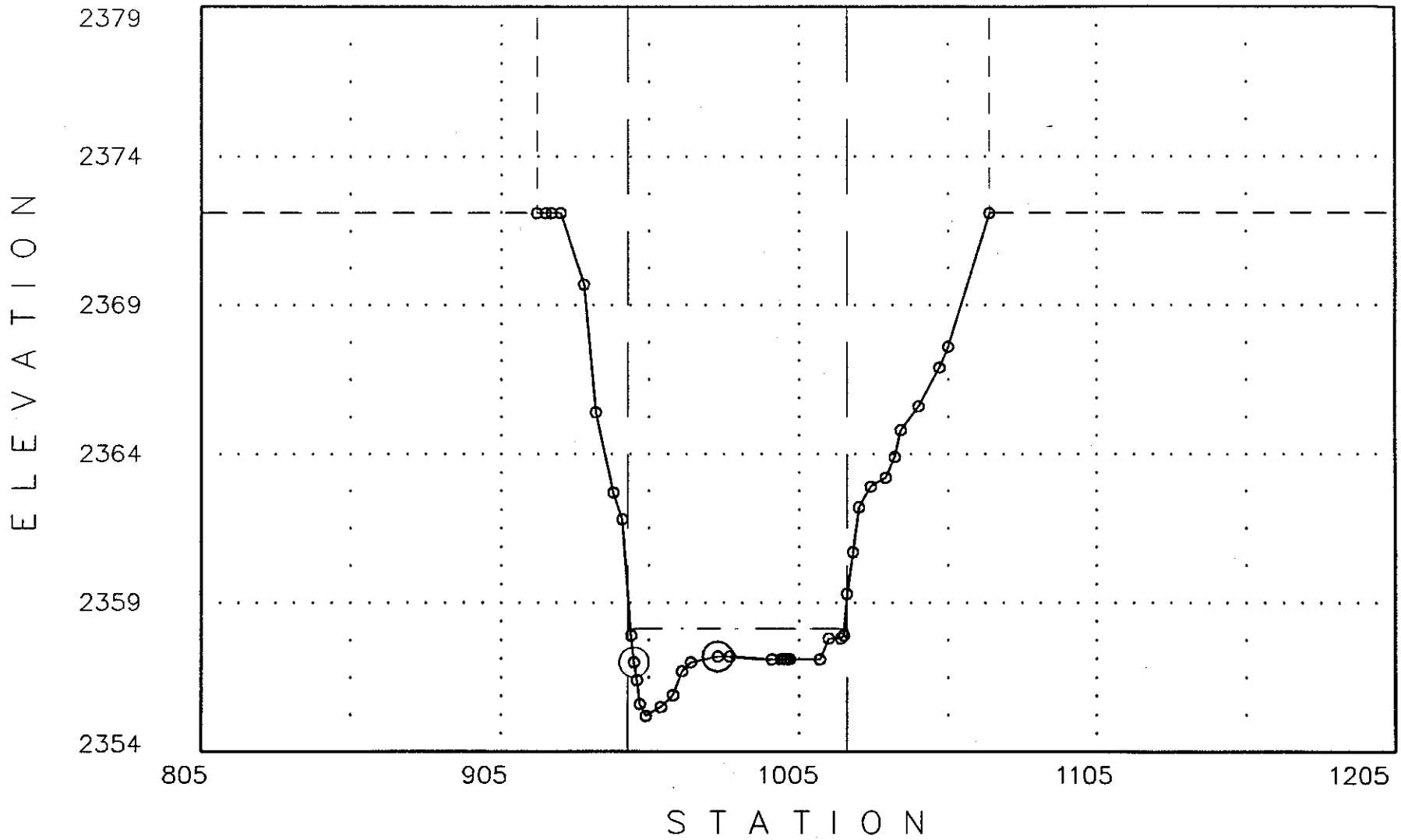


08-11-1992

<<<<<< Cross Section: .506: (FN = WASHK.FWO) >>>>>>

Q1= 480 WS1= 2358.14
Q2= 480 WS2= 2358.14

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

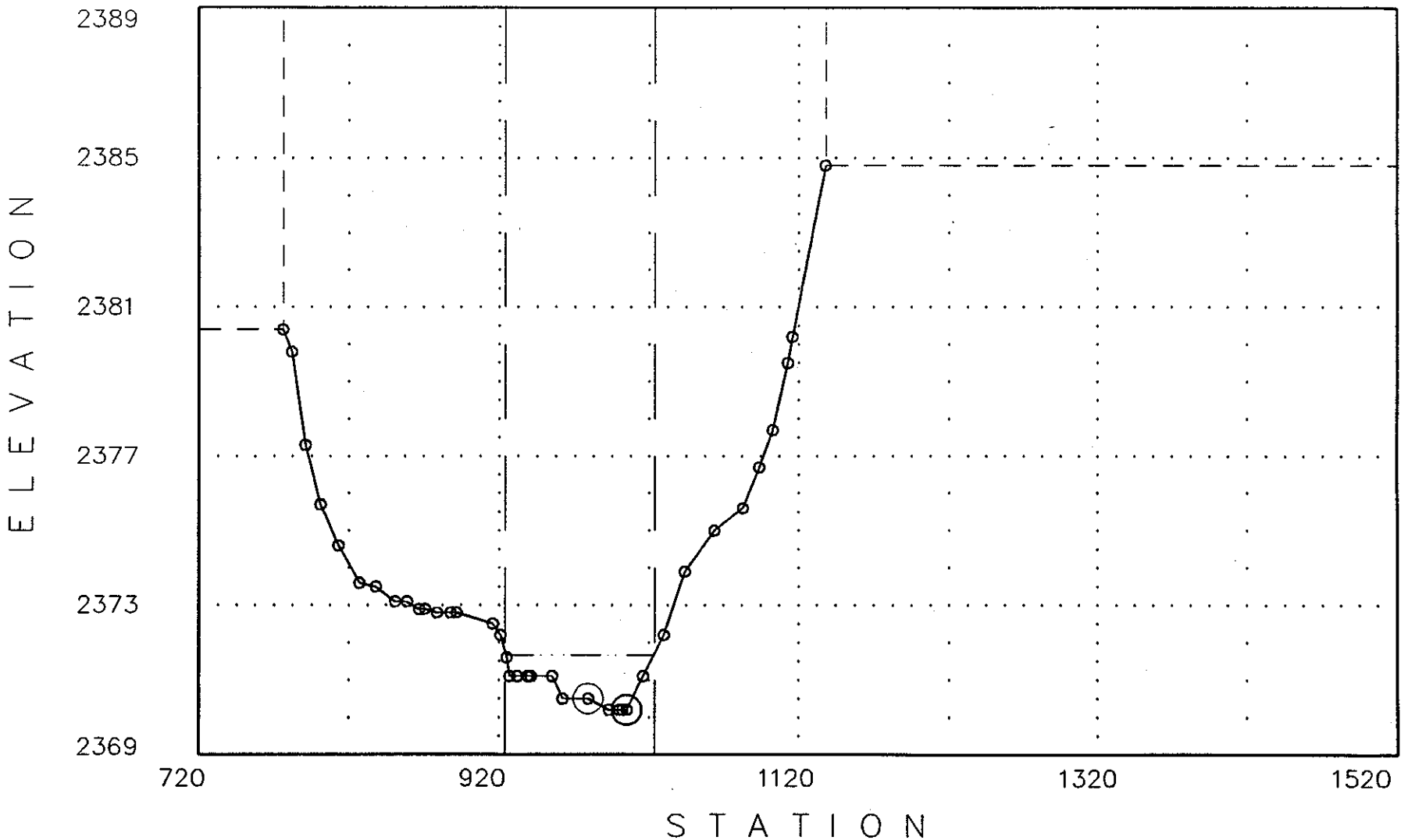


08-11-1992

<<<<<< Cross Section: .604: (FN = WASHK.FWO) >>>>>>

Q1= 400 WS1= 2371.67
Q2= 400 WS2= 2371.67

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

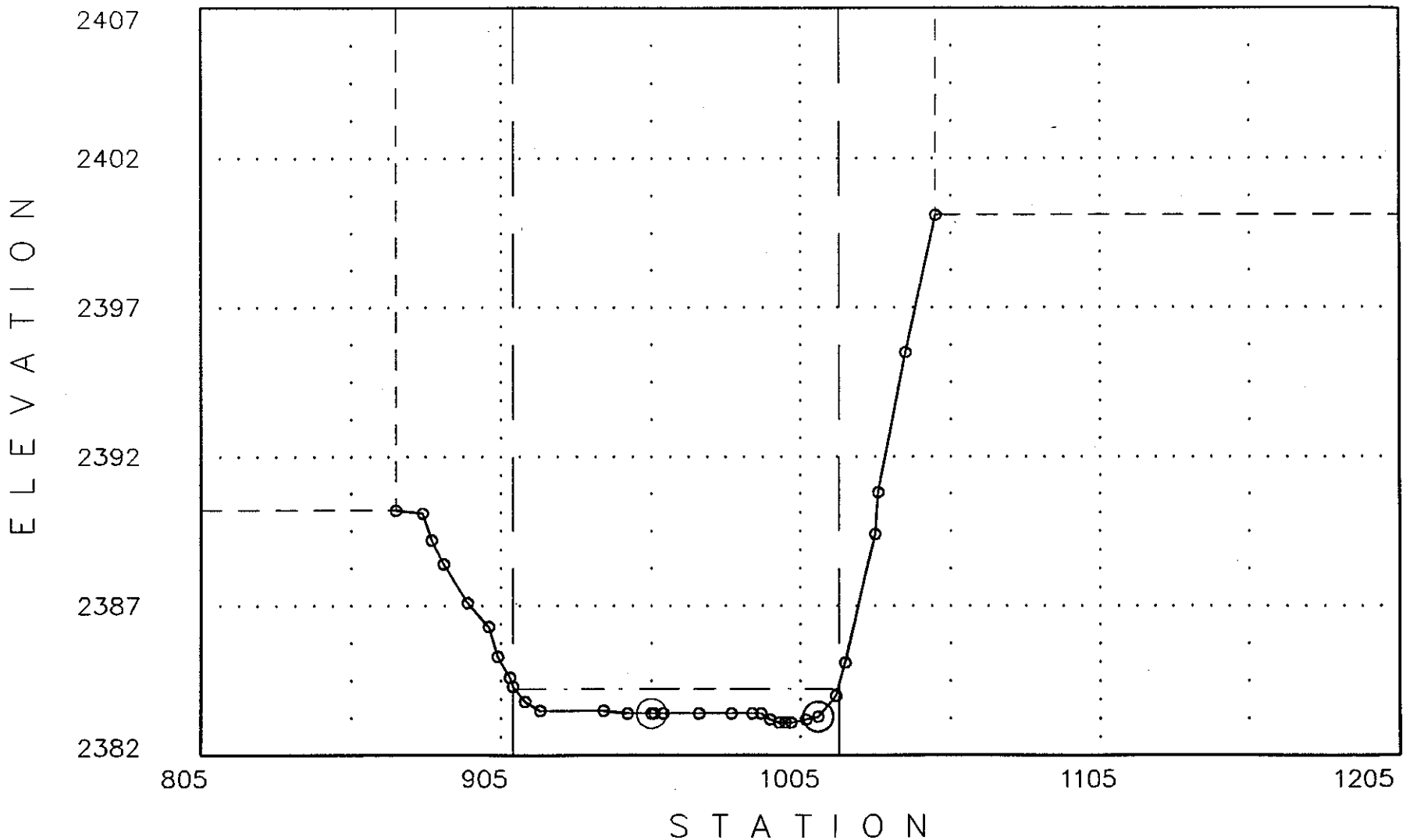


08-11-1992

<<<<<< Cross Section: .705: (FN = WASHK.FWO) >>>>>>

Q1= 400 WS1= 2384.23
Q2= 400 WS2= 2384.23

Manning-n's: n-lob = .065 n-ch = .045 n-rob = .065

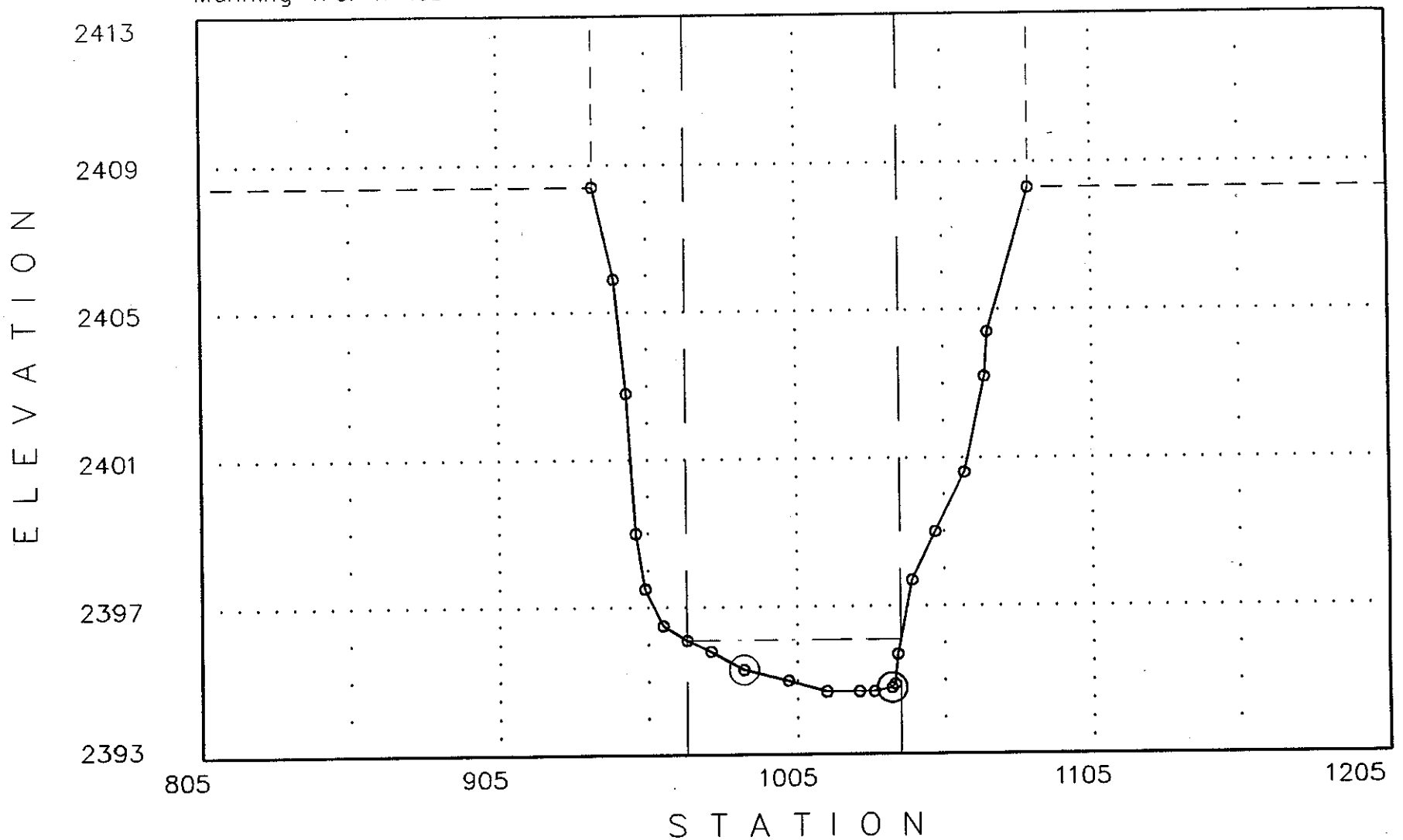


08-11-1992

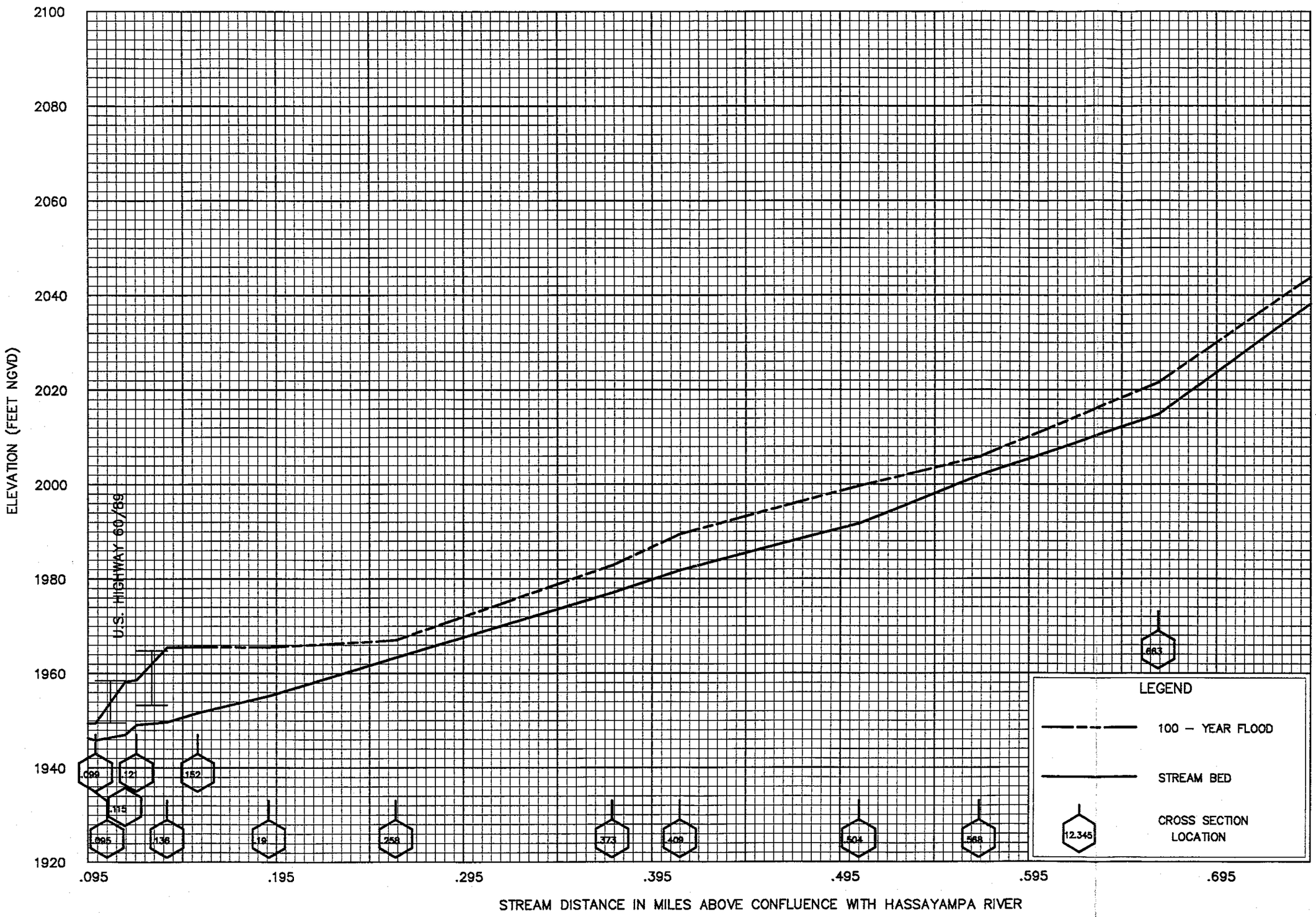
<<<<<< Cross Section: .795: (FN = WASHK.FWO) >>>>>>

Q1= 330 WS1= 2396.1
Q2= 330 WS2= 2396.1

Manning-n's: n-lob = .065 n-ch = .045 n-rob = .065



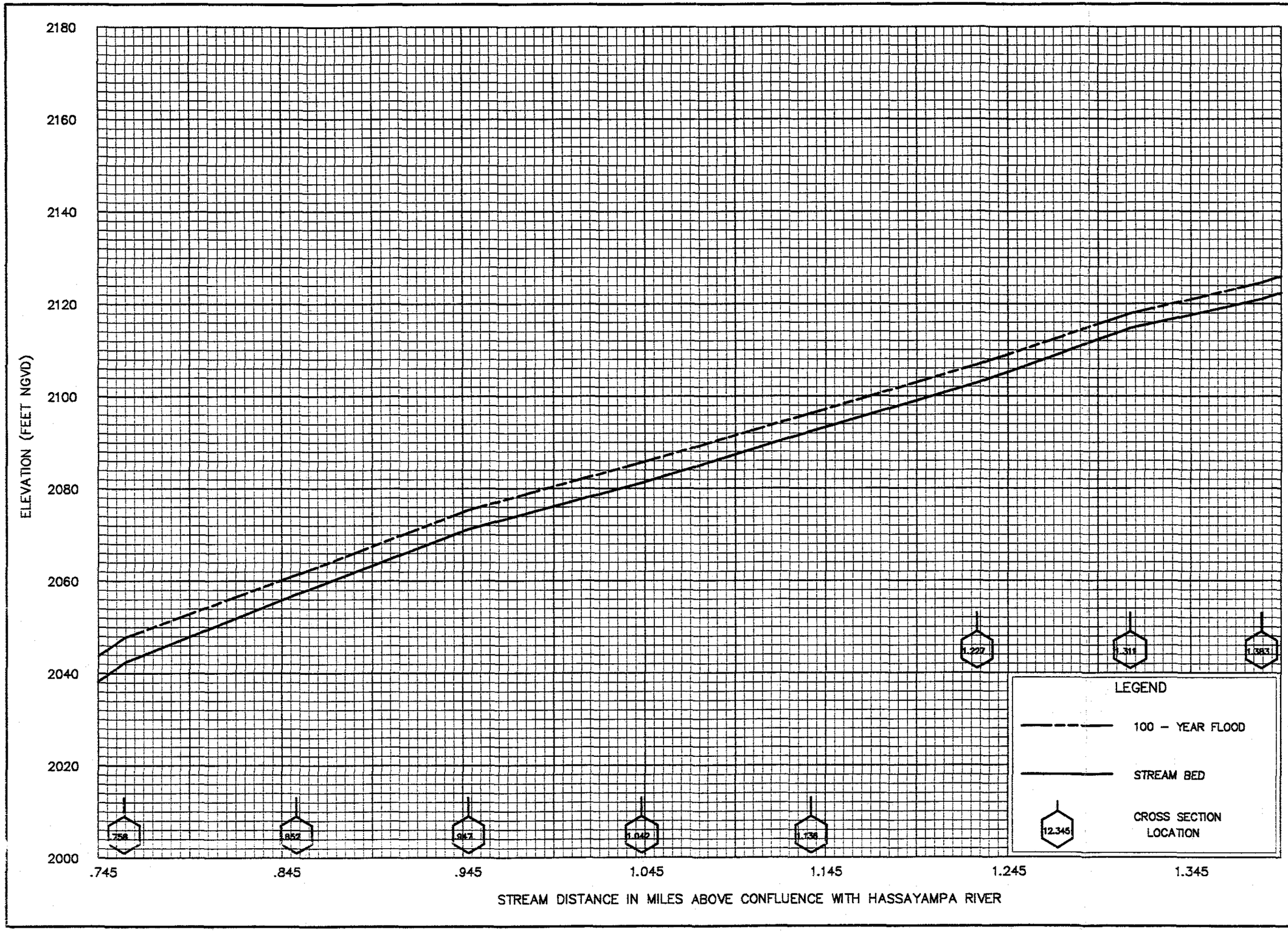
08-11-1992



FLOOD PROFILES

UN-NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

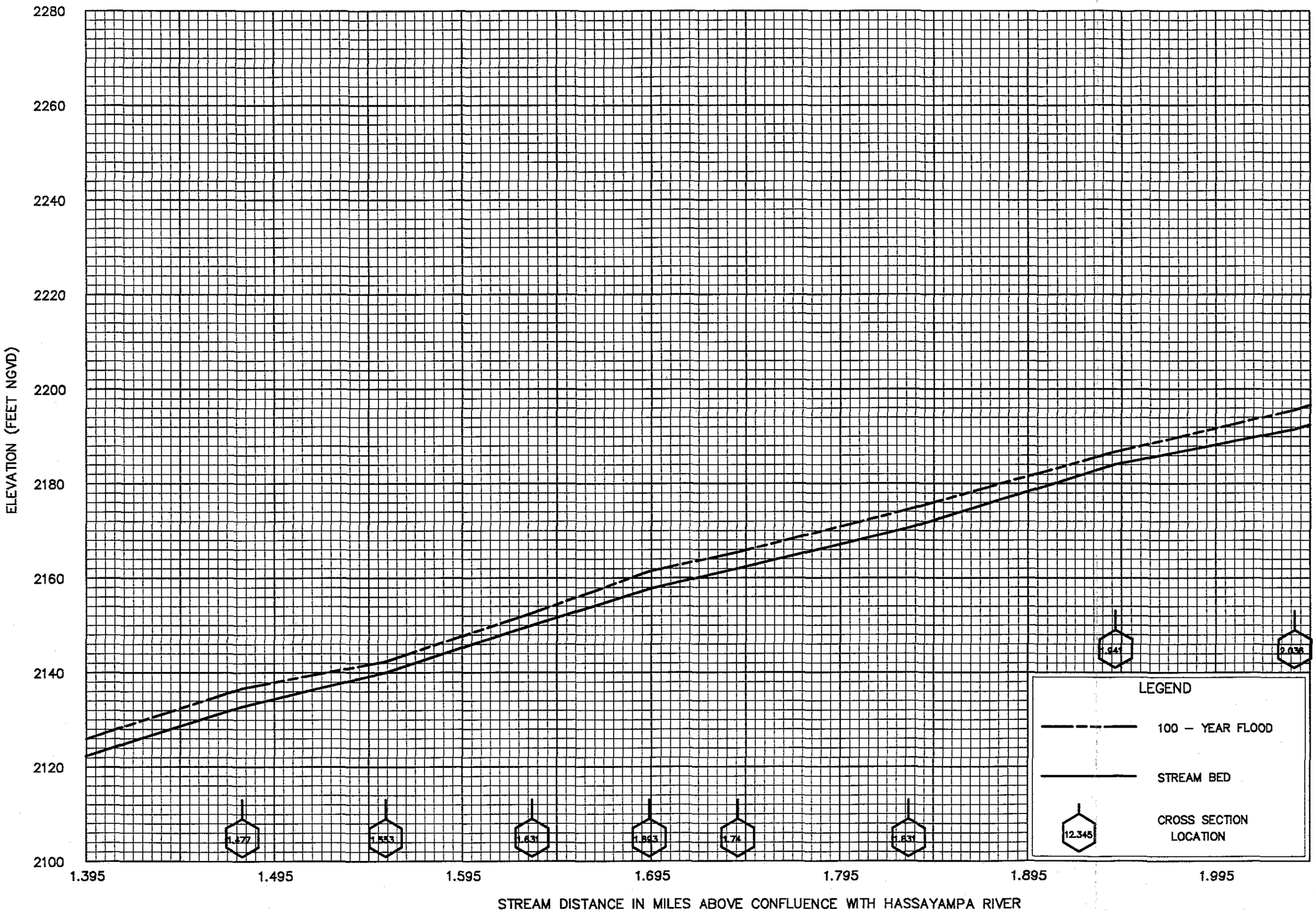


FLOOD PROFILES

UN–NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

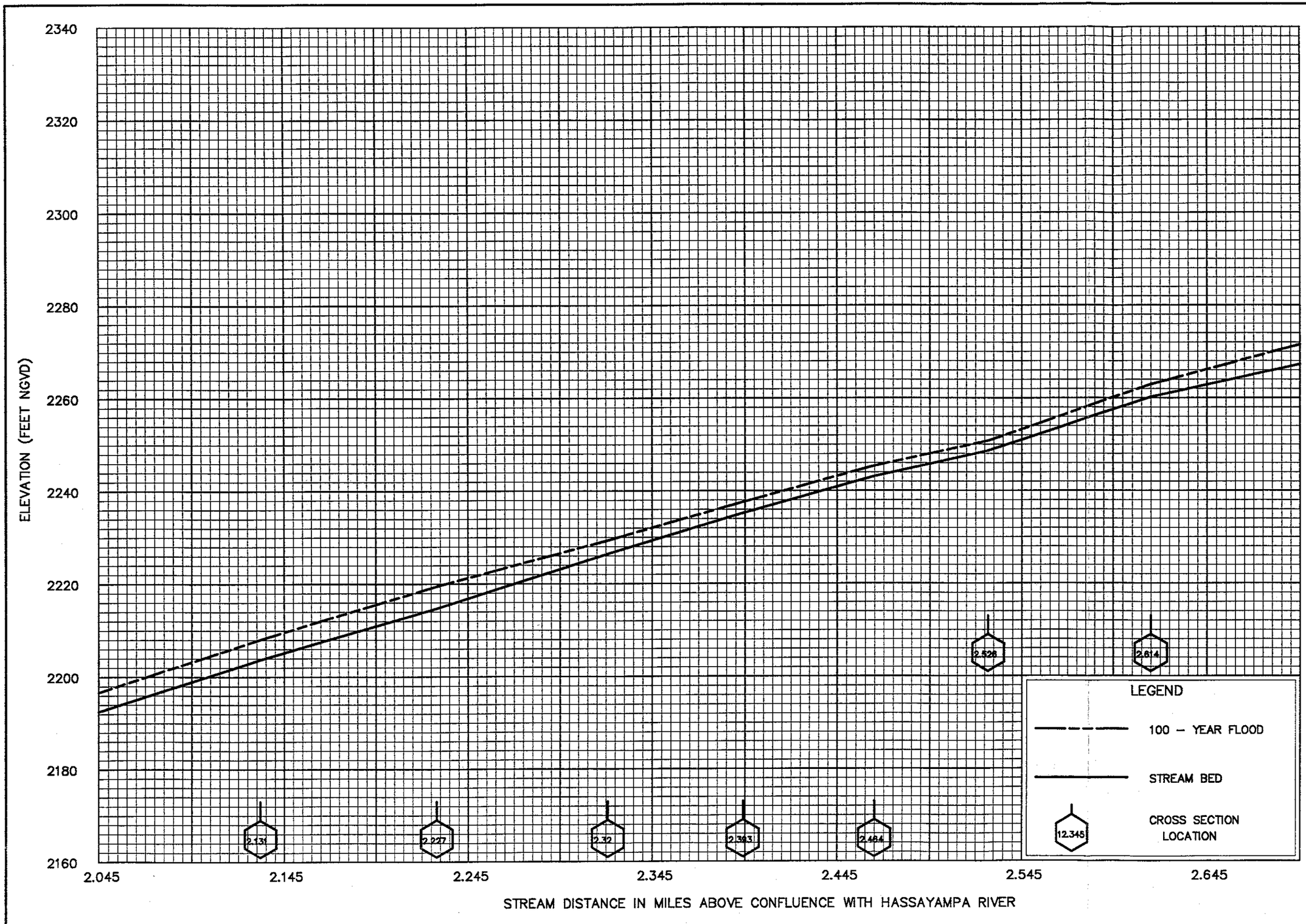


FLOOD PROFILES

UN–NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

UN–NAMED WASH #6 (WASH K)

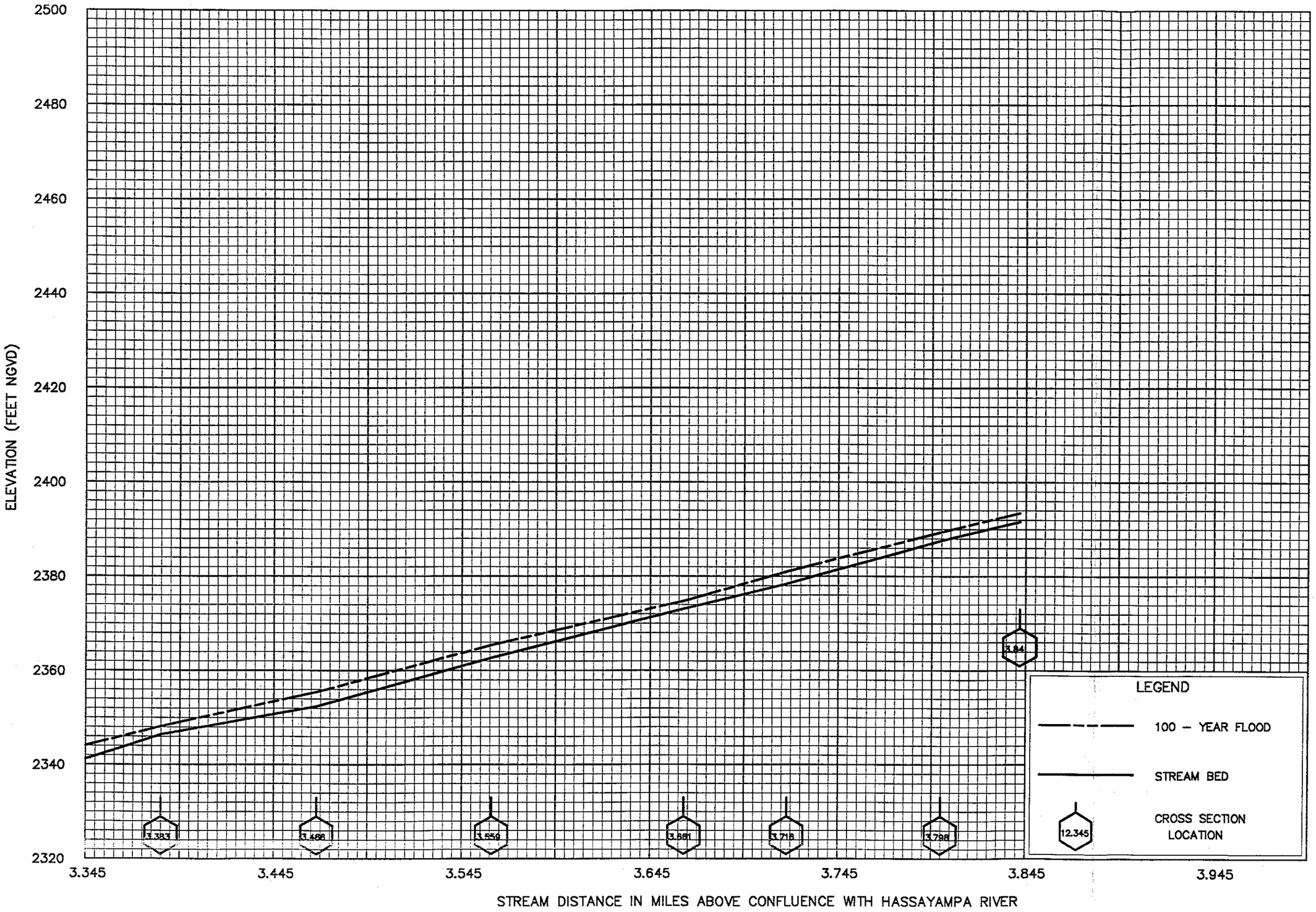
FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

FLOOD PROFILES

UN–NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

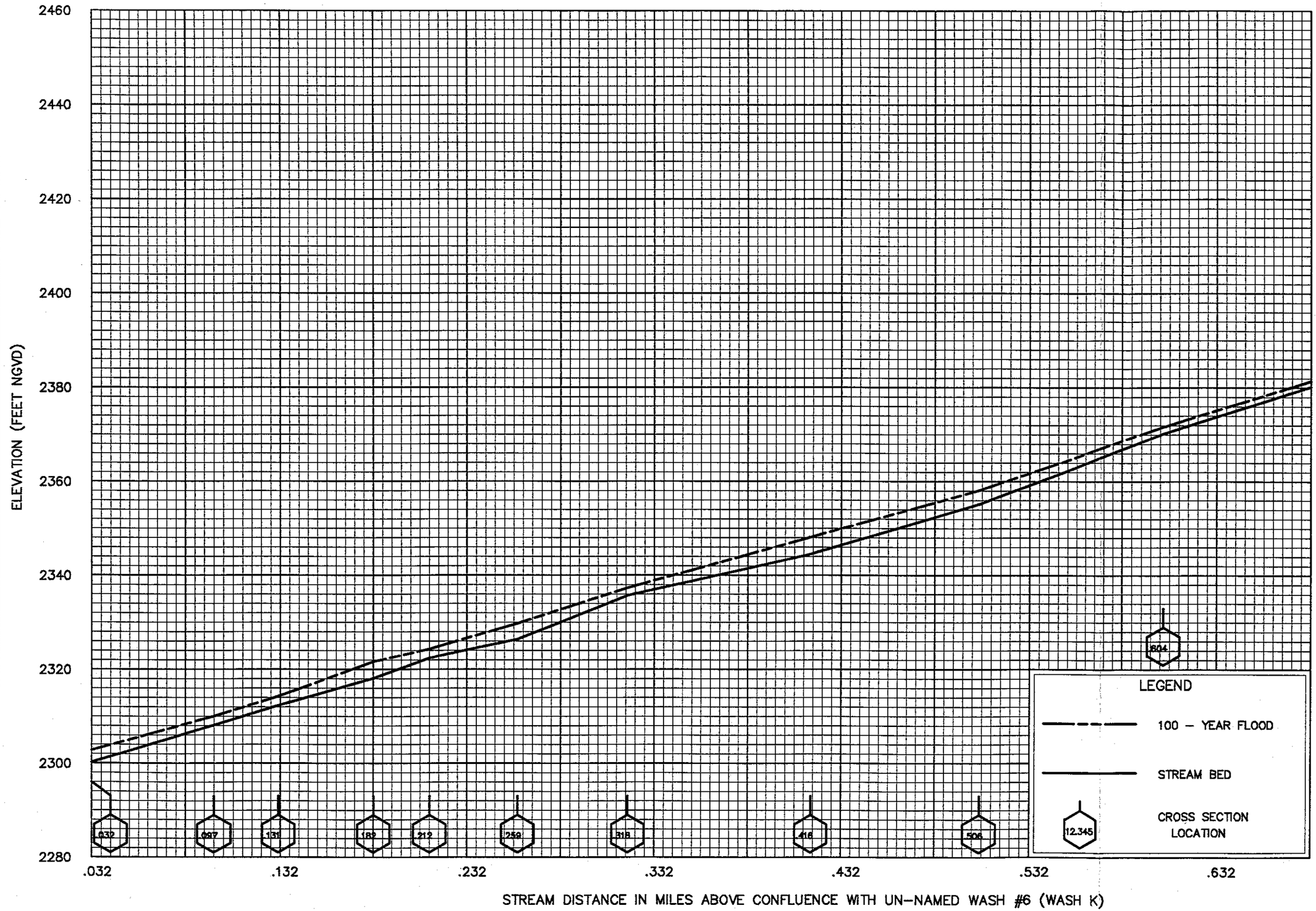


FLOOD PROFILES

UN-NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

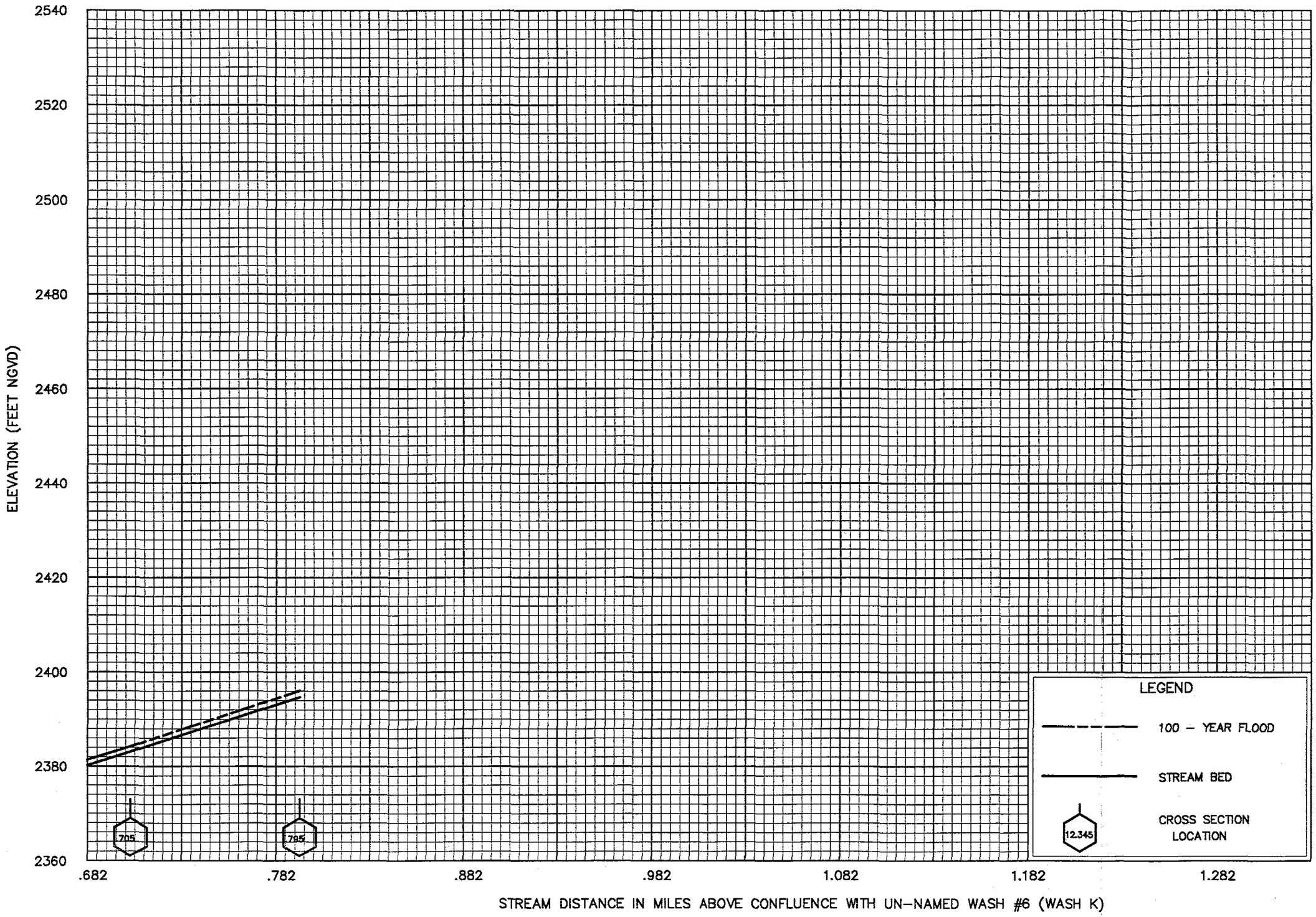


FLOOD PROFILES

TRIBUTARY TO UN-NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

TRIBUTARY TO UN-NAMED WASH #6 (WASH K)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.11: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #7 (Wash 1)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1197\02\ADMIN\119702RP.063

May 1994

6.11

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)
(One form for each flooding source)

Project Name /Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☐ Detailed study stream (briefly explain methodology) NA

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
U.S. Hwy 60-89	0.79	—	802

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records *(use Attachment A)*

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN OF WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

ream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

ttach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

lic reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.091

Upstream limit: Station 1.516

2. EFFECTIVE FIS

☒ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☐ Studied by detailed methods

Downstream limit of study _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	802	802
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by assuming critical depth at the Palm Lake spillway

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .030 - .045

Overbanks ..... .045 - .070

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 18.21

Specify location 1.421

3. What is the distance between the cross-sections in 2 above? 496

Specify location 1.421

4. What is the maximum distance between cross-sections? 602

Specify location ..... .815

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0.1 foot

Specify location 1.230, 1.421

c. What is the maximum velocity? ..... 11.6 fps

Specify location ..... .289

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model (10-, 50-, 100-, and 500-year), downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODIND SOURCE: WASH L: UNNAMED HASSAYAMPA R. TRIB. #7

PROJECT NAME /IDENTIFIER: Wickenburg ADMS FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS: New Model - See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

Sheet 1 of 1

FLOODWAY DATA, WASH L: UNNAMED WASH #7
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.091	549.	221.	3.3	1954.9	1954.9	.0
.194	379.	636.	1.1	1956.7	1956.7	.0
.226	142.	153.	4.7	1963.0	1963.0	.0
.268	17.	64.	11.2	1974.0	1974.0	.0
.280	17.	95.	7.6	1976.4	1976.4	.0
.282	79.	283.	2.6	1977.5	1977.5	.0
.283	79.	205.	3.7	1977.5	1977.5	.0
.289	17.	69.	11.6	1979.1	1979.1	.0
.304	17.	99.	8.1	1982.4	1982.4	.0
.324	130.	696.	1.2	1984.0	1984.0	.0
.399	91.	128.	6.3	1988.1	1988.1	.0
.493	206.	192.	4.2	1997.8	1997.8	.0
.588	121.	152.	5.3	2009.9	2009.9	.0
.701	70.	115.	7.0	2022.1	2022.1	.0
.815	139.	153.	5.2	2039.1	2039.1	.0
.891	152.	150.	5.3	2047.6	2047.6	.0
.000	82.	130.	6.2	2059.0	2059.0	.0
1.081	31.	91.	8.9	2069.4	2069.4	.0
1.157	30.	85.	9.4	2093.7	2093.7	.0
1.230	34.	98.	8.2	2102.3	2102.2	.1
1.327	34.	104.	7.7	2116.8	2116.8	.0
1.421	29.	100.	8.0	2134.8	2134.7	.1
1.516	42.	110.	7.3	2151.5	2151.5	.0

Wickenburg ADMS FCD 89-79

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE/COASTAL MAPPING FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No Zone A, 500-year, or coastal zones revised or delineated. ~~Revised~~ 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 ft Contour interval

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

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

Attach additional pages if needed.

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

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

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

New ~~Revised~~ detailed 100-year floodplain ~~replaces effective zone~~ ~~floodplain.~~

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

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

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

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

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

If no, explain:

NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

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

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

      If yes, justify steeper slopes_____

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

      If no, describe erosion protection provided_____

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

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

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

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

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

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. HWY 60-89 EASTBOUND
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.268 to Station 0.280
3. This revision reflects *(check one of the following)*:
   - [x] New bridge/culvert not modeled in the FIS
   - [ ] Modified bridge/culvert previously modeled in the FIS
   - [ ] New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

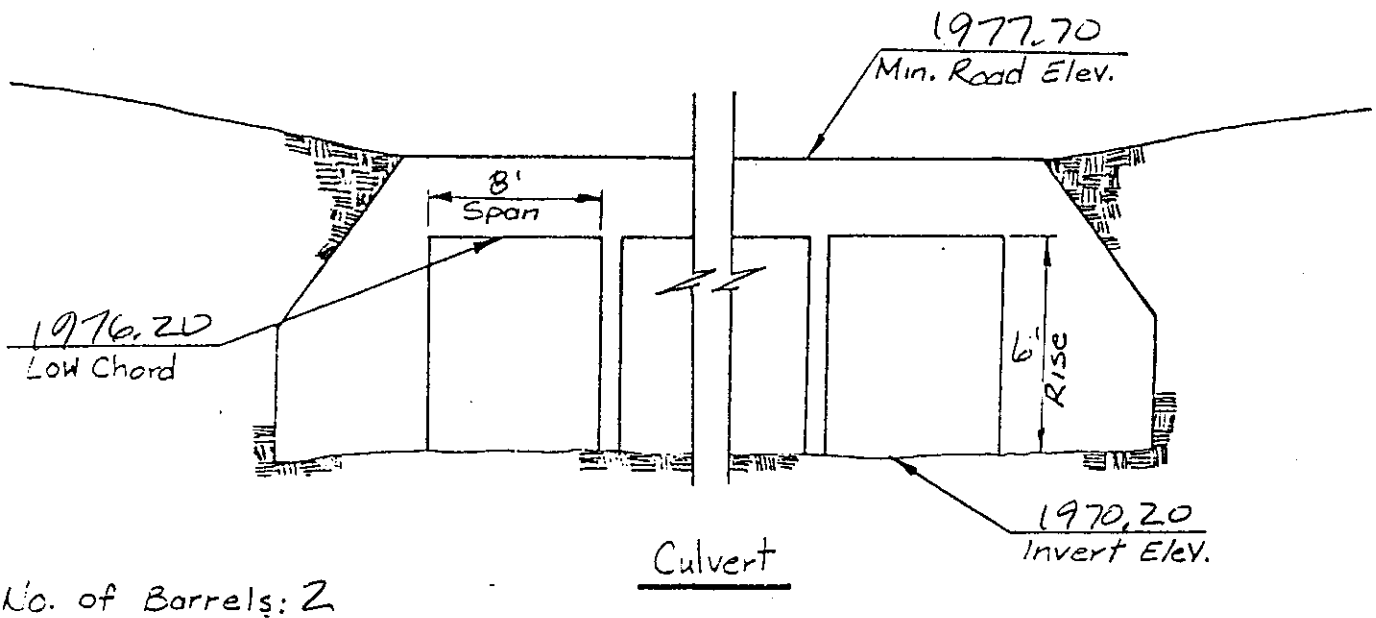
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) Two 8x6 foot reinforced Concrete box culverts
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) No OFFSET FLARED WINGWALLS; 3/4 inch chamfer at top of inlet.
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine, split flow/side weir between eastbound and westbound structures

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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

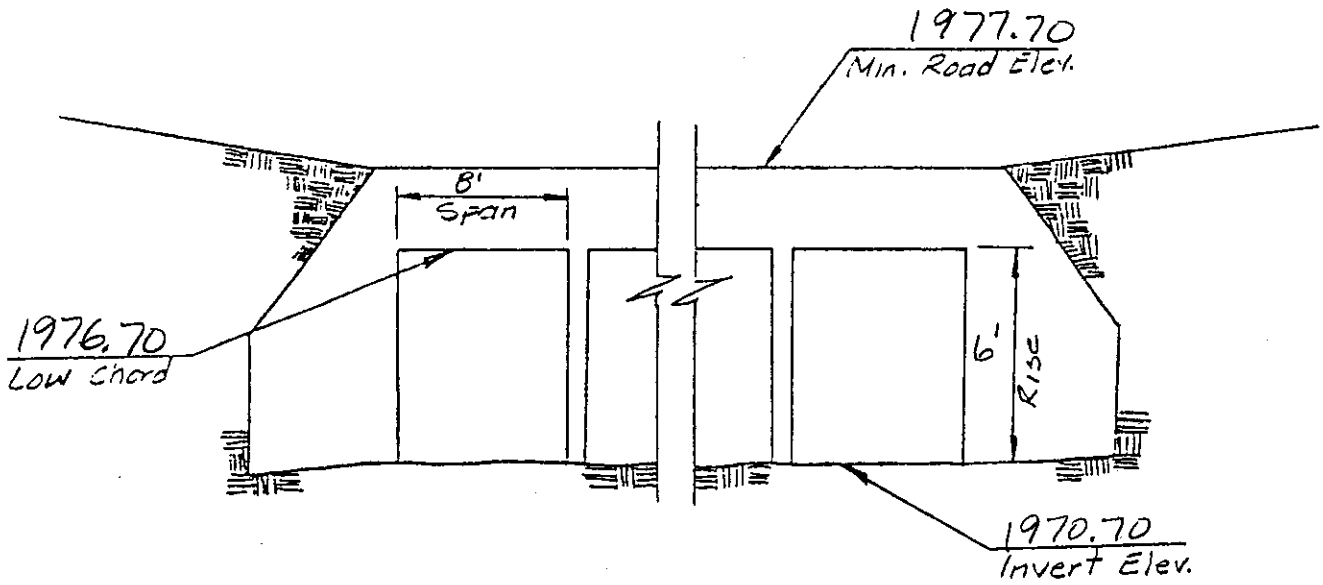


No. of Barrels: 2

Culvert Size: 8x6 ft

Approx. Depth of Sediment in Culvert: 0 See Cross Section # 0.268

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

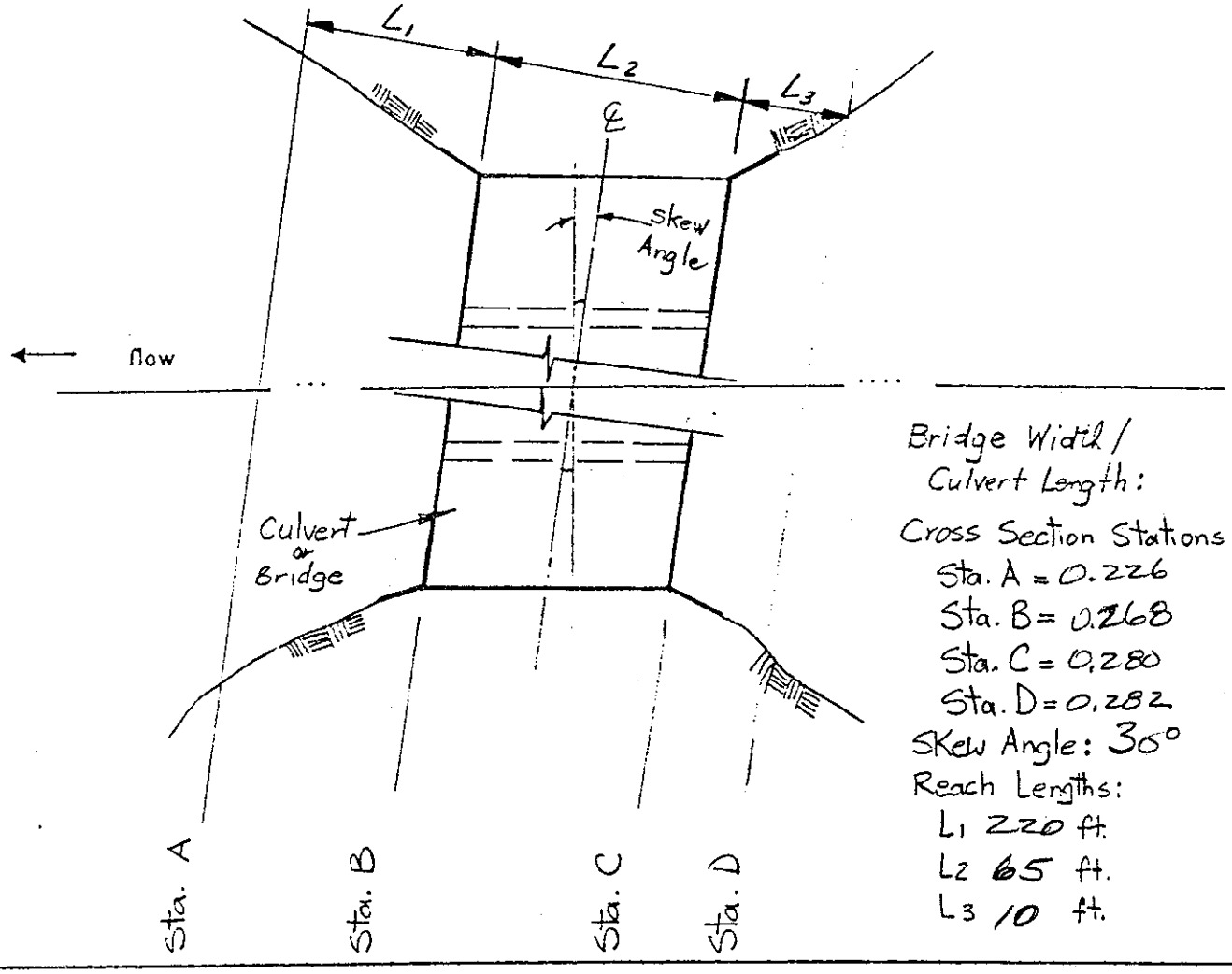


No. of Barrels: 2

Culvert Size: 8x6 ft.

Approx. Depth of Sediment in Culvert: 0 See Cross Section # 0.280

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



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

Culvert length or bridge width (ft)	65
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	96
Total culvert/bridge area (ft²)	96

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1977.70	~~1985~~ 1978.7
Downstream face	1977.70	~~1985~~ 1978.7

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1977.7	1977.7
Downstream face	1977.7	1977.7

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1976.38	1977.27
Downstream face	1974.04	1975.98

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	721	0	0	721*

The maximum depth of flow over the roadway/railroad (ft.) ..... —0—

Weir length (ft.) ..... —0—

Top Widths

	Floodplain	Floodway
Upstream face	16.8 ft	16.8 ft
Downstream face	16.8 ft	16.8 ft

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	16.8	16.8
Downstream face	16.8	16.8

*81 cfs lost over left bank levee just upstream between E-bound and W-bound culverts.

Loss Coefficients

Entrance loss coefficient	0.30
Manning's "n" value assigned to the structure(s)	0.015
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	—
Pier coefficient	—
Contraction loss coefficient	0.60
Expansion loss coefficient	0.80

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) NA

Comments (*explain any unusual situations*):

Low left bank between eastbound and westbound US 60-89 structures allows flow to leave channel into median 81 cfs divided flow appears to flow to Wash K, then to the Hassayampa River

Attach analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH L: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#7)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. HWY 60-89 Westbound
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.289 to Station 0.304
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

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

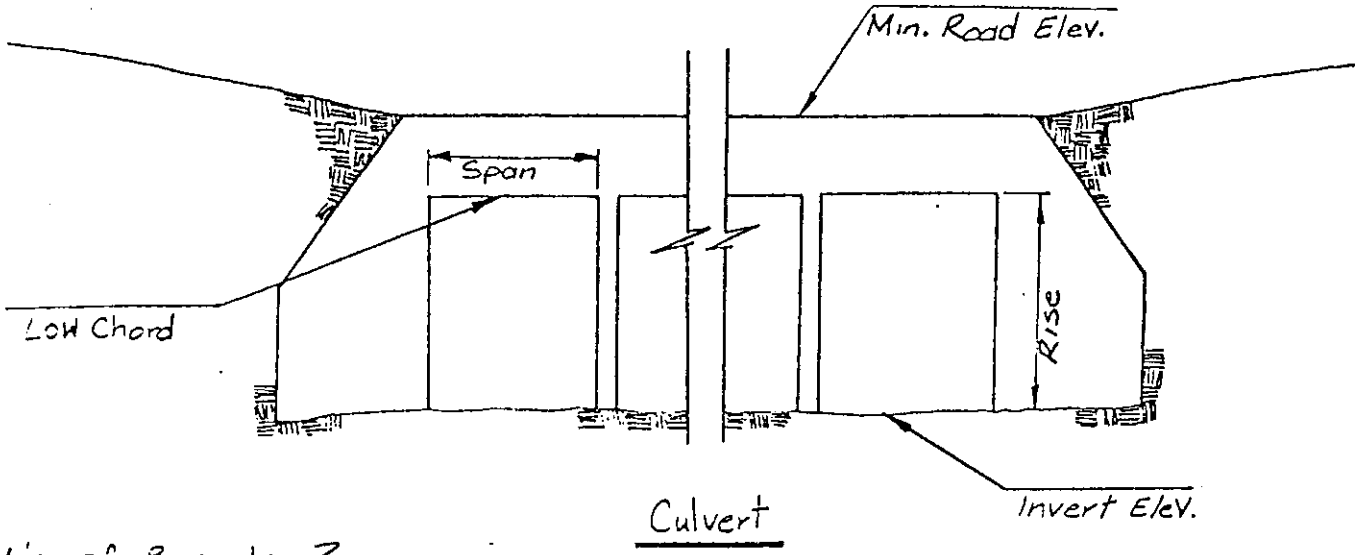
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) two 8x6 reinforced concrete box culverts
2. Entrance geometry of culvert/type of bridge opening (e.g. 30°-75° wing walls with square top edge, sloping embankments and vertical abutments) NO OFFSET FLARED WINGWALLS; 3/4 INCH CHAMFER AT TOP OF INLET
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine, split flow between eastbound and westbound structures

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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

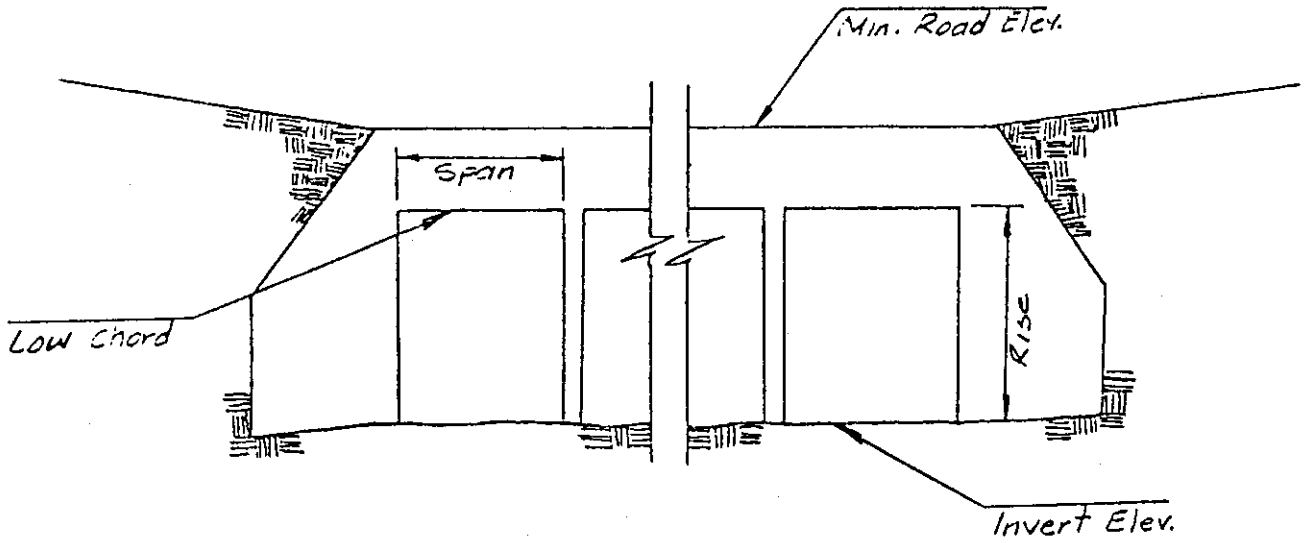


No. of Barrels: 2

Culvert Size: 8x6

Approx. Depth of Sediment in Culvert: 0 See Cross Section # 0.289

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

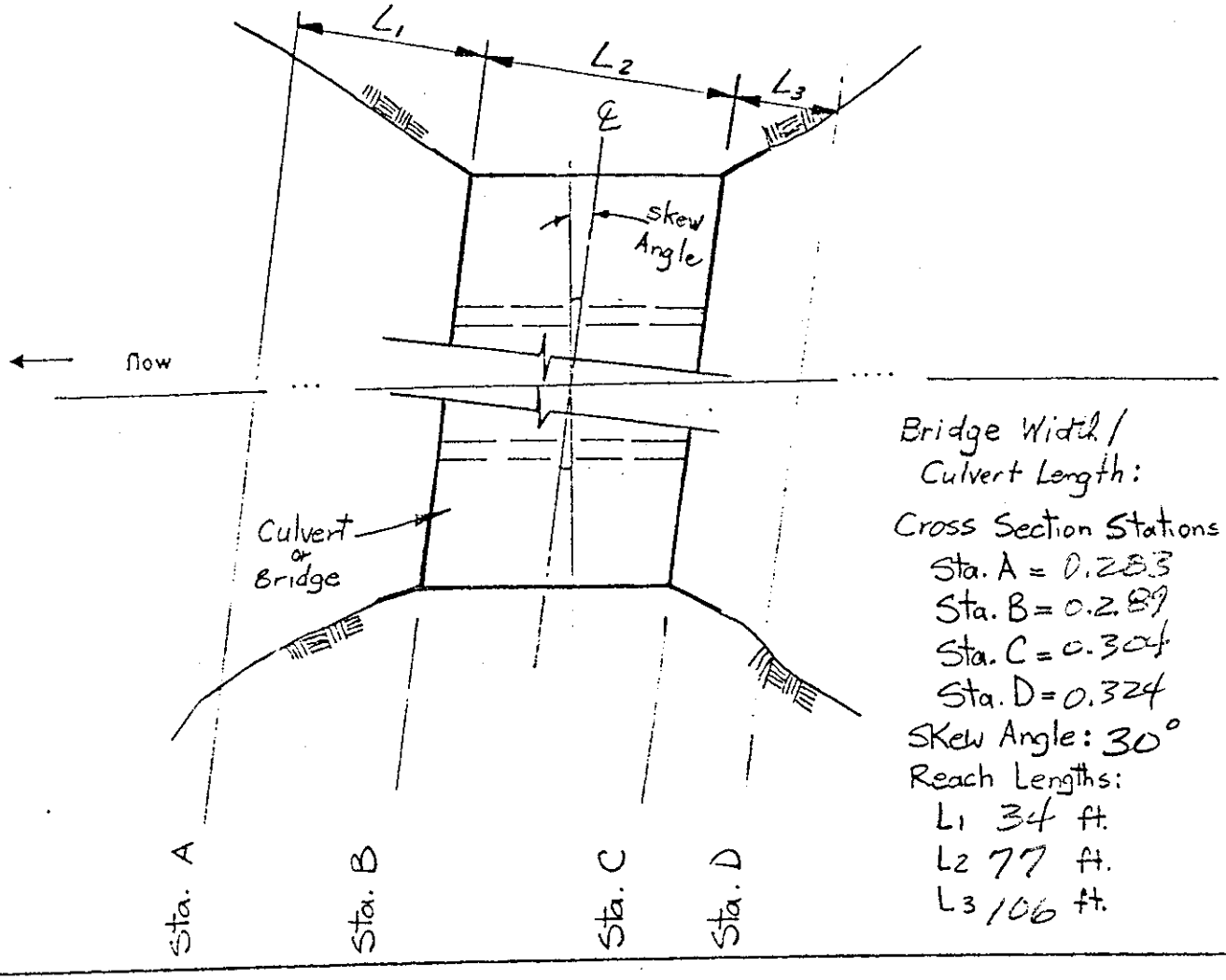


No. of Barrels: 2

Culvert Size: 8x6

Approx. Depth of Sediment in Culvert: 1 ft See Cross Section # 0.304

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



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

Culvert length or bridge width (ft)	75
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	
Total culvert/bridge area (ft²)	

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1982.50	1984.70
Downstream face	1982.50	1984.70

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1982.5	1984.70
Downstream face	1982.5	1984.70

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1982.39	1983.41
Downstream face	1979.12	1981.20

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	744	55	802

The maximum depth of flow over the roadway/railroad (ft.) 0.9

Weir length (ft.) 59

Top Widths

	Floodplain	Floodway
Upstream face	16.8	16.8 ft
Downstream face	16.8	16.8 ft

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	16.8	16.8
Downstream face	16.8	16.8

Loss Coefficients

Entrance loss coefficient	0.30
Manning's "n" value assigned to the structure(s)	0.015
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	2.63
Pier coefficient	—
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) NA

Comments (*explain any unusual situations*):

Low left bank between eastbound and westbound US Hwy 60-89 structures allows flow to leave channel into median. 81 cfs (calculated by HEC-2 model) flows to Wash K, then to the Hassayampa River.

Weir flow due to sediment accumulation being accounted for. Non-cohesive material will generally wash away during flood event. Floodplain does not overtop westbound lane, as WSEL ≈ ELTRD

Attach analysis.

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*          DATE    14JUL92     TIME    02:34:13  *
*********************************************
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****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

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

THIS RUN EXECUTED 14JUL92 02:34:13

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

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



SPLIT FLOW BEING PERFORMED


SF      LEFT BANK LEVEE IN DIVIDED HIGHWAY OF US HWY 60-89


JC      ENERGY GRADE LINE USED TO DETERMINE WEIR FLOW
JP                              1

TW      LEFT BANK LEVEE BETWEEN SECTIONS 0.280 & 0.282
WS     2    .280    .282      -1    2.63
WC     0  1978.3      10  1975.7

TW      LEFT BANK LEVEE BETWEEN SECTIONS 0.282 & 0.283
WS     2    .282    .283      -1    2.63
WC     0  1975.7       2  1975.7

TW      LEFT BANK LEVEE BETWEEN SECTIONS 0.283 & 0.289
WS     2    .283    .289      -1    2.63
WC     0  1975.7      34  1984.3
```

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T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      BLACK & VEATCH PN 17676   COE & VAN LOO PN 1197-02
T3      WASH L: UNNAMED WASH #7          (FILE WASHL.DAT)

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

              2                          -1                                 1954.87

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     1                -1                                   -1                          15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NC     .07       .07      .045       .1        .3
QT       2       802       802
ET                         9.1                                                        580.76    1130.23
            CONFLUENCE OF WASH L: UNNAMED WASH #7
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 TG (HASSAYAMPA RIVER MILE 47.81)
                 TH (HASSAYAMPA RIVER MILE 47.90)
            CROSS SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE IS ASSUMED AT CRITICAL DEPTH SINCE 0.091 IS
            MODELING PALM LAKE SPILLWAY CREST

            SPLIT FLOW OPTION USED FROM XSECT 0.280 TO XSECT 0.289
            TO MODEL OVERFLOW LEVEE IN LEFT OVERBANK.  THE PROGRAM
            WILL USE THE ENERGY GRADE LINE TO DETERMINE OVERFLOW.

            PALM LAKE SPILLWAY CREST

X1    0.091        17       990      1010         0         0         0
GR   1960.0      113.    1955.2      178.    1956.3      468.    1955.3      510.    1956.1      550.
GR   1955.1      576.    1954.2      595.    1953.8      611.    1954.8      651.    1955.3      677.
GR   1955.4      683.    1956.0      731.    1953.7      990.    1953.6     1000.    1953.7     1010.
GR   1955.4     1184.    1960.0     1205.

ET                         9.1                                                        783.46    1162.98
X1    0.194        11      1000      1035       550       550       545
GR   1968.      700.    1964.      715.    1960.      755.    1956.      790.    1954.3      960.
GR   1954.     1000.    1954.     1035.    1956.     1120.    1960.     1350.     1964.     1390.
GR      68.     1410.
```

```
ET                    9.1                                                927.15    1069.31
X1   0.226      16     973     1012      190      175      170
GR   1969.3    805.   1963.5   822.    1964.0    848.    1963.3    918.   1961.4    973.
GR   1961.4    982.   1961.3  1000.    1961.3   1012.    1962.1   1039.  1963.5   1087.
GR   1964.9   1143.   1964.2  1209.    1964.9   1262.    1965.7   1294.  1965.6   1358.
GR   1972.3   1420.

NC   0.045    0.045   0.015    0.6       0.8
          DS FACE: 2 - 8' X 6' RCB
X1   0.268      16    991.6  1008.4     200      240      220
X3     10                                                        1977.7   1978.7
GR   1977.7    957.   1978.3   986.    1978.4   991.5    1970.2   991.6  1970.2   1000.
GR   1970.2   1008.4  1978.7  1008.5   1978.7   1010.    1978.7   1012.  1978.9   1028.
GR   1979.2   1065.   1979.9  1136.    1982.1   1246.    1982.9   1283.  1984.6   1361.
GR   1986.0   1429.

SC   2.015    0.30    2.63      0       6.0      8.0      64.3     12.3   1970.7   1970.2
          US FACE: 2 - 8' X 6' RCB

          SPLIT FLOW IN LEFT OVERBANK BEGINS
X1   0.280      16    991.6  1008.4      65       65       65
X2                      2    1976.7   1977.7
X3     10                                                        1977.7   1978.7
BT    -16     957.   1977.7            986.    1978.3            991.5   1978.4
BT            991.6  1978.4           1000.    1978.6           1008.4   1978.7
BT           1008.5  1978.7           1010.    1978.7           1012.    1978.7
BT            1028.  1978.9           1065.    1979.2           1136.    1979.9
BT            1246.  1982.1           1283.    1982.9           1361.    1984.6
BT            1429.  1986.0
GR   1977.7    957.   1978.3   986.    1978.4   991.5    1970.7   991.6  1970.7   1000.
GR   1970.7   1008.4  1978.7  1008.5   1978.7   1010.    1978.7   1012.  1978.9   1028.
GR   1979.2   1065.   1979.9  1136.    1982.1   1246.    1982.9   1283.  1984.6   1361.
GR   1986.0   1429.

NC   0.070    0.070   0.035    0.6       0.8
ET              9.1     9.1                                                986.     1065.
          TOE OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

          ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

          ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

          MAPPED FLOODPLAIN TO CWSEL

X1   .282      17    991.5  1021.5      10       10       10
GR   1968.2    682.   1969.3   788.    1971.5   892.    1974.3    957.   1975.7    986.
GR   1971.9   991.5  1971.9   991.6   1971.9   1000.    1971.9   1008.4  1971.9   1008.5
GR   1971.9   1010.   1971.9  1012.    1971.9   1021.5   1974.7   1028.  1976.7   1065.
GR   1978.4   1246.   1981.2  1361.
```

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ET            9.1       9.1                                                    986.      1065.
          TOP OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

          ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

          ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

          MAPPED FLOODPLAIN TO CWSEL

X1   0.283       16      992.     1022.        2        2        2
GR   1968.2     682.    1969.3     788.   1971.5     892.   1974.3     957.   1975.7     986.
GR   1974.0     992.    1974.0    1000.   1974.0    1010.   1974.0    1012.   1974.0    1022.
GR   1974.7    1028.    1976.7    1065.   1978.4    1244.   1981.2    1361.   1983.3    1445.
GR   1987.2    1491.

NC   0.045     0.045     0.015     0.6      0.8
          DS FACE: 2 - 8' X 6' RCB

          SPLIT FLOW IN LEFT OVERBANK ENDS
X1   0.289       18     991.6    1008.4       34       34       34
X3      10                                                        1982.5   1984.7
GR   1982.5     881.    1982.8     899.   1983.4     935.   1984.2     977.   1984.4    991.5
GR   1975.0    991.6    1975.0    1000.   1975.0    1005.   1975.0   1008.4   1984.7   1008.5
GR   1984.8    1031.    1985.5    1117.   1986.2    1205.   1986.2    1211.   1987.1    1290.
GR   1987.7    1337.    1987.7    1340.   1988.0   1368.4
SC   0.015     0.30      2.63       0       4.9      8.0       75      12.3   1976.5   1975.0
          US FACE: 2 - 8' X 6' RCB  (APPROXIMATELY 1' SEDIMENT)
X1   0.304       20     991.6    1008.4       77       77       77
X2                          2    1981.4   1982.5
X3      10                                                        1982.5   1984.7
BT     -20      867    1987.5              878.6   1982.5              881   1982.5
BT              899    1982.8               935    1983.4              977   1984.2
BT            991.5    1984.4              991.6   1984.5             1000   1984.6
BT             1005    1984.6             1008.4   1984.7           1008.5   1984.7
BT             1031    1984.8              1117    1985.5             1205   1986.2
BT             1211    1986.2              1290    1987.1             1337   1987.7
BT             1340    1987.7             1368.4   1988.0
GR   1987.5     867    1982.5     878.6   1982.5     881   1982.8     899   1983.4     935
GR   1984.2     977    1984.4     991.5   1976.5    991.6   1976.5    1000   1976.5    1005
GR   1976.5    1008.4   1984.7    1008.5   1984.8    1031   1985.5    1117   1986.2    1205
GR   1986.2    1211     1987.1     1290   1987.7    1337   1987.7    1340   1988.0   1368.4

NC   0.070     0.070     0.045     0.6      0.8
ET            9.1       9.1                                                    935.      1065.
          ET RECORD: STA 935. & 1065. MODEL 1 TO 1 FLOW
                     CONTRACTION UPSTREAM OF RCB
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                MAPPED FLOODPLAIN TO CWSEL
X[illegible].324      21     991.5    1008.5      95     120     106                1.1
GR  1987.5     867    1982.4    878.6    1981.5     881  1979.8     899     1979.5     935
GR  1977.3     977    1976.8    991.5    1976.8    991.6  1976.5    1000     1976.6    1005
GR  1976.7  1008.4    1976.7   1008.5    1977.5    1031  1977.8    1117     1977.7    1205
GR  1977.7    1211    1977.9     1290    1978.7    1337  1979.6    1340     1988.0  1368.4
GR  1989.1    1371

NC   0.050   0.050     0.030       0.1       0.3
ET                      9.1                                                   973.54  1065.10
X1   0.399      14       976      1025       390     405     396
GR  1996.2    959.    1988.0     973.7    1986.7    976.  1985.6    1000.    1985.5    1002.
GR  1986.5   1025.    1988.0     1058.    1988.5   1099.  1988.3    1128.    1988.4    1149.
GR  1989.6   1189.    1991.3     1240.    1991.9   1276.  2000.8    1284.

ET                      9.1                                                   814.02  1020.52
X1   0.493      12       968      1019       510     470     500
GR  2008.2    725.    2003.6     751.    1999.5    790.  1997.3     822.    1996.8     852.
GR  1997.1    906.    1997.1     947.    1996.9    968.  1996.2     991.    1996.2    1000.
GR  1997.1   1019.    2009.4     1044.

ET                      9.1                                                   892.01  1012.88
X1   0.588       7       953      1000       490     495     500
GR  2020.4    872.    2009.4     893.    2009.1    938.  2008.2     953.    2007.9    1000.
GR  2009.5   1012.    2021.0     1036.

E[illegible]                    9.1                                                   945.97  1015.57
X1[illegible].701       9       948      1000       570     600     597
GR  2033.0    876.    2034.1     886.    2033.7    910.  2029.2     934.    2020.9     948.
GR  2019.6    996.    2020.2     1000.    2022.4   1018.  2032.7    1045.

ET                      9.1                                                   885.51  1024.89
X1   0.815      13       974    1024.5       665     580     602
GR  2049.1    638.    2045.7     655.    2044.0    679.  2044.4     720.    2042.6     767.
GR  2040.2    848.    2038.5     908.    2038.6    955.  2038.6     974.    2036.4    1000.
GR  2036.5   1023.    2038.6    1024.5    2061.3   1041.

ET                      9.1                                                   869.08  1020.70
X1   0.891       8       973      1019       410     385     400
GR  2057.6    845.    2054.3     849.    2045.9    874.  2046.7     906.    2046.6     973.
GR  2046.5   1000.    2046.8     1019.    2056.1   1040.

ET                      9.1                                                   941.39  1023.33
X1   1.000      11      982.     1022.       510     500     580
GR  2080.5    904.    2068.9     915.    2057.6    945.  2057.6     982.    2057.0    1000.
GR  2056.9   1003.    2056.0     1008.    2058.0   1022.  2060.9    1026.    2068.7    1052.
GR  2080.1   1089.

ET                      9.1                                                   981.95  1013.13
X1   1.081       7       986     1006.       350     500     425
GR  2080.3    969.    2069.     982.4    2066.0    986.  2065.8     1000.    2065.7    1006.
GR[illegible]69.   1012.4    2085.3     1044
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ET			9.1						983.06	1012.93
X1	1.157	7	988	1009	425	365	400			
GR	2100.1	966.	2091.9	988.	2089.2	996.	2089.5	1000.	2089.8	1004.
GR	2091.4	1009.	2106.9	1035.						
ET			9.1						980.45	1014.14
X1	1.230	8	990	1005	375	420	385			
GR	2112.1	965.	2102.9	979.	2097.4	990.	2098.3	996.	2098.6	1000.
GR	2098.9	1005.	2103.2	1017.	2112.3	1055.				
ET			9.1						978.77	1012.70
X1	1.327	10	994	1003	530	500	510			
GR	2132.5	909.	2128.2	927.	2123.9	954.	2116.4	980.	2112.3	994.
GR	2112.0	1000.	2111.8	1003.	2114.6	1010.	2122.6	1020.	2132.3	1044.
ET			9.1						990.68	1019.74
X1	1.421	10	997.3	1006	480	540	496			
GR	2143.7	978.	2136.5	988.2	2130.0	997.3	2128.1	1000.	2129.1	1003.
GR	2130.1	1006.	2136.5	1025.	2143.9	1050.	2147.8	1070.	2148.1	1083.
ET			9.1						973.39	1015.29
X1	1.516	9	987	1002	520	490	502			
GR	2164.7	907.	2161.4	928.	2154.7	963.	2147.4	987.	2148.0	1000.
GR	2148.1	1002.	2151.4	1015.	2155.0	1022.3	2165.7	1044.		

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .091

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
CONFLUENCE OF WASH L: UNNAMED WASH #7
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
TG (HASSAYAMPA RIVER MILE 47.81)
TH (HASSAYAMPA RIVER MILE 47.90)
CROSS SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE IS ASSUMED AT CRITICAL DEPTH SINCE 0.091 IS
MODELING PALM LAKE SPILLWAY CREST

SPLIT FLOW OPTION USED FROM XSECT 0.280 TO XSECT 0.289
TO MODEL OVERFLOW LEVEE IN LEFT OVERBANK. THE PROGRAM
WILL USE THE ENERGY GRADE LINE TO DETERMINE OVERFLOW.

PALM LAKE SPILLWAY CREST

.091	1.27	1954.87	1954.87	1954.87	1955.17	.29	.00	.00	1953.70
721.1	345.2	176.0	199.9	119.6	24.5	70.6	.0	.0	1953.70
.00	2.89	7.19	2.83	.070	.045	.070	.000	1953.60	580.76
.036157	0.	0.	0.	0	4	0	.00	346.63	1130.23

FLOW DISTRIBUTION FOR SECNO= .09 CWSEL= 1954.87

STA=	581.	595.	611.	651.	990.	1010.	1130.
PER Q=	1.3	7.2	8.9	30.5	24.4	27.7	
AREA=	4.8	14.0	23.0	77.8	24.5	70.6	
VEL=	2.0	3.7	2.8	2.8	7.2	2.8	
DEPTH=	.3	.9	.6	.2	1.2	.6	

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

*SECNO .194

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 6.08

.194	2.75	1956.75	1955.31	.00	1956.78	.03	1.58	.03	1954.00
721.1	377.6	194.9	148.6	377.9	96.2	164.6	5.4	4.6	1954.00
.12	1.00	2.03	.90	.070	.045	.070	.000	1954.00	783.46
.000979	550.	545.	550.	6	8	0	.00	379.52	1162.98

FLOW DISTRIBUTION FOR SECNO= .19 CWSEL= 1956.75

STA=	783.	790.	960.	1000.	1035.	1120.	1163.
PER Q=	.1	34.2	18.1	27.0	19.8	.8	
AREA=	2.4	271.6	103.9	96.2	148.5	16.1	
VEL=	.3	.9	1.3	2.0	1.0	.3	
DEPTH=	.4	1.6	2.6	2.7	1.7	.4	

*SECNO .226

33[illegible]CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.226	1.68	1962.98	1962.98	.00	1963.54	.56	.48	.16	1961.40
721.1	102.8	457.0	161.2	36.3	63.9	48.1	7.0	5.7	1961.30
.13	2.83	7.16	3.36	.070	.045	.070	.000	1961.30	927.15
.024321	190.	170.	175.	0	14	0	.00	142.15	1069.31

FLOW DISTRIBUTION FOR SECNO= .23 CWSEL= 1962.98

STA=	927.	973.	1012.	1039.	1069.
PER Q=	14.3	63.4	18.8	3.6	
AREA=	36.3	63.9	34.7	13.4	
VEL=	2.8	7.2	3.9	1.9	
DEPTH=	.8	1.6	1.3	.4	

CCHV= .600 CEHV= .800
*SECNO .268

NO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1977.70 ELREA= 1978.70

DS FACE: 2 - 8' X 6' RCB

.268	3.84	1974.04	1974.04	.00	1975.98	1.94	1.11	1.10	1970.20
721.1	.0	721.1	.0	.0	64.5	.0	7.6	6.1	1970.20
.14	.00	11.18	.00	.000	.015	.000	.000	1970.20	991.60
.002117	200.	220.	240.	0	17	0	.00	16.80	1008.40

FLOW DISTRIBUTION FOR SECNO= .27 CWSEL= 1974.04

STA= 992. 1008.
PER Q= 100.0
AREA= 64.5
[illegible]= 11.2
[illegible]= 3.8

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.015	.30	2.63	.00	6.00	8.00	64.30	12	3	1970.70	1970.20

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 3 - WINGWALLS FLARED 18.4 DEGREES (3:1); INLET SKEWED 30 DEGREES

*SECNO .280

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1976.971 EGOC = 1977.268 PCWSE= 1974.040 ELTRD= 1977.700

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.92

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

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1976.97	1977.27	1.29	0.	721.	7.551	96.0	1977.70	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1977.70 ELREA= 1978.70

US FACE: 2 - 8' X 6' RCB

SPLIT FLOW IN LEFT OVERBANK BEGINS

.280	5.68	1976.38	.00	.00	1977.27	.89	1.29	.00	1970.70
721.1	.0	721.1	.0	.0	95.5	.0	7.7	6.1	1970.70
.14	.00	7.55	.00	.000	.015	.000	.000	1970.70	991.60
.000573	65.	65.	65.	3	0	0	.00	16.80	1008.40

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1976.38

S[illegible] 992. 1008.
[illegible]= 100.0
AREA= 95.5
VEL= 7.6
DEPTH= 5.7

CCHV= .600 CEHV= .800
*SECNO .282

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 986.0 1065.0 TYPE= 1 TARGET= 79.000
TOE OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

MAPPED FLOODPLAIN TO CWSEL

.282	9.32	1977.52	1974.48	1977.51	1977.70	.18	.01	.42	1971.90
740.7	21.4	622.5	96.8	20.4	168.2	94.2	7.7	6.1	1971.90
.14	1.05	3.70	1.03	.070	.035	.070	.000	1968.20	986.00
.000762	10.	10.	10.	4	8	0	.00	79.00	1065.00

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

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1977.52

STA=	986.	992.	1022.	1028.	1065.
PER Q=	2.9	84.0	5.3	7.7	
AREA=	20.4	168.2	27.4	66.9	
VEL=	1.1	3.7	1.4	.9	
DEPTH=	3.7	5.6	4.2	1.8	

*SECNO .283

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .51

3470 ENCROACHMENT STATIONS= 986.0 1065.0 TYPE= 1 TARGET= 79.000
TOP OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

MAPPED FLOODPLAIN TO CWSEL

.283	9.28	1977.48	1976.46	1977.48	1977.84	.36	.00	.14	1974.00
756.3	29.3	566.9	160.1	15.8	104.5	84.8	7.7	6.1	1974.00
.14	1.85	5.42	1.89	.070	.035	.070	.000	1968.20	986.00
.003090	2.	2.	2.	2	10	0	.00	79.00	1065.00

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1977.48

STA=	986.	992.	1022.	1028.	1065.
PER Q=	3.9	74.9	6.3	14.9	
AREA=	15.8	104.5	18.8	66.0	
VEL=	1.9	5.4	2.5	1.7	
DEPTH=	2.6	3.5	3.1	1.8	

CCHV= .600 CEHV= .800
*SECNO .289

3301 HV CHANGED MORE THAN HVINS

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1982.50 ELREA= 1984.70

DS FACE: 2 - 8' X 6' RCB

SPLIT FLOW IN LEFT OVERBANK ENDS

.289	4.12	1979.12	1979.12	1979.12	1981.20	2.08	.08	1.38	1975.00
802.0	.0	802.0	.0	.0	69.3	.0	7.8	6.2	1975.00
.14	.00	11.58	.00	.000	.015	.000	.000	1975.00	991.60
.002068	34.	34.	34.	0	14	0	.00	16.80	1008.40

FLOW DISTRIBUTION FOR SECNO= .29 CWSEL= 1979.12

STA= 992. 1008.
PER Q= 100.0
AREA= 69.3
[illegible]EL= 11.6
[illegible] 4.1

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.015	.30	2.63	.00	4.90	8.00	75.00	12	3	1976.50	1975.00

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 3 - WINGWALLS FLARED 18.4 DEGREES (3:1); INLET SKEWED 30 DEGREES

*SECNO .304

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1983.41

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.81

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1983.97	1983.55	2.21	55.	744.	8.102	78.4	1982.50	59.

[illegible]

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1982.50 ELREA= 1984.70

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        US FACE: 2 - 8' X 6' RCB  (APPROXIMATELY 1' SEDIMENT)
     .304      5.89   1982.39      .00   1982.39   1983.41      1.02      2.21      .00   1976.50
    802.0        .0     802.0       .0        .0      99.0        .0       8.0      6.2   1976.50
      .14       .00      8.10      .00      .000      .015      .000      .000   1976.50    991.60
  .000628       77.       77.      77.         3         0         0       .00     16.80   1008.40


FLOW DISTRIBUTION FOR SECNO=       .30          CWSEL=   1982.39

STA=     992.    1008.
  PER Q=    100.0
   AREA=     99.0
    VEL=      8.1
  DEPTH=      5.9

CCHV=     .600 CEHV=     .800
*SECNO  .324

3301 HV CHANGED MORE THAN HVINS


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


3470 ENCROACHMENT STATIONS=      935.0    1065.0  TYPE=      1  TARGET=      130.000
        ET RECORD: STA 935. & 1065. MODEL 1 TO 1 FLOW
                   CONTRACTION UPSTREAM OF RCB

        MAPPED FLOODPLAIN TO CWSEL
     .324      6.42   1984.02   1979.80   1984.02   1984.05       .03       .04       .60   1977.90
    802.0     272.1     200.8     329.1     275.2     107.1     313.5       9.0       6.4   1977.80
      .17       .99      1.87      1.05      .070      .045      .070      .000   1977.60    935.00
  .000277       95.      106.      120.         2        22         0       .00    130.00   1065.00


FLOW DISTRIBUTION FOR SECNO=       .32          CWSEL=   1984.02

STA=     935.     977.     992.    1009.    1031.    1065.
  PER Q=     21.7     12.2     25.0     18.7     22.4
   AREA=    190.0     85.2    107.1    131.0    182.4
    VEL=       .9      1.1      1.9      1.1      1.0
  DEPTH=      4.5      5.9      6.3      5.8      5.4

CCHV=     .100 CEHV=     .300
*SECNO  .399
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[illegible]O	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.399	2.59	1988.09	1988.09	1988.09	1988.86	.77	.32	.22	1986.70
802.0	3.5	731.1	67.4	1.7	99.5	27.9	12.7	7.4	1986.50
.18	2.04	7.34	2.42	.050	.030	.050	.000	1985.50	973.54
.008557	390.	396.	405.	0	14	0	.00	91.55	1065.10

FLOW DISTRIBUTION FOR SECNO= .40 CWSEL= 1988.09

STA=	974.	976.	1025.	1058.	1065.
PER Q=	.4	91.2	8.4	.0	
AREA=	1.7	99.5	27.6	.3	
VEL=	2.0	7.3	2.4	.3	
DEPTH=	.7	2.0	.8	.0	

*SECNO .493
71[illegible]IMUM SPECIFIC ENERGY
372[illegible]TICAL DEPTH ASSUMED

.493	1.65	1997.85	1997.85	1997.85	1998.28	.43	5.09	.03	1996.90
802.0	355.4	445.7	.9	123.2	67.5	.6	14.6	9.1	1997.10
.21	2.88	6.60	1.59	.050	.030	.050	.000	1996.20	814.02
.012239	510.	500.	470.	0	14	0	.00	206.51	1020.52

FLOW DISTRIBUTION FOR SECNO= .49 CWSEL= 1997.85

STA=	814.	822.	852.	906.	947.	968.	1019.	1021.
PER Q=	.4	8.5	18.5	10.4	6.6	55.6	.1	
AREA=	2.2	24.0	48.5	30.7	17.8	67.5	.6	
VEL=	1.4	2.8	3.1	2.7	2.9	6.6	1.6	
DEPTH=	.3	.8	.9	.7	.8	1.3	.4	

*SECNO .588
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.588	2.02	2009.92	2009.92	2009.92	2010.56	.64	5.18	.06	2008.20
802.0	128.3	626.7	47.0	49.5	87.9	14.8	16.5	10.9	2007.90
.23	2.59	7.13	3.17	.050	.030	.050	.000	2007.90	892.01
.008988	490.	500.	495.	0	11	0	.00	120.87	1012.88

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

FLOW DISTRIBUTION FOR SECNO= .59 CWSEL= 2009.92

STA=	892.	893.	938.	953.	1000.	1012.	1013.
PER Q=	.0	8.1	7.8	78.1	5.8	.0	
AREA=	.3	30.2	19.1	87.9	14.6	.2	
VEL=	1.1	2.2	3.3	7.1	3.2	.9	
DEPTH=	.3	.7	1.3	1.9	1.2	.2	

*SECNO .701
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.701	2.50	2022.10	2022.10	2022.10	2022.99	.88	5.78	.07	2020.90
802.0	2.4	756.1	43.5	1.2	97.7	14.8	18.3	12.2	2020.20
.25	1.97	7.74	2.94	.050	.030	.050	.000	2019.60	945.97
.010537	570.	597.	600.	0	11	0	.00	69.59	1015.57

FLOW DISTRIBUTION FOR SECNO= .70 CWSEL= 2022.10

STA	946.	948.	1000.	1016.
	.3	94.3	5.4	
AREA=	1.2	97.7	14.8	
VEL=	2.0	7.7	2.9	
DEPTH=	.6	1.9	1.0	

*SECNO .815
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.815	2.74	2039.14	2039.14	2039.14	2039.80	.66	5.22	.02	2038.60
802.0	74.2	727.7	.1	45.0	106.8	.1	20.2	13.7	2038.60
.28	1.65	6.82	.74	.050	.030	.050	.000	2036.40	885.51
.007197	665.	602.	580.	0	8	0	.00	139.38	1024.89

FLOW DISTRIBUTION FOR SECNO= .81 CWSEL= 2039.14

STA=	886.	908.	955.	974.	1025.	1025.
PER Q=	1.1	6.1	2.1	90.7	.0	
AREA=	7.2	27.6	10.2	106.8	.1	
VEL=	1.2	1.8	1.7	6.8	.7	
DEPTH=	.3	.6	.5	2.1	.3	

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

*SECNO .891
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.891	1.65	2047.55	2047.55	2047.55	2048.08	.52	4.76	.01	2046.60
802.0	478.2	322.4	1.4	104.7	44.3	.6	21.6	15.1	2046.80
.30	4.57	7.28	2.20	.050	.030	.050	.000	2045.90	869.08
.022744	410.	400.	385.	0	14	0	.00	151.62	1020.70

FLOW DISTRIBUTION FOR SECNO= .89 CWSEL= 2047.55

STA=	869.	874.	906.	973.	1019.	1021.
PER Q=	1.9	26.1	31.6	40.2	.2	
AREA=	4.1	40.1	60.6	44.3	.6	
VEL=	3.8	5.2	4.2	7.3	2.2	
DEPTH=	.8	1.3	.9	1.0	.4	

*SECNO 1.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

00	2.96	2058.96	2058.96	2058.96	2059.75	.79	8.42	.08	2057.60
02.0	198.4	602.5	1.1	52.8	76.0	.6	23.3	16.5	2058.00
.32	3.76	7.93	1.66	.050	.030	.050	.000	2056.00	941.39
.010990	510.	580.	500.	0	17	0	.00	81.94	1023.33

FLOW DISTRIBUTION FOR SECNO= 1.00 CWSEL= 2058.96

STA=	941.	945.	982.	1022.	1023.
PER Q=	.7	24.0	75.1	.1	
AREA=	2.5	50.4	76.0	.6	
VEL=	2.3	3.8	7.9	1.7	
DEPTH=	.7	1.4	1.9	.5	

*SECNO 1.081

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.081	3.68	2069.38	2069.38	2069.38	2070.90	1.52	3.91	.22	2066.00
802.0	23.1	727.3	51.6	6.8	70.5	13.1	24.4	17.0	2065.70
.34	3.37	10.32	3.93	.050	.030	.050	.000	2065.70	981.95
.008095	350.	425.	500.	0	11	0	.00	31.18	1013.13

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

FLOW DISTRIBUTION FOR SECNO= 1.08 CWSEL= 2069.38

STA=	982.	986.	1006.	1012.	1013.
PER Q=	2.9	90.7	6.4	.0	
AREA=	6.8	70.5	13.0	.1	
VEL=	3.4	10.3	4.0	.8	
DEPTH=	1.7	3.5	2.0	.2	

*SECNO 1.157
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.157	4.54	2093.74	2093.74	2093.74	2095.36	1.62	3.28	.03	2091.90
802.0	11.2	778.3	12.5	4.5	75.2	4.6	25.2	17.3	2091.40
.35	2.46	10.35	2.72	.050	.030	.050	.000	2089.20	983.06
.008346	425.	400.	365.	0	11	0	.00	29.87	1012.93

FLOW DISTRIBUTION FOR SECNO= 1.16 CWSEL= 2093.74

STA=	983.	988.	1009.	1013.
[illegible]	1.4	97.0	1.6	
AREA=	4.5	75.2	4.6	
VEL=	2.5	10.4	2.7	
DEPTH=	.9	3.6	1.2	

*SECNO 1.230
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.230	4.78	2102.18	2102.18	2102.18	2103.77	1.60	3.22	.00	2097.40
802.0	102.9	644.8	54.4	22.8	58.0	15.0	26.0	17.6	2098.90
.36	4.51	11.12	3.63	.050	.030	.050	.000	2097.40	980.45
.008364	375.	385.	420.	0	8	0	.00	33.70	1014.14

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 2102.18

STA=	980.	990.	1005.	1014.
PER Q=	12.8	80.4	6.8	
AREA=	22.8	58.0	15.0	
VEL=	4.5	11.1	3.6	
DEPTH=	2.4	3.9	1.6	

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[illegible]0     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
  TIME   VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
  SLOPE  XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 1.327
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    1.327     4.96   2116.76   2116.76   2116.76   2118.28      1.53      4.03       .01   2112.30
    802.0    150.7     503.5     147.8      33.9      42.2      27.8      27.1      18.0   2111.80
      .37     4.44     11.93      5.32      .050      .030      .050      .000   2111.80    978.77
  .007405     530.      510.      500.         0         8         0       .00     33.93   1012.70


FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   2116.76

STA=     979.     980.     994.    1003.    1010.    1013.
  PER Q=       .0     18.8     62.8     17.6       .8
   AREA=       .2     33.7     42.2     24.9      2.9
    VEL=       .8      4.5     11.9      5.7      2.3
  DEPTH=       .2      2.4      4.7      3.6      1.1

*SECNO 1.421
7185 MINIMUM SPECIFIC ENERGY
37[illegible]ITICAL DEPTH ASSUMED
    [illegible]21     6.63   2134.73   2134.73   2134.73   2136.59      1.86      3.64       .10   2130.00
    [illegible]02.0    60.6     607.0     134.4      15.7      49.1      31.8      28.3      18.4   2130.10
      .39     3.87     12.36      4.23      .050      .030      .050      .000   2128.10    990.68
  .007093     480.      496.      540.         0        11         0       .00     29.06   1019.74


FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   2134.73

STA=     991.     997.    1006.    1020.
  PER Q=      7.6     75.7     16.8
   AREA=     15.7     49.1     31.8
    VEL=      3.9     12.4      4.2
  DEPTH=      2.4      5.6      2.3

*SECNO 1.516

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    1.516     4.14   2151.54   2151.54   2151.54   2152.89      1.35      3.70       .05   2147.40
    802.0    115.5     599.1      87.4      28.2      56.9      23.3      29.5      18.8   2148.10
      .40     4.10     10.53      3.75      .050      .030      .050      .000   2147.40    973.39
  .007645     520.      502.      490.         0        14         0       .00     41.90   1015.29
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[illegible]O	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.52 CWSEL= 2151.54

STA=	973.	987.	1002.	1015.
PER Q=	14.4	74.7	10.9	
AREA=	28.2	56.9	23.3	
VEL=	4.1	10.5	3.8	
DEPTH=	2.1	3.8	1.8	

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.280 & 0.282

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
19.58	19.58	.00	19.58	19.58	.00	7	1977.268	1977.697	.280	.282

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.282 & 0.283

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
15.63	15.65	.14	35.21	35.23	.06	7	1977.697	1977.840	.282	.283

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.283 & 0.289

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
45.69	45.77	.17	80.90	81.00	.13	7	1977.840	1981.205	.283	.289

T1 FLOODWAY DETERMINATION
T2 1.0 FT TARGET INCREASE
T3 WASH L: UNNAMED WASH #7

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3			-1				1954.87	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

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

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .091

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 580.8 1130.2 TYPE= 1 TARGET= 549.470
CONFLUENCE OF WASH L: UNNAMED WASH #7
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
TG (HASSAYAMPA RIVER MILE 47.81)
TH (HASSAYAMPA RIVER MILE 47.90)
CROSS SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE IS ASSUMED AT CRITICAL DEPTH SINCE 0.091 IS
MODELING PALM LAKE SPILLWAY CREST

SPLIT FLOW OPTION USED FROM XSECT 0.280 TO XSECT 0.289
TO MODEL OVERFLOW LEVEE IN LEFT OVERBANK. THE PROGRAM
WILL USE THE ENERGY GRADE LINE TO DETERMINE OVERFLOW.

PALM LAKE SPILLWAY CREST

.091	1.29	1954.89	1954.89	1954.89	1955.17	.27	.00	.00	1953.70
721.1	346.0	173.4	201.7	123.1	24.8	72.6	.0	.0	1953.70
.00	2.81	6.99	2.78	.070	.045	.070	.000	1953.60	580.76
.033553	0.	0.	0.	0	4	0	.00	349.36	1130.23

*SECNO .194

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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.83

3470 ENCROACHMENT STATIONS= 783.5 1163.0 TYPE= 1 TARGET= 379.520

.194	2.74	1956.74	1955.31	1956.74	1956.77	.03	1.58	.02	1954.00
721.1	377.5	195.2	148.4	376.6	96.0	163.8	5.4	4.6	1954.00
.12	1.00	2.03	.91	.070	.045	.070	.000	1954.00	783.51
.000989	550.	545.	550.	6	5	0	.00	379.12	1162.64

*SECNO .226
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 927.2 1069.3 TYPE= 1 TARGET= 142.160

.226	1.72	1963.02	1963.02	1963.02	1963.54	.52	.48	.15	1961.40
721.1	105.7	452.1	163.4	38.0	65.3	50.2	7.1	5.7	1961.30
.13	2.78	6.92	3.26	.070	.045	.070	.000	1961.30	927.15
.002106	190.	170.	175.	0	14	0	.00	142.16	1069.31

CCHV= .600 CEHV= .800
*SECNO .268

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1977.70 ELREA= 1978.70

DS FACE: 2 - 8' X 6' RCB

.268	3.84	1974.04	1974.04	1974.04	1975.98	1.94	1.09	1.14	1970.20
721.1	.0	721.1	.0	.0	64.5	.0	7.6	6.1	1970.20
.14	.00	11.18	.00	.000	.015	.000	.000	1970.20	991.60
.002120	200.	220.	240.	0	17	0	.00	16.80	1008.40

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

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.015	.30	2.63	.00	6.00	8.00	64.30	12	3	1970.70	1970.20

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 3 - WINGWALLS FLARED 18.4 DEGREES (3:1); INLET SKEWED 30 DEGREES

*SECNO .280

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1976.971 EGOC = 1977.268 PCWSE= 1974.038 ELTRD= 1977.700

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.92

SP[illegible]CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1976.97	1977.27	1.29	0.	721.	7.551	96.0	1977.70	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1977.70 ELREA= 1978.70

US FACE: 2 - 8' X 6' RCB

SPLIT FLOW IN LEFT OVERBANK BEGINS

.280	5.68	1976.38	.00	1976.38	1977.27	.89	1.29	.00	1970.70
721.1	.0	721.1	.0	.0	95.5	.0	7.7	6.1	1970.70
.14	.00	7.55	.00	.000	.015	.000	.000	1970.70	991.60
.000573	65.	65.	65.	3	0	0	.00	16.80	1008.40

CCHV= .600 CEHV= .800
*SECNO .282

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 986.0 1065.0 TYPE= 1 TARGET= 79.000
TOE OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

MAPPED FLOODPLAIN TO CWSEL

.282	9.32	1977.52	1974.48	1977.51	1977.70	.18	.01	.42	1971.90
740.7	21.4	622.5	96.8	20.4	168.2	94.2	7.8	6.1	1971.90
.14	1.05	3.70	1.03	.070	.035	.070	.000	1968.20	986.00
.000762	10.	10.	10.	4	8	0	.00	79.00	1065.00

*SECNO .283

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .51

3470 ENCROACHMENT STATIONS= 986.0 1065.0 TYPE= 1 TARGET= 79.000

TOP OF CONCRETE DROP STRUCTURE IN MEDIAN OF HWY 60-89

ET RECORD: STA 986. TOP OF LEVEE IN LEFT OVERBANK

ET RECORD: STA 1065. TOP OF LEVEE IN RIGHT OVERBANK

MAPPED FLOODPLAIN TO CWSEL

.283	9.28	1977.48	1976.46	1977.48	1977.84	.36	.00	.14	1974.00
.3	29.3	566.9	160.1	15.8	104.5	84.8	7.8	6.1	1974.00
.14	1.85	5.42	1.89	.070	.035	.070	.000	1968.20	986.00
.003090	2.	2.	2.	2	10	0	.00	79.00	1065.00

CCHV= .600 CEHV= .800
*SECNO .289

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1982.50 ELREA= 1984.70

DS FACE: 2 - 8' X 6' RCB

SPLIT FLOW IN LEFT OVERBANK ENDS

.289	4.12	1979.12	1979.12	1979.12	1981.20	2.08	.08	1.38	1975.00
802.0	.0	802.0	.0	.0	69.3	.0	7.9	6.2	1975.00
.14	.00	11.58	.00	.000	.015	.000	.000	1975.00	991.60
.002068	34.	34.	34.	0	14	0	.00	16.80	1008.40

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

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.015	.30	2.63	.00	4.90	8.00	75.00	12	3	1976.50	1975.00

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 3 - WINGWALLS FLARED 18.4 DEGREES (3:1); INLET SKEWED 30 DEGREES

*SECNO .304

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1983.41

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.81

SPECIAL CULVERT

	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
[illegible].97	1983.55	2.21	55.	744.	8.102	78.4	1982.50	59.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1982.50 ELREA= 1984.70

US FACE: 2 - 8' X 6' RCB (APPROXIMATELY 1' SEDIMENT)

.304	5.89	1982.39	.00	1982.39	1983.41	1.02	2.21	.00	1976.50
802.0	.0	802.0	.0	.0	99.0	.0	8.0	6.2	1976.50
.14	.00	8.10	.00	.000	.015	.000	.000	1976.50	991.60
.000628	77.	77.	77.	3	0	0	.00	16.80	1008.40

CCHV= .600 CEHV= .800
*SECNO .324

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 935.0 1065.0 TYPE= 1 TARGET= 130.000
ET RECORD: STA 935. & 1065. MODEL 1 TO 1 FLOW
CONTRACTION UPSTREAM OF RCB

MAPPED FLOODPLAIN TO CWSEL

.324	6.42	1984.02	1979.80	1984.02	1984.05	.03	.04	.60	1977.90
802.0	272.1	200.8	329.1	275.2	107.1	313.5	9.0	6.4	1977.80

.17	.99	1.87	1.05	.070	.045	.070	.000	1977.60	935.00
.000277	95.	106.	120.	2	22	0	.00	130.00	1065.00

[illegible]0	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO .399

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 973.5 1065.1 TYPE= 1 TARGET= 91.560

.399	2.57	1988.07	1988.07	1988.07	1988.86	.78	.32	.23	1986.70
802.0	3.4	732.1	66.5	1.7	98.9	27.4	12.8	7.4	1986.50
.18	2.04	7.40	2.43	.050	.030	.050	.000	1985.50	973.57
.008751	390.	396.	405.	0	18	0	.00	90.54	1064.11

*SECNO .493
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 814.0 1020.5 TYPE= 1 TARGET= 206.500

[illegible]3	1.65	1997.85	1997.85	1997.85	1998.28	.43	5.13	.04	1996.90
[illegible].0	355.7	445.4	.9	123.5	67.6	.6	14.6	9.1	1997.10
.21	2.88	6.59	1.59	.050	.030	.050	.000	1996.20	814.02
.012162	510.	500.	470.	0	14	0	.00	206.50	1020.52

*SECNO .588
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 892.0 1012.9 TYPE= 1 TARGET= 120.870

.588	2.02	2009.92	2009.92	2009.92	2010.56	.64	5.17	.06	2008.20
802.0	128.2	626.8	47.0	49.4	87.9	14.8	16.6	10.9	2007.90
.23	2.59	7.14	3.17	.050	.030	.050	.000	2007.90	892.01
.009011	490.	500.	495.	0	11	0	.00	120.86	1012.87

*SECNO .701
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 946.0 1015.6 TYPE= 1 TARGET= 69.600

.701	2.53	2022.13	2022.13	2022.13	2022.99	.86	5.67	.06	2020.90
802.0	2.5	755.3	44.2	1.3	98.9	15.2	18.4	12.2	2020.20
.25	1.96	7.64	2.92	.050	.030	.050	.000	2019.60	945.97
[illegible]7	570.	597.	600.	0	11	0	.00	69.60	1015.57

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

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*SECNO  .815
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      885.5    1024.9  TYPE=      1  TARGET=      139.380
      .815      2.75   2039.15   2039.15   2039.15   2039.80      .65      5.06      .02   2038.60
     802.0      75.8     726.1       .1      45.9     107.3       .1      20.3     13.7   2038.60
       .28      1.65      6.77       .74      .050      .030     .050      .000  2036.40    885.51
   .007052      665.      602.      580.         0         8        0       .00   139.38   1024.89


*SECNO  .891
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      869.1    1020.7  TYPE=      1  TARGET=      151.620
      .891      1.66   2047.56   2047.56   2047.56   2048.08      .52      4.68      .01   2046.60
     802.0     478.2     322.4       1.4     105.1      44.4       .6      21.7     15.1   2046.80
       .30      4.55      7.26      2.20      .050      .030     .050      .000  2045.90    869.08
   .022486      410.      400.      385.         0        14        0       .00   151.62   1020.70


*SECNO 1.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      941.4    1023.3  TYPE=      1  TARGET=       81.940
     1.000      2.96   2058.96   2058.96   2058.96   2059.75      .79      8.36      .08   2057.60
     802.0     198.6     602.4       1.1      52.9      76.0       .6      23.4     16.5   2058.00
       .32      3.75      7.92      1.66      .050      .030     .050      .000  2056.00    941.39
   .010943      510.      580.      500.         0        17        0       .00    81.94   1023.33


*SECNO 1.081

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      982.0    1013.1  TYPE=      1  TARGET=       31.180
     1.081      3.68   2069.38   2069.38   2069.38   2070.90     1.52      3.89      .22   2066.00
     802.0      23.1     727.2      51.6       6.9      70.6     13.2      24.5     17.1   2065.70
       .34      3.37     10.31      3.92      .050      .030     .050      .000  2065.70    981.95
   .008061      350.      425.      500.         0        11        0       .00    31.18   1013.13
```

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

*SECNO 1.157
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 983.1 1012.9 TYPE= 1 TARGET= 29.870

1.157	4.57	2093.77	2093.77	2093.77	2095.36	1.59	3.23	.02	2091.90
802.0	11.5	777.7	12.8	4.7	75.7	4.7	25.3	17.3	2091.40
.35	2.47	10.27	2.72	.050	.030	.050	.000	2089.20	983.06
.008134	425.	400.	365.	0	11	0	.00	29.87	1012.93

*SECNO 1.230
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 980.5 1014.1 TYPE= 1 TARGET= 33.690

1.230	4.84	2102.24	2102.24	2102.24	2103.77	1.53	3.08	.01	2097.40
802.0	103.8	642.2	56.0	23.5	59.0	15.6	26.1	17.6	2098.90
.36	4.43	10.88	3.59	.050	.030	.050	.000	2097.40	980.45
.007834	375.	385.	420.	0	8	0	.00	33.69	1014.14

*SECNO 1.327
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 978.8 1012.7 TYPE= 1 TARGET= 33.930

1.327	4.96	2116.76	2116.76	2116.76	2118.28	1.52	3.89	.00	2112.30
802.0	150.8	503.3	147.8	34.0	42.2	27.8	27.3	18.0	2111.80
.37	4.44	11.92	5.31	.050	.030	.050	.000	2111.80	978.77
.007381	530.	510.	500.	0	8	0	.00	33.93	1012.70

*SECNO 1.421
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 990.7 1019.7 TYPE= 1 TARGET= 29.060

1.421	6.75	2134.85	2134.85	2134.85	2136.58	1.74	3.47	.06	2130.00
802.0	62.3	600.9	138.8	16.4	50.1	33.4	28.4	18.4	2130.10
.39	3.79	11.99	4.15	.050	.030	.050	.000	2128.10	990.68
.006487	480.	496.	540.	0	11	0	.00	29.06	1019.74

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

*SECNO 1.516
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 973.4 1015.3 TYPE= 1 TARGET= 41.900

1.516	4.18	2151.58	2151.58	2151.58	2152.89	1.30	3.46	.04	2147.40
802.0	116.6	596.7	88.8	28.8	57.5	23.9	29.7	18.8	2148.10
.40	4.05	10.37	3.72	.050	.030	.050	.000	2147.40	973.39
.007311	520.	502.	490.	0	14	0	.00	41.90	1015.29

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.280 & 0.282

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
19.58	19.58	.00	19.58	19.58	.00	7	1977.268	1977.697	.280	.282

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.282 & 0.283

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
15.63	15.65	.14	35.21	35.23	.06	7	1977.697	1977.840	.282	.283

TW LEFT BANK LEVEE BETWEEN SECTIONS 0.283 & 0.289

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
45.69	45.77	.17	80.90	81.00	.13	7	1977.840	1981.205	.283	.289

THIS RUN EXECUTED 14JUL92 02:36:54

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HEC-2 WATER SURFACE PROFILES

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

WASH L: UNNAMED WASH #7

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.091	.00	.00	.00	1953.60	721.10	1954.87	1954.87	1955.17	361.57	7.19	214.73	37.92
*	.091	.00	.00	.00	1953.60	721.10	1954.89	1954.89	1955.17	335.53	6.99	220.50	39.37
*	.194	545.00	.00	.00	1954.00	721.10	1956.75	1955.31	1956.78	9.79	2.03	638.65	230.52
*	.194	545.00	.00	.00	1954.00	721.10	1956.74	1955.31	1956.77	9.89	2.03	636.39	229.34
*	.226	170.00	.00	.00	1961.30	721.10	1962.98	1962.98	1963.54	243.21	7.16	148.24	46.24
*	.226	170.00	.00	.00	1961.30	721.10	1963.02	1963.02	1963.54	221.06	6.92	153.44	48.50
*	.268	220.00	.00	.00	1970.20	721.10	1974.04	1974.04	1975.98	21.17	11.18	64.51	156.73
*	.268	220.00	.00	.00	1970.20	721.10	1974.04	1974.04	1975.98	21.20	11.18	64.48	156.60
*	.280	65.00	1977.70	1976.70	1970.70	721.10	1976.38	.00	1977.27	5.73	7.55	95.49	301.33
*	.280	65.00	1977.70	1976.70	1970.70	721.10	1976.38	.00	1977.27	5.73	7.55	95.49	301.33
	.282	10.00	.00	.00	1968.20	740.68	1977.52	1974.48	1977.70	7.62	3.70	282.87	268.28
	.282	10.00	.00	.00	1968.20	740.68	1977.52	1974.48	1977.70	7.62	3.70	282.87	268.28
*	.283	2.00	.00	.00	1968.20	756.31	1977.48	1976.46	1977.84	30.90	5.42	205.11	136.05
*	.283	2.00	.00	.00	1968.20	756.31	1977.48	1976.46	1977.84	30.90	5.42	205.11	136.05
*	.289	34.00	.00	.00	1975.00	802.00	1979.12	1979.12	1981.20	20.68	11.58	69.25	176.38
*	.289	34.00	.00	.00	1975.00	802.00	1979.12	1979.12	1981.20	20.68	11.58	69.25	176.38
*	.304	77.00	1982.50	1981.40	1976.50	802.00	1982.39	.00	1983.41	6.28	8.10	98.99	319.95
*	.304	77.00	1982.50	1981.40	1976.50	802.00	1982.39	.00	1983.41	6.28	8.10	98.99	319.95
*	.324	106.00	.00	.00	1977.60	802.00	1984.02	1979.80	1984.05	2.77	1.87	695.79	481.95
*	.324	106.00	.00	.00	1977.60	802.00	1984.02	1979.80	1984.05	2.77	1.87	695.79	481.95
*	.399	396.00	.00	.00	1985.50	802.00	1988.09	1988.09	1988.86	85.57	7.34	129.16	86.70
*	.399	396.00	.00	.00	1985.50	802.00	1988.07	1988.07	1988.86	87.51	7.40	128.06	85.73

	CNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.493	500.00	.00	.00	1996.20	802.00	1997.85	1997.85	1998.28	122.39	6.60	191.31	72.50
*	.493	500.00	.00	.00	1996.20	802.00	1997.85	1997.85	1998.28	121.62	6.59	191.72	72.72
*	.588	500.00	.00	.00	2007.90	802.00	2009.92	2009.92	2010.56	89.88	7.13	152.22	84.60
*	.588	500.00	.00	.00	2007.90	802.00	2009.92	2009.92	2010.56	90.11	7.14	152.07	84.48
*	.701	597.00	.00	.00	2019.60	802.00	2022.10	2022.10	2022.99	105.37	7.74	113.75	78.13
*	.701	597.00	.00	.00	2019.60	802.00	2022.13	2022.13	2022.99	100.97	7.64	115.35	79.82
*	.815	602.00	.00	.00	2036.40	802.00	2039.14	2039.14	2039.80	71.97	6.82	151.83	94.53
*	.815	602.00	.00	.00	2036.40	802.00	2039.15	2039.15	2039.80	70.52	6.77	153.24	95.50
*	.891	400.00	.00	.00	2045.90	802.00	2047.55	2047.55	2048.08	227.44	7.28	149.65	53.18
*	.891	400.00	.00	.00	2045.90	802.00	2047.56	2047.56	2048.08	224.86	7.26	150.17	53.48
*	1.000	580.00	.00	.00	2056.00	802.00	2058.96	2058.96	2059.75	109.90	7.93	129.42	76.50
*	1.000	580.00	.00	.00	2056.00	802.00	2058.96	2058.96	2059.75	109.43	7.92	129.60	76.67
*	1.081	425.00	.00	.00	2065.70	802.00	2069.38	2069.38	2070.90	80.95	10.32	90.45	89.14
*	1.081	425.00	.00	.00	2065.70	802.00	2069.38	2069.38	2070.90	80.61	10.31	90.58	89.32
*	1.157	400.00	.00	.00	2089.20	802.00	2093.74	2093.74	2095.36	83.46	10.35	84.30	87.79
*	1.157	400.00	.00	.00	2089.20	802.00	2093.77	2093.77	2095.36	81.34	10.27	85.08	88.92
*	1.230	385.00	.00	.00	2097.40	802.00	2102.18	2102.18	2103.77	83.64	11.12	95.79	87.69
*	1.230	385.00	.00	.00	2097.40	802.00	2102.24	2102.24	2103.77	78.34	10.88	98.06	90.61
*	1.327	510.00	.00	.00	2111.80	802.00	2116.76	2116.76	2118.28	74.05	11.93	103.91	93.20
*	1.327	510.00	.00	.00	2111.80	802.00	2116.76	2116.76	2118.28	73.81	11.92	104.03	93.35
*	1.421	496.00	.00	.00	2128.10	802.00	2134.73	2134.73	2136.59	70.93	12.36	96.55	95.23
*	1.421	496.00	.00	.00	2128.10	802.00	2134.85	2134.85	2136.58	64.87	11.99	99.98	99.58
*	1.516	502.00	.00	.00	2147.40	802.00	2151.54	2151.54	2152.89	76.45	10.53	108.39	91.72
*	1.516	502.00	.00	.00	2147.40	802.00	2151.58	2151.58	2152.89	73.11	10.37	110.14	93.80

W UNNAMED WASH #7

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.091	721.10	1954.87	.00	.00	.00	346.63	.00
*	.091	721.10	1954.89	.02	.00	.00	349.36	.00
*	.194	721.10	1956.75	.00	1.87	.00	379.52	545.00
*	.194	721.10	1956.74	-.01	1.85	.00	379.12	545.00
*	.226	721.10	1962.98	.00	6.23	.00	142.15	170.00
*	.226	721.10	1963.02	.04	6.28	.00	142.16	170.00
*	.268	721.10	1974.04	.00	11.06	.00	16.80	220.00
*	.268	721.10	1974.04	.00	11.02	.00	16.80	220.00
*	.280	721.10	1976.38	.00	2.34	.00	16.80	65.00
*	.280	721.10	1976.38	.00	2.34	.00	16.80	65.00
	.282	740.68	1977.52	.00	1.13	.00	79.00	10.00
	.282	740.68	1977.52	.00	1.13	.00	79.00	10.00
*	.283	756.31	1977.48	.00	-.03	.00	79.00	2.00
*	.283	756.31	1977.48	.00	-.03	.00	79.00	2.00
*	.289	802.00	1979.12	.00	1.64	.00	16.80	34.00
*	.289	802.00	1979.12	.00	1.64	.00	16.80	34.00
*	.304	802.00	1982.39	.00	3.27	.00	16.80	77.00
*	.304	802.00	1982.39	.00	3.27	.00	16.80	77.00
*	.324	802.00	1984.02	.00	1.63	.00	130.00	106.00
*	.324	802.00	1984.02	.00	1.63	.00	130.00	106.00
*	.399	802.00	1988.09	.00	4.06	.00	91.55	396.00
*	.399	802.00	1988.07	-.01	4.05	.00	90.54	396.00
*	.493	802.00	1997.85	.00	9.76	.00	206.51	500.00
*	.493	802.00	1997.85	.00	9.78	.00	206.50	500.00
*	.588	802.00	2009.92	.00	12.07	.00	120.87	500.00
*	.588	802.00	2009.92	.00	12.07	.00	120.86	500.00
*	.701	802.00	2022.10	.00	12.18	.00	69.59	597.00
*	.701	802.00	2022.13	.02	12.21	.00	69.60	597.00
*	.815	802.00	2039.14	.00	17.03	.00	139.38	602.00
*	.815	802.00	2039.15	.01	17.02	.00	139.38	602.00
*	.891	802.00	2047.55	.00	8.42	.00	151.62	400.00
*	.891	802.00	2047.56	.00	8.41	.00	151.62	400.00

	CNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.000	802.00	2058.96	.00	11.41	.00	81.94	580.00
*	1.000	802.00	2058.96	.00	11.41	.00	81.94	580.00
*	1.081	802.00	2069.38	.00	10.42	.00	31.18	425.00
*	1.081	802.00	2069.38	.00	10.42	.00	31.18	425.00
*	1.157	802.00	2093.74	.00	24.36	.00	29.87	400.00
*	1.157	802.00	2093.77	.03	24.38	.00	29.87	400.00
*	1.230	802.00	2102.18	.00	8.44	.00	33.70	385.00
*	1.230	802.00	2102.24	.07	8.48	.00	33.69	385.00
*	1.327	802.00	2116.76	.00	14.58	.00	33.93	510.00
*	1.327	802.00	2116.76	.00	14.52	.00	33.93	510.00
*	1.421	802.00	2134.73	.00	17.97	.00	29.06	496.00
*	1.421	802.00	2134.85	.12	18.09	.00	29.06	496.00
*	1.516	802.00	2151.54	.00	16.81	.00	41.90	502.00
*	1.516	802.00	2151.58	.04	16.74	.00	41.90	502.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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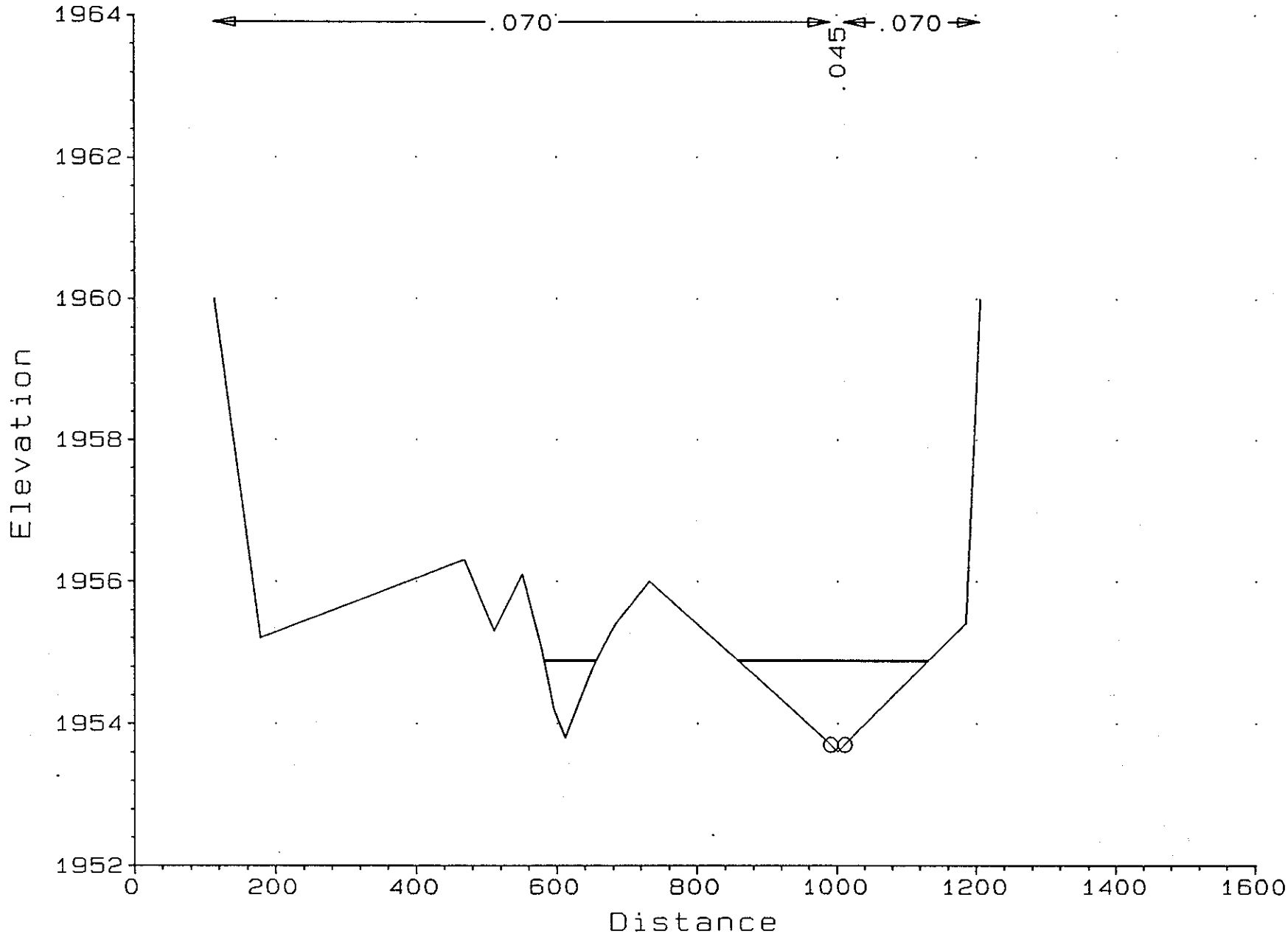
FLOODWAY DATA, WASH L: UNNAMED WASH #7
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.091	549.	221.	3.3	1954.9	1954.9	.0
.194	379.	636.	1.1	1956.7	1956.7	.0
.226	142.	153.	4.7	1963.0	1963.0	.0
.268	17.	64.	11.2	1974.0	1974.0	.0
.280	17.	95.	7.6	1976.4	1976.4	.0
.282	79.	283.	2.6	1977.5	1977.5	.0
.283	79.	205.	3.7	1977.5	1977.5	.0
.289	17.	69.	11.6	1979.1	1979.1	.0
.304	17.	99.	8.1	1982.4	1982.4	.0
.324	130.	696.	1.2	1984.0	1984.0	.0
.399	91.	128.	6.3	1988.1	1988.1	.0
.493	206.	192.	4.2	1997.8	1997.8	.0
.588	121.	152.	5.3	2009.9	2009.9	.0
.701	70.	115.	7.0	2022.1	2022.1	.0
.815	139.	153.	5.2	2039.1	2039.1	.0
.891	152.	150.	5.3	2047.6	2047.6	.0
[illegible]00	82.	130.	6.2	2059.0	2059.0	.0
[illegible].081	31.	91.	8.9	2069.4	2069.4	.0
1.157	30.	85.	9.4	2093.7	2093.7	.0
1.230	34.	98.	8.2	2102.3	2102.2	.1
1.327	34.	104.	7.7	2116.8	2116.8	.0
1.421	29.	100.	8.0	2134.8	2134.7	.1
1.516	42.	110.	7.3	2151.5	2151.5	.0

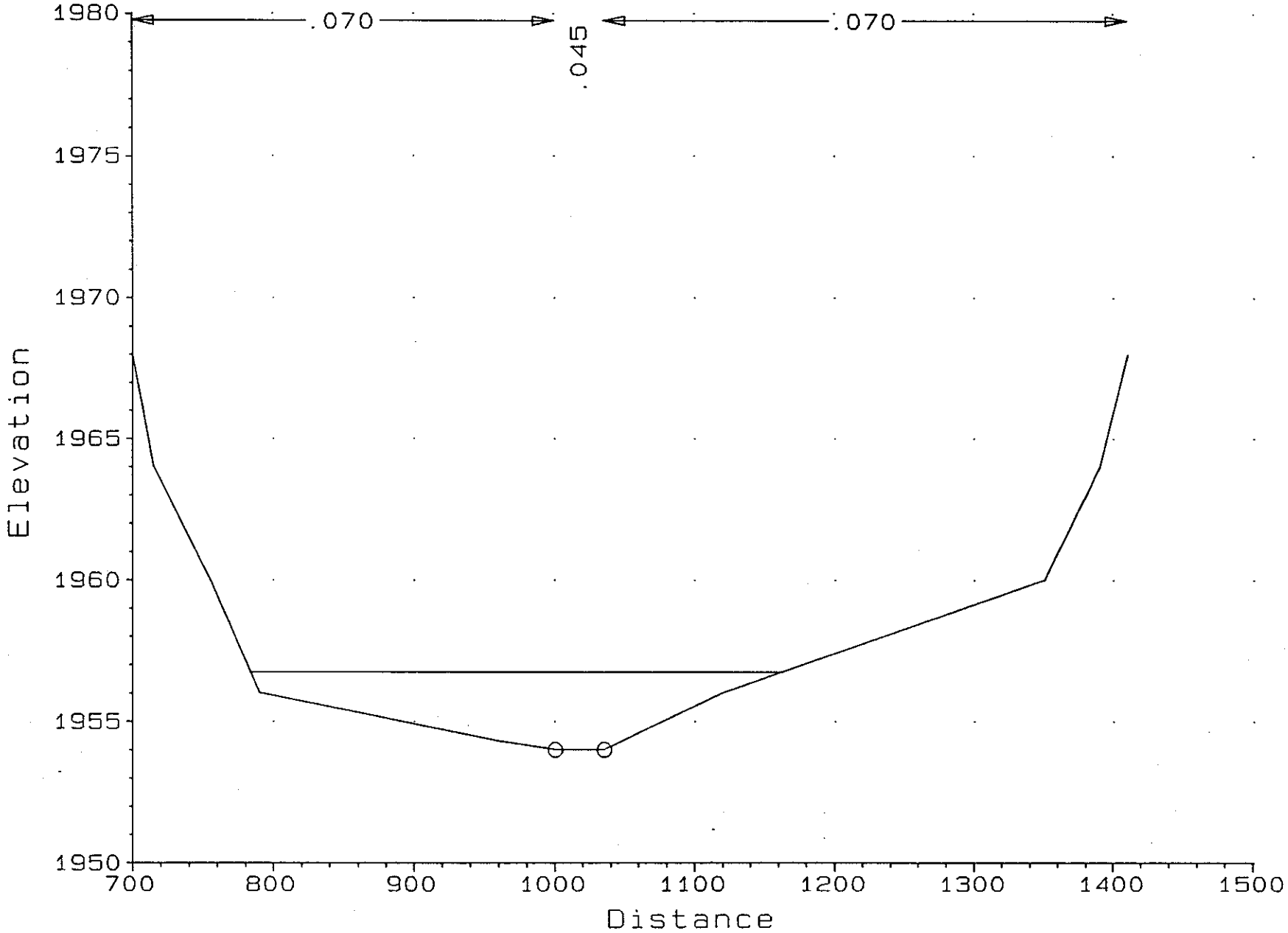
WASH L: UNNAMED WASH #7

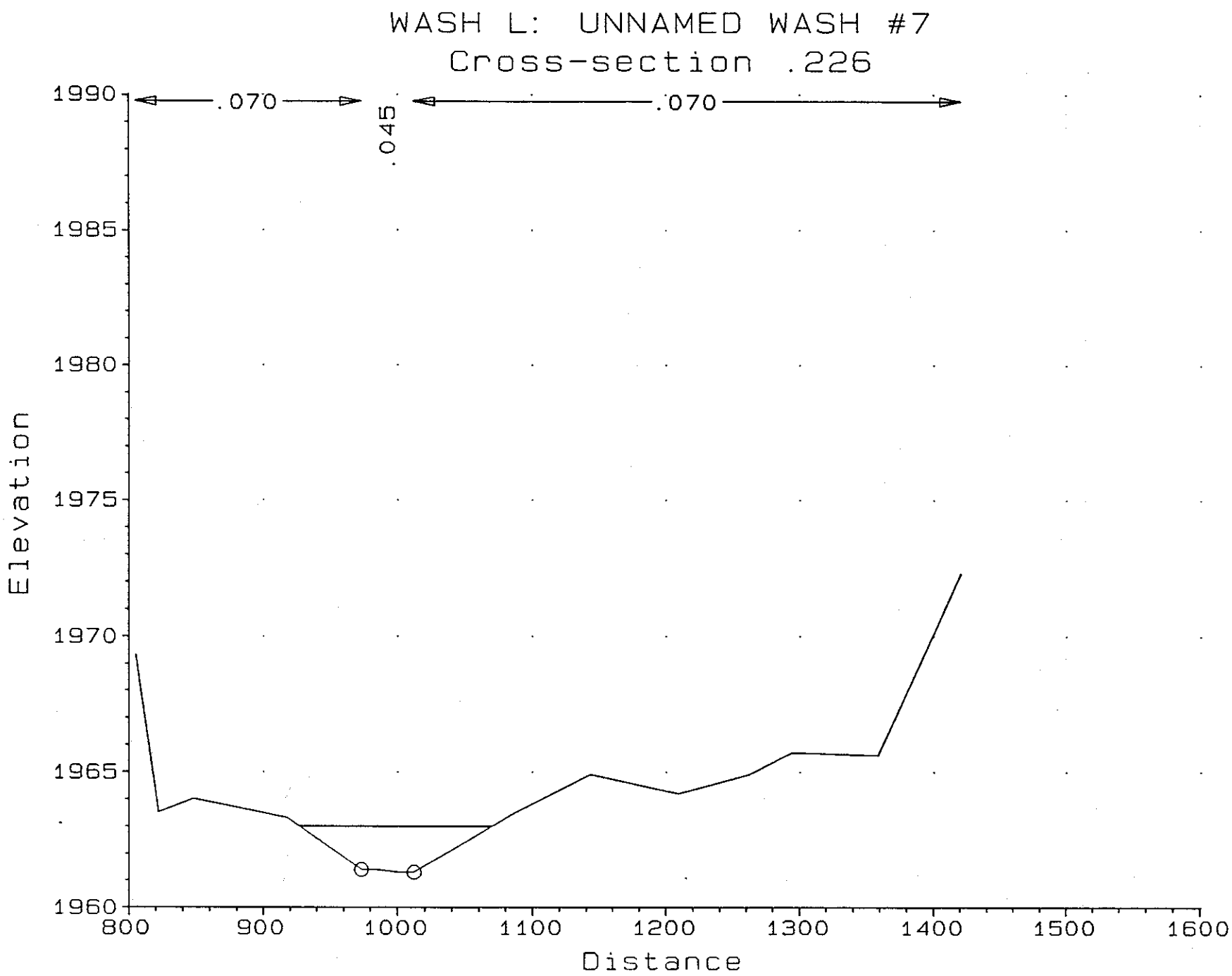
Cross-section .091

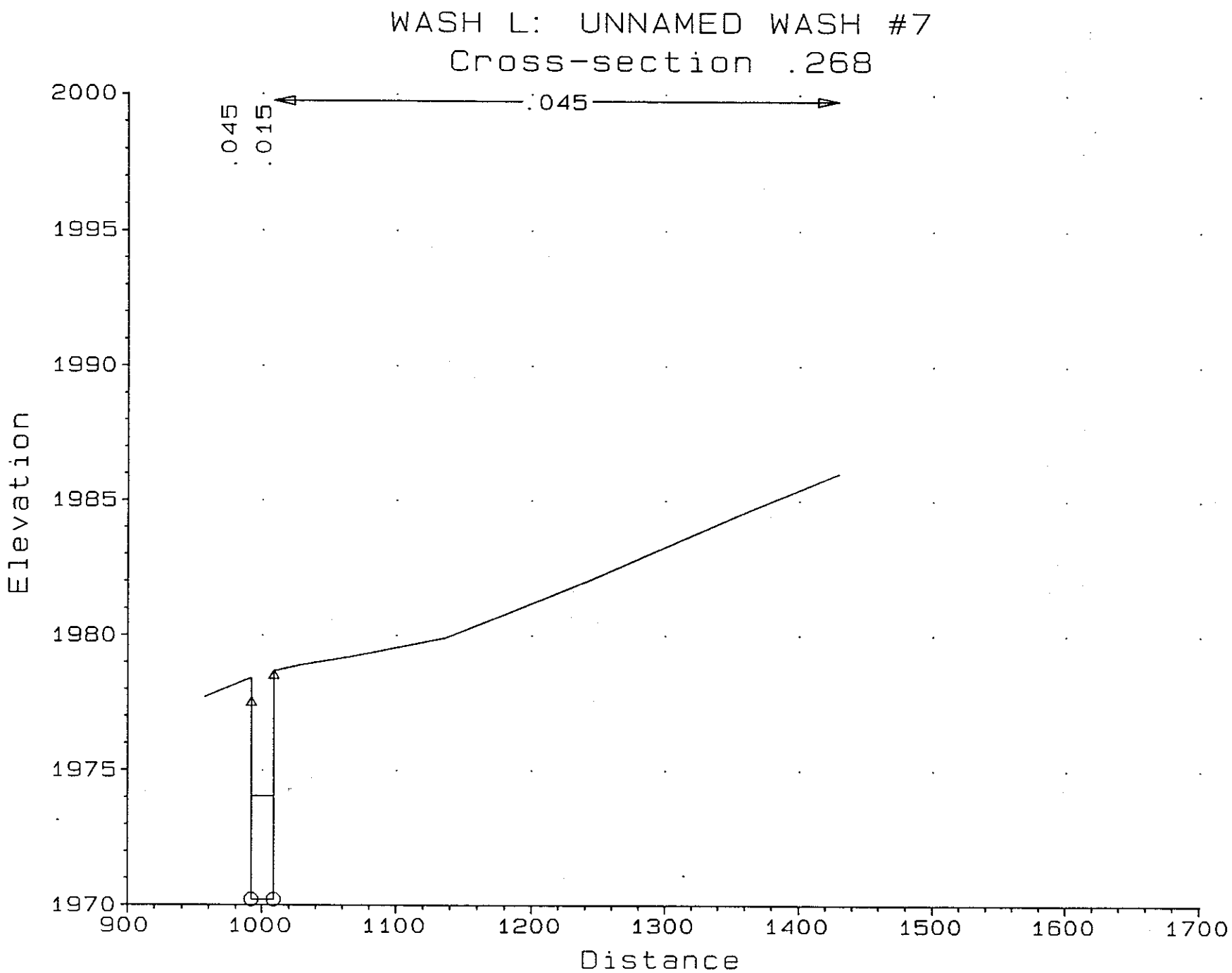


WASH L: UNNAMED WASH #7

Cross-section .194

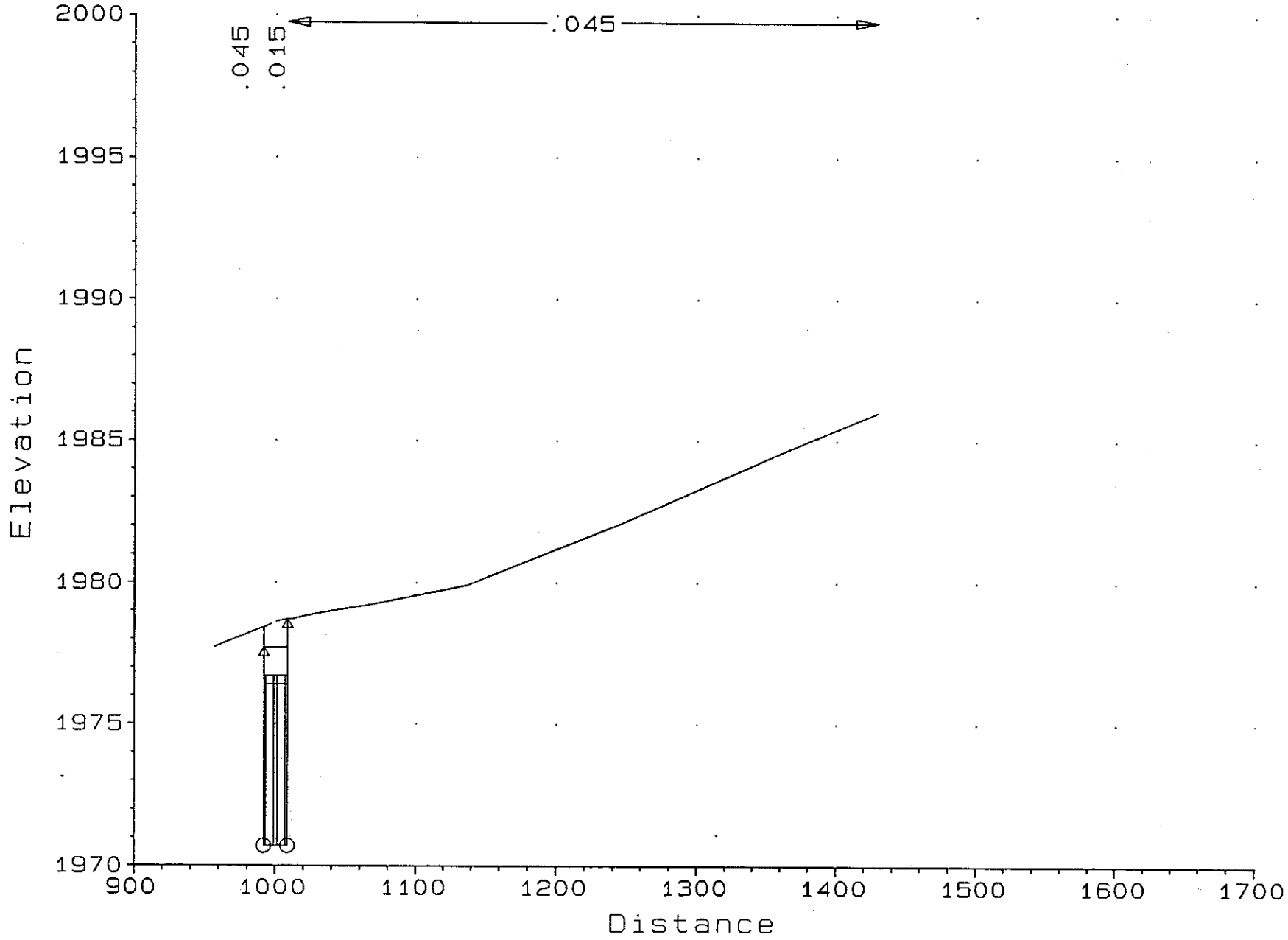


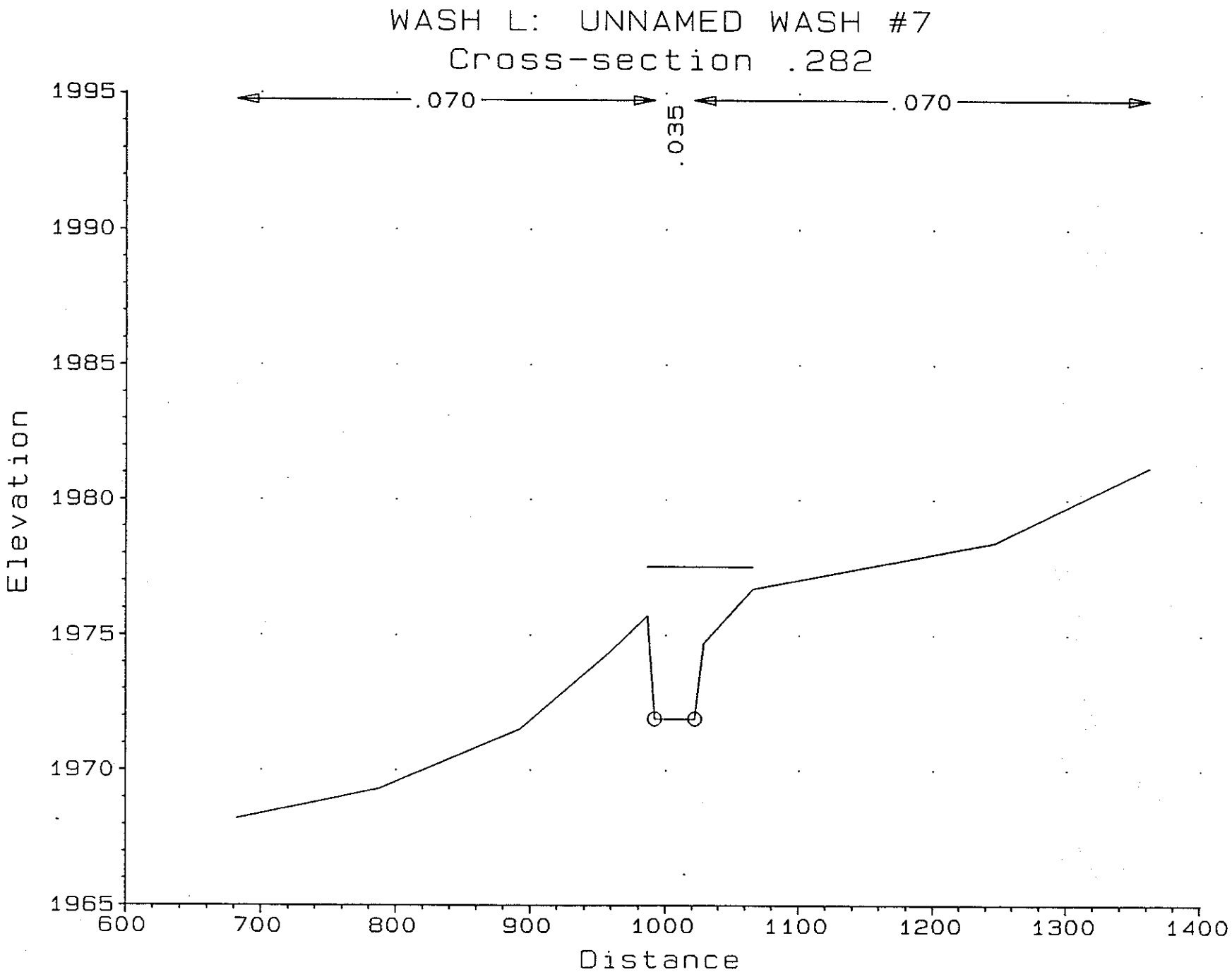

WASH L: UNNAMED WASH #7
Cross-section .226
.070
.045
.070
1990
1985
1980
1975
1970
1965
1960
Elevation
800
900
1000
1100
1200
1300
1400
1500
1600
Distance

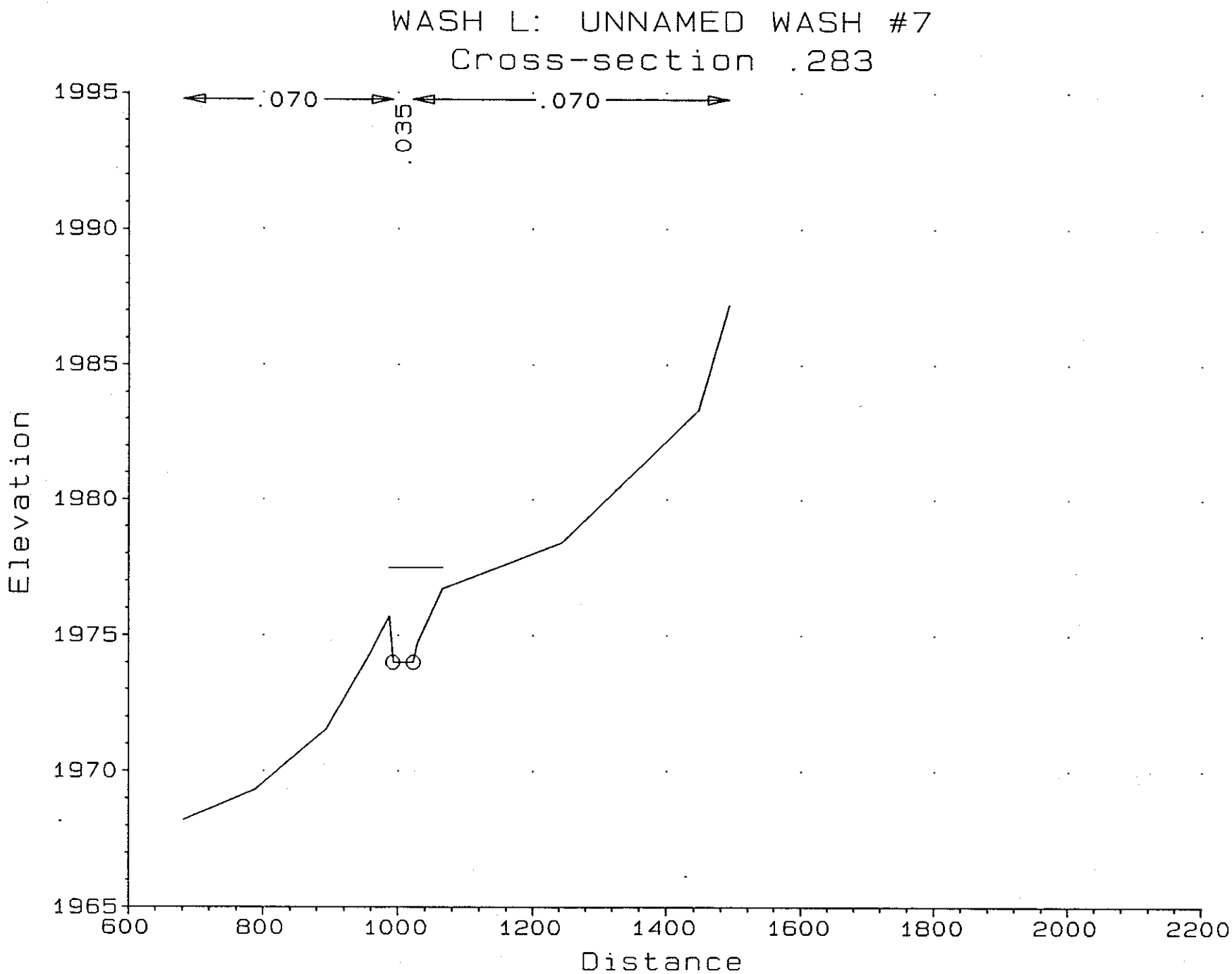

WASH L: UNNAMED WASH #7
Cross-section .268
.045
.045
.015
2000
1995
1990
1985
1980
1975
1970
Elevation
900
1000
1100
1200
1300
1400
1500
1600
1700
Distance

WASH L: UNNAMED WASH #7

Cross-section .280




WASH L: UNNAMED WASH #7
Cross-section .282
.070
.035
.070
1995
1990
1985
1980
1975
1970
1965
Elevation
600
700
800
900
1000
1100
1200
1300
1400
Distance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Cross-section .283
.070
.035
.070
1995
1990
1985
1980
1975
1970
1965
Elevation
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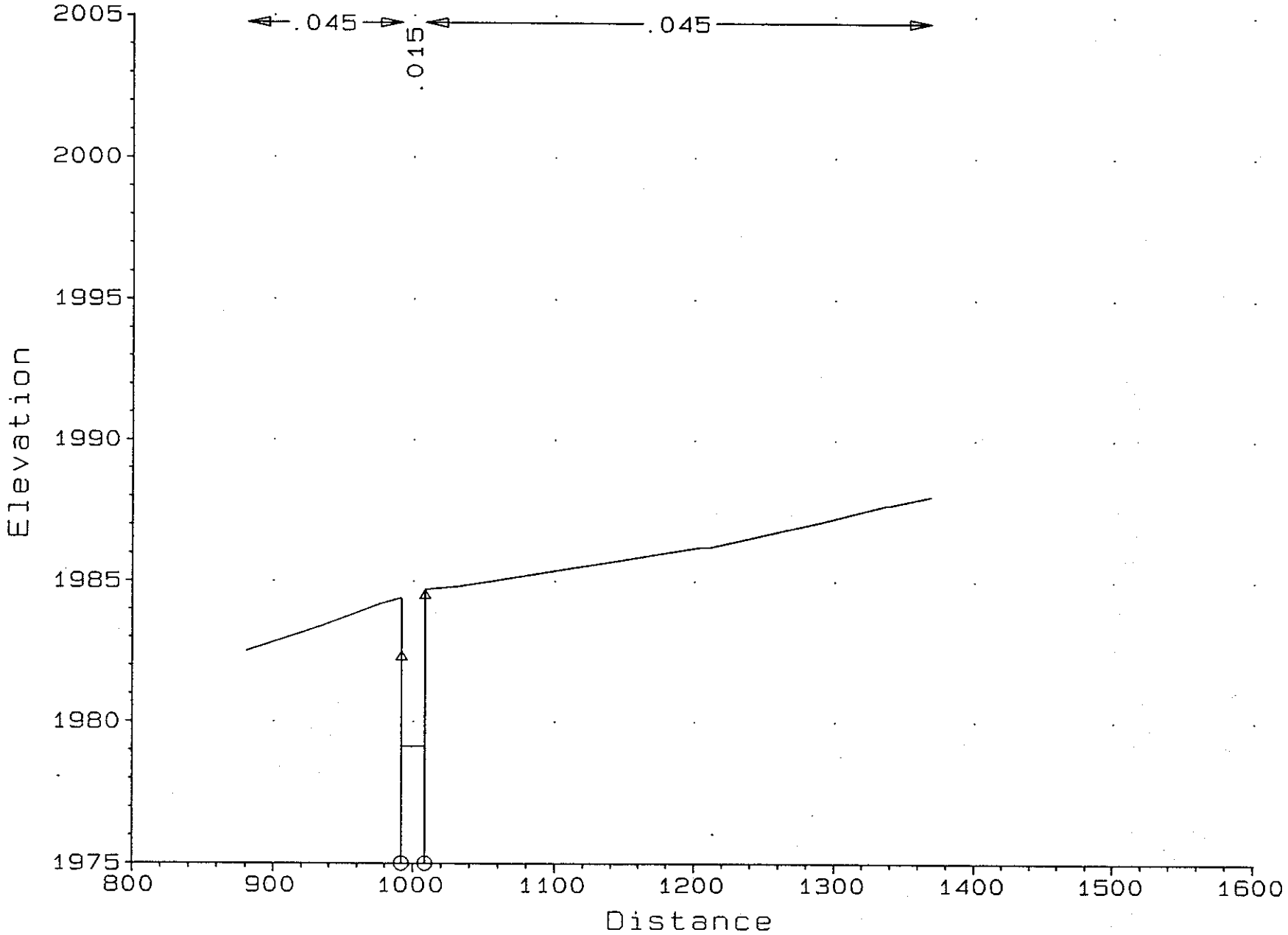
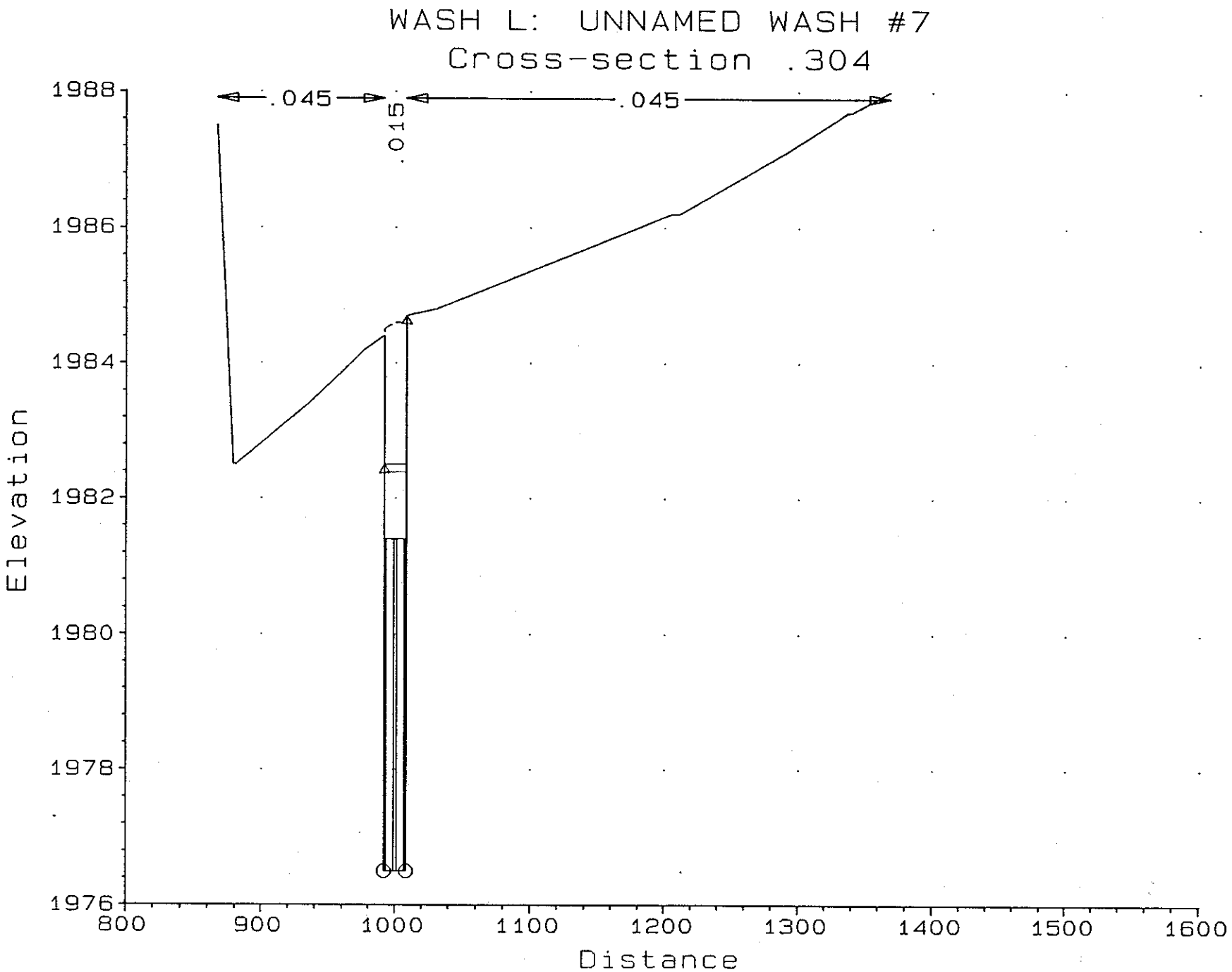
800
1000
1200
1400
1600
1800
2000
2200
Distance

WASH L: UNNAMED WASH #7
Cross-section .289

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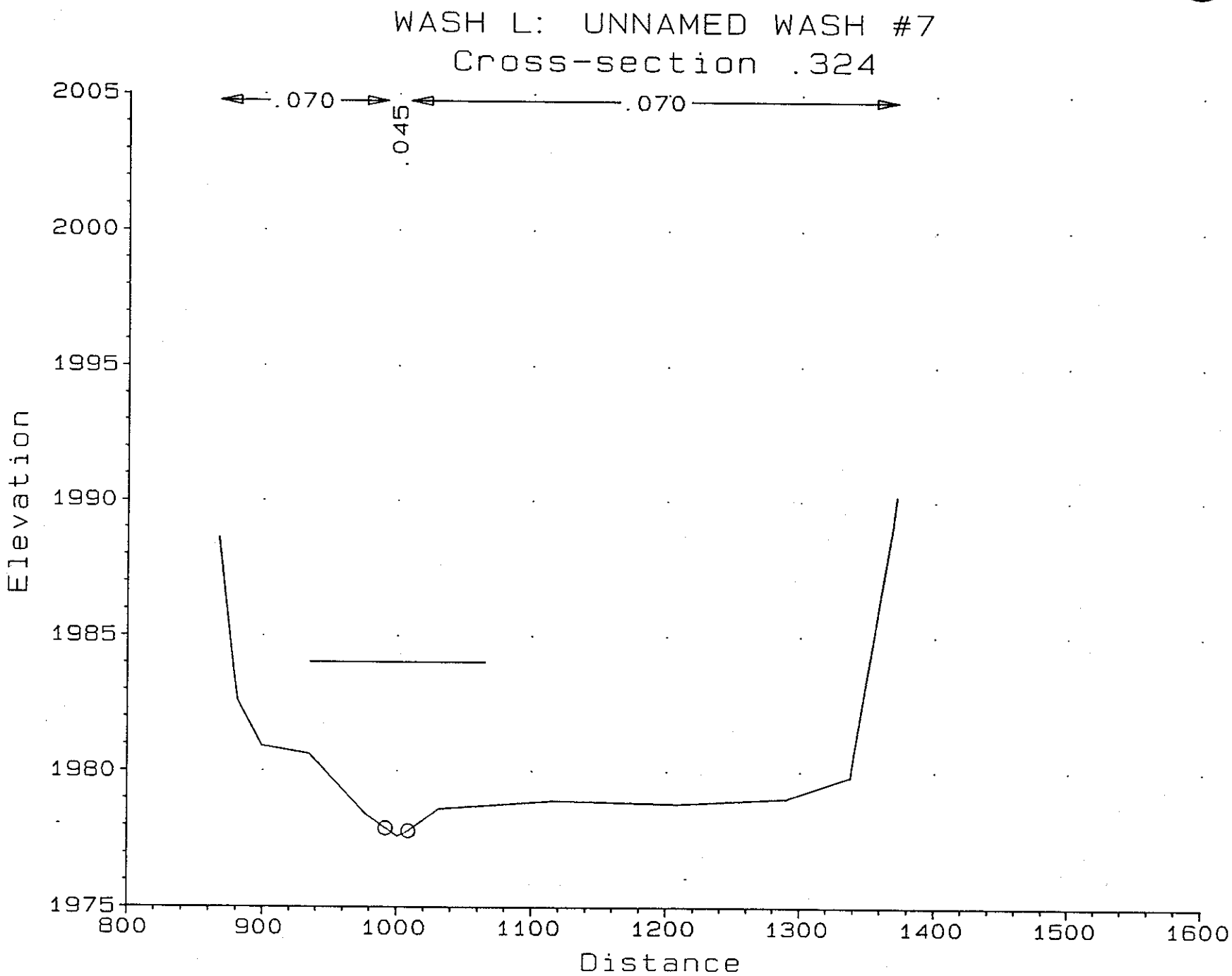
Cross-section .304
.045
.015
.045
1988
1986
1984
1982
1980
1978
1976
Elevation
800
900
1000
1100
1200
1300
1400
1500
1600
Distance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Cross-section .324
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.045
.070
2005
2000
1995
1990
1985
1980
1975
Elevation
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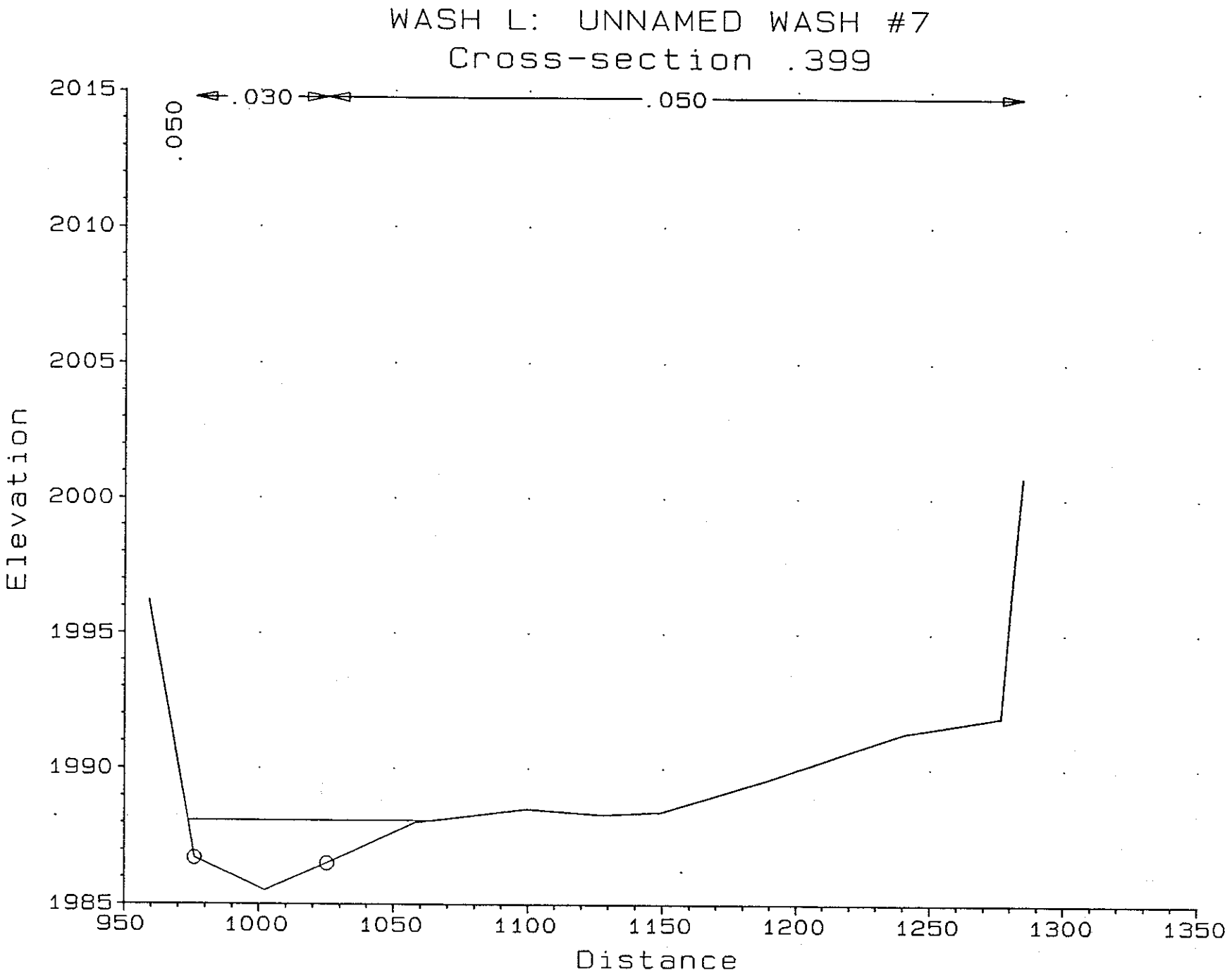
900
1000
1100
1200
1300
1400
1500
1600
Distance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Cross-section .399
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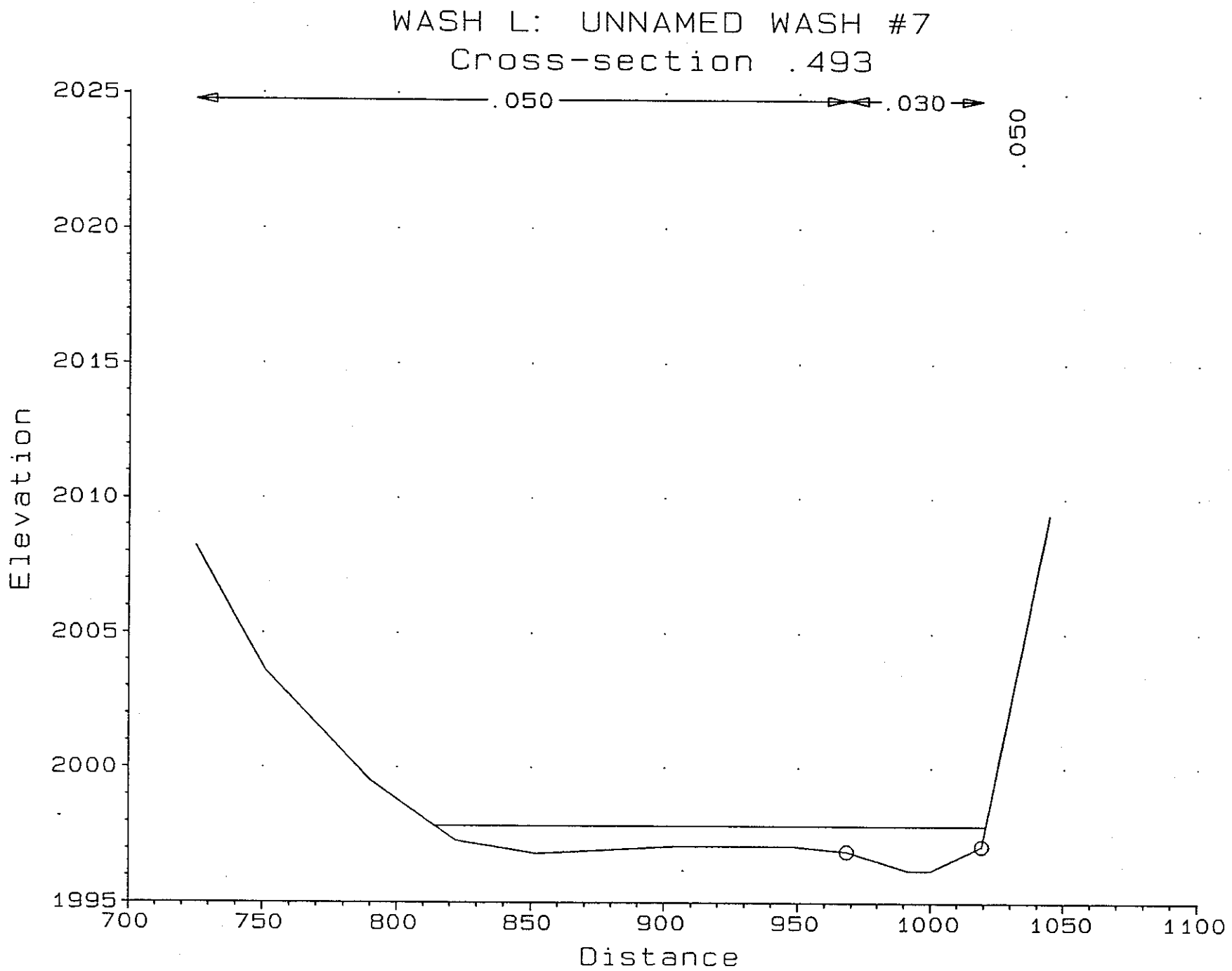
.050
.050
2015
2010
2005
2000
1995
1990
1985
Elevation
950
1000
1050
1100
1150
1200
1250
1300
1350
Distance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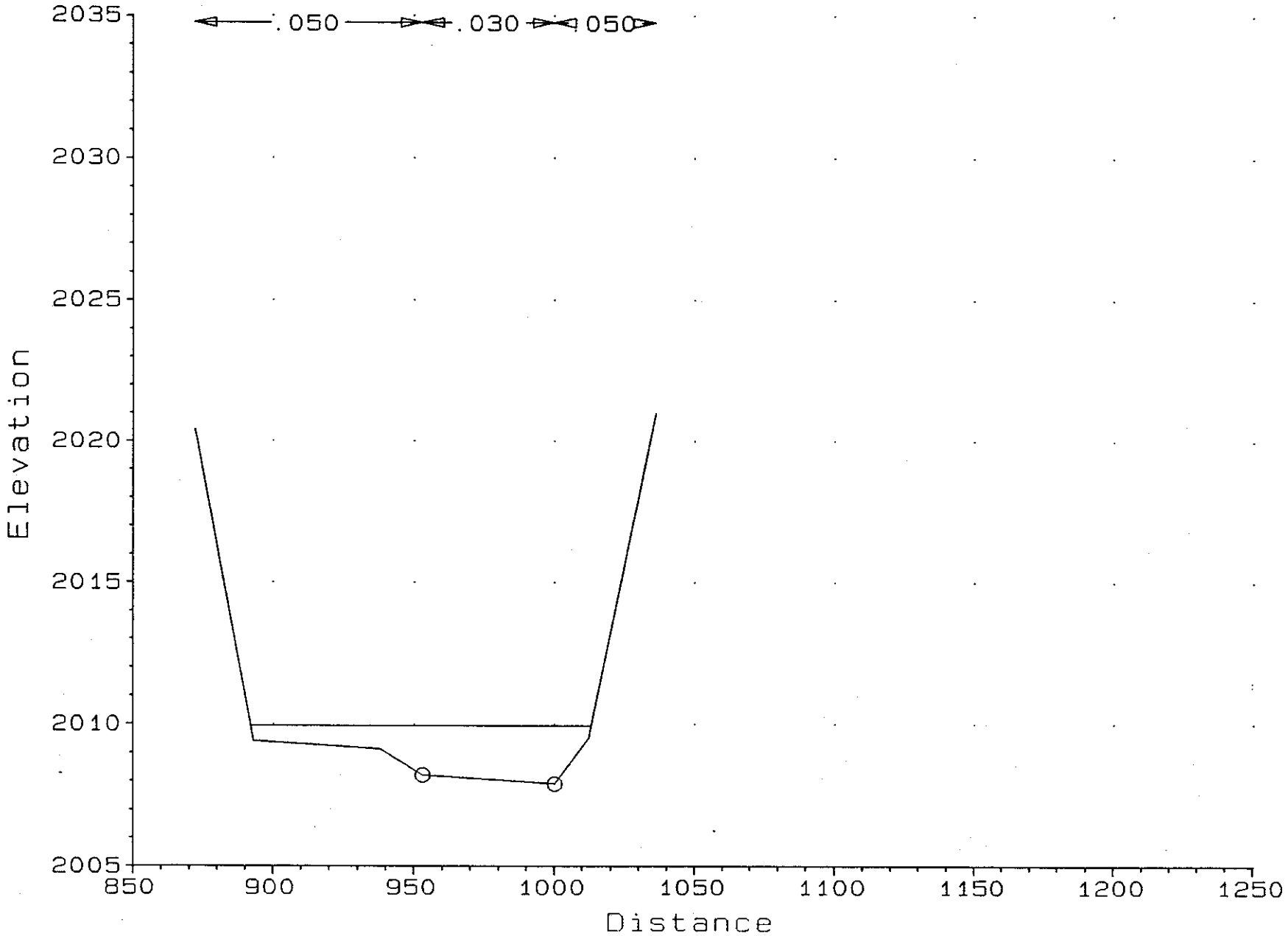
Cross-section .493
.050
.030
.050
2025
2020
2015
2010
2005
2000
1995
Elevation
700
750
800
850
900
950
1000
1050
1100
Distance

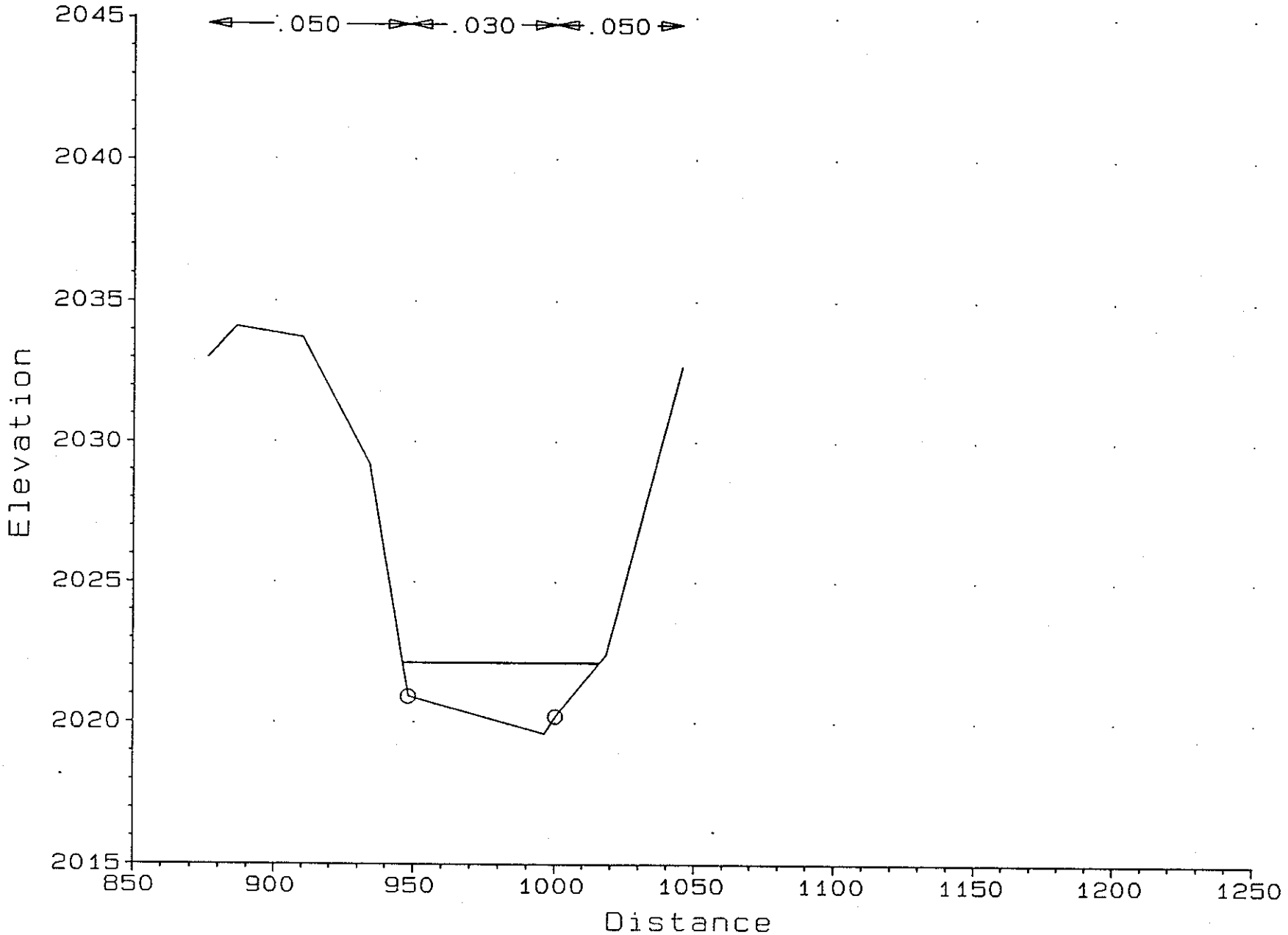
WASH L: UNNAMED WASH #7

Cross-section .588



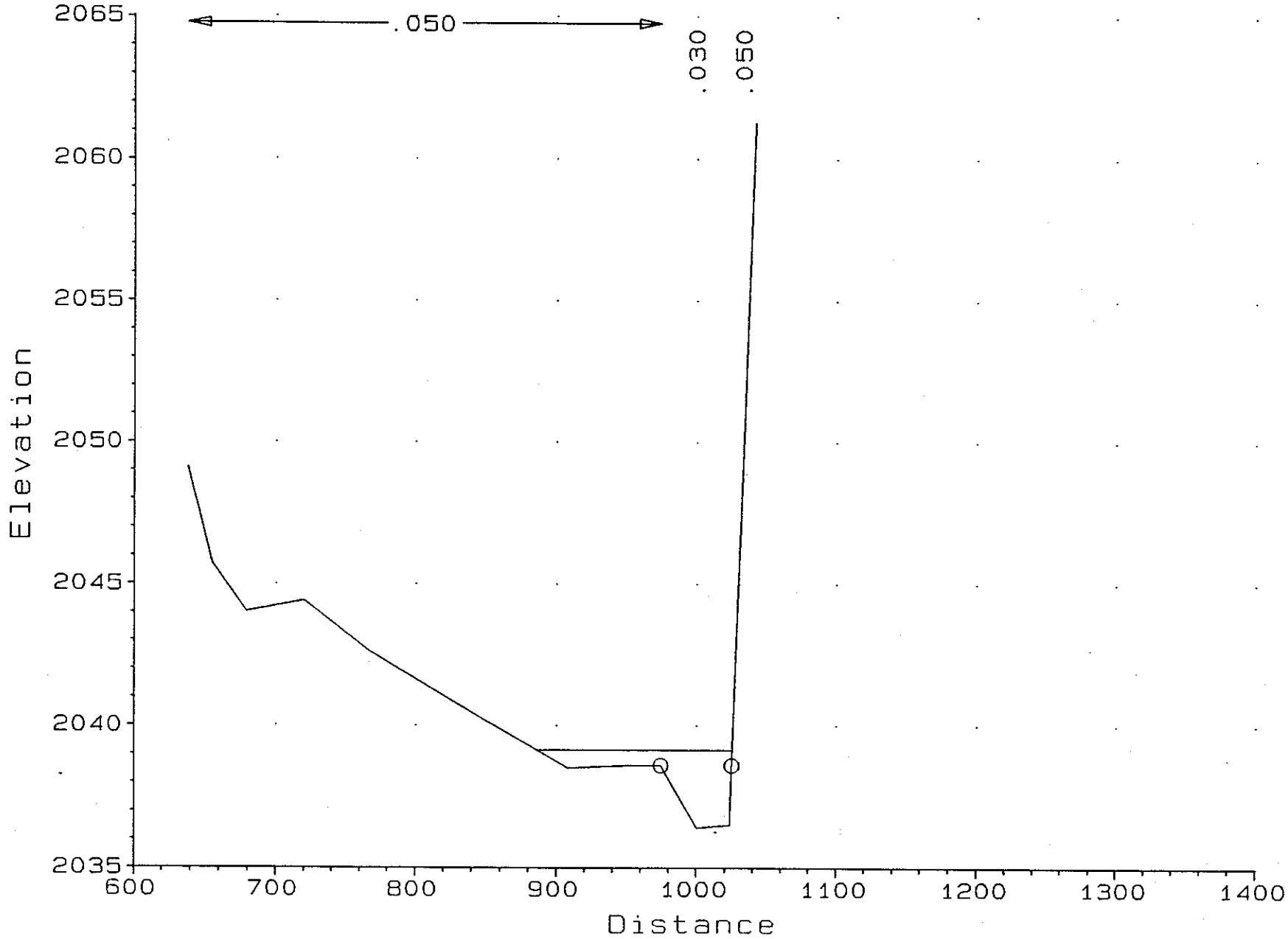
WASH L: UNNAMED WASH #7

Cross-section .701



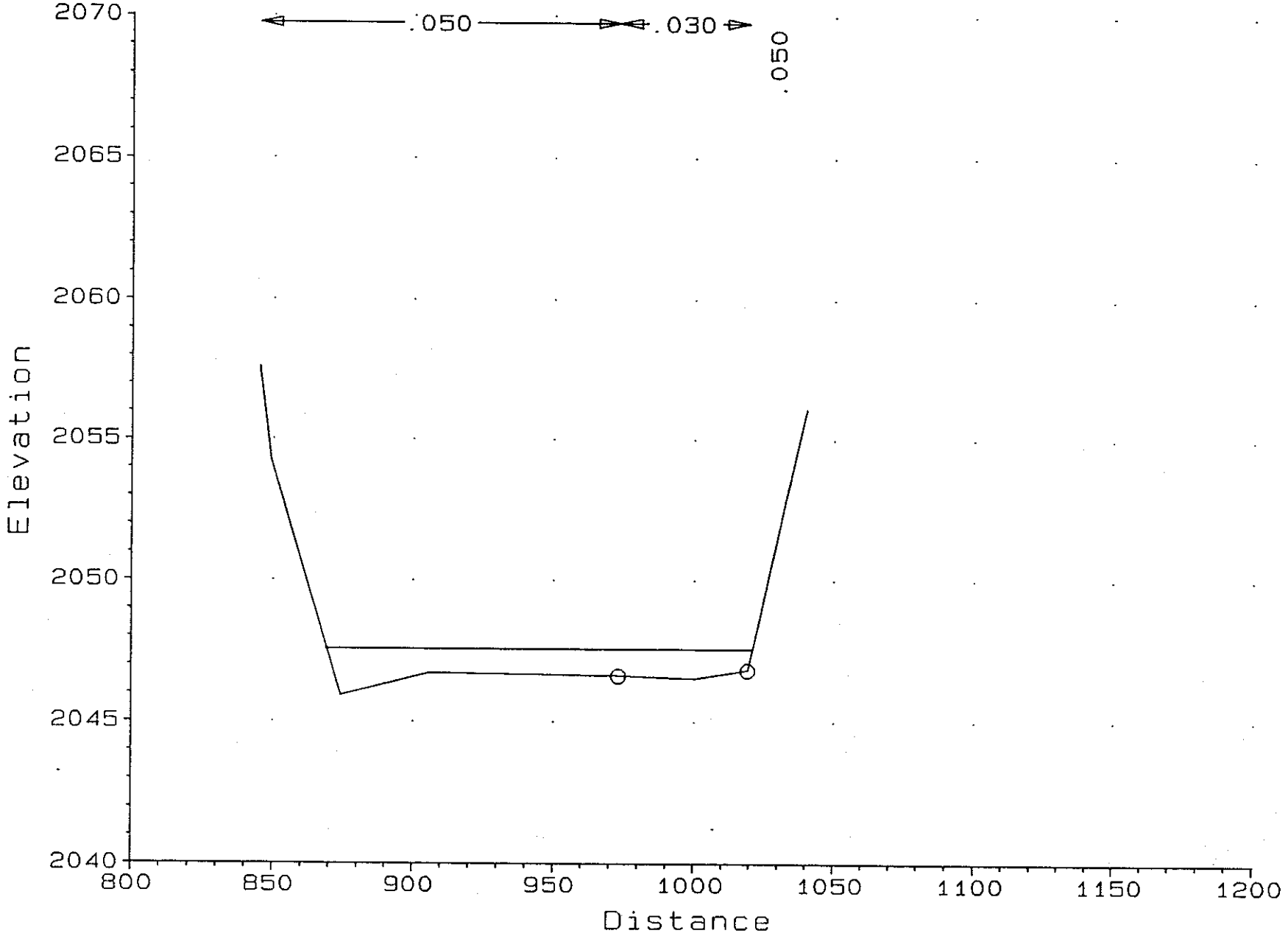
WASH L: UNNAMED WASH #7

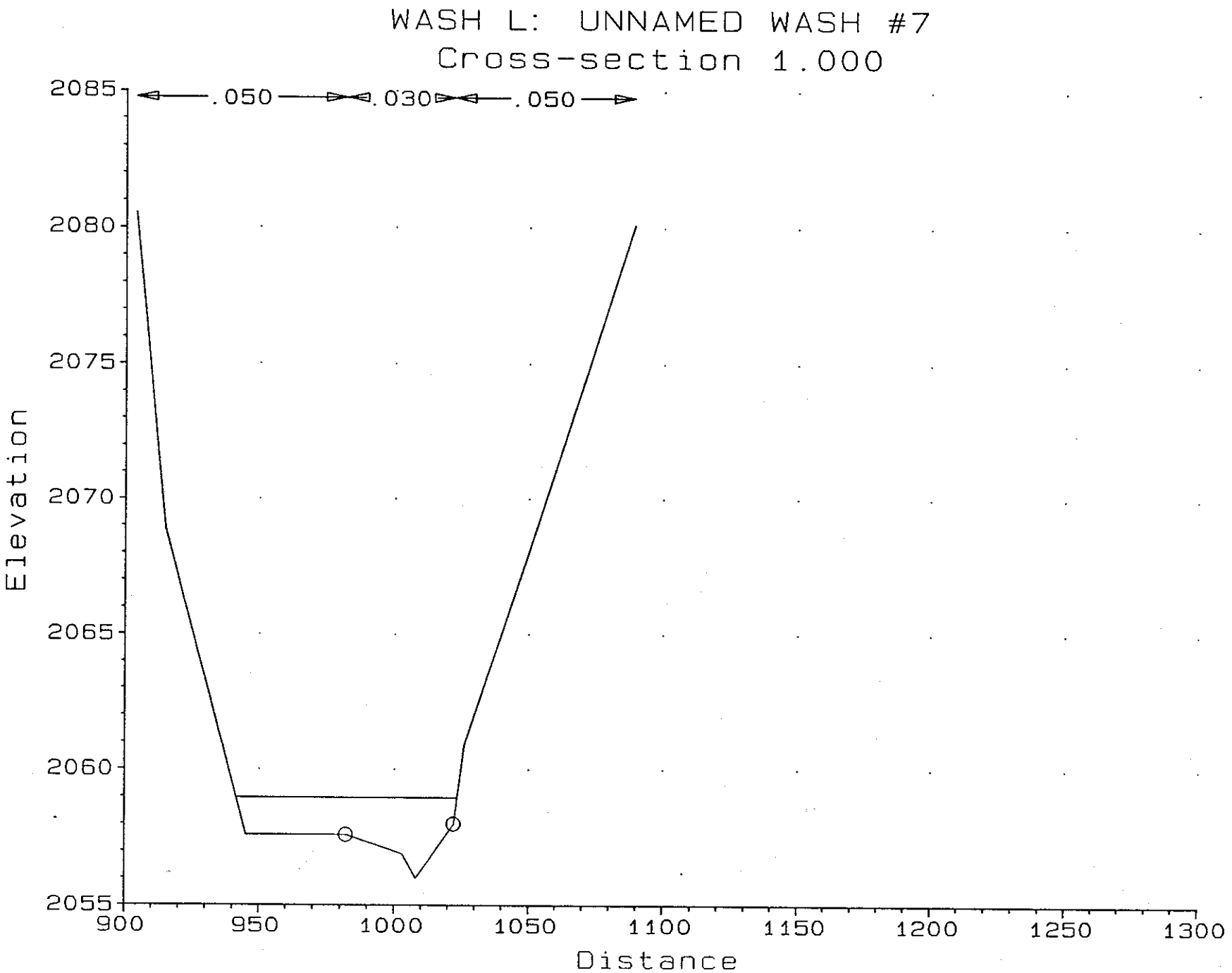
Cross-section .815



WASH L: UNNAMED WASH #7

Cross-section .891

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Cross-section 1.000
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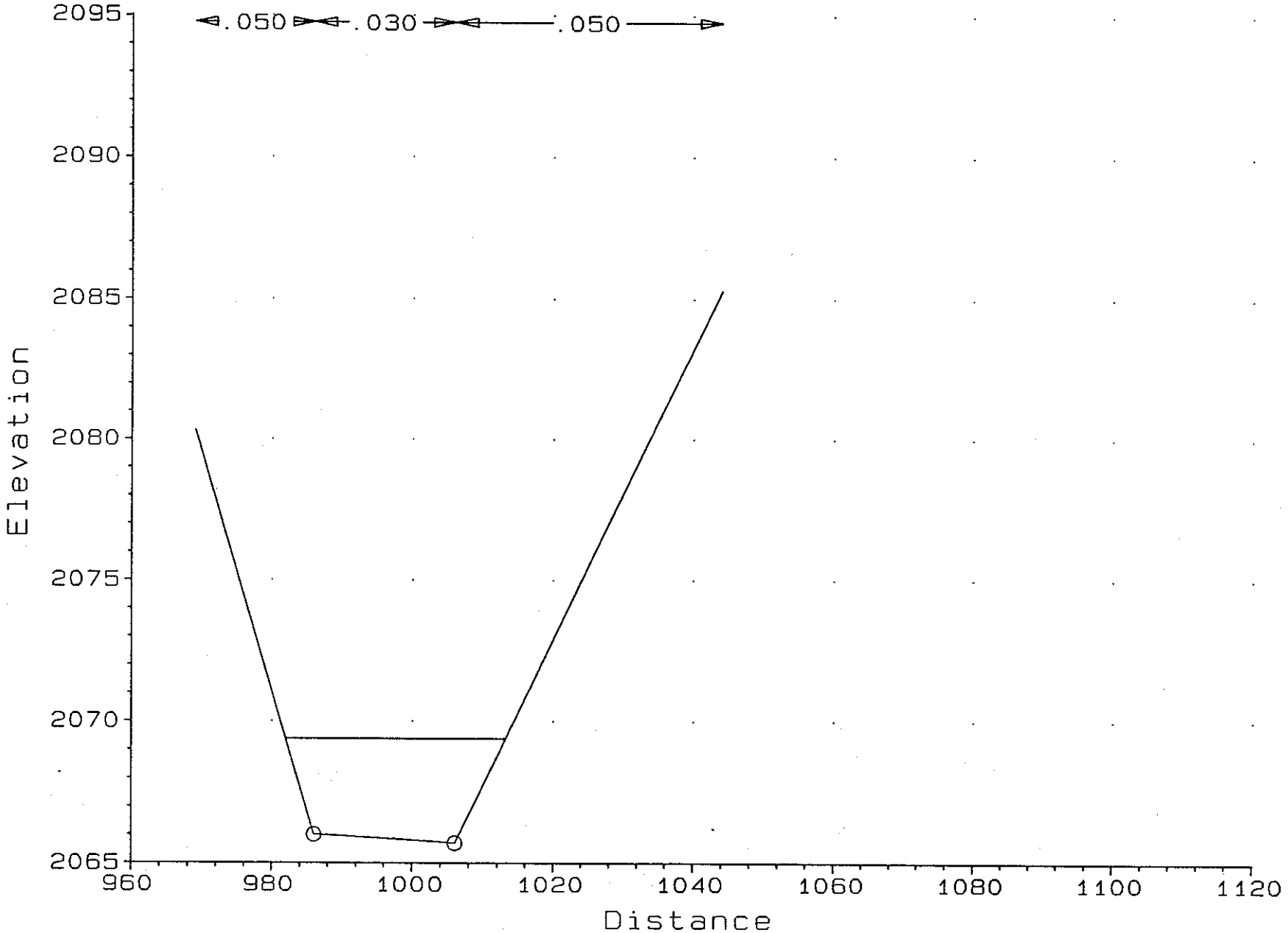
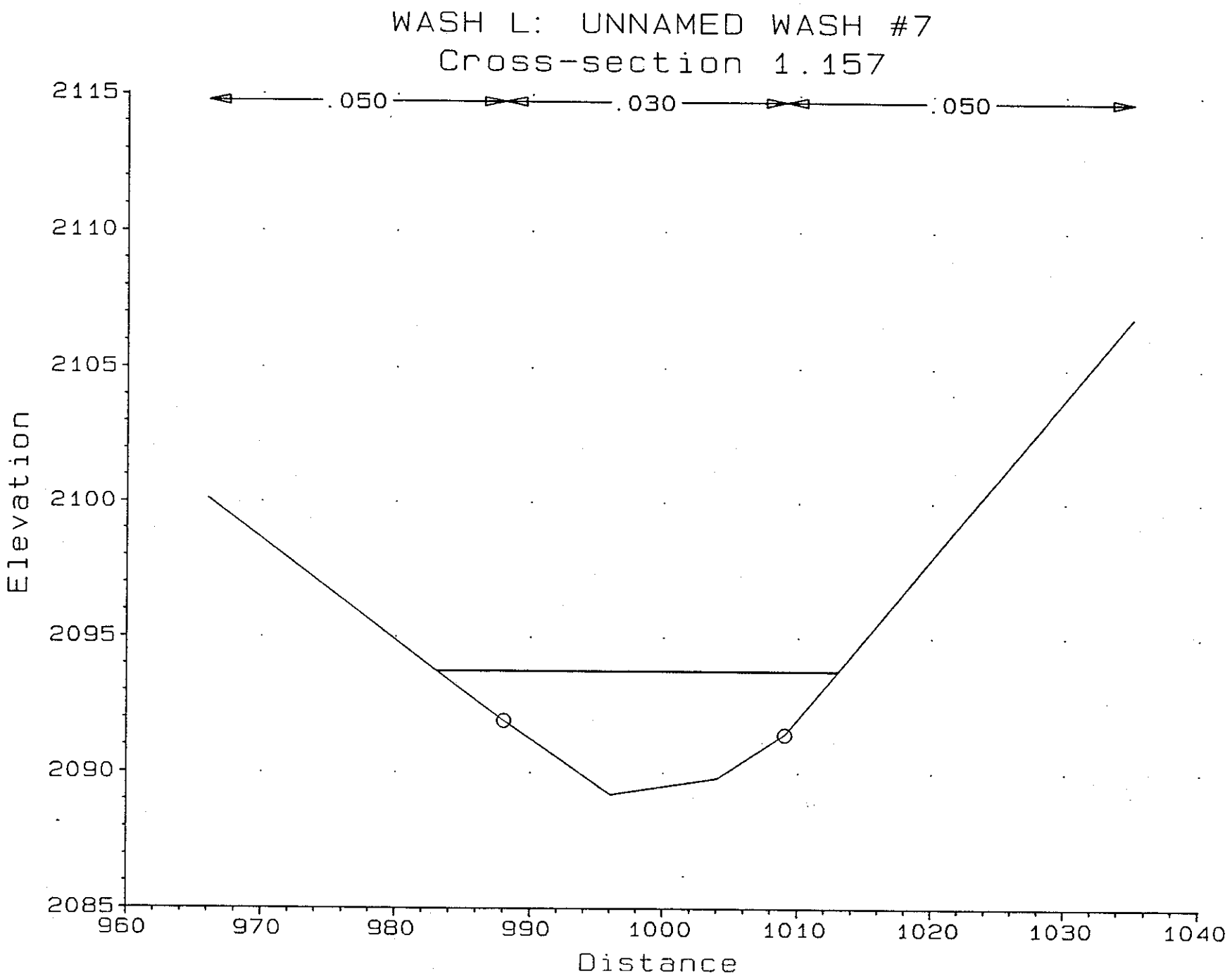
.030
.050
2085
2080
2075
2070
2065
2060
2055
Elevation
900
950
1000
1050
1100
1150
1200
1250
1300
Distance

WASH L: UNNAMED WASH #7
Cross-section 1.081

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Cross-section 1.157
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.030
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2115
2110
2105
2100
2095
2090
2085
Elevation
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970
980
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1000
1010
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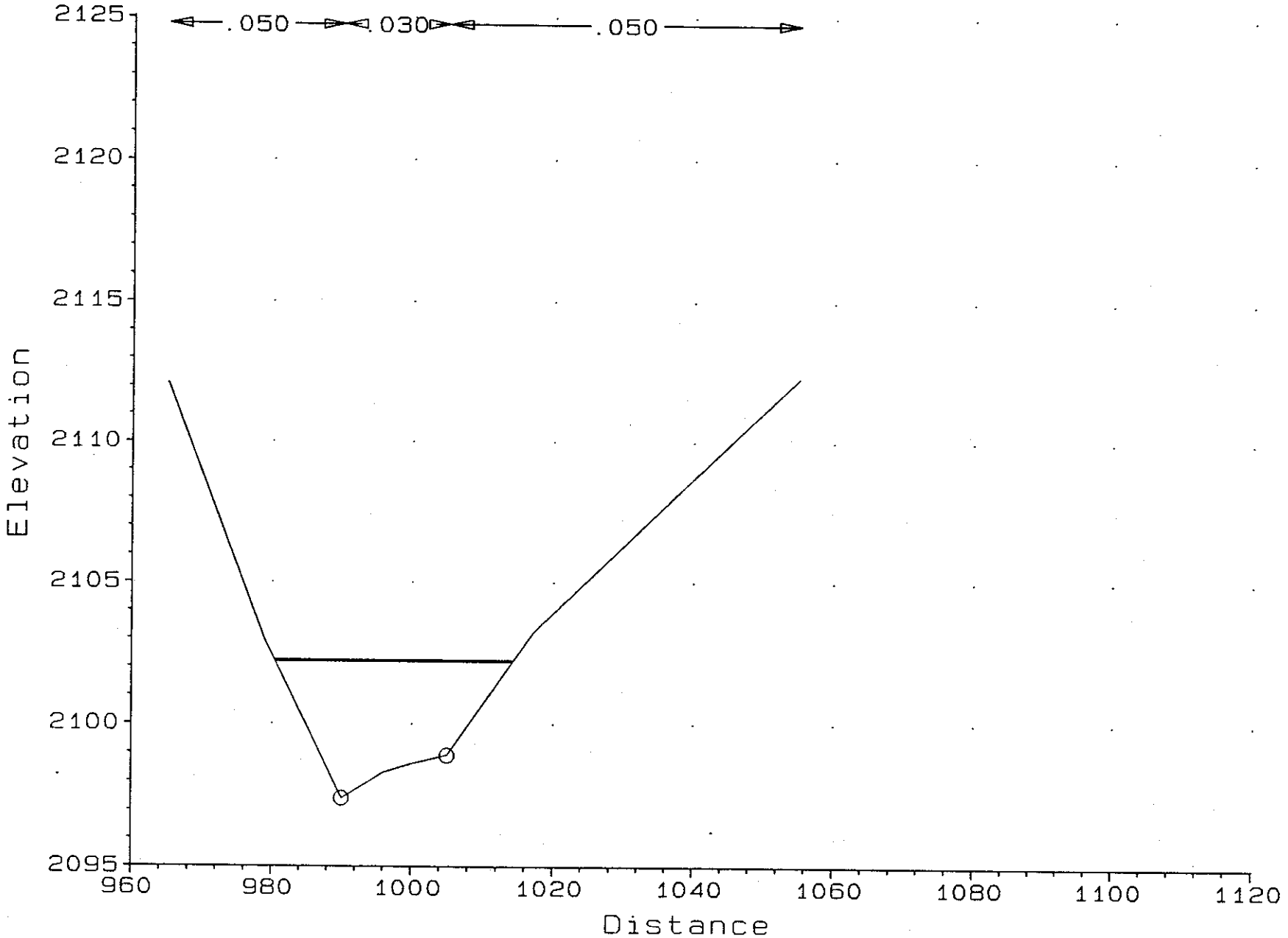
1030
1040
Distance

WASH L: UNNAMED WASH #7

Cross-section 1.230



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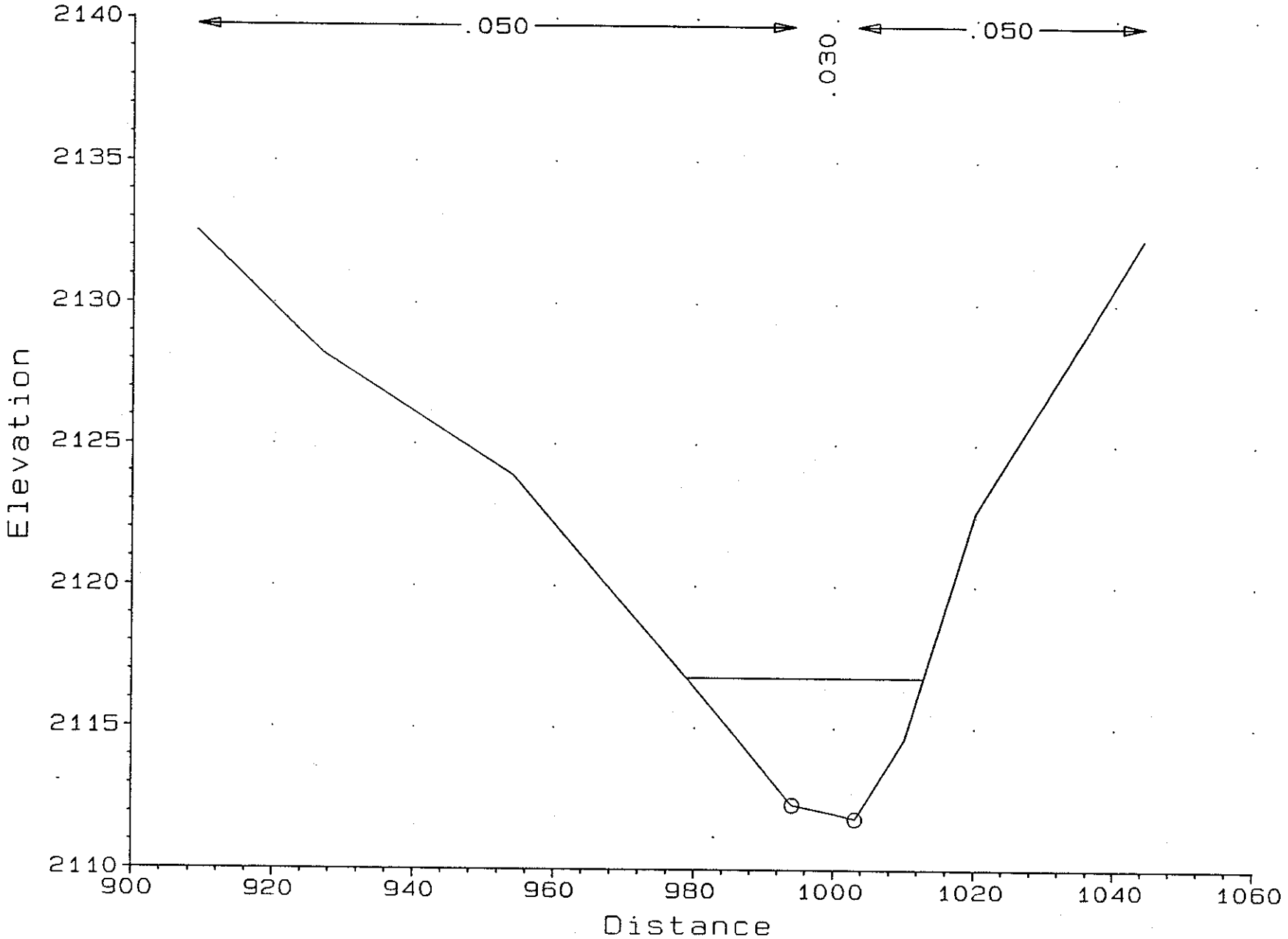
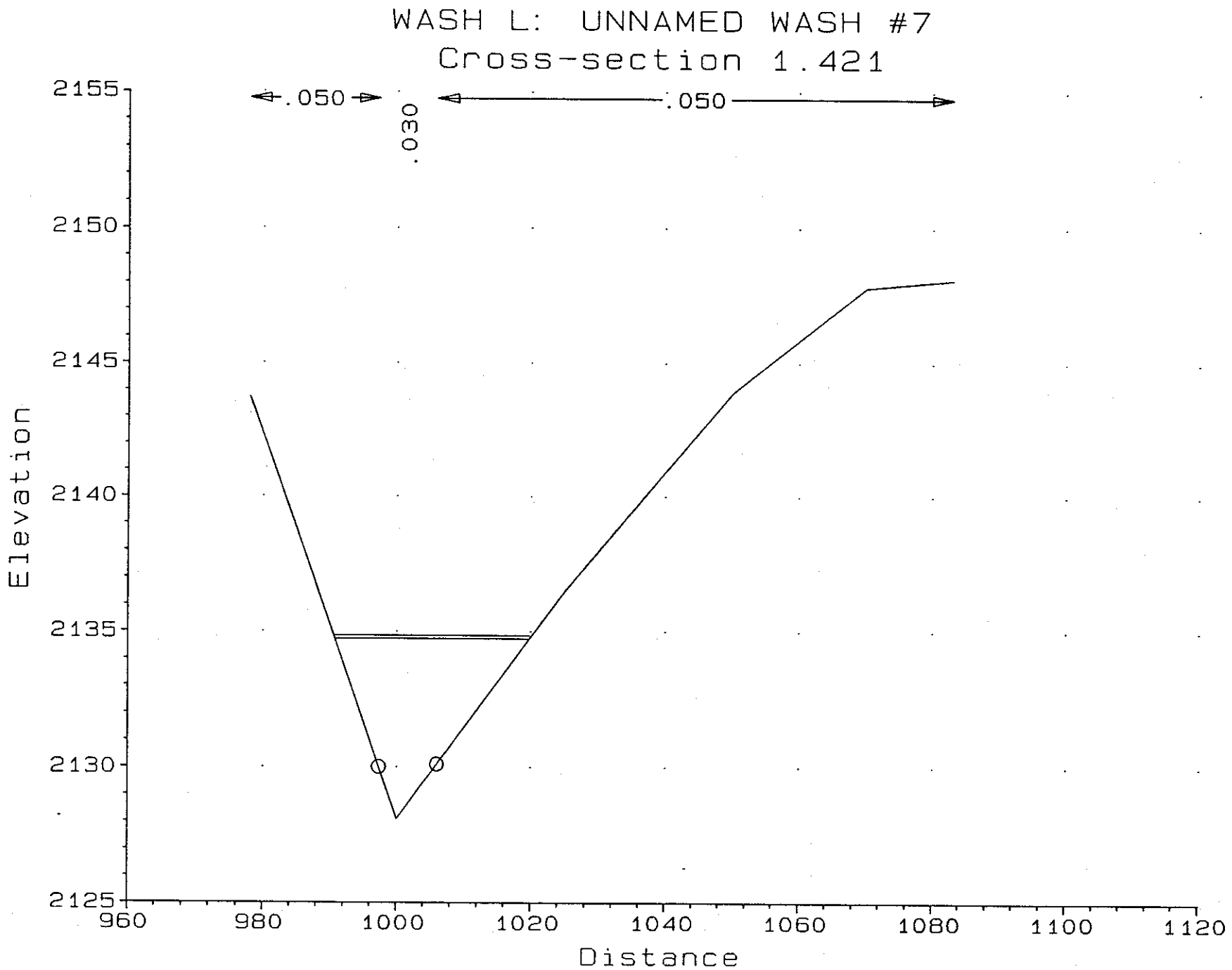
Cross-section 1.327

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Cross-section 1.421
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Elevation
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980
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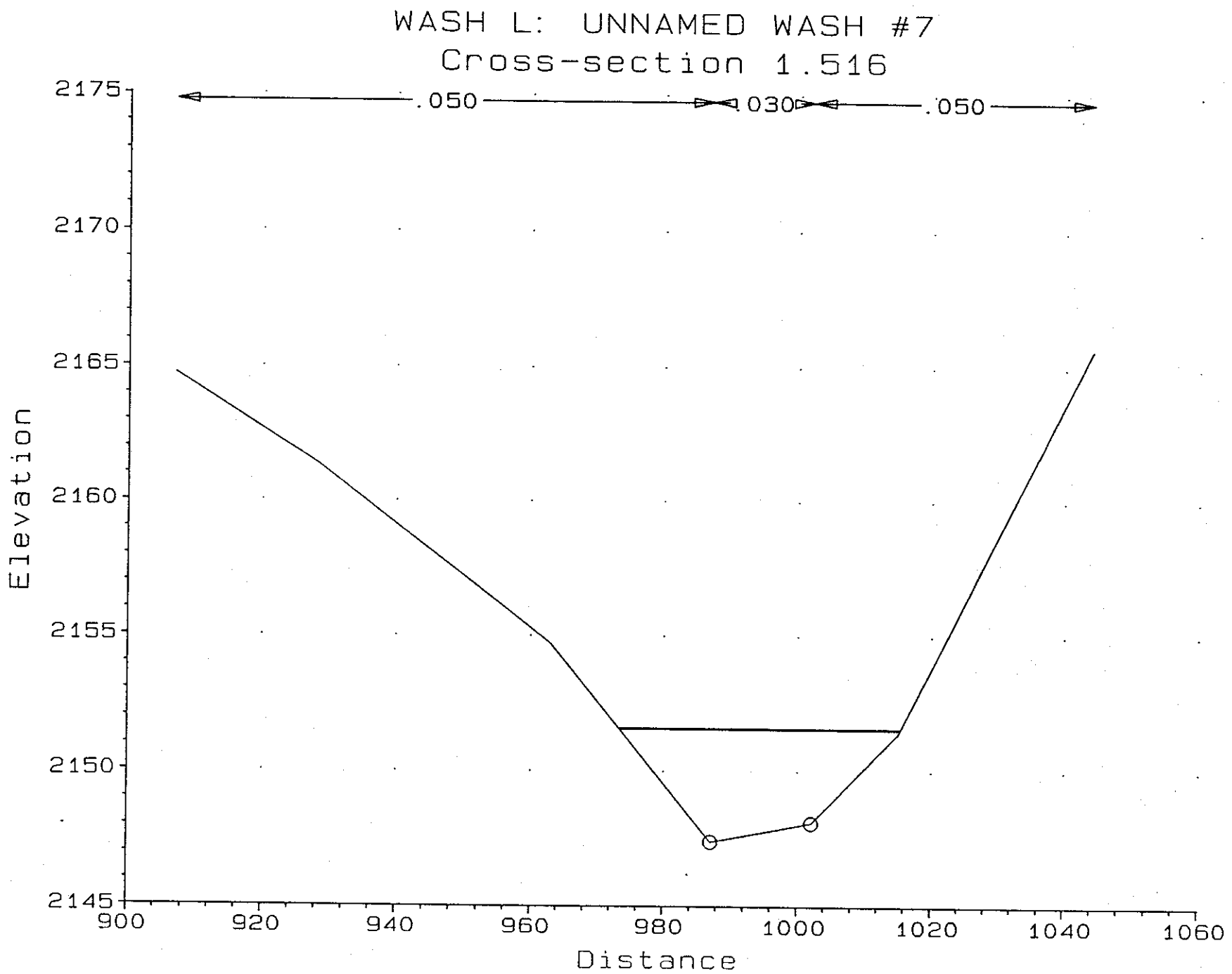
1040
1060
1080
1100
1120
Distance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Cross-section 1.516
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.030
.050
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2155
2150
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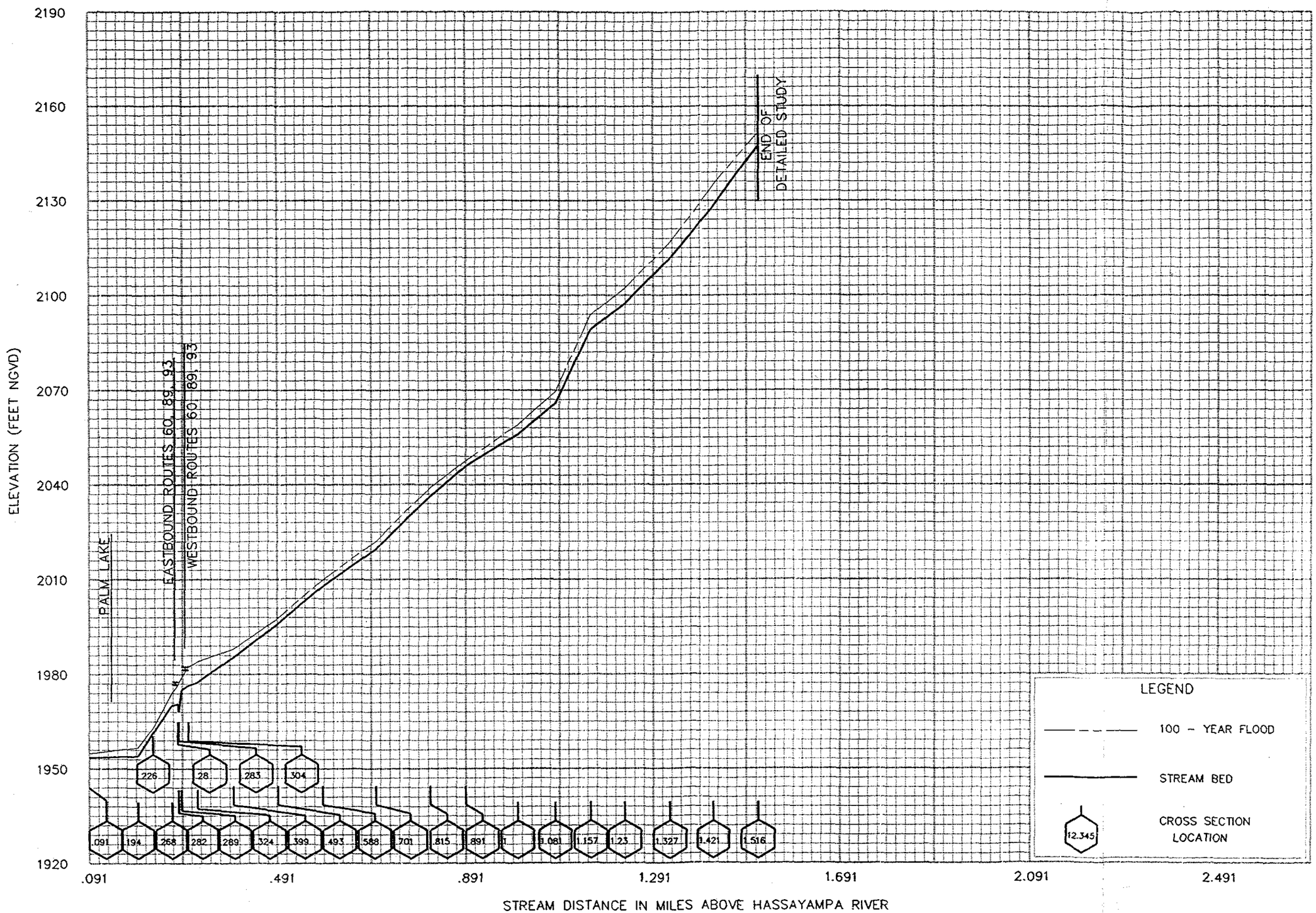
1000
1020
1040
1060
Distance



FLOOD PROFILES

UNNAMED WASH #7 (L)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/18/94 10:45:39 ACD-12_

PC FILE:WASHL.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.12: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #8 (Wash m)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1187\02\ADMIN\118702RP.063

May 1994

6.12

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: UNINCORPORATED MARICOPA COUNTY / TOWN OF WICKENBURG

Flooding Source: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#8)
(One form for each flooding source)

Project Name/Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

- ☐ Approximate study stream (Zone A)
- ☐ Detailed study stream (briefly explain methodology) NA

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- ☒ No existing analysis
- ☐ Improved data *(see data revision on page 3)*
- ☐ Changed physical conditions of watershed *(explain)*
- ☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*
- ☐ Evaluation of proposed conditions (CLOMRs only) (explain)
- ☒ Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- ☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
  Attach evidence of approval.
- ☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#8)

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
HASSAYAMPA R. CONFLUENCE	0.3	—	390

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS (*i.e. no changed hydraulic conditions*)? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN of WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

ic reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#8)
(One form for each flooding source)

Project Name/Identifier: Wickenburg AOMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.076

Upstream limit: Station 0.852

2. EFFECTIVE FIS

☒ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☐ Studied by detailed methods

Downstream limit of study _____

Upstream limit of study _____

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

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

☒ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	390	390
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .025 - .045

Overbanks ..... .040 - .070

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 16.44 ft

Specify location 0.852

3. What is the distance between the cross-sections in 2 above? ..... 500 ft

Specify location 0.852

4. What is the maximum distance between cross-sections? 610

Specify location 0.192

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... + foot

b. What is the maximum surcharge for the revised conditions? ..... NA foot

Specify location ..... ZONE A

c. What is the maximum velocity? ..... ~~11.67~~ fps

Specify location ..... ~~0.282~~

Explain:

d. Are there any negeative surcharge values at any cross-section NA ☐ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODIND SOURCE: WASH M: UNNAMED HASSAYAMPA R. TRIB (#8)

PROJECT NAME /IDENTIFIER: Wickenburg ADMS FCD 89-79

	PROPOSED EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
.076	1962.32														
.192	1964.71														
.237	1968.90														
.282	1982.88														
.324	1987.66														
.349	1989.21														
.394	1992.08														
.479	2002.80														
.530	2010.91														
.582	2025.88														
.672	2037.07														
.758	2045.79														
.852	2061.92														

COMMENTS:
New Model - ~~See following Floodway Data Table~~
ZONE A - NO FLOODWAY

1-100-year (natural) Water Surface Elevation
2-Encroachment (floodway) Water Surface Elevation
3-Surcharge Value

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

Sheet 1 of 1

Wickenburg ADMS FCD 89-79

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE/COASTAL MAPPING FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#8)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No 500-year, or coastal zones revised or delineated. Revised 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 ft Contour interval

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

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

Attach additional pages if needed.

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

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

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

~~Revised detailed 100-year floodplain replaces effective Zone floodplain.~~ NA NEW ZONE A FLOODPLAIN

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

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

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

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

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

If no, explain:

NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

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

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

   If yes, justify steeper slopes_____

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

   If no, describe erosion protection provided_____

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

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

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

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

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

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#8)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. Hwy 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.282 to Station 0.324
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

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

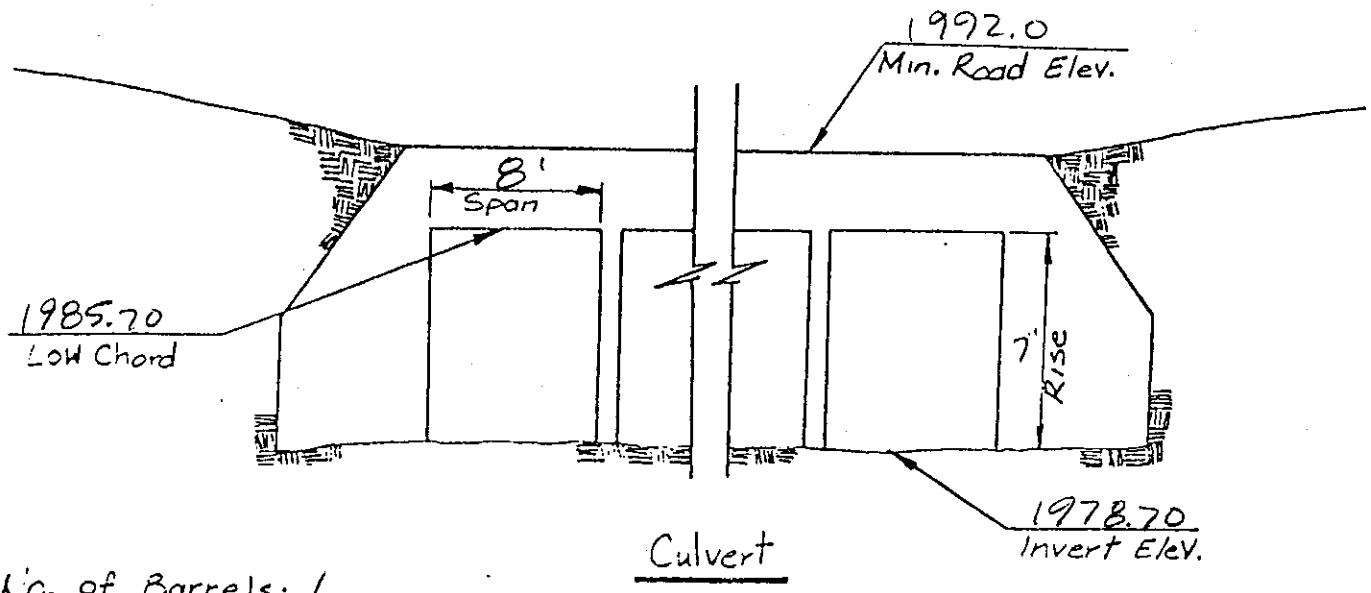
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) Single 8'x7' reinforced concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30°-75° wing walls with square top edge, sloping embankments and vertical abutments) 30°-70° wing walls with square top edge
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine

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

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

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



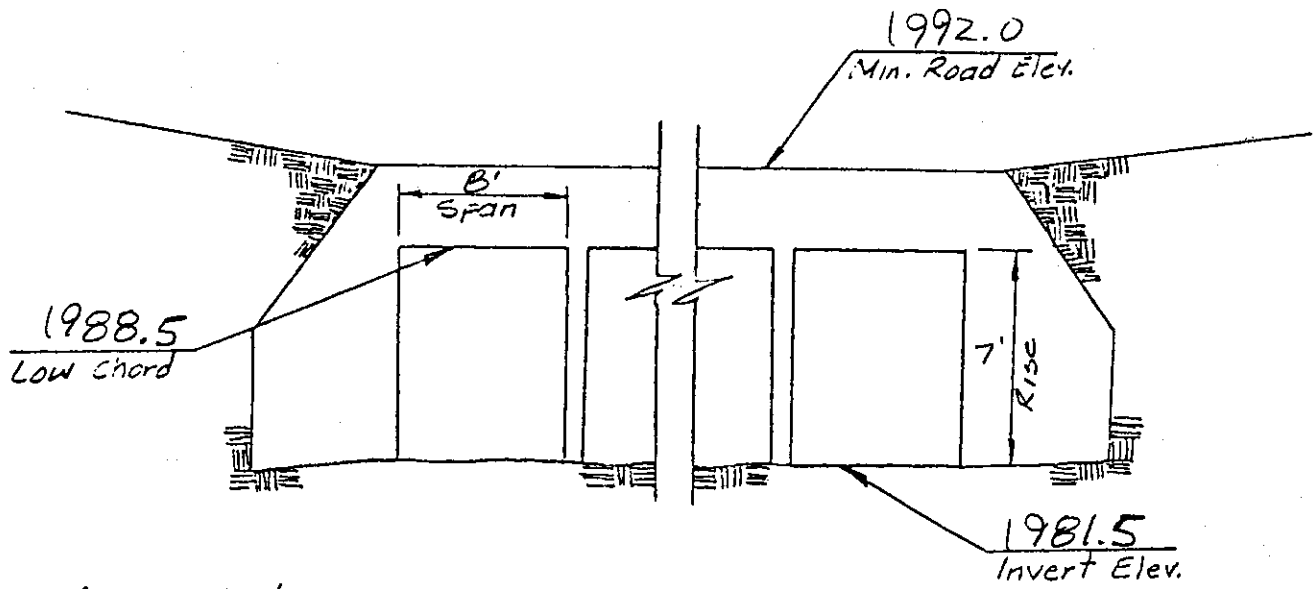
Culvert

No. of Barrels: 1

Culvert Size: 8x7

Approx. Depth of Sediment in Culvert: See Cross Section # 0.282

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



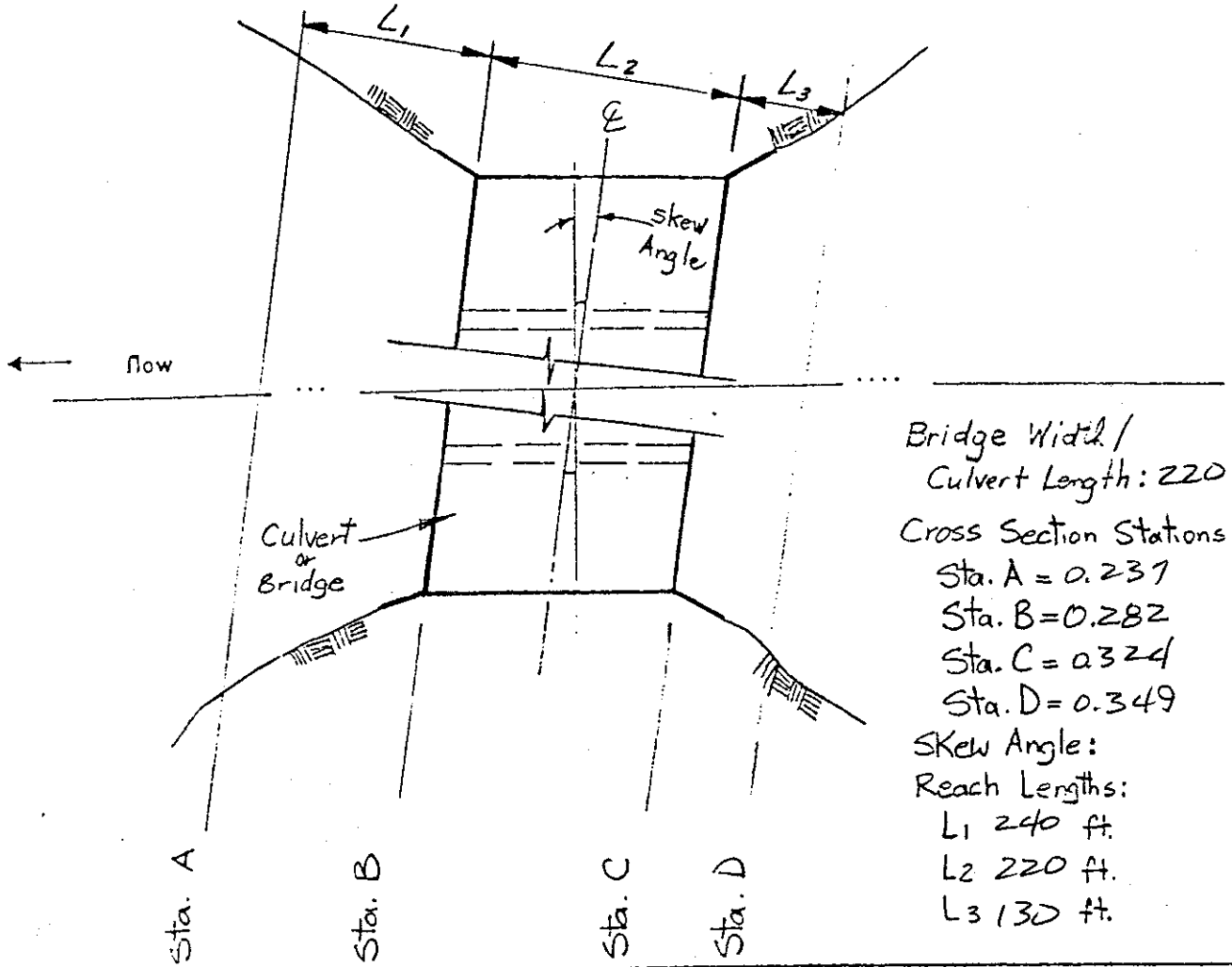
Culvert

No. of Barrels: 1

Culvert Size: 8x7

Approx. Depth of Sediment in Culvert: See Cross Section # 0.324

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



Bridge Width / Culvert Length: 220

Cross Section Stations
Sta. A = 0.237
Sta. B = 0.282
Sta. C = 0.324
Sta. D = 0.349

Skew Angle:

Reach Lengths:
L1 240 ft.
L2 220 ft.
L3 130 ft.

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

Culvert length or bridge width (ft)	220
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	56
Total culvert/bridge area (ft²)	56

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1987.6	1996.10
Downstream face	1987.6	1996.10

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1992.0	1992.0
Downstream face	1992.0	1992.0

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1987.66	1988.63
Downstream face	1982.88	1984.99

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	390	—	—	390

The maximum depth of flow over the roadway/railroad (ft.) ..... —

Weir length (ft.) ..... —

Top Widths

	Floodplain	Floodway
Upstream face	8	8
Downstream face	8	8

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	8	8
Downstream face	8	8

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	.015
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	NA
Pier coefficient	NA
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) No encroachment

Comments *(explain any unusual situations)*:

Attach analysis.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    29JUN92    TIME   13:23:24 *
*****************************************
```

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

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

THIS RUN EXECUTED 29JUN92 13:23:24

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

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


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      BLACK & VEATCH PN 17676  COE & VAN LOO JN 1197-02
T3      WASH M: UNNAMED WASH #8          (FILE WASHM.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                  1962.32

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

    0.050     0.040     0.025       0.1       0.3
QT      2       390       390
            CONFLUENCE OF WASH M: UNNAMED WASH #8
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 TJ (HASSAYAMPA RIVER MILE 48.05)
                 TL (HASSAYAMPA RIVER MILE 48.19)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

X1    0.076        19     993.8    1003.3         0         0         0
GR   1972.8      907.    1970.9      926.    1964.6      960.    1962.1      987.    1960.0     993.8
GR   1960.0     1000.    1960.0    1003.3    1961.0     1010.    1961.6     1064.    1962.2     1108.
GR   1963.2     1134.    1964.0     1150.    1964.5     1204.    1964.5     1256.    1968.1     1269.
GR   1970.2     1287.    1979.6     1318.    1983.9     1337.    1983.6     1350.

NC    0.070    0.070     0.045       0.1       0.3
X1    0.192       16       995      1005       610       620       610
GR   1976.0      932.    1974.1      935.    1973.6      954.    1968.3      965.    1963.8      988.
GR   1962.9      995.    1962.9     1000.    1962.9     1005.    1963.0     1015.    1963.8     1053.
GR   1963.7     1141.    1963.2     1177.    1963.2     1212.    1963.9     1233.    1968.6     1263.
GR   1978.4     1293.
```

```
                9.1                                                                939.      1112.
          ET RECORD -  STATION 1112.0 ELIMINATE INEFFECTIVE
                       FLOW AREA IN RIGHT OVERBANK
X1   0.237      20      995     1005     240      220      240
GR   1980.4     939.    1972.2  958.     1968.1   980.     1967.7   995.     1967.5   1000.
GR   1967.7     1005.   1967.9  1042.    1968.3   1050.    1968.4   1057.    1969.0   1089.
GR   1969.3     1109.   1969.3  1112.    1969.1   1175.    1968.2   1245.    1967.7   1278.
GR   1967.6     1320.   1967.8  1341.    1971.3   1361.    1976.3   1387.    1980.1   1402.

NC   0.060      0.060   0.015   0.6      0.8
          DOWNSTREAM FACE: 1 - 8' X 7' RCB

          NOTE:  EB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE DS FACE SECTION
X1   0.282      11      996     1004     220      240      240
X3   10                                                                1987.6   1996.1
GR   1987.6     518.    1989.5  653.     1992.2   811.     1995.1   992.     1996.1   995.9
GR   1978.7     996.    1978.7  1000.    1978.7   1004.    1996.1   1004.1   1996.1   1100.
GR   1996.4     1130.

SC   1.015      0.4     3.0     0        7        8        219.5    8.1      1981.5   1978.7
          UPSTREAM FACE: 1 - 8' X 7' RCB

          NOTE:  WB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE US FACE SECTION
     0.324      11      996     1004     219.5    219.5    219.5
                         2       1988.5   1992.0
X3   10                                                                1992.0   1999.6
BT   -11        518.    1992.0           653.     1993.9           811.     1996.6
BT              992.    1999.5           995.9    1999.6           996.     1999.6
BT              1000.   1999.6           1004.    1999.6           1004.1   1999.6
BT              1100.   2000.5           1130.    2000.8
GR   1992.0     518.    1993.9  653.     1996.6   811.     1999.5   992.     1999.6   995.9
GR   1981.5     996.    1981.5  1000.    1981.5   1004.    1999.6   1004.1   2000.5   1100.
GR   2000.8     1130.

NC   0.070      0.070   0.045   0.6      0.8
X1   0.349      13      991     1000     130      130      130
GR   2008.1     947.    1987.8  981.     1984.0   988.     1981.9   991.     1981.9   1000.
GR   1982.3     1003.   1983.3  1013.    1984.0   1022.    1984.9   1028.    1988.0   1038.
GR   1992.8     1045.   1996.0  1055.    2001.2   1080.

NC   0.070      0.070   0.045   0.1      0.3
X1   0.394      19      997     1003.8   220      270      240
GR   2013.7     876.    2006.7  882.     1995.5   914.     1994.7   924.     1994.2   936.
GR   1993.8     948.    1993.4  959.     1992.3   970.     1988.9   997.     1987.9   1000.
GR   1988.9     1003.8  1991.6  1014.    1991.8   1047.    1992.0   1120.    1993.9   1125.
GR   1998.6     1137.   2001.8  1152.    2002.1   1222.    2002.4   1267.
```

[illegible]	0.050	0.050	0.030	0.1	0.3					
X1	0.479	13	982	1000	450	380	450			
GR	2020.6	946.	2016.4	955.	2004.0	965.0	2001.8	975.	2000.8	982.
GR	2000.8	990.	2000.8	1000.	2001.9	1010.	2003.4	1020.	2004.9	1034.
GR	2004.2	1044.	2005.1	1058.	2016.8	1091.				
X1	0.530	9	992	1002.7	260	270	270			
GR	2025.1	947.	2018.1	960.	2009.5	977.	2008.8	992.	2008.3	1000.
GR	2008.8	1002.7	2009.6	1007.	2011.5	1017.	2025.5	1034.		
X1	0.582	9	992	1000	270	270	270			
GR	2044.5	954.	2030.5	972.8	2023.8	986.	2023.8	992.	2023.8	1000.
GR	2024.4	1014.	2030.6	1022.	2038.8	1037.	2040.4	1049.		
X1	0.672	14	994	1001.1	480	480	480			
GR	2048.8	945.	2045.7	948.	2041.5	954.8	2037.0	962.	2035.3	982.
GR	2034.9	988.	2034.5	994.	2034.1	1000.	2034.5	1001.1	2035.2	1003.
GR	2038.0	1009.	2041.4	1017.	2052.4	1045.	2052.4	1067.		
X1	0.758	9	1000	1008	450	450	450			
GR	2057.1	951.	2049.7	959.	2043.8	987.	2043.6	1000.	2043.5	1003.
GR	2043.6	1008.	2048.1	1025.	2054.0	1041.	2058.2	1056.		
X1	0.852	11	994.4	1003.1	500	500	500			
GR	2076.4	949.	2072.6	954.	2067.3	968.	2066.7	975.	2059.5	991.
[illegible]	059.2	994.4	2058.7	1000.	2059.2	1003.1	2060.0	1008	2065.0	1011.
[illegible]	2081.6	1049.								

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .076

CONFLUENCE OF WASH M: UNNAMED WASH #8
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
TJ (HASSAYAMPA RIVER MILE 48.05)
TL (HASSAYAMPA RIVER MILE 48.19)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED BY SLOPE AREA METHOD

.076	2.32	1962.32	1962.30	1962.32	1962.69	.37	.00	.00	1960.00
390.0	20.0	156.6	213.4	8.9	22.0	85.9	.0	.0	1960.00
.00	2.25	7.10	2.48	.050	.025	.040	.000	1960.00	984.62
.004650	0.	0.	0.	0	5	0	.00	126.50	1111.12

FLOW DISTRIBUTION FOR SECNO= .08 CWSEL= 1962.32

STA=	985.	987.	994.	1003.	1010.	1064.	1108.	1111.
PER Q=	.0	5.1	40.1	11.7	36.2	6.7	.0	
AREA=	.3	8.6	22.0	12.2	55.1	18.5	.2	
VEL=	.5	2.3	7.1	3.7	2.6	1.4	.4	
DEPTH=	.1	1.3	2.3	1.8	1.0	.4	.1	

CCHV= .100 CEHV= .300
*SECNO .192

.192	1.81	1964.71	1964.00	.00	1964.74	.03	2.02	.03	1962.90
390.0	13.5	43.8	332.8	11.6	18.1	276.7	3.0	2.7	1962.90
.13	1.16	2.42	1.20	.070	.045	.070	.000	1962.90	983.34
.002425	610.	610.	620.	4	13	0	.00	254.83	1238.18

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

FLOW DISTRIBUTION FOR SECNO= .19 CWSEL= 1964.71

STA=	983.	988.	995.	1005.	1015.	1053.	1141.	1177.	1212.	1233.	1238.
PER Q=	.3	3.1	11.2	6.9	16.0	22.1	14.2	18.7	7.2	.3	
AREA=	2.1	9.5	18.1	17.6	49.8	84.6	45.4	52.9	24.4	2.1	
VEL=	.6	1.3	2.4	1.5	1.3	1.0	1.2	1.4	1.2	.6	
DEPTH=	.5	1.4	1.8	1.8	1.3	1.0	1.3	1.5	1.2	.4	

*SECNO .237
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 939.0 1112.0 TYPE= 1 TARGET= 173.000
ET RECORD - STATION 1112.0 ELIMINATE INEFFECTIVE
FLOW AREA IN RIGHT OVERBANK

.237	1.40	1968.90	1968.90	.00	1969.31	.41	1.40	.11	1967.70
390.0	66.0	99.8	224.2	16.7	13.0	57.5	4.0	3.6	1967.70
.14	3.95	7.69	3.90	.070	.045	.070	.000	1967.50	975.72
.038313	240.	240.	220.	0	15	0	.00	107.87	1083.58

DISTRIBUTION FOR SECNO= .24 CWSEL= 1968.90

STA=	976.	980.	995.	1005.	1042.	1050.	1057.	1084.
PER Q=	1.0	15.9	25.6	46.1	5.9	2.7	2.8	
AREA=	1.7	15.0	13.0	40.6	6.4	3.8	6.6	
VEL=	2.2	4.1	7.7	4.4	3.6	2.8	1.6	
DEPTH=	.4	1.0	1.3	1.1	.8	.5	.2	

CCHV= .600 CEHV= .800
*SECNO .282

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1987.60 ELREA= 1996.10

DOWNSTREAM FACE: 1 - 8' X 7' RCB

```
          NOTE:  EB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE DS FACE SECTION
     .282      4.18   1982.88   1982.88      .00   1984.99      2.11      1.29      1.36   1978.70
    390.0        .0     390.0        .0       .0      33.4        .0       4.3       4.0   1978.70
      .15       .00     11.67       .00     .000      .015      .000      .000   1978.70    996.00
   .002061     220.      240.      240.        0        20         0       .00      8.00   1004.00


FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1982.88

STA=     996.    1004.
  PER Q=    100.0
   AREA=     33.4
    VEL=     11.7
  DEPTH=      4.2


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    1          .015      .40      3.00       .00      7.00      8.00    219.50      8         1       1981.50   1978.70

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

*SECNO  .324

 IAL CULVERT OUTLET CONTROL
EGIC =   1988.226  EGOC =   1988.631  PCWSE=   1982.878  ELTRD=   1992.000


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.91

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
  1988.23   1988.63     3.64       0.      390.    7.914      56.0   1992.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1992.00 ELREA=      1999.60

          UPSTREAM FACE: 1 - 8' X 7' RCB

          NOTE:  WB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE US FACE SECTION
     .324      6.16   1987.66       .00       .00   1988.63       .97      3.64       .00   1981.50
    390.0        .0     390.0        .0       .0      49.3        .0       4.6       4.0   1981.50
      .15       .00      7.91       .00     .000      .015      .000      .000   1981.50    996.00
    0565      220.      220.      220.         3         0         0       .00      8.00   1004.00
```

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

FLOW DISTRIBUTION FOR SECNO= .32 CWSEL= 1987.66

STA=	996.	1004.
PER Q=	100.0	
AREA=	49.3	
VEL=	7.9	
DEPTH=	6.2	

CCHV= .600 CEHV= .800
*SECNO .349

3301 HV CHANGED MORE THAN HVINS

.349	7.31	1989.21	1984.62	.00	1989.24	.04	.05	.56	1981.90
390.0	37.7	139.3	213.0	43.7	65.8	192.9	5.1	4.1	1981.90
.18	.86	2.12	1.10	.070	.045	.070	.000	1981.90	978.63
.000289	130.	130.	130.	2	14	0	.00	61.14	1039.77

FLOW DISTRIBUTION FOR SECNO= .35 CWSEL= 1989.21

STA=	979.	981.	988.	991.	1000.	1003.	1013.	1022.	1028.	1038.	1040.
PER Q=	.1	4.4	5.2	35.7	7.3	20.4	14.5	7.4	4.9	.1
AREA=	1.7	23.2	18.8	65.8	21.3	64.2	50.1	28.6	27.7	1.1
VEL=	.3	.7	1.1	2.1	1.3	1.2	1.1	1.0	.7	.2
DEPTH=	.7	3.3	6.3	7.3	7.1	6.4	5.6	4.8	2.8	.6

CCHV= .100 CEHV= .300
*SECNO .394
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.394	4.19	1992.09	1992.09	.00	1992.58	.49	.21	.14	1988.90
390.0	115.9	191.3	82.8	40.5	25.1	45.8	6.3	4.7	1988.90
.19	2.86	7.62	1.81	.070	.045	.070	.000	1987.90	971.65
.009860	220.	240.	270.	0	14	0	.00	148.60	1120.24

FLOW DISTRIBUTION FOR SECNO= .39 CWSEL= 1992.09

STA=	972.	997.	1004.	1014.	1047.	1120.
PER Q=	29.7	49.0	14.9	3.8	2.5
AREA=	40.5	25.1	18.8	13.0	14.1
VEL=	2.9	7.6	3.1	1.1	.7
DEPTH=	1.6	3.7	1.8	.4	.2

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


CCHV=     .100 CEHV=     .300
*SECNO  .479
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .479      2.00   2002.80   2002.80       .00   2003.56       .76      4.35       .08   2000.80
    390.0      45.2     284.7      60.1      12.8      36.1      17.3       7.1       5.6   2000.80
      .21      3.52      7.89      3.48      .050      .030      .050      .000   2000.80    970.43
  .010040      450.      450.      380.         0        11         0       .00     45.60   1016.03


FLOW DISTRIBUTION FOR SECNO=       .48          CWSEL=   2002.80

STA=     970.     975.     982.    1000.    1010.    1016.
  PER Q=      1.1     10.5     73.0     14.2      1.2
   AREA=      2.3     10.5     36.1     14.5      2.7
    VEL=      1.9      3.9      7.9      3.8      1.7
  DEPTH=       .5      1.5      2.0      1.5       .5

*SECNO  .530
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .530      2.61   2010.91   2010.91       .00   2011.75       .84      2.75       .02   2008.80
    390.0     121.6     226.5      41.9      28.4      25.2      11.9       7.5       5.9   2008.80
      .22      4.29      8.97      3.53      .050      .030      .050      .000   2008.30    974.21
  .010524      260.      270.      270.         0        11         0       .00     39.68   1013.89


FLOW DISTRIBUTION FOR SECNO=       .53          CWSEL=   2010.91

STA=     974.     977.     992.    1003.    1007.    1014.
  PER Q=      1.1     30.0     58.1      8.1      2.6
   AREA=      2.0     26.4     25.2      7.4      4.5
    VEL=      2.2      4.4      9.0      4.3      2.3
  DEPTH=       .7      1.8      2.4      1.7       .7

*SECNO  .582
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .582      2.08   2025.88   2025.88       .00   2026.77       .89      3.37       .02   2023.80
    390.0      88.8     164.5     136.7      16.7      16.6      26.3       7.9       6.1   2023.80
      .23      5.30      9.89      5.19      .050      .030      .050      .000   2023.80    981.90
  .015006      270.      270.      270.         0        15         0       .00     34.01   1015.91
```

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

FLOW DISTRIBUTION FOR SECNO= .58 CWSEL= 2025.88

STA=	982.	986.	992.	1000.	1014.	1016.
PER Q=	3.8	19.0	42.2	34.1	.9	
AREA=	4.3	12.5	16.6	24.9	1.4	
VEL=	3.5	5.9	9.9	5.3	2.5	
DEPTH=	1.0	2.1	2.1	1.8	.7	

*SECNO .672
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.672	2.97	2037.07	2037.07	.00	2037.84	.78	5.64	.01	2034.50
390.0	175.8	184.8	29.4	44.3	19.6	7.9	8.7	6.5	2034.50
.25	3.97	9.41	3.71	.050	.030	.050	.000	2034.10	961.90
.009446	480.	480.	480.	0	14	0	.00	45.10	1007.00

FLOW DISTRIBUTION FOR SECNO= .67 CWSEL= 2037.07

STA=	962.	982.	988.	994.	1001.	1003.	1007.
PER Q=	12.8	13.7	18.6	47.4	5.1	2.5	
AREA=	18.3	11.8	14.2	19.6	4.2	3.7	
VEL=	2.7	4.5	5.1	9.4	4.7	2.6	
DEPTH=	.9	2.0	2.4	2.8	2.2	.9	

*SECNO .758
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.758	2.29	2045.79	2045.79	.00	2046.65	.86	4.98	.02	2043.60
390.0	183.2	174.6	32.2	36.6	17.9	9.1	9.4	7.0	2043.60
.27	5.00	9.73	3.54	.050	.030	.050	.000	2043.50	977.54
.013157	450.	450.	450.	0	15	0	.00	38.74	1016.28

FLOW DISTRIBUTION FOR SECNO= .76 CWSEL= 2045.79

STA=	978.	987.	1000.	1008.	1016.
PER Q=	8.1	38.9	44.8	8.2	
AREA=	9.4	27.2	17.9	9.1	
VEL=	3.4	5.6	9.7	3.5	
DEPTH=	1.0	2.1	2.2	1.1	

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

```
*SECNO  .852
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .852      3.22   2061.92   2061.92       .00   2063.09      1.18      5.67       .10   2059.20
     390.0      68.7     261.1      60.2      15.2      25.8      12.5      10.0       7.3   2059.20
       .29      4.51     10.12      4.84      .050      .030      .050      .000   2058.70    985.63
   .009878      500.      500.      500.         0        11         0       .00     23.52   1009.15

FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   2061.92

STA=     986.     991.     994.    1003.    1008.    1009.
  PER Q=      5.2     12.4     67.0     14.9       .5
   AREA=      6.5      8.7     25.8     11.4      1.1
    VEL=      3.2      5.5     10.1      5.1      1.8
  DEPTH=      1.2      2.6      3.0      2.3      1.0
```

THIS RUN EXECUTED 29JUN92 13:23:34

****
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

WASH M: UNNAMED WASH #8

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.076	.00	.00	.00	1960.00	390.00	1962.32	1962.30	1962.69	46.50	7.10	116.87	57.19
	.192	610.00	.00	.00	1962.90	390.00	1964.71	1964.00	1964.74	24.25	2.42	306.47	79.19
*	.237	240.00	.00	.00	1967.50	390.00	1968.90	1968.90	1969.31	383.13	7.69	87.17	19.92
	.282	240.00	.00	.00	1978.70	390.00	1982.88	1982.88	1984.99	20.61	11.67	33.42	85.90
*	.324	219.50	1992.00	1988.50	1981.50	390.00	1987.66	.00	1988.63	5.65	7.91	49.28	164.07
	.349	130.00	.00	.00	1981.90	390.00	1989.21	1984.62	1989.24	2.89	2.12	302.46	229.43
*	.394	240.00	.00	.00	1987.90	390.00	1992.09	1992.09	1992.58	98.60	7.62	111.42	39.28
*	.479	450.00	.00	.00	2000.80	390.00	2002.80	2002.80	2003.56	100.40	7.89	66.18	38.92
*	.530	270.00	.00	.00	2008.30	390.00	2010.91	2010.91	2011.75	105.24	8.97	65.46	38.02
*	.582	270.00	.00	.00	2023.80	390.00	2025.88	2025.88	2026.77	150.06	9.89	59.71	31.84
*	.672	480.00	.00	.00	2034.10	390.00	2037.07	2037.07	2037.84	94.46	9.41	71.87	40.13
*	.758	450.00	.00	.00	2043.50	390.00	2045.79	2045.79	2046.65	131.57	9.73	63.64	34.00
*	.852	500.00	.00	.00	2058.70	390.00	2061.92	2061.92	2063.09	98.78	10.12	53.48	39.24

: UNNAMED WASH #8

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.076	390.00	1962.32	.00	.00	.00	126.50	.00
	.192	390.00	1964.71	.00	2.39	.00	254.83	610.00
*	.237	390.00	1968.90	.00	4.19	.00	107.87	240.00
*	.282	390.00	1982.88	.00	13.98	.00	8.00	240.00
*	.324	390.00	1987.66	.00	4.78	.00	8.00	219.50
	.349	390.00	1989.21	.00	1.55	.00	61.14	130.00
*	.394	390.00	1992.09	.00	2.89	.00	148.60	240.00
*	.479	390.00	2002.80	.00	10.71	.00	45.60	450.00
*	.530	390.00	2010.91	.00	8.10	.00	39.68	270.00
*	.582	390.00	2025.88	.00	14.97	.00	34.01	270.00
	.672	390.00	2037.07	.00	11.19	.00	45.10	480.00
*	.758	390.00	2045.79	.00	8.73	.00	38.74	450.00
*	.852	390.00	2061.92	.00	16.12	.00	23.52	500.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .237  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .237  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .282  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .282  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .324  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .394  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .394  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .479  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .479  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .530  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .530  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .582  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .582  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .672  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .672  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .758  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .758  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .852  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .852  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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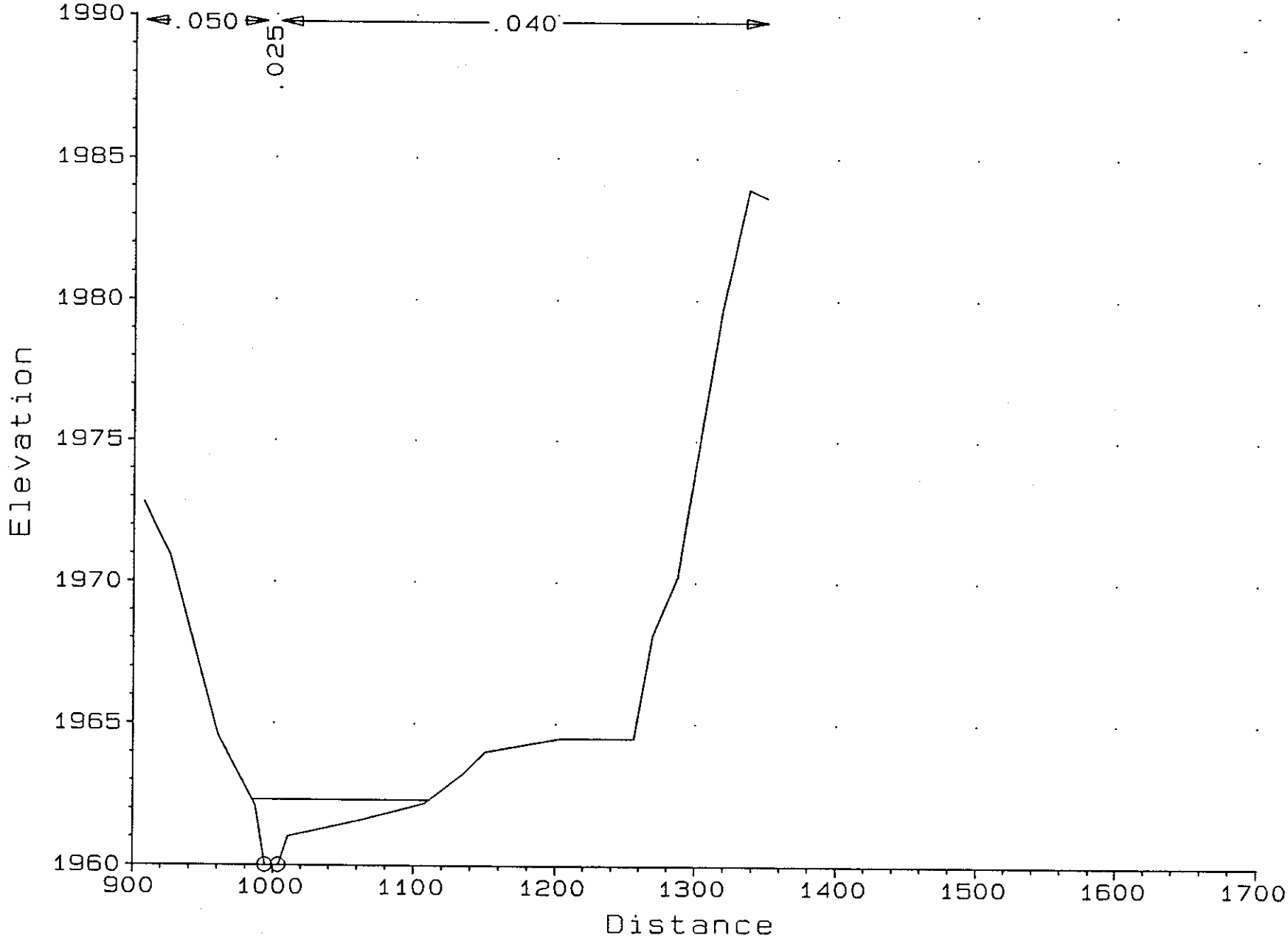
WASH M: UNNAMED WASH #8

Cross-section .076



WASH M: UNNAMED WASH #8

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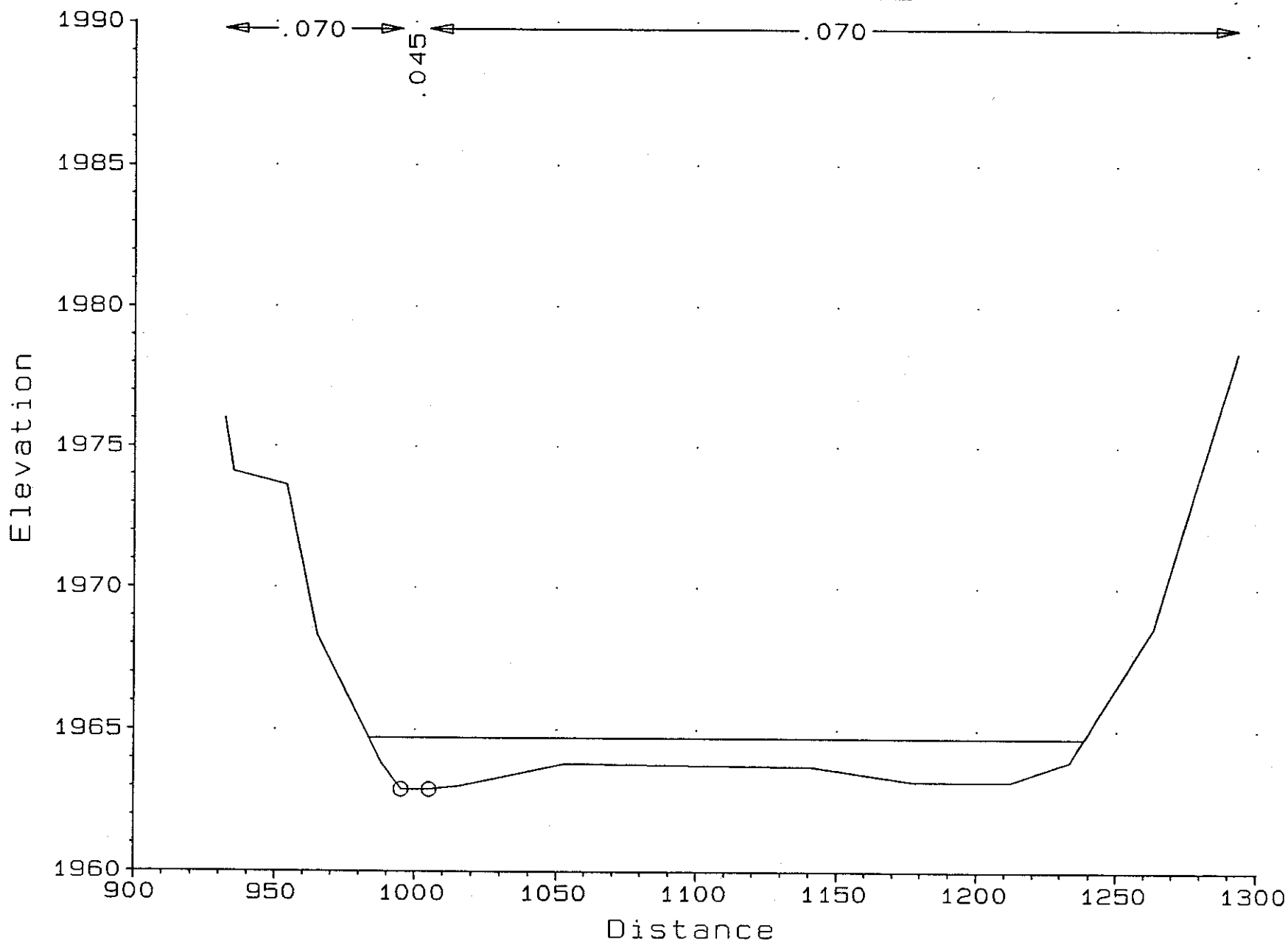
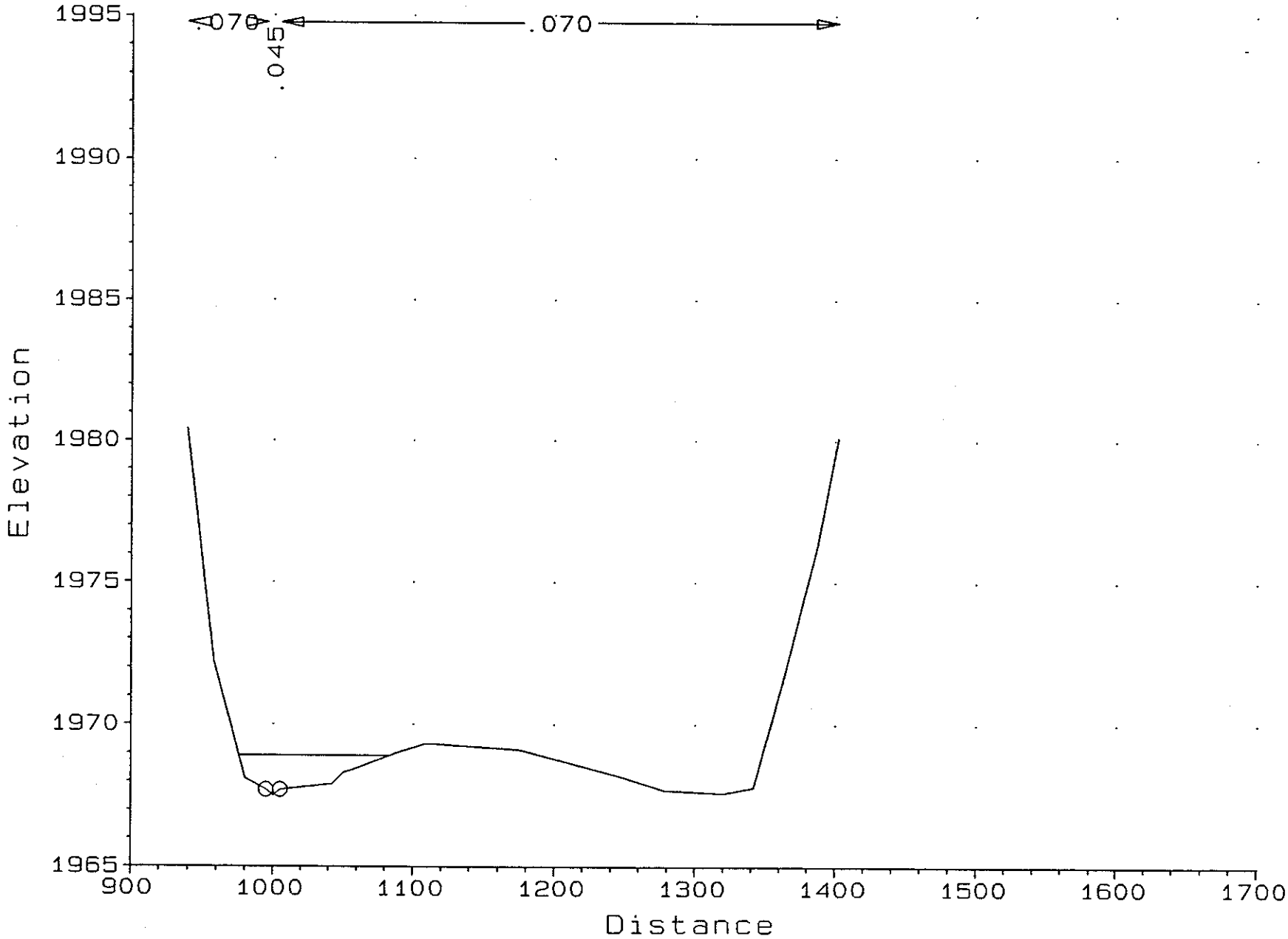
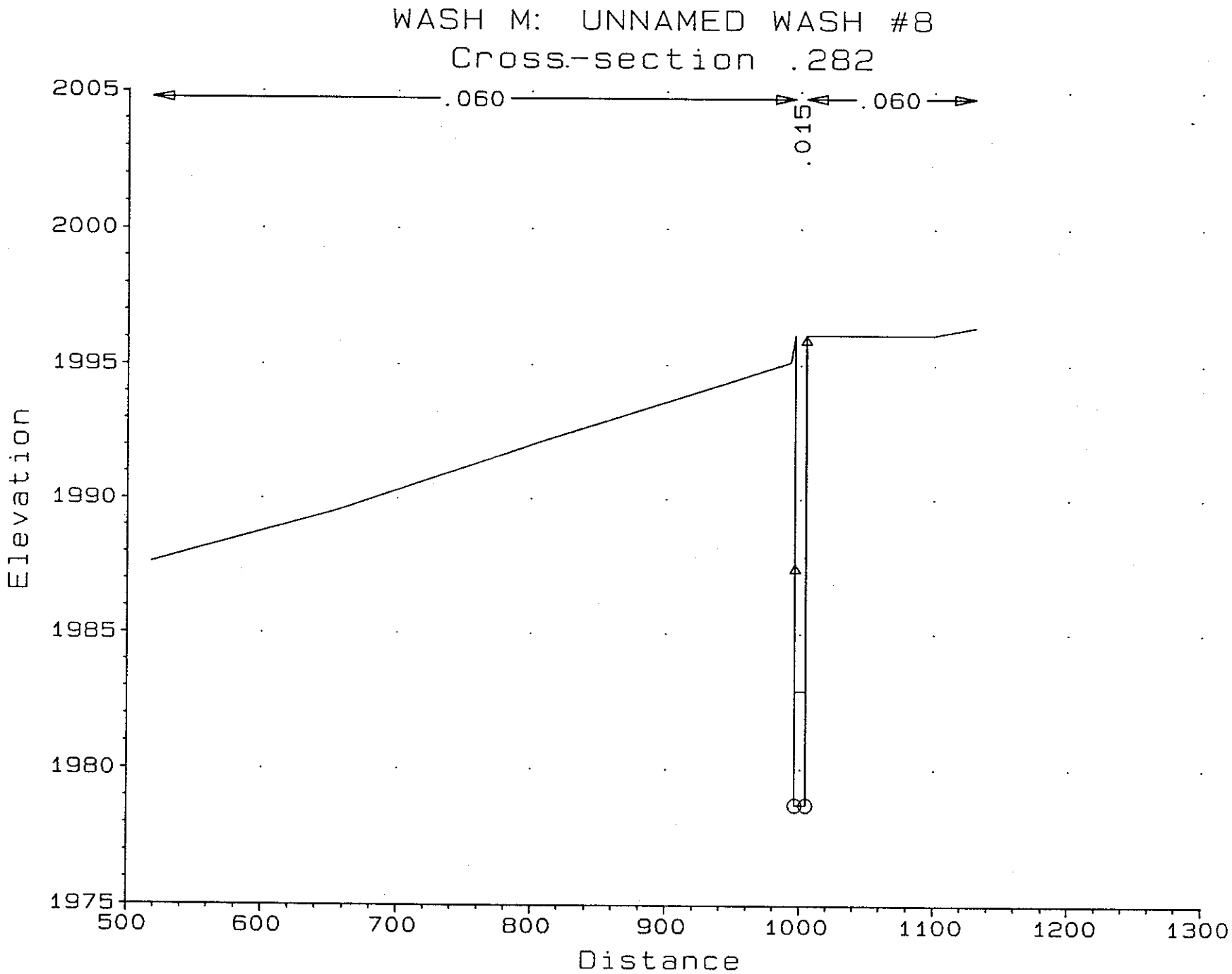


WASH M: UNNAMED WASH #8

Cross-section .237

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Cross-section .282
.060
.060
.015
2005
2000
1995
1990
1985
1980
1975
Elevation
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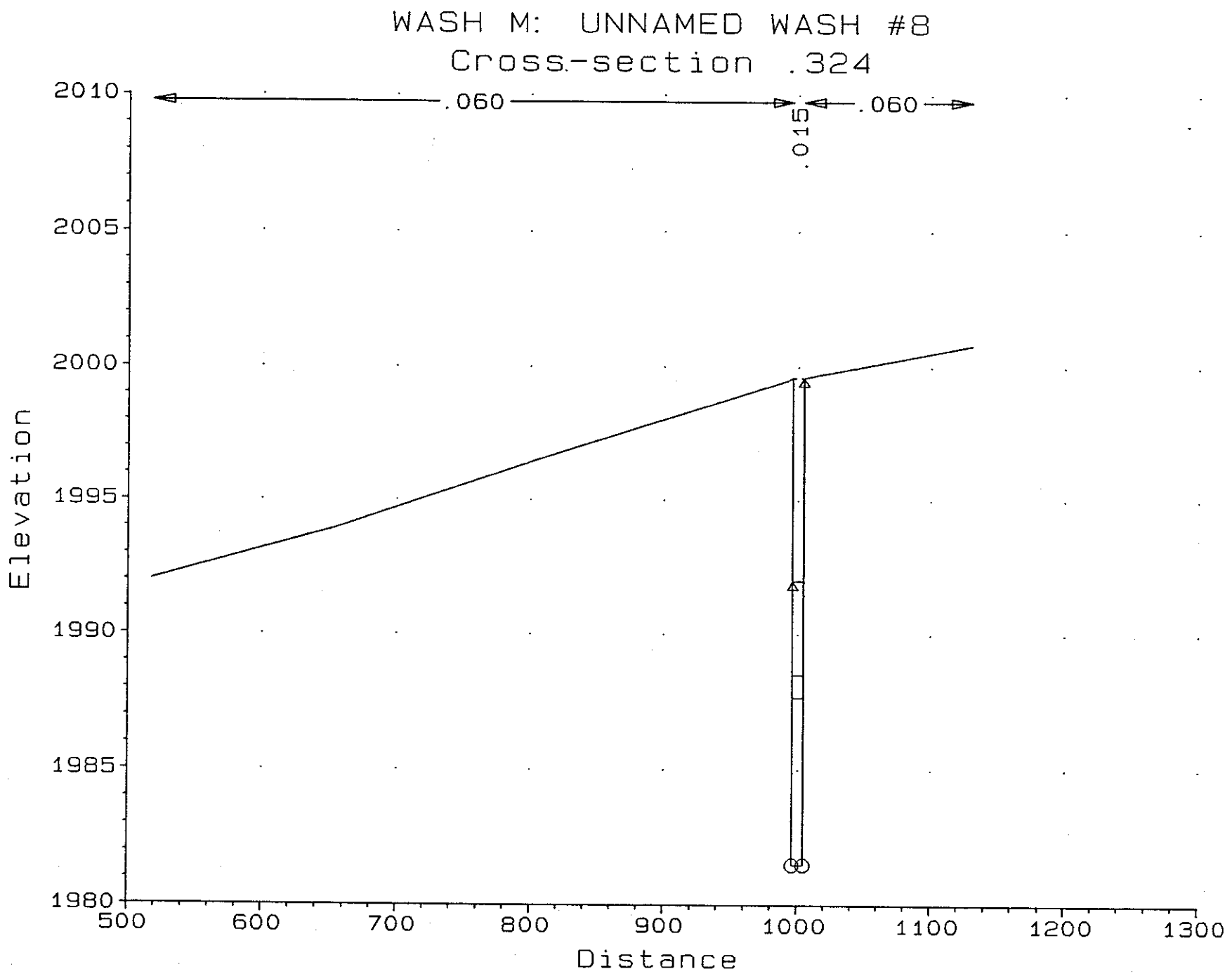
600
700
800
900
1000
1100
1200
1300
Distance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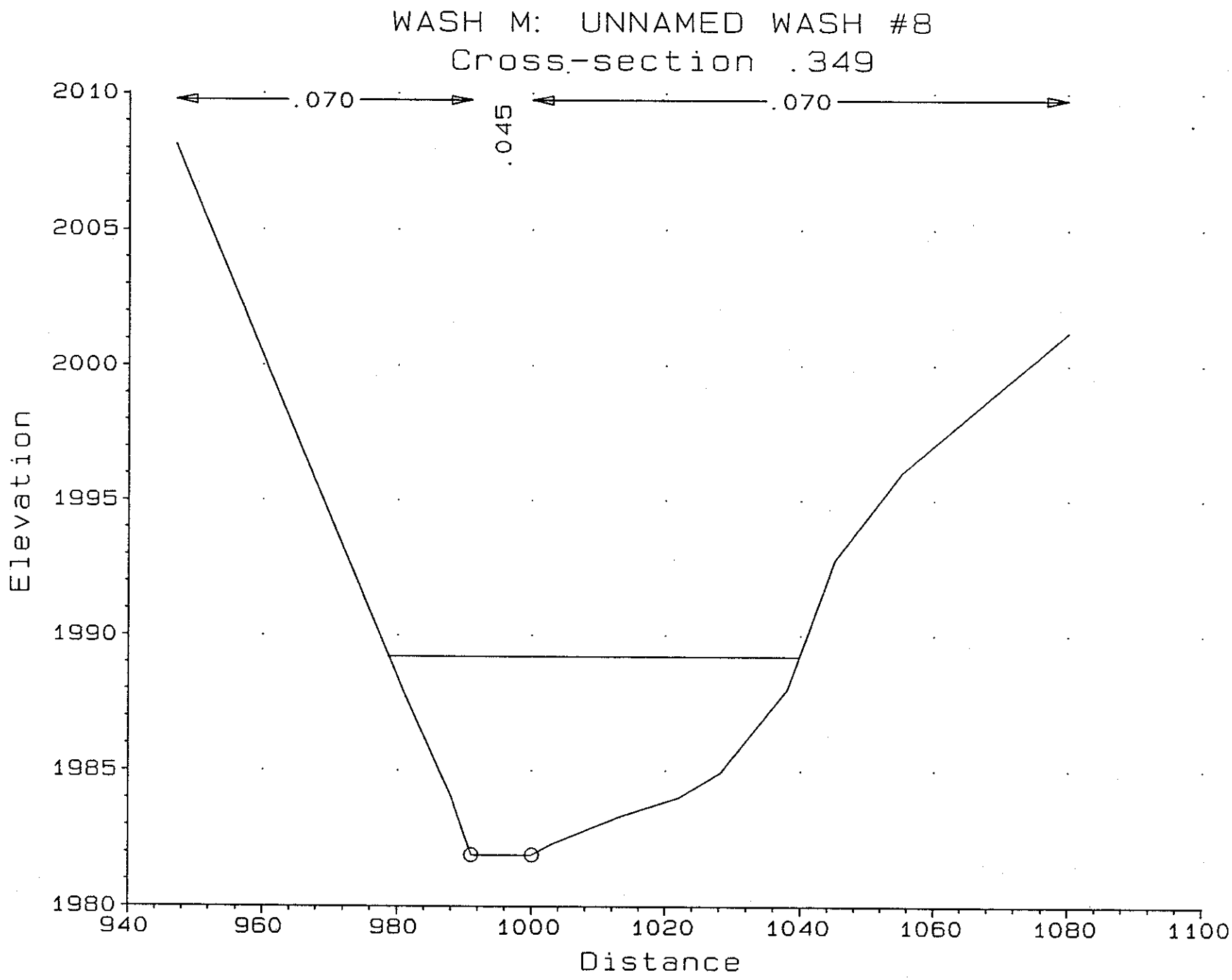
Cross-section .324
.060
.060
.015
2010
2005
2000
1995
1990
1985
1980
Elevation
500
600
700
800
900
1000
1100
1200
1300
Distance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Cross-section .349
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.045
.070
2010
2005
2000
1995
1990
1985
1980
Elevation
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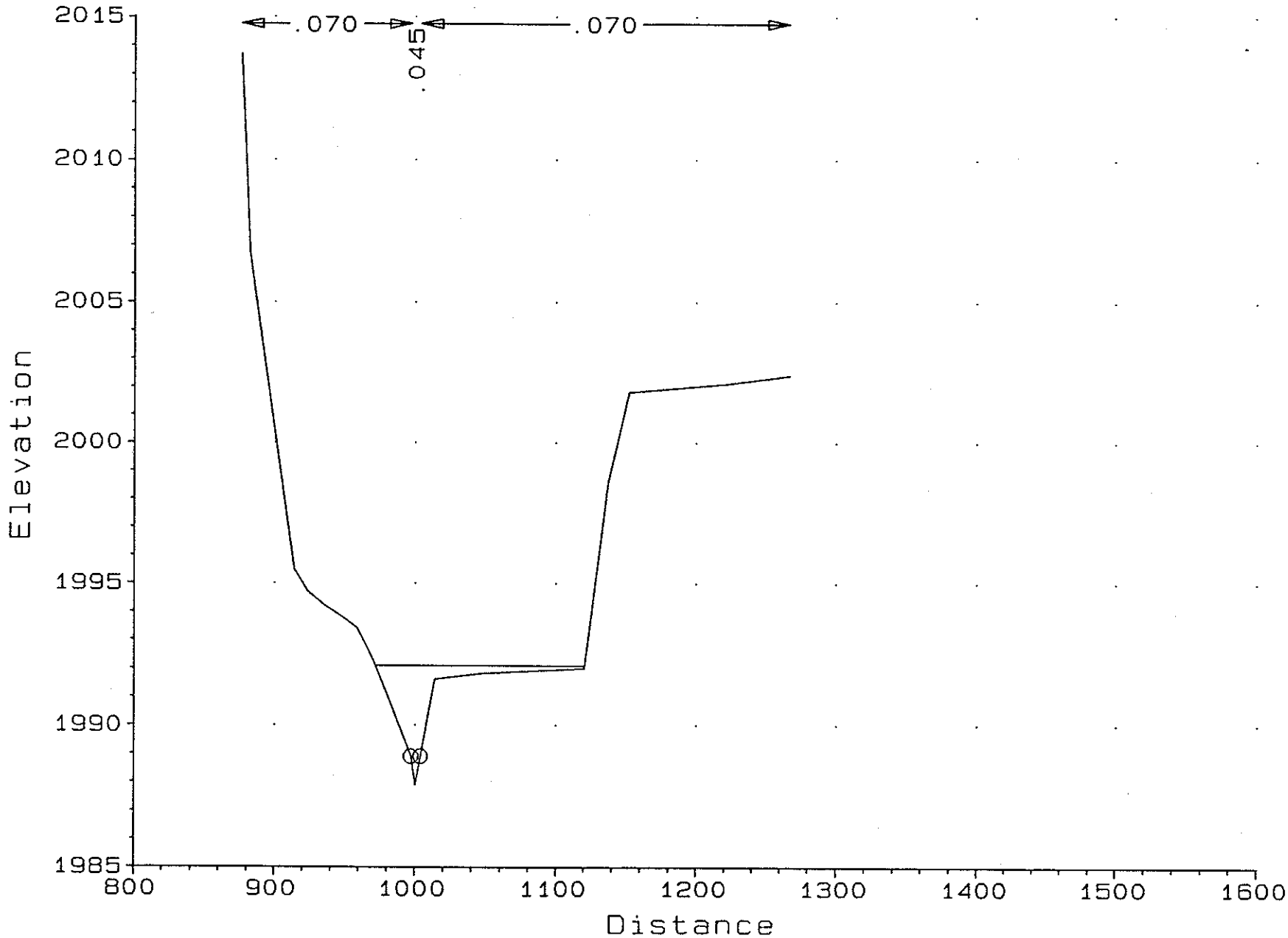
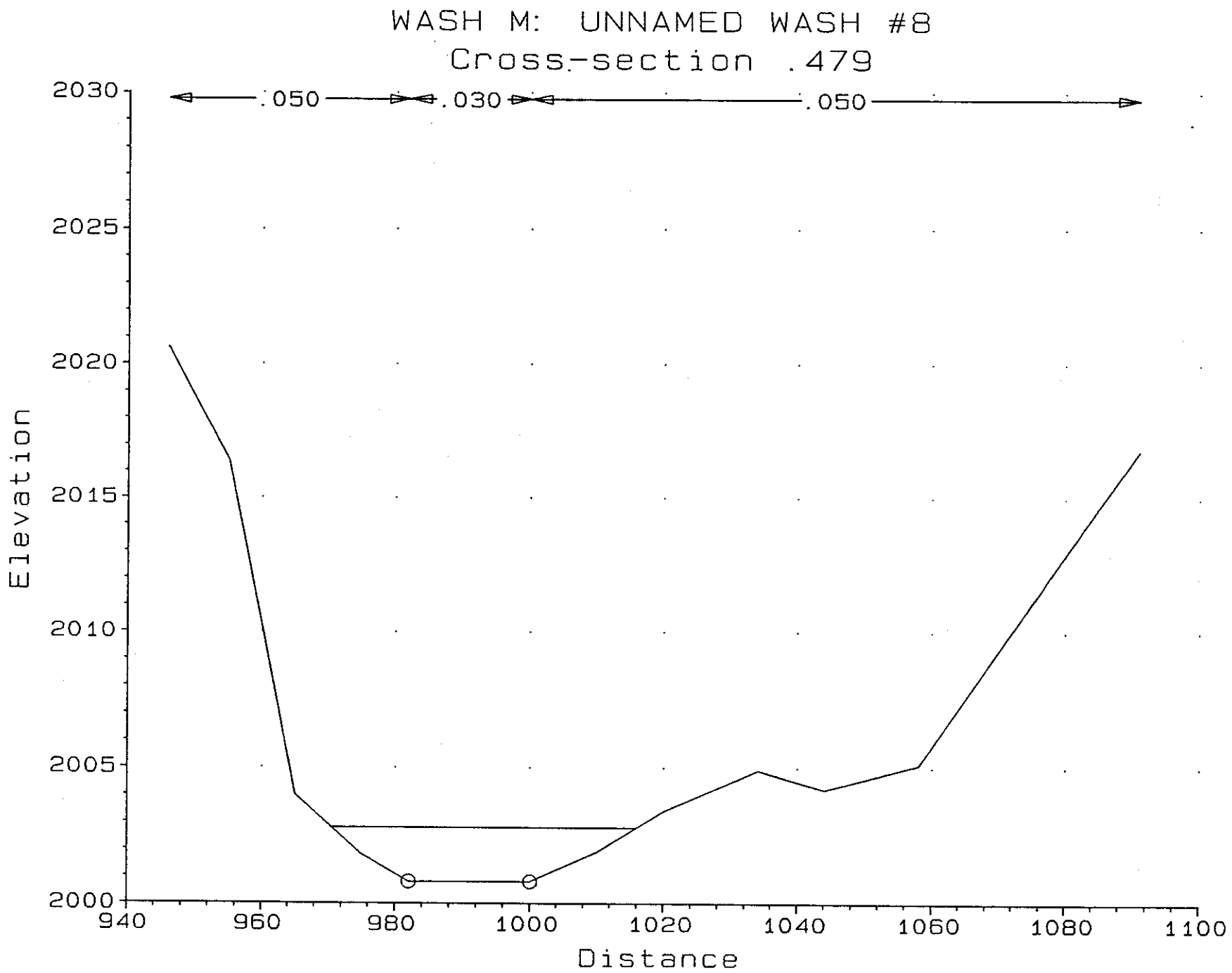
960
980
1000
1020
1040
1060
1080
1100
Distance

WASH M: UNNAMED WASH #8

Cross-section .394




WASH M: UNNAMED WASH #8
Cross-section .479
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.030
.050
2030
2025
2020
2015
2010
2005
2000
Elevation
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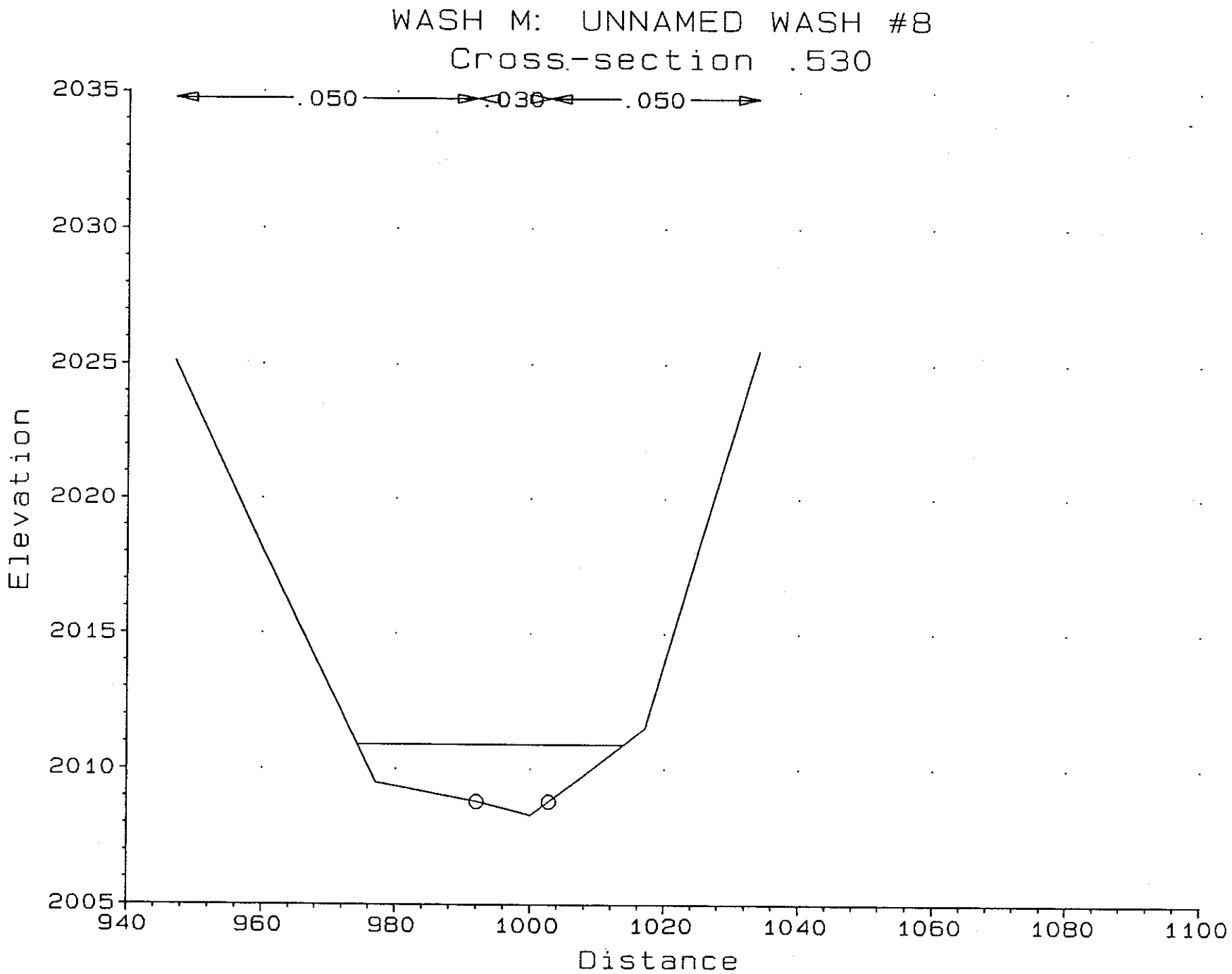
1040
1060
1080
1100
Distance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.030
.050
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Elevation
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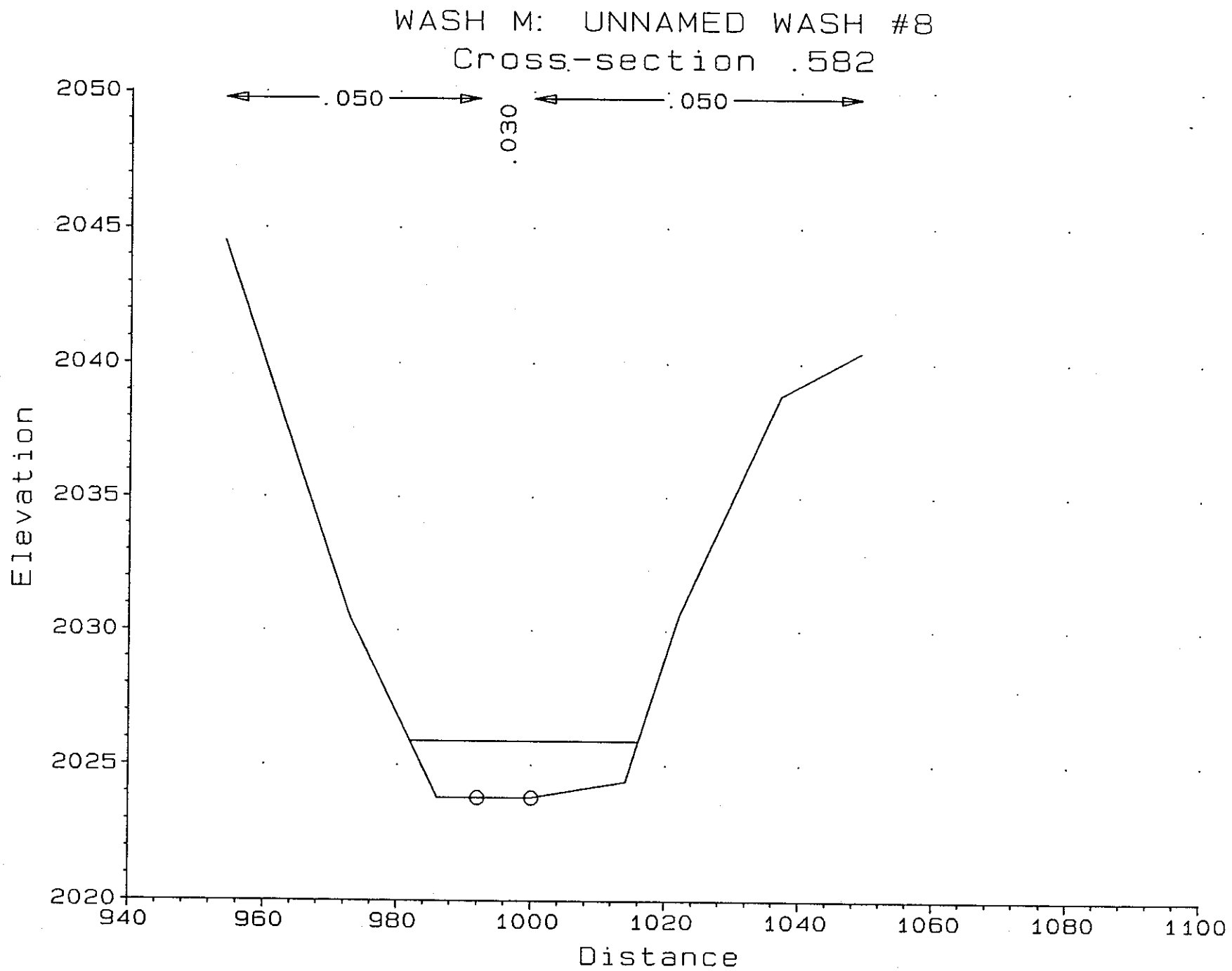
1100
Distance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Cross-section .582
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.030
.050
Elevation
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2030
2025
2020
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1000
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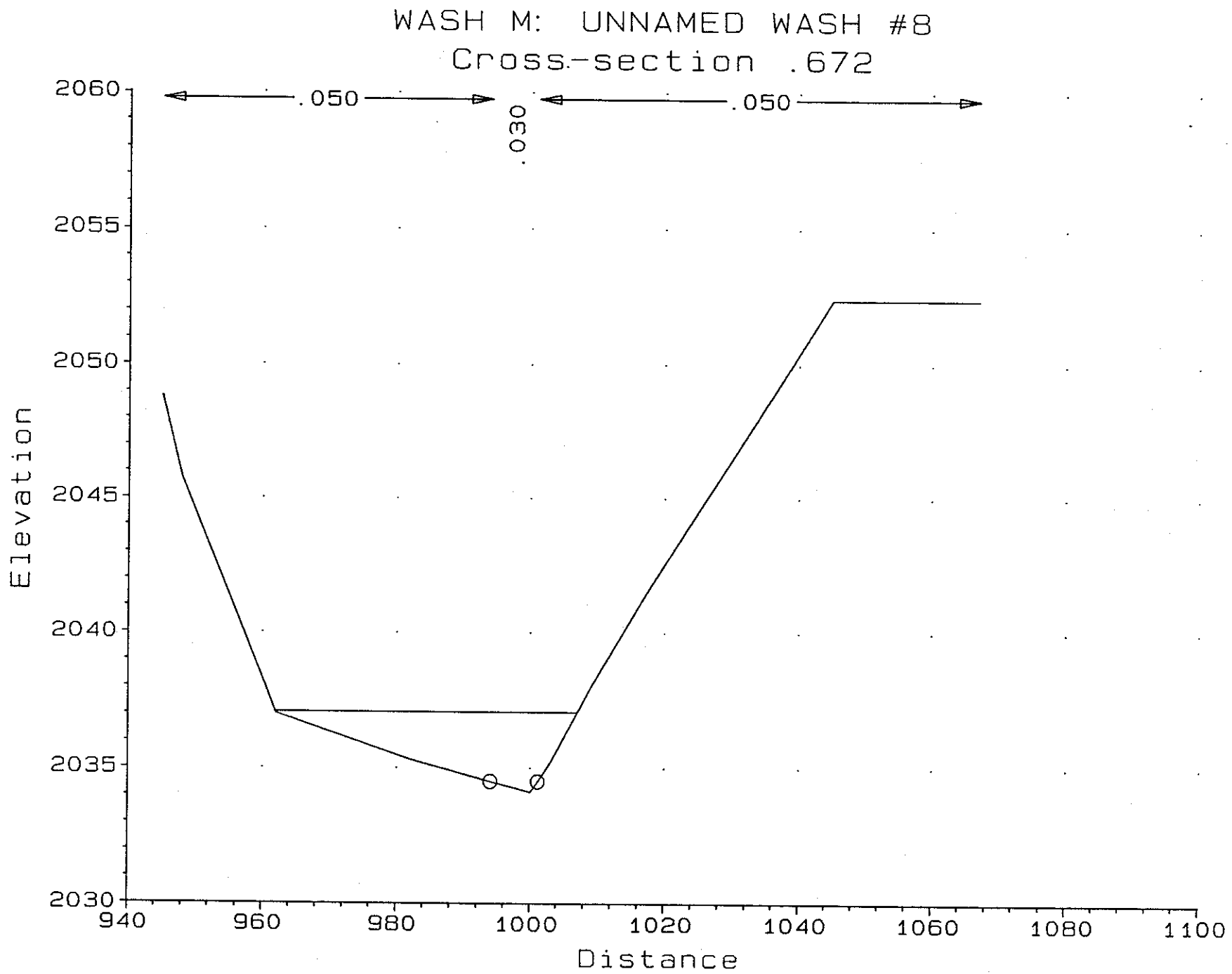
1060
1080
1100
Distance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.050
.030
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1040
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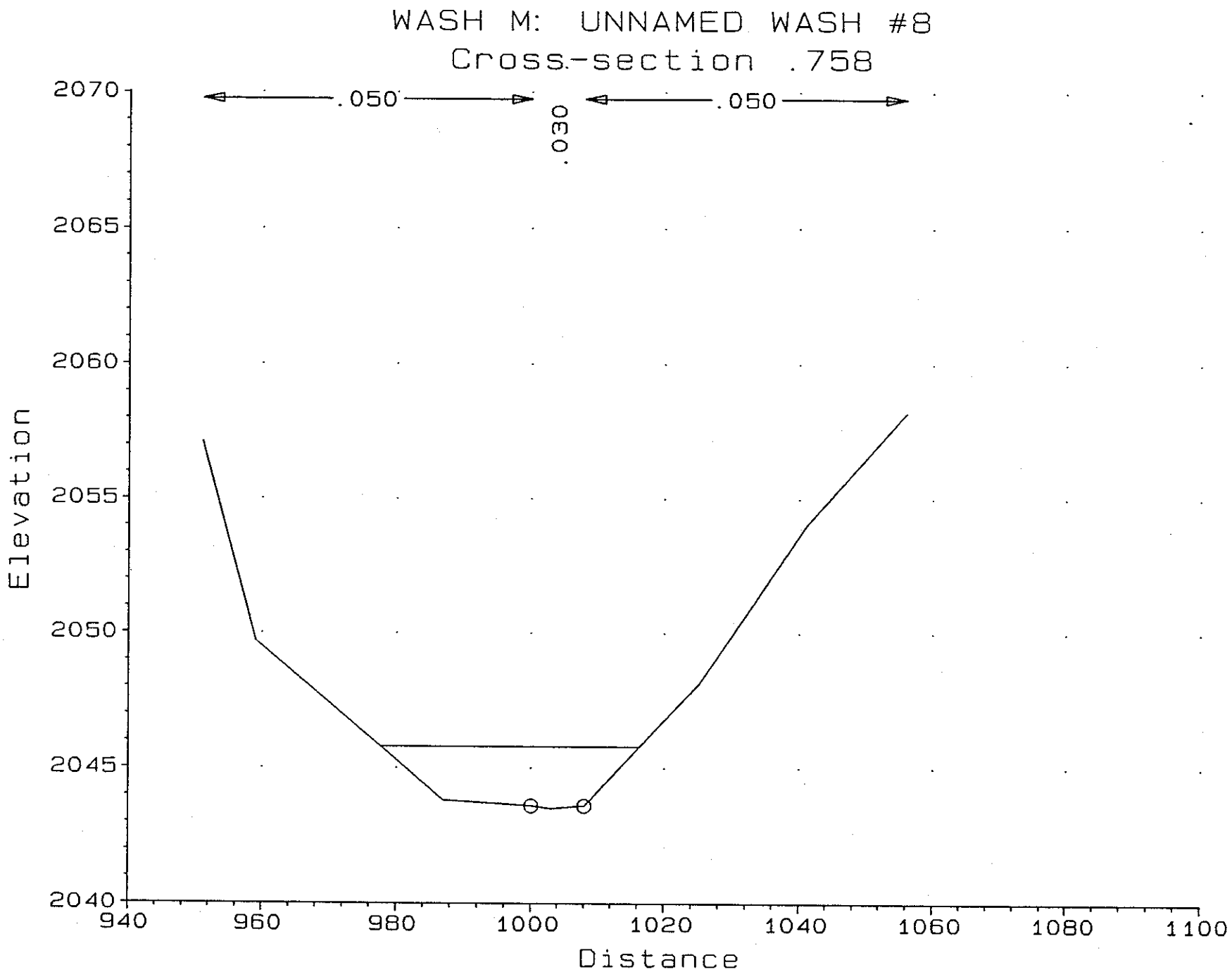
Distance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.030
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2040
Elevation
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960
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1000
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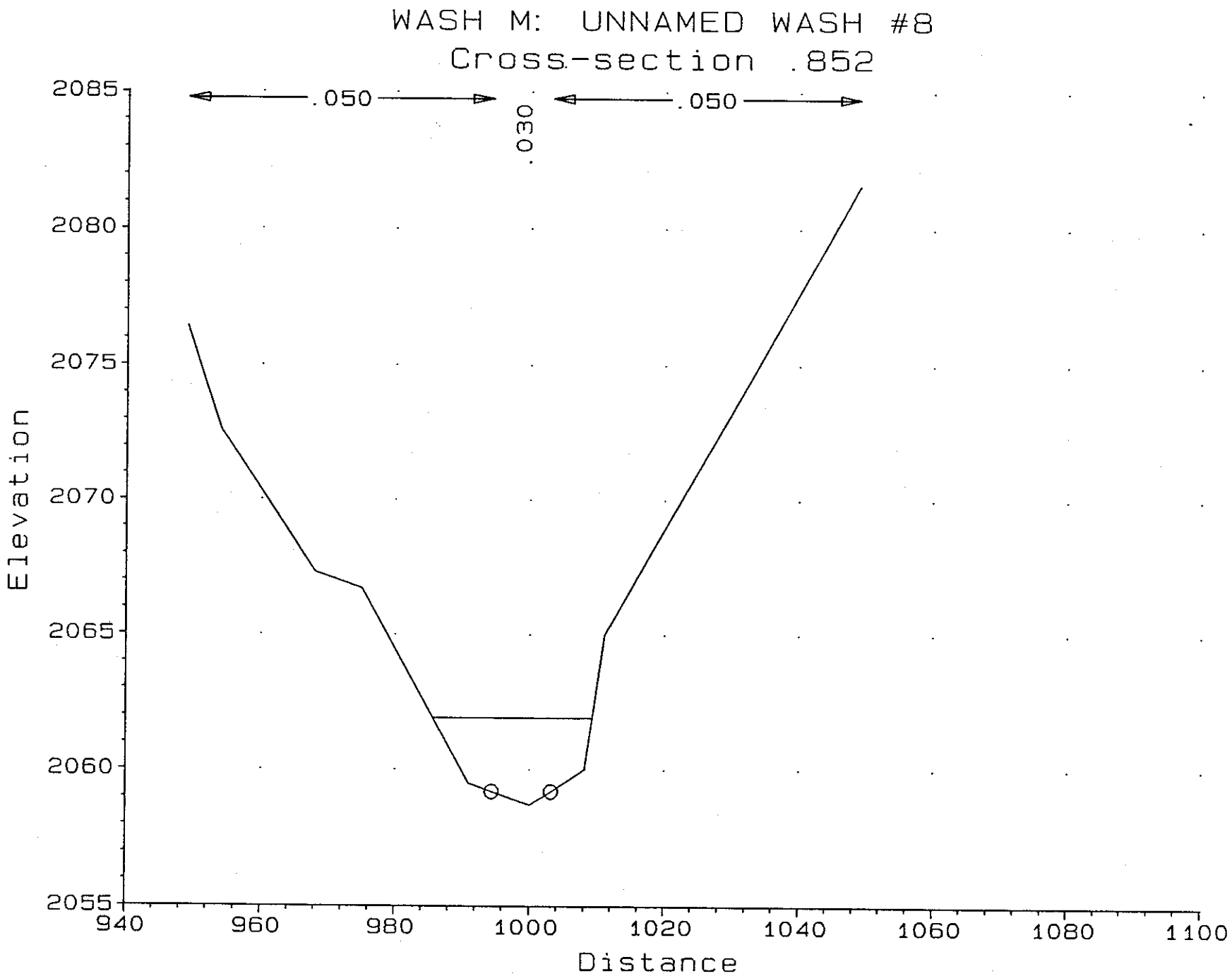
1040
1060
1080
1100
Distance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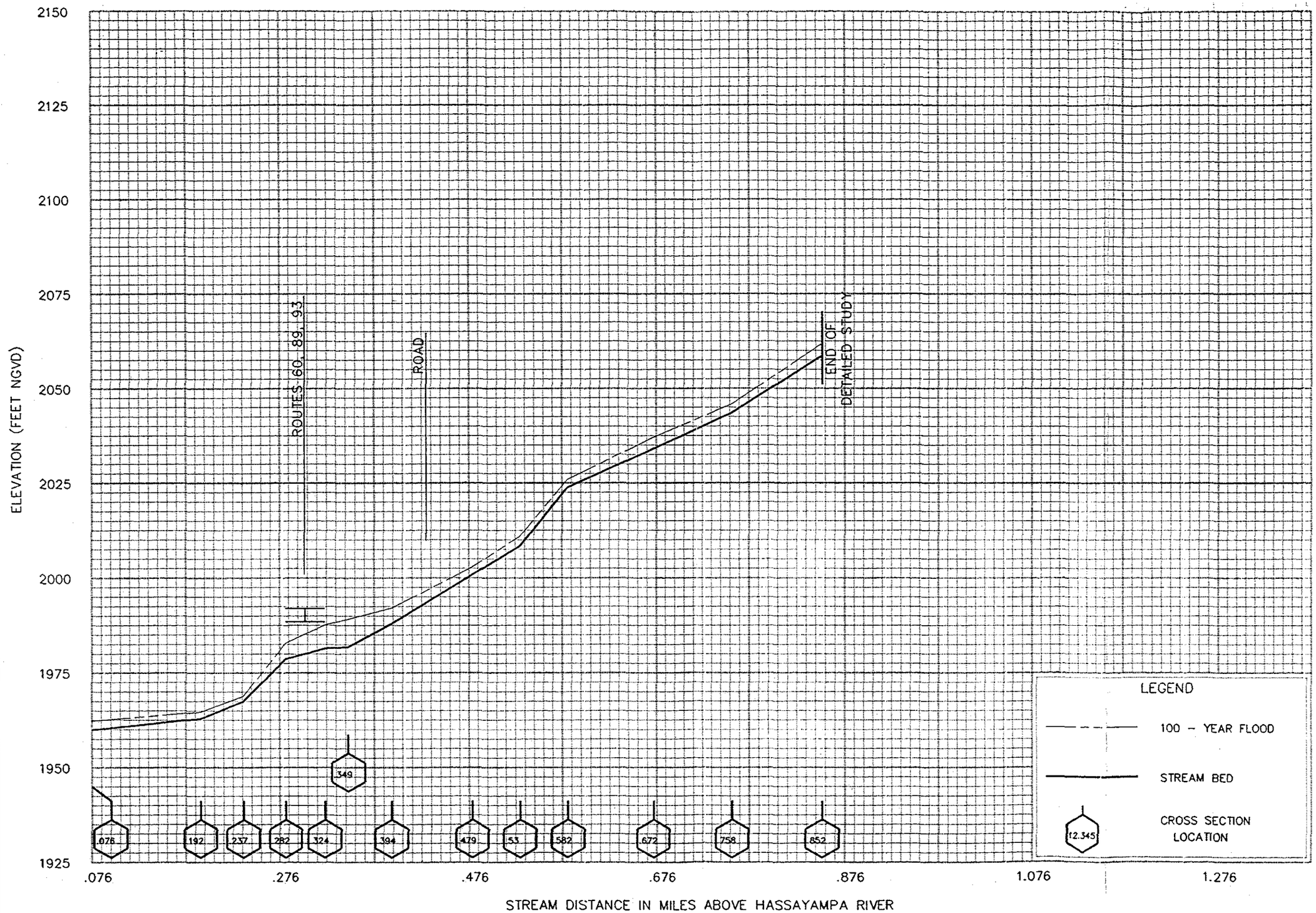
1080
1100
Distance



FLOOD PROFILES

UNNAMED WASH #8 (M)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/21/94 11:08:20 ACD-12_

PC FILE:WASHM.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.13: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #11 (Wash n)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\11197\02\ADMIN\119702RP.063

May 1994

6.13

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: UNINCORPORATED MARICOPA COUNTY/TOWN OF WICKENBURG

Flooding Source: WASH N: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#11)
(One form for each flooding source)

Project Name/Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

- [x] Approximate study stream (Zone A)
- [ ] Detailed study stream (briefly explain methodology) _____

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- [ ] No existing analysis
- [ ] Improved data *(see data revision on page 3)*
- [ ] Changed physical conditions of watershed *(explain)* _____
- [ ] Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*
- [ ] Evaluation of proposed conditions (CLOMRs only) (explain) _____
- [x] Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- [x] Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
  Attach evidence of approval.
- [ ] Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
	0.33	—	

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN OF WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

lic reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the me for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH M: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#11)
(One form for each flooding source)

Project Name/Identifier: Wickenburg AOMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.093

Upstream limit: Station 0.596

2. EFFECTIVE FIS

☐ Not studied

☒ Studied by approximate methods

Downstream limit of study ~Same

Upstream limit of study ~Same

☐ Studied by detailed methods

Downstream limit of study

Upstream limit of study

☐ Floodway delineated

Downstream limit of Floodway

Upstream limit of Floodway

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain:

☐ Flood control structure. Explain:

☐ Other. Explain:

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model*). Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	429	429
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... .030

Overbanks ..... .040 – .050

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 19.19 ft

Specify location ..... STA 0.330

3. What is the distance between the cross-sections in 2 above? 560

Specify location ..... STA 0.330

4. What is the maximum distance between cross-sections? 560

Specify location ..... STA 0.330

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... NA foot

Specify location ..... ZONE A

c. What is the maximum velocity? ..... — fps

Specify location ..... —

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODIND SOURCE:

PROJECT NAME /IDENTIFIER: Wickenburg ADMS FCD89-79

	Proposed EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
.093	2061.76														
.134	2067.54														
.224	2083.91														
.330	2102.91														
.418	2119.97														
.507	2138.22														
.596	2156.59														

COMMENTS:
New Model - ~~See following Floodway Data Table~~
PROPOSED EFFECTIVE ZONE A

1-100-year (natural) Water Surface Elevation
2-Encroachment (floodway) Water Surface Elevation
3-Surcharge Value

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

Sheet 1 of 1

Wickenburg ADMS FCD 89-79

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE/COASTAL MAPPING FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: WASH N: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#11)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No Zone AE, 500-year, or coastal zones revised or delineated. Revised 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 ft Contour interval

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

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

   Attach additional pages if needed.

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

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

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

Revised approximate [redacted] 100-year floodplain replaces effective zone A floodplain.

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

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

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

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

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

If no, explain:

NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

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

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

   If yes, justify steeper slopes _____

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

   If no, describe erosion protection provided _____

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

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

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

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

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

   If yes, attach the coastal structures form.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    24JUN92   TIME   15:24:55 *
*****************************************
```

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

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

THIS RUN EXECUTED 24JUN92 15:24:55

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

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


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      B&V PN 17676   CVL JN 1197-02
T3      WASH N: UNNAMED WASH #11      (FILE WASHN.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0         0         0         0         0   2061.76         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                  -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

      0.040     0.040     0.030       0.1       0.3
QT        1       429
            CONFLUENCE OF WASH N: UNNAMED WASH #11
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 VG (HASSAYAMPA RIVER MILE 52.02)
                 VH (HASSAYAMPA RIVER MILE 52.12)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED FROM SLOPE AREA METHOD

            JACK BURDEN LANE

X1    0.093        24       978      1022         0         0         0
GR   2072.5       764    2066.8       772    2062.0       788    2061.1       803    2061.1       848
GR   2061.4       906    2061.6       940    2061.2       978    2061.2      1000    2061.2      1022
GR   2062.1      1049    2063.4      1140    2062.4      1237    2062.5      1345    2062.5      1373
GR   2062.7      1438    2062.9      1521    2062.9      1593    2062.9      1605    2062.9      1614
GR   2063.4      1639    2065.0      1648    2067.7      1670    2076.2      1708
```

```
                NOTE:  ADDED STATIONS 980 & 1020
                       TO APPROXIMATE 40' CHANNEL
X1    0.134       22       980      1020       230       190       215
X3       10
GR   2080.3      791.   2067.6       819.   2066.2      852.   2065.2      868.   2065.6      901.
GR   2066.9      929.   2068.3       959.   2067.6      980.   2066.7     1000.   2067.2     1020.
GR   2067.6     1035.   2066.9      1057.   2067.2     1067.   2066.9     1115.   2067.6     1206.
GR   2067.6     1284.   2066.8      1356.   2067.4     1395.   2067.4     1430.   2070.6     1453.
GR   2078.6     1492.   2080.5      1506.

X1    0.224       14       985      1023       480       470       480
X3       10
GR   2096.3      917   2090.6       922   2090.3       948   2087.0       958   2084.3       985
GR   2083.4     1000   2083.6      1023   2083.8      1059   2083.6      1101   2083.3      1133
GR   2083.2     1154   2083.2      1222   2084.5      1249   2100.2      1293

X1    0.330       17       977      1019       560       530       560
X3       10
GR   2116.5      755.   2116.5       767.   2111.2      782.   2110.6      835.   2110.6      870.
GR   2109.4      919.   2108.9       944.   2105.8      947.   2101.5      971.   2101.8      977.
GR   2101.8     1000.   2101.9      1019.   2102.5     1059.   2103.8     1084.   2103.9     1102.
GR   2106.2     1144.   2116.2      1179.

X1    0.418       16       970      1007       460       460       460
X3       10
GR   2132.6      830   2129.6       851   2125.6       870   2122.5       883   2122.9       906
GR   2121.0      937   2121.2       954   2120.3       970   2119.0       977   2117.0      1000
GR   2118.0     1003   2121.6      1007   2120.9      1055   2122.1      1072   2124.3      1086
GR   2132.3     1103

NC    0.050    0.050    0.030
                MANNING 'n' VALUES FOR LOB AND ROB INCREASED
X1    0.507       13       990      1007       465       460       470
X3       10
GR   2152.5      914.   2144.5       929.   2137.5      951.   2137.7      969.   2136.8      990.
GR   2136.9      997.   2136.9      1000.   2136.8     1007.   2137.1     1025.   2138.4     1078.
GR   2138.8     1098.   2147.1      1116.   2153.1     1141.

                APPROXIMATE END OF DETAILED STUDY

                NOTE:  ADDED STATIONS 990 & 1010
                       TO APPROXIMATE 20' CHANNEL
X1    0.596       15       990      1010       470       480       470
X3       10
GR   2168.2      933   2159.2       945   2156.4       963   2155.5       990   2155.2      1000
GR   2155.3     1010   2155.7      1035   2155.7      1059   2156.4      1079   2156.0      1092
GR   2158.2     1124   2160.8      1164   2162.0      1181   2161.5      1203   2168.3      1217
```

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .093
3720 CRITICAL DEPTH ASSUMED
CONFLUENCE OF WASH N: UNNAMED WASH #11
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
VG (HASSAYAMPA RIVER MILE 52.02)
VH (HASSAYAMPA RIVER MILE 52.12)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED FROM SLOPE AREA METHOD

JACK BURDEN LANE

.093	.66	2061.76	2061.76	2061.76	2062.00	.24	.00	.00	2061.20
429.0	295.2	122.7	11.1	86.0	24.8	4.8	.0	.0	2061.20
.00	3.43	4.95	2.34	.040	.030	.040	.000	2061.10	791.95
.021511	0.	0.	0.	0	4	0	.00	246.94	1038.89

FLOW DISTRIBUTION FOR SECNO= .09 CWSEL= 2061.76

STA=	792.	803.	848.	906.	940.	978.	1022.	1039.
PER Q=	2.2	28.8	24.2	4.7	8.9	28.6	2.6	
AREA=	3.7	29.8	29.8	8.9	13.8	24.8	4.8	
VEL=	2.6	4.1	3.5	2.2	2.8	5.0	2.3	
DEPTH=	.3	.7	.5	.3	.4	.6	.3	

*SECNO .134

3265 DIVIDED FLOW

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

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2067.60 ELREA= 2067.20

NOTE: ADDED STATIONS 980 & 1020
TO APPROXIMATE 40' CHANNEL

.134	.84	2067.54	2067.54	.00	2067.73	.19	4.75	.00	2067.60
429.0	.0	95.9	333.1	.0	19.7	111.0	.6	1.4	2067.20
.02	.00	4.87	3.00	.000	.030	.040	.000	2066.70	981.30
.023773	230.	215.	190.	0	14	0	.00	354.87	1431.02

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 2067.54

STA=	981.	1020.	1033.	1057.	1067.	1115.	1198.	1356.	1395.	1430.	1431.
PER Q=	22.4	.9	4.0	4.1	19.6	16.8	17.1	13.3	1.8	.0	
AREA=	19.7	2.2	6.5	4.9	23.6	26.8	24.8	17.2	5.0	.1	
VEL=	4.9	1.8	2.7	3.6	3.6	2.7	3.0	3.3	1.6	.1	
DEPTH=	.5	.2	.3	.5	.5	.3	.2	.4	.1	.1	

[illegible] .224
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2084.30 ELREA= 2083.60

.224	.51	2083.91	2083.91	.00	2084.15	.23	11.18	.01	2084.30
429.0	.0	46.2	382.8	.0	11.7	99.4	1.9	4.7	2083.60
.05	.00	3.94	3.85	.000	.030	.040	.000	2083.40	991.42
.023622	480.	480.	470.	0	14	0	.00	245.42	1236.84

FLOW DISTRIBUTION FOR SECNO= .22 CWSEL= 2083.91

STA=	991.	1023.	1059.	1101.	1133.	1154.	1222.	1237.
PER Q=	10.8	3.7	4.3	11.9	14.1	51.7	3.6	
AREA=	11.7	7.7	9.0	14.9	14.0	48.6	5.3	
VEL=	3.9	2.0	2.0	3.4	4.3	4.6	2.9	
DEPTH=	.4	.2	.2	.5	.7	.7	.4	

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

*SECNO .330
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.330	1.11	2102.91	2102.91	.00	2103.34	.43	9.29	.06	2101.80
429.0	56.0	274.0	99.0	13.2	45.9	30.2	3.1	6.8	2101.90
.08	4.25	5.98	3.27	.040	.030	.040	.000	2101.80	963.11
.012951	560.	560.	530.	0	17	0	.00	103.86	1066.97

FLOW DISTRIBUTION FOR SECNO= .33 CWSEL= 2102.91

STA=	963.	971.	977.	1019.	1059.	1067.
PER Q=	4.3	8.7	63.9	22.5	.6	
AREA=	5.6	7.6	45.9	28.6	1.7	
VEL=	3.3	4.9	6.0	3.4	1.5	
DEPTH=	.7	1.3	1.1	.7	.2	

*SECNO .418
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2120.30 ELREA= 2121.60

.418	2.97	2119.97	2119.97	.00	2120.84	.87	5.61	.13	2120.30
429.0	.0	429.0	.0	.0	57.5	.0	3.9	7.5	2121.60
.10	.00	7.46	.00	.000	.030	.000	.000	2117.00	971.77
.011507	460.	460.	460.	0	20	0	.00	33.42	1005.19

FLOW DISTRIBUTION FOR SECNO= .42 CWSEL= 2119.97

STA=	972.	1007.
PER Q=	100.0	
AREA=	57.5	
VEL=	7.5	
DEPTH=	1.7	

*SECNO .507
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
MANNING 'n' VALUES FOR LOB AND ROB INCREASED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.507	1.42	2138.22	2138.22	.00	2138.65	.42	6.00	.04	2136.80
429.0	101.8	169.2	157.9	32.4	23.2	48.5	4.8	8.4	2136.80
.12	3.14	7.31	3.26	.050	.030	.050	.000	2136.80	948.73
.014403	465.	470.	460.	0	14	0	.00	121.99	1070.72

FLOW DISTRIBUTION FOR SECNO= .51 CWSEL= 2138.22

STA=	949.	951.	969.	990.	1007.	1025.	1071.
PER Q=	.3	6.8	16.6	39.5	22.3	14.5	
AREA=	.8	11.2	20.4	23.2	22.9	25.6	
VEL=	1.8	2.6	3.5	7.3	4.2	2.4	
DEPTH=	.4	.6	1.0	1.4	1.3	.6	

*SECNO .596
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
APPROXIMATE END OF DETAILED STUDY

NOTE: ADDED STATIONS 990 & 1010
TO APPROXIMATE 20' CHANNEL

.596	1.39	2156.59	2156.59	.00	2156.97	.38	6.66	.00	2155.50
429.0	44.7	177.1	207.2	17.4	25.8	67.0	5.9	9.8	2155.30
.15	2.57	6.87	3.09	.050	.030	.050	.000	2155.20	961.78
.013688	470.	470.	480.	0	5	0	.00	138.80	1100.58

FLOW DISTRIBUTION FOR SECNO= .60 CWSEL= 2156.59

STA=	962.	963.	990.	1010.	1035.	1059.	1079.	1092.	1101.
PER Q=	.0	10.4	41.3	23.4	16.0	5.8	2.2	.9	
AREA=	.1	17.3	25.8	27.2	21.4	10.8	5.1	2.5	
VEL=	.7	2.6	6.9	3.7	3.2	2.3	1.9	1.5	
DEPTH=	.1	.6	1.3	1.1	.9	.5	.4	.3	

THIS RUN EXECUTED 24JUN92 15:25:01

****
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

WASH N: UNNAMED WASH #11

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.093	.00	.00	.00	2061.10	429.00	2061.76	2061.76	2062.00	215.11	4.95	115.50	29.25
*	.134	215.00	.00	.00	2066.70	429.00	2067.54	2067.54	2067.73	237.73	4.87	130.69	27.82
*	.224	480.00	.00	.00	2083.40	429.00	2083.91	2083.91	2084.15	236.22	3.94	111.19	27.91
	.330	560.00	.00	.00	2101.80	429.00	2102.91	2102.91	2103.34	129.51	5.98	89.24	37.70
*	.418	460.00	.00	.00	2117.00	429.00	2119.97	2119.97	2120.84	115.07	7.46	57.47	39.99
*	.507	470.00	.00	.00	2136.80	429.00	2138.22	2138.22	2138.65	144.03	7.31	104.09	35.75
*	.596	470.00	.00	.00	2155.20	429.00	2156.59	2156.59	2156.97	136.88	6.87	110.19	36.67

: UNNAMED WASH #11

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.093	429.00	2061.76	.00	.00	.00	246.94	.00
*	.134	429.00	2067.54	.00	5.78	.00	354.87	215.00
*	.224	429.00	2083.91	.00	16.37	.00	245.42	480.00
*	.330	429.00	2102.91	.00	19.00	.00	103.86	560.00
*	.418	429.00	2119.97	.00	17.06	.00	33.42	460.00
*	.507	429.00	2138.22	.00	18.25	.00	121.99	470.00
*	.596	429.00	2156.59	.00	18.37	.00	138.80	470.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .093  PROFILE=  1  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .134  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .134  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .224  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .224  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .330  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .330  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .418  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .418  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .507  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .507  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .596  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .596  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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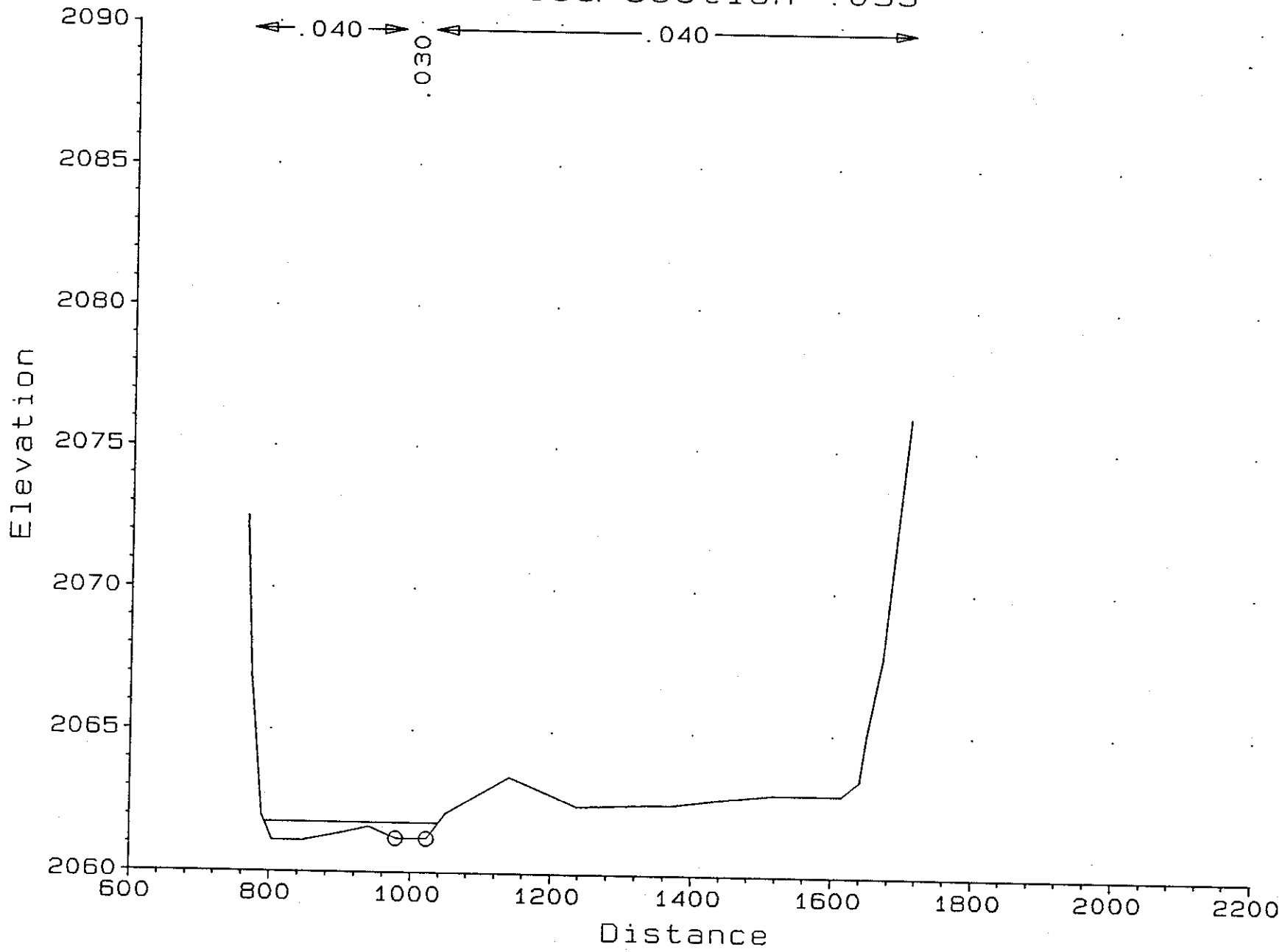
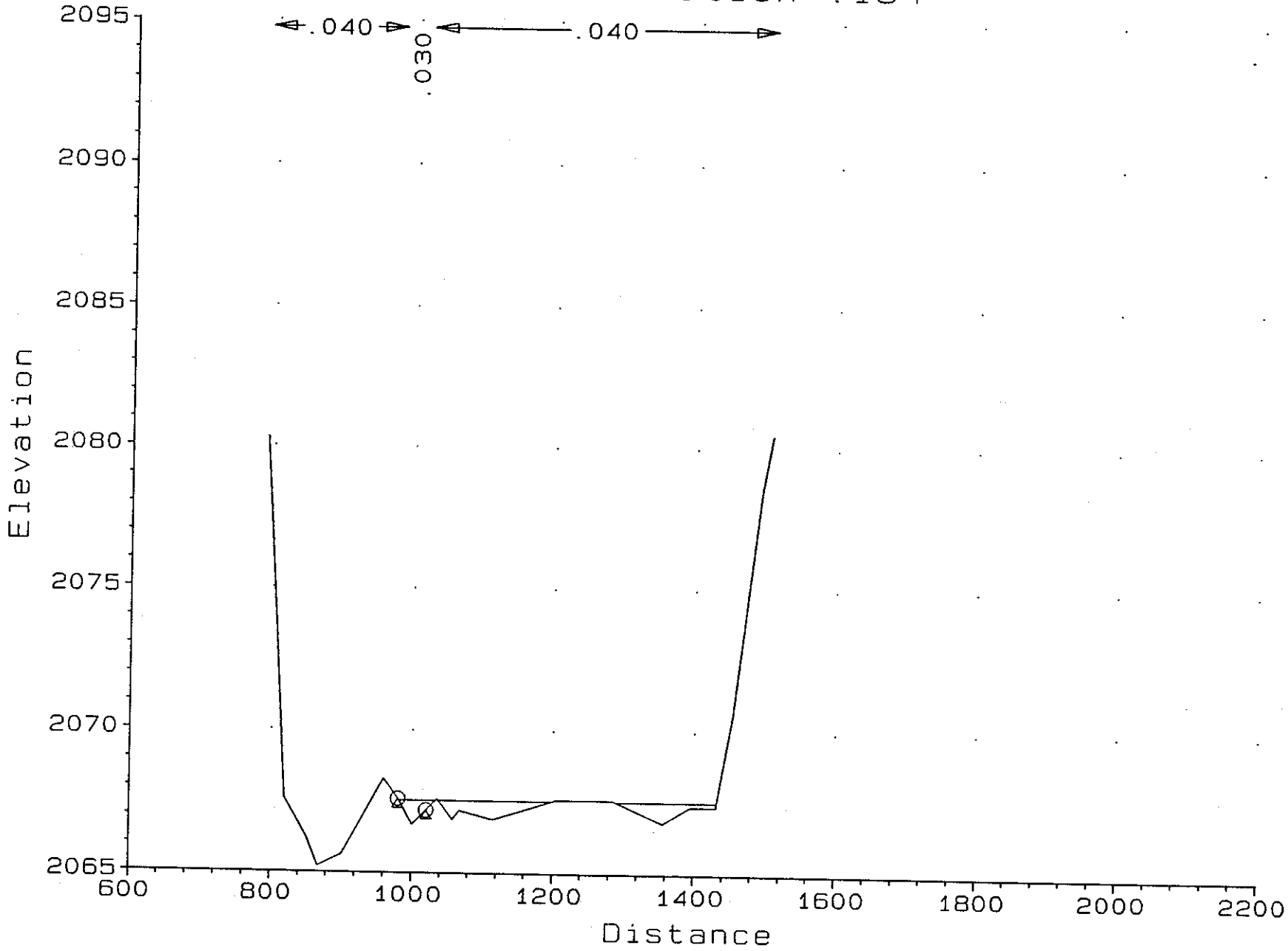
WASH N: UNNAMED WASH #11

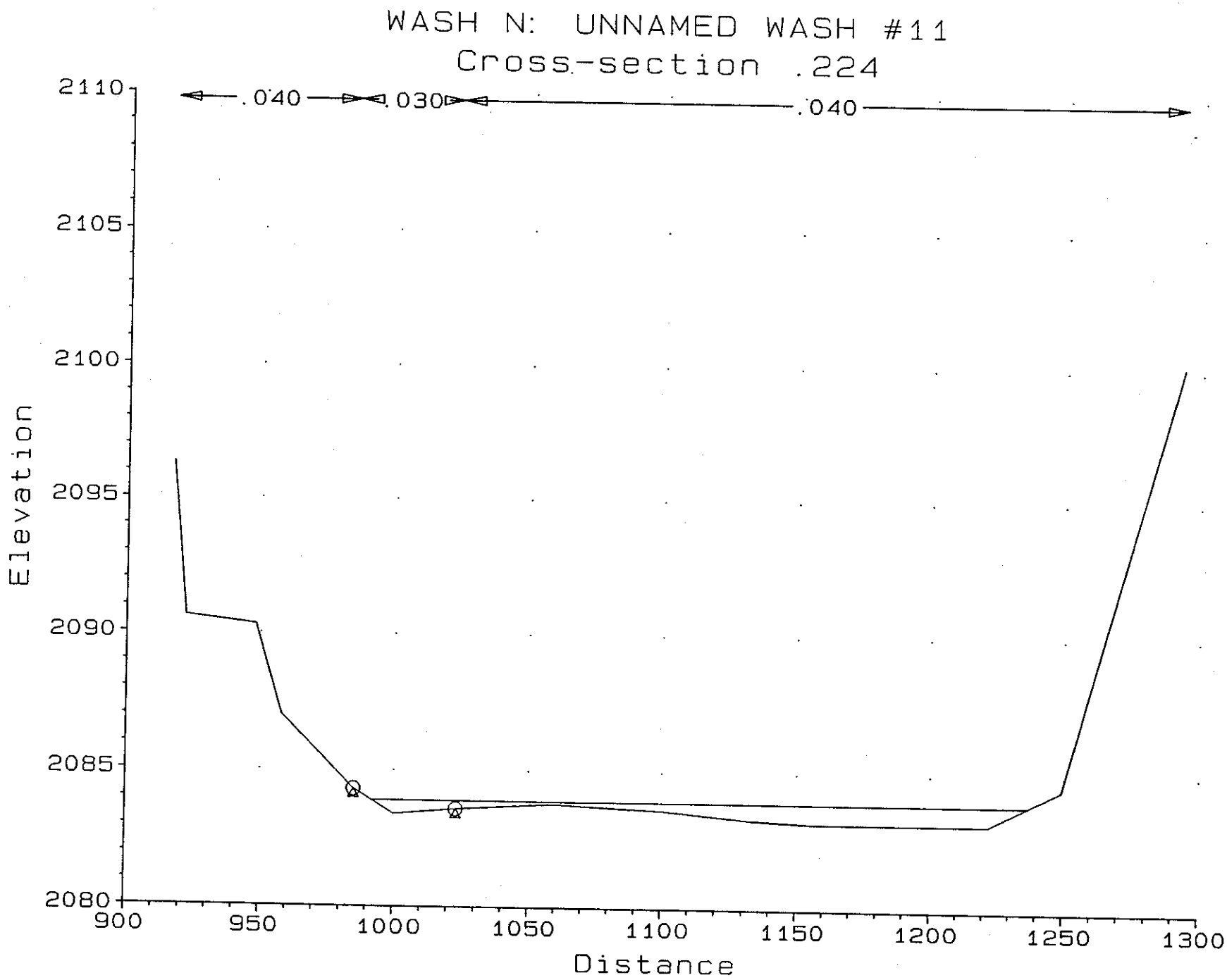
Cross-section .093



WASH N: UNNAMED WASH #11

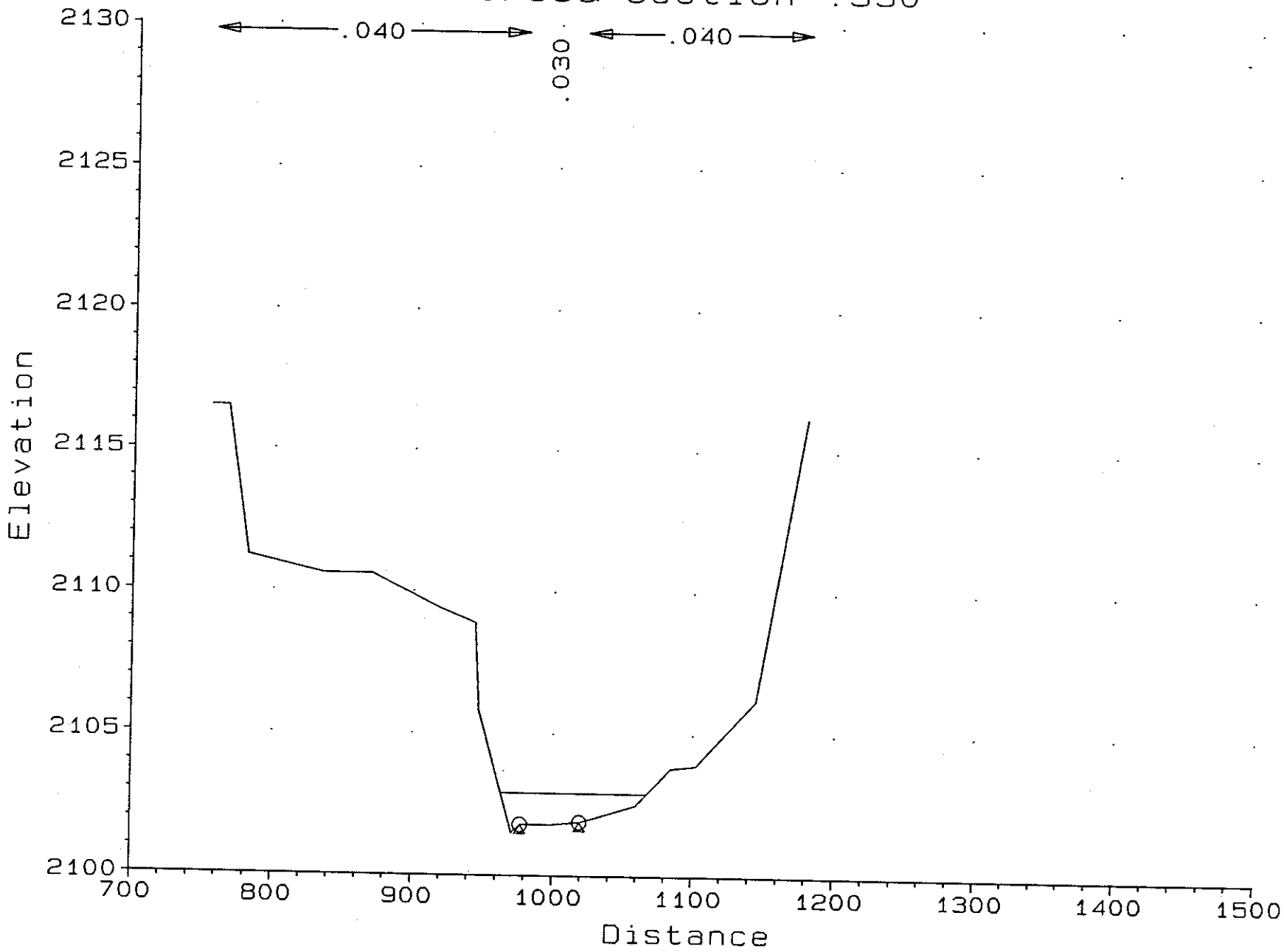
Cross-section .134

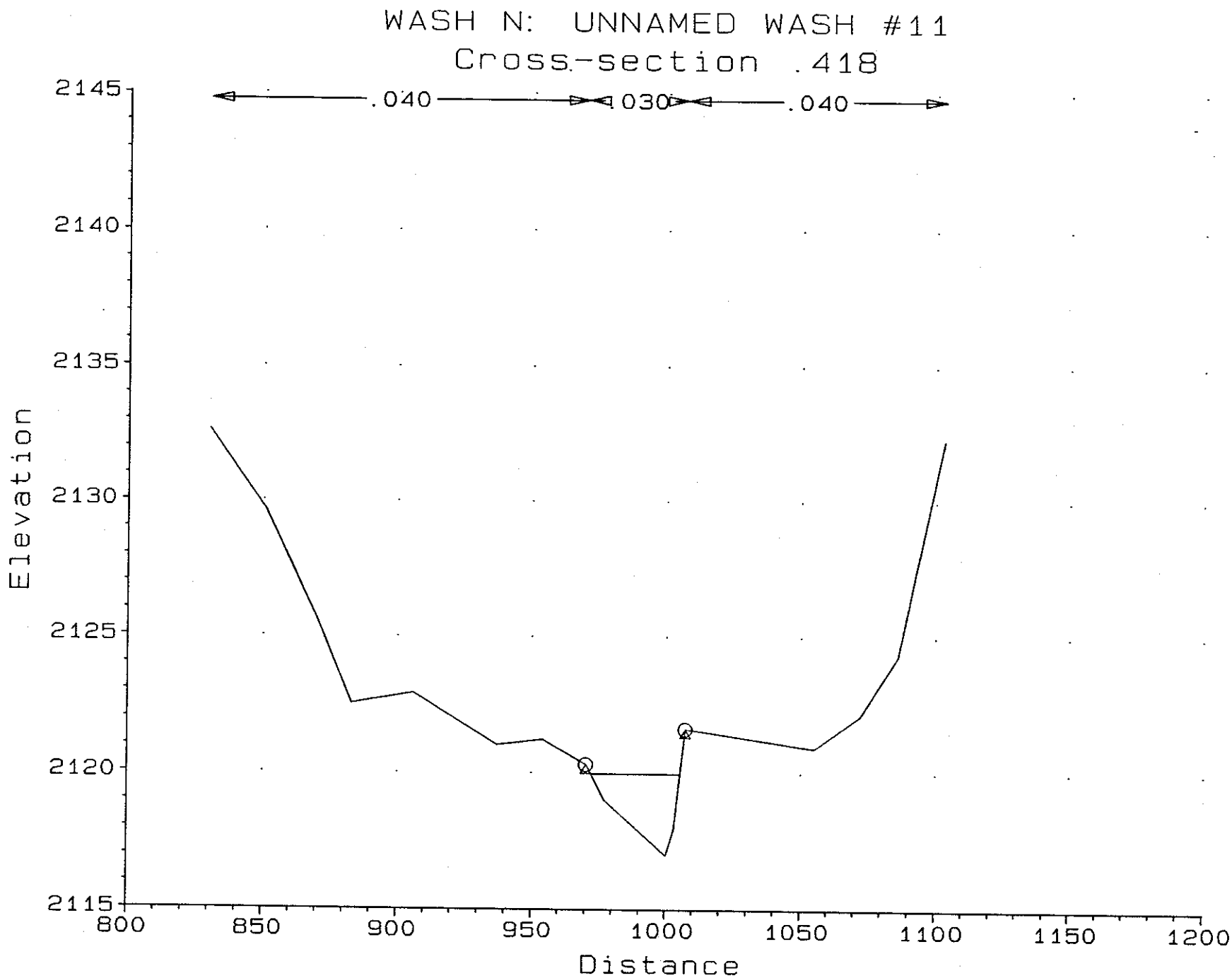


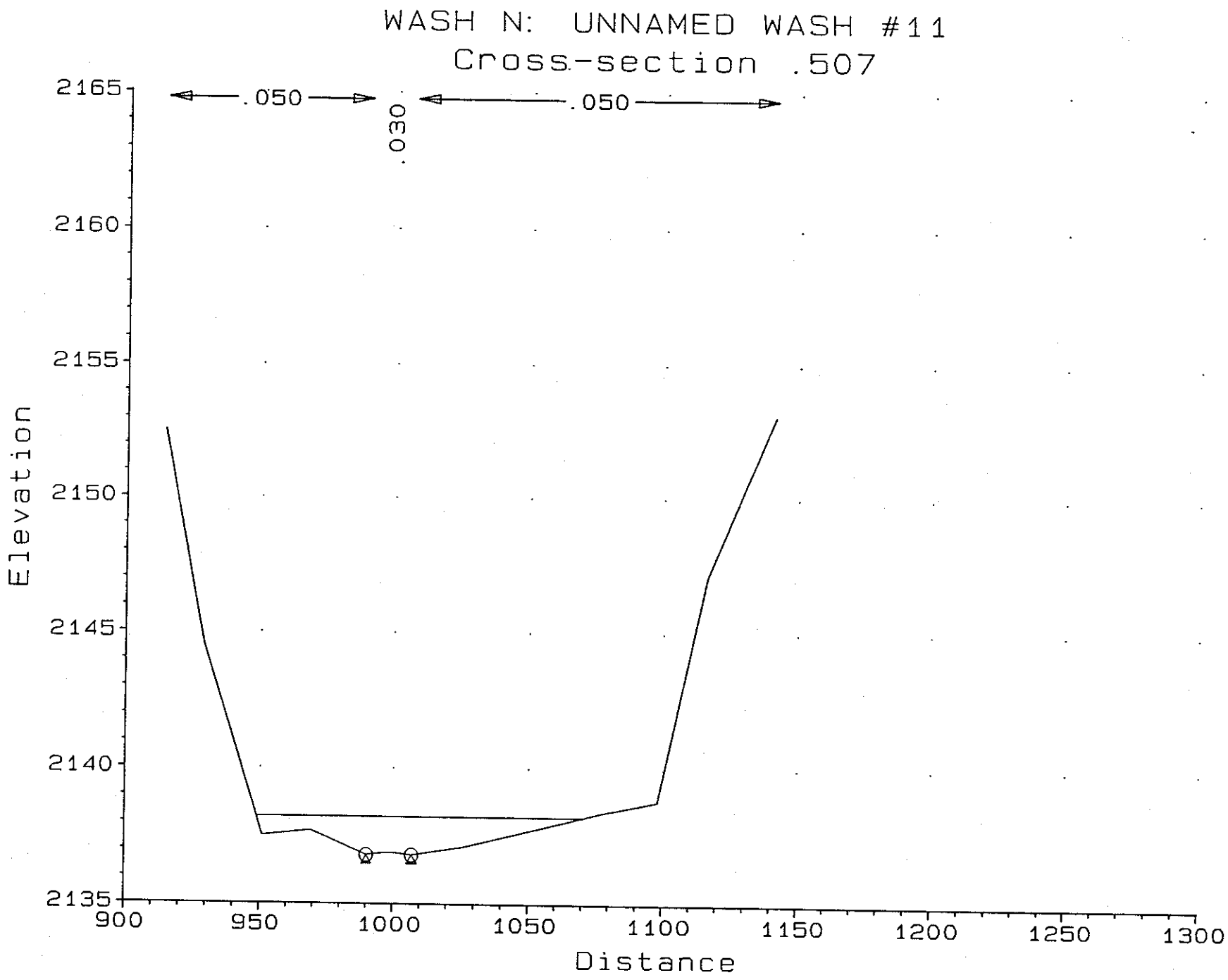

WASH N: UNNAMED WASH #11
Cross-section .224
.040
.030
.040
2110
2105
2100
2095
2090
2085
2080
Elevation
900
950
1000
1050
1100
1150
1200
1250
1300
Distance

WASH N: UNNAMED WASH #11

Cross-section .330

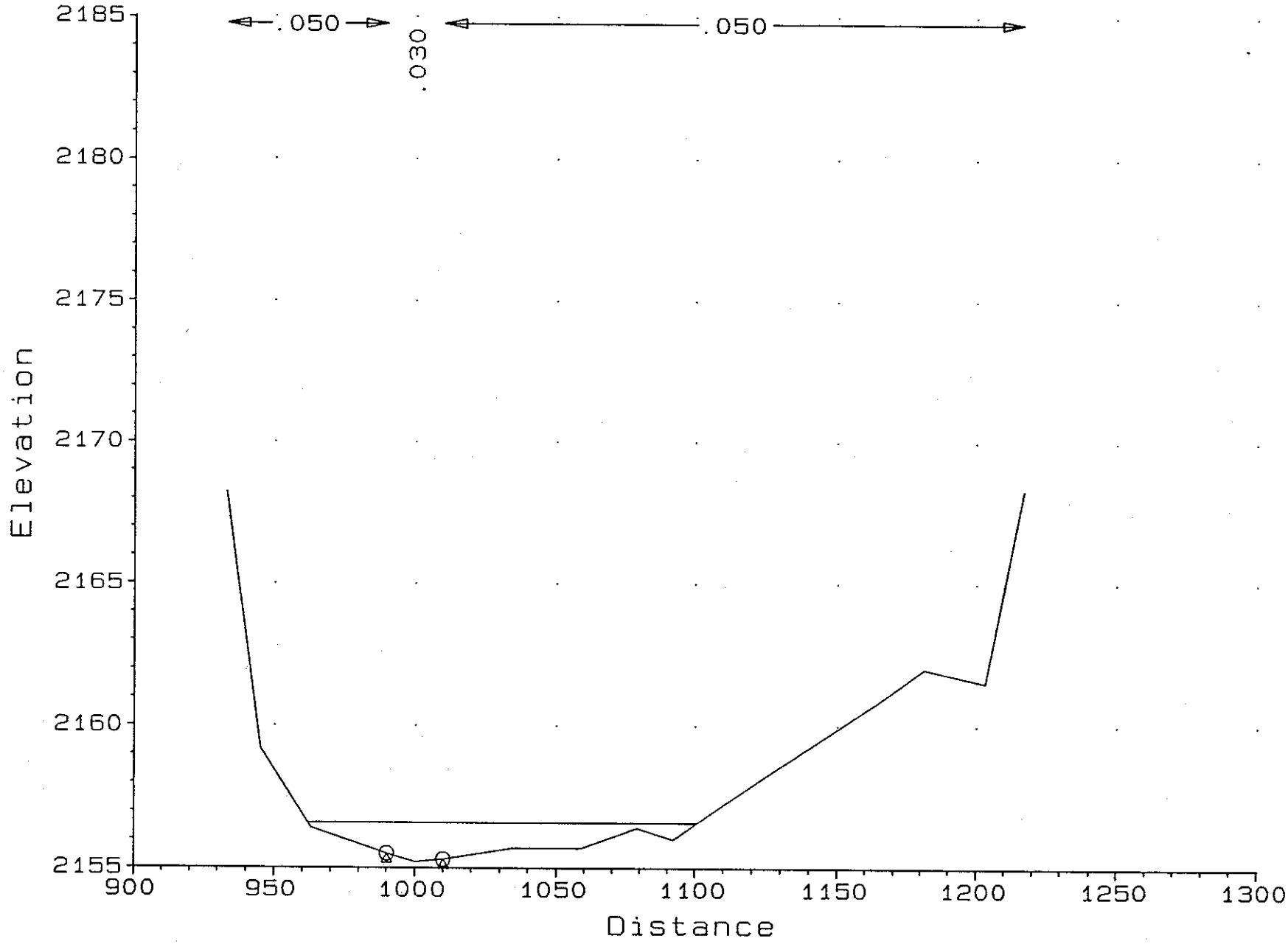


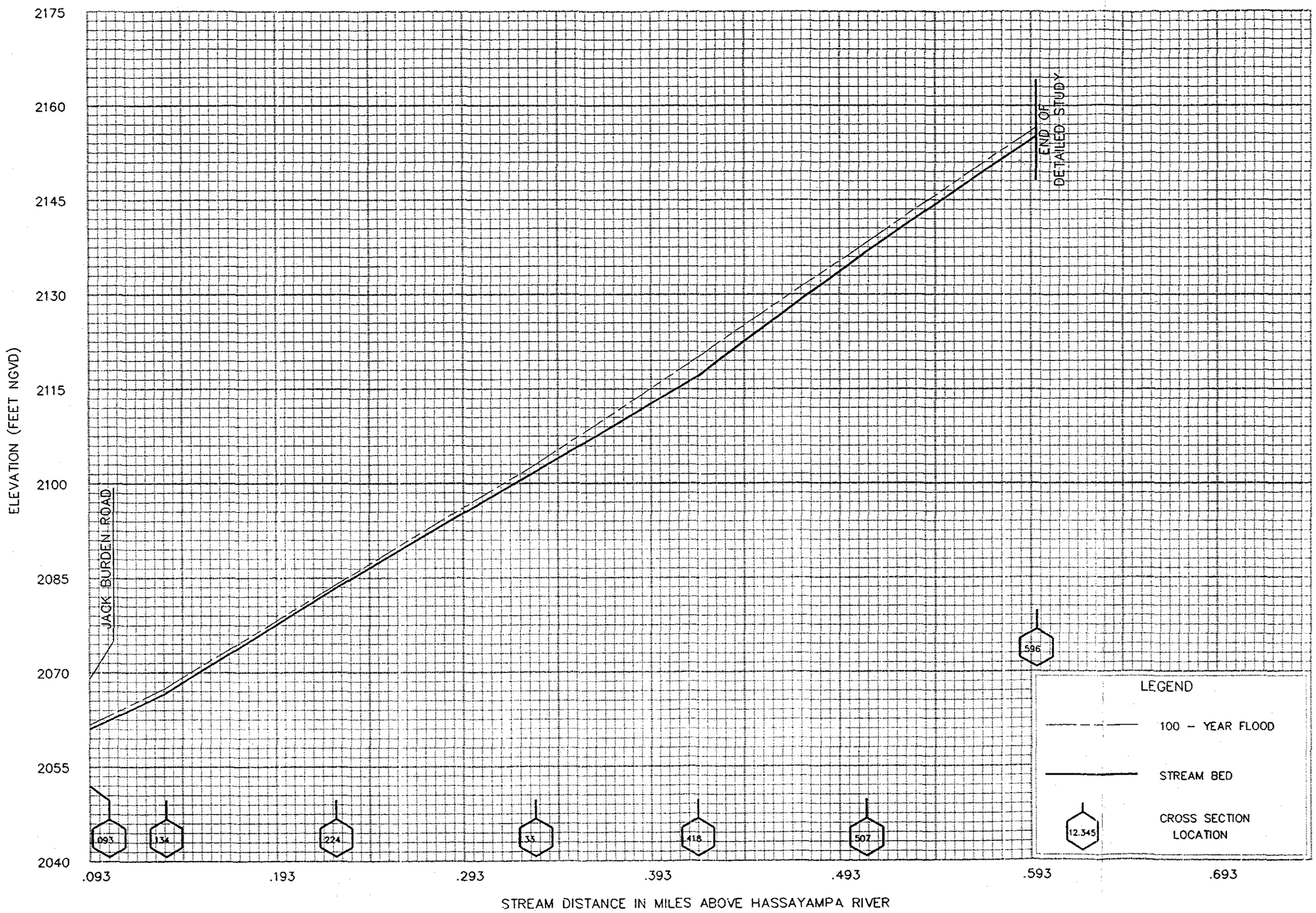

WASH N: UNNAMED WASH #11
Cross-section .418
.040
.030
.040
2145
2140
2135
2130
2125
2120
2115
Elevation
800
850
900
950
1000
1050
1100
1150
1200
Distance


WASH N: UNNAMED WASH #11
Cross-section .507
.050
.030
.050
2165
2160
2155
2150
2145
2140
2135
Elevation
900
950
1000
1050
1100
1150
1200
1250
1300
Distance

WASH N: UNNAMED WASH #11

Cross-section .596





FLOOD PROFILES

UNNAMED WASH #11 (N)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/21/94 11:47:41 ACD-12-

PC FILE:WASHN.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.14: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #12 (Wash o)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1187\02\ADMIN\118702RP.063

May 1994

6.14

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: UNINCORPORATED MARICOPA COUNTY / TOWN OF WICKENBURG

Flooding Source: WASH O: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#12)
(One form for each flooding source)

Project Name /Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

- ☒ Approximate study stream (Zone A)
- ☐ Detailed study stream (briefly explain methodology) _____

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- ☐ No existing analysis
- ☐ Improved data *(see data revision on page 3)*
- ☐ Changed physical conditions of watershed *(explain)* _____
- ☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*
- ☐ Evaluation of proposed conditions (CLOMRs only) (explain) _____
- ☒ Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- ☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
  Attach evidence of approval.
- ☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: WASH O: UNNAMED NASSAYAMPA RIVER TRIBUTARY (#12)

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
U.S. HWY 60-89	2.90	UNKNOWN	1,995

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

lic reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the me for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH 0: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#12)
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station .082

Upstream limit: Station 1.550

2. EFFECTIVE FIS

☐ Not studied

☒ Studied by approximate methods

Downstream limit of study: Same

Upstream limit of study: ~ Station 0.625

☐ Studied by detailed methods

Downstream limit of study: _____

Upstream limit of study: _____

☐ Floodway delineated

Downstream limit of Floodway: _____

Upstream limit of Floodway: _____

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	1,995	1,995
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel 0.025-0.030

Overbanks 0.045-0.060

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 20.69

Specify location 0.708

3. What is the distance between the cross-sections in 2 above? ..... 690 ft

Specify location 0.708

4. What is the maximum distance between cross-sections? ..... 690 ft

Specify location 0.708

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1.0 foot

b. What is the maximum surcharge for the revised conditions? ..... 1.0 foot

Specify location 0.082

c. What is the maximum velocity? ..... 12.7 fps

Specify location 0.205

Explain:

d. Are there any negeative surcharge values at any cross-section ☒ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

The maximum negative surcharge is 0.4 ft at Section 0.279. This is a result of adjacent encroachment that increases velocity and lowers the water surface elevation at the section.

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County/ Town of Wickenburg	WASH O: UNNAMED HASSAYAMPA R. TRIB (#12)	Wickenburg ADMS FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS: New Model - See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

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

Sheet 1 of 1

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FLOODWAY DATA, WASH O: UNNAMED WASH #12
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.082	201.	410.	4.9	1997.3	1996.3	1.0
.163	44.	192.	10.4	2009.1	2009.1	.0
.205	32.	157.	12.7	2013.3	2013.3	.0
.224	32.	263.	7.6	2021.4	2021.4	.0
.231	100.	553.	3.6	2022.3	2022.3	.0
.279	137.	327.	6.1	2022.5	2022.9	-.4
.335	137.	324.	6.2	2029.7	2029.3	.4
.407	138.	333.	6.0	2037.3	2037.0	.3
.496	214.	414.	4.8	2047.3	2046.7	.6
.578	266.	384.	5.2	2058.1	2058.1	.0
.708	203.	387.	5.2	2078.5	2078.5	.0
.773	229.	352.	5.7	2086.2	2086.2	.0
.858	184.	329.	6.1	2098.1	2098.1	.0
.960	75.	238.	8.4	2110.7	2110.7	.0
1.051	168.	377.	5.3	2122.4	2122.4	.0
1.140	95.	258.	7.7	2134.1	2134.1	.0
1.242	86.	272.	7.3	2148.2	2148.2	.0
1.340	86.	238.	8.4	2158.8	2158.8	.0
1.440	122.	319.	6.2	2172.6	2172.6	.0
1.550	299.	424.	4.7	2188.8	2188.8	.0

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE/COASTAL MAPPING FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: WASH O: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#12)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No Zone A, 500-year, or coastal zones revised or delineated. Revised 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 FT Contour interval

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

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

Attach additional pages if needed.

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

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

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

Revised detailed 100-year floodplain replaces effective zone floodplain.

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

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

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

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

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

If no, explain:

NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

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

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

      If yes, justify steeper slopes _____

      _____

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

      If no, describe erosion protection provided _____

      _____

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

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

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

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

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

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH-D: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#12)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. Hwy 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.205 to Station 0.224
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

   (Explain why new analysis was performed)

2. BACKGROUND

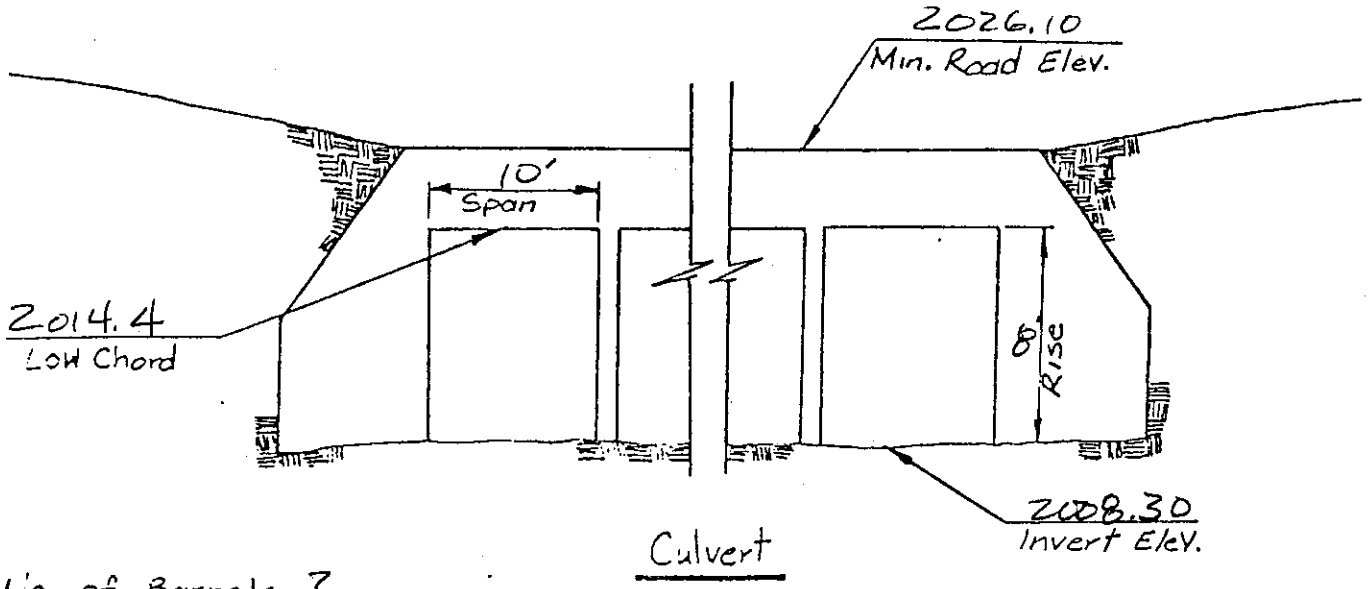
Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) Three 10x8 ft reinforced concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30°-75° Wing walls with square top edge
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine

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

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

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

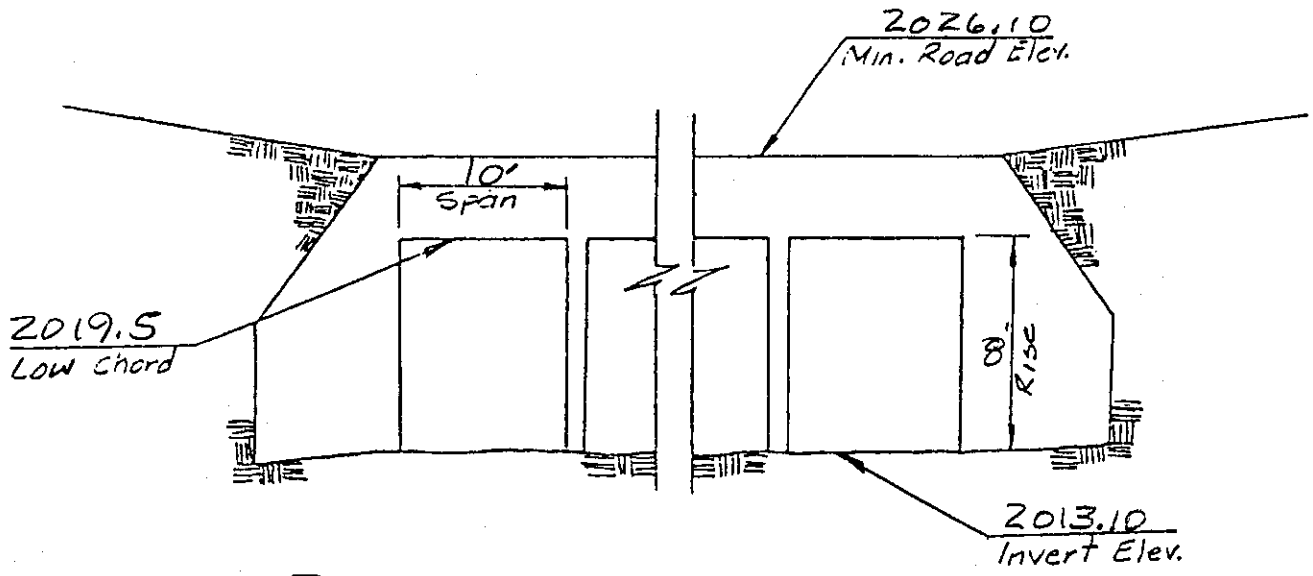


No. of Barrels: 3

Culvert Size: 10x 8

Approx. Depth of Sediment in Culvert: 1.6 ft See Cross Section # 0.205

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

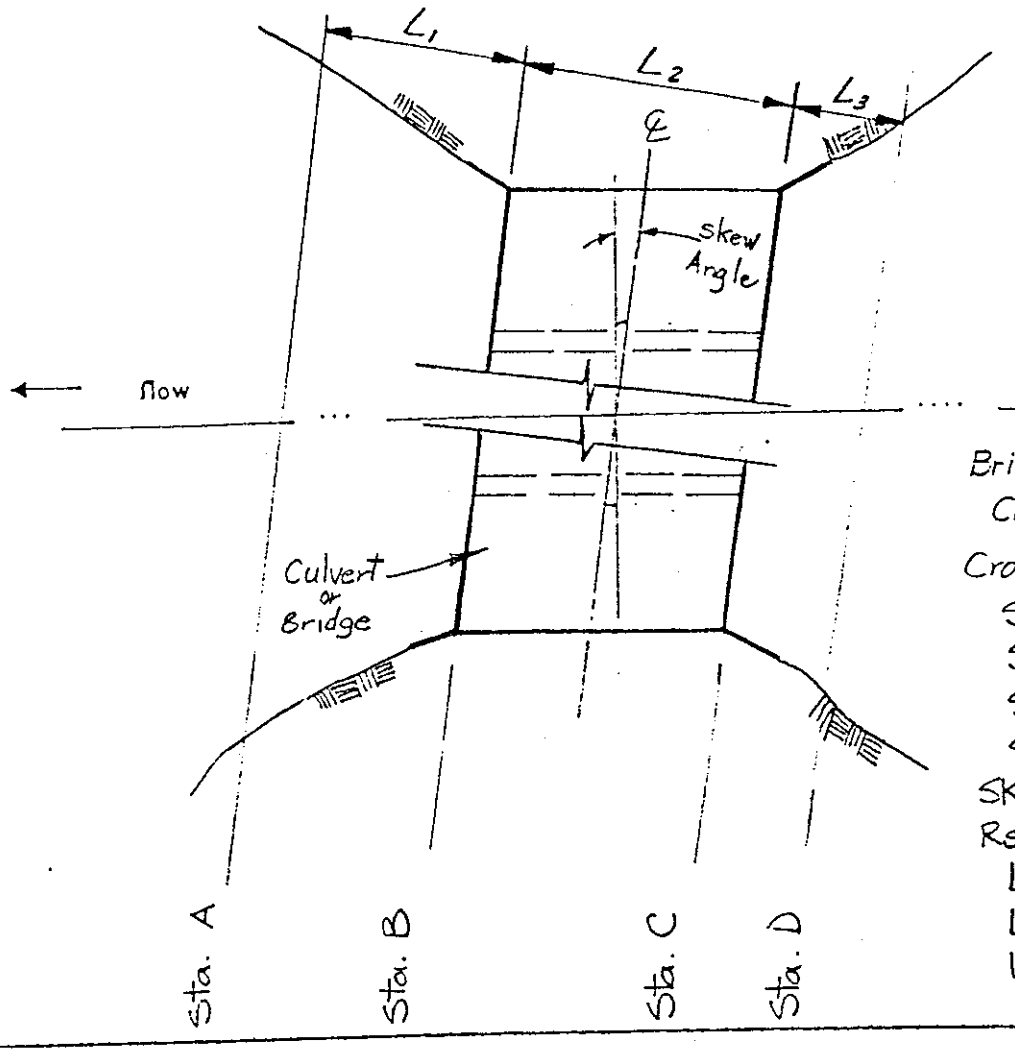


No. of Barrels: 3

Culvert Size: 10x8

Approx. Depth of Sediment in Culvert: 1.6 ft See Cross Section # 0.224

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



Bridge Width / Culvert Length: 97.7

Cross Section Stations
Sta. A = 0.163
Sta. B = 0.205
Sta. C = 0.224
Sta. D = 0.23L

Skew Angle:

Reach Lengths:
L1 240 ft.
L2 98 ft.
L3 40 ft.

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

Culvert length or bridge width (ft)	98
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	192
Total culvert/bridge area (ft²)	192

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	2026.05	2028.25
Downstream face	2026.05	2028.25

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	2026.10	—
Downstream face	2026.10	—

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	2021.39	2022.28
Downstream face	2013.25	2015.76

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	1,995	—	1,995

The maximum depth of flow over the roadway/railroad (ft.) ..... —

Weir length (ft.) ..... —

Top Widths

	Floodplain	Floodway
Upstream face	31.70	31.70
Downstream face	31.70	31.70

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	31.70	31.70
Downstream face	31.70	31.70

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	.015
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	NA
Pier coefficient	NA
Contraction loss coefficient	0.6
Expansion loss coefficient	0.8

4. SEDIMENT TRANSPORT CONSIDERATIONS

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

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

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

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

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

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

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

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) NO BRIDGE ENCROACHMENT

Comments *(explain any unusual situations)*:

Attach analysis.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    29JUN92    TIME    16:00:37  *
*****************************************
```

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

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

THIS RUN EXECUTED 29JUN92 16:00:37

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

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


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      BLACK & VEATCH PN 17676   COE & VAN LOO JN 1197-02
T3      WASH O: UNNAMED WASH #12          (FILE WASHO.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                  1996.34

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NC     .060      .045      .025       .1        .3
QT       2      1995      1995
ET                          9.1                                                                  999.34      1200
            CONFLUENCE OF WASH O: UNNAMED WASH #12
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                UC (HASSAYAMPA RIVER MILE 49.52)
                UD (HASSAYAMPA RIVER MILE 49.61)
            CROSS-SECTION DESIGNATION FROM:
                HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                STUDY, MARICOPA COUNTY, ARIZONA AND
                UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                MANAGEMENT AGENCY, EFFECTIVE DATE
                SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

X1     .082       82      1000      1017         0         0         0
GR   2020.7      42.    2015.7      52.    2010.5       66.    2007.1       77.    2005.6       84.
GR   2004.7     142.    2002.1     180.    2002.9      237.    2003.0      322.    2001.7      396.
GR   2000.9     430.    1999.0     516.    1998.3      574.    1999.0      618.    2000.3      654.
GR   2000.9     675.    2000.7     687.    2001.4      723.    2001.9      762.    2002.9      800.
GR   2003.7     814.    2002.7     832.    2002.3      845.    2002.3      849.    2003.2      854.
GR   2004.8     872.    2006.8     900.    2007.1      919.    2006.6      936.    2005.8      947.
GR   2005.0     955.    2003.5     961.    2002.2      970.    1998.3      982.    1997.5      992.
GR   1997.5     999.    1994.1    1000.    1994.2     1017.    1996.7     1022.    1997.1     1025.
GR   1997.2    1028.    1996.9    1033.    1996.7     1036.    1996.5     1037.    1996.4     1038.
GR   1996.3    1039.    1996.0    1060.    1995.3     1106.    1994.9     1154.    1994.4     1177.
GR   1994.7    1213.    1994.6    1246.    1994.5     1257.    1994.7     1283.    1996.0     1321.
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GR	1996.6	1359.	1997.8	1377.	1997.9	1409.	1998.7	1424.	1999.6	1430.

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    2001.2     1433.     2002.8     1438.     2004.1     1440.     2004.1     1449.     2003.0     1459.
    2003.7     1493.     2004.4     1531.     2005.7     1569.     2005.5     1616.     2005.7     1688.
GR  2006.7     1719.     2007.0     1720.     2007.2     1764.     2008.1     1792.     2008.7     1808.
GR  2008.8     1827.     2010.2     1856.     2010.2     1916.     2012.5     1933.     2013.6     1954.
GR  2016.6     1992.     2020.4     2052.

ET              5.1        9.1                965.     1020.                          975.98     1020.
            ET RECORD - STATION 1020. TO ELIMINATE INEFFECTIVE
                        FLOW AREA IN RIGHT OVERBANK DOWNSTREAM
                        OF 3 - 10' X 8' RCB

            MAPPED FLOODPLAIN TO CWSEL

X1  0.163        37       987       1010       430       430       430
GR  2020.1      964.     2019.3      965.     2016.7      970.     2006.6      978.     2005.2      987.
GR  2002.6      990.     2002.6     1000.     2003.6     1006.     2003.8     1007.     2004.4     1008.
GR  2004.7     1009.     2005.0     1010.     2005.3     1011.     2008.0     1018.     2008.8     1020.
GR  2008.7     1023.     2008.0     1031.     2008.0     1036.     2008.0     1037.     2008.0     1046.
GR  2008.2     1060.     2008.7     1082.     2008.7     1109.     2008.7     1144.     2009.2     1173.
GR  2009.8     1199.     2010.8     1225.     2011.3     1251.     2012.3     1291.     2013.2     1313.
GR  2013.5     1341.     2013.7     1357.     2013.5     1369.     2014.3     1377.     2014.3     1384.
GR  2014.6     1389.     2016.0     1399.

NC  0.060      0.060      0.030       0.6        0.8
            DOWNSTREAM FACE: 3 - 10' X 8' RCB
X1  0.205        29     984.15    1015.85       240       240       240
     10                                                                      2016.3     2016.3
    2024.1      941.     2023.7      946.     2020.2      959.     2017.3      966.     2015.9      975.
GR  2014.3      981.     2008.3    984.15     2008.3      991.     2008.3      992.     2008.3      993.
GR  2008.3      995.     2008.3      997.     2008.3     1000.     2008.3     1009.     2008.3    1015.85
GR  2012.2     1017.     2013.3     1021.     2016.0     1061.     2016.0     1131.     2016.2     1179.
GR  2016.3     1213.     2016.4     1245.     2015.9     1269.     2015.8     1289.     2016.0     1309.
GR  2016.7     1319.     2019.4     1330.     2021.8     1341.     2024.0     1349.

SC  3.015      0.40       3.0         0        6.4         10       97.7        8.1     2013.1     2008.3
NC  0.060      0.060      0.015       0.6        0.8
            UPSTREAM FACE: 3 - 10' X 8' RCB  (~1.6' OF SEDIMENT)
X1  0.224        57     984.15    1015.85      97.7       97.7       97.7
X2                          2     2019.5   2026.05
X3     10                                                            2026.05    2028.25
BT    -57       816.     2030.8                828.     2027.4                  837.65     2026.1
BT              843.     2026.1                852.     2026.3                    862.     2026.4
BT              873.     2026.5                878.     2026.6                    880.     2026.6
BT              888.     2026.8                897.     2026.9                    903.     2027.0
BT              907.     2027.1                911.     2027.2                    917.     2027.1
BT              922.     2027.1                927.     2027.0                    930.     2027.0
BT              933.     2027.0                943.     2027.0                    946.     2027.0
BT              954.     2026.8                959.     2026.8                    967.     2026.8
BT              973.     2027.0                982.     2027.2                    983.     2027.2
BT            984.15     2027.3                994.     2027.5                   1000.     2027.7
BT             1004.     2027.9               1010.     2028.1                   1015.     2028.2
            1015.85      2028.3               1017.     2028.3                   1022.     2028.4
             1032.       2028.7               1036.     2028.8                   1061.     2029.6
BT           1062.       2029.6               1072.     2029.8                   1087.     2030.1
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                1125.    2030.9              1142.    2031.2              1166.    2031.8
                1196.    2032.6              1202.    2032.7              1245.    2033.7
BT              1246.    2033.8              1268.    2034.8              1278.    2035.2
BT              1289.    2035.7              1295.    2035.6              1306.    2035.5
BT              1321.    2035.3              1335.    2035.1              1338.    2035.1
GR   2030.8      816.    2027.4      828.    2026.1    837.65    2026.1     843.    2026.3      852.
GR   2026.4      862.    2026.5      873.    2026.6      878.    2026.6     880.    2026.8      888.
GR   2026.9      897.    2027.0      903.    2027.1      907.    2027.2     911.    2027.1      917.
GR   2027.1      922.    2027.0      927.    2027.0      930.    2027.0     933.    2027.0      943.
GR   2027.0      946.    2026.8      954.    2026.8      959.    2026.8     967.    2027.0      973.
GR   2027.2      982.    2027.2      983.    2013.1    984.15    2013.1     994.    2013.1     1000.
GR   2013.1     1004.    2013.1     1010.    2013.1     1015.    2013.1  1015.85    2028.3     1017.
GR   2028.4     1022.    2028.7     1032.    2028.8     1036.    2029.6    1061.    2029.6     1062.
GR   2029.8     1072.    2030.1     1087.    2030.9     1125.    2031.2    1142.    2031.8     1166.
GR   2032.6     1196.    2032.7     1202.    2033.7     1245.    2033.8    1246.    2034.8     1268.
GR   2035.2     1278.    2035.7     1289.    2035.6     1295.    2035.5    1306.    2035.3     1321.
GR   2035.1     1335.    2035.1     1338.

NC    0.060     0.060     0.030       0.6       0.8
ET                5.1       9.1                944.     1055.                       954.84     1055.
            ET RECORD - STATIONS 944. & 1055. TO SATISFY
                        1 TO 1 FLOW CONTRACTION UPSTREAM
                        OF 3 - 10' X 8' RCB

            MAPPED FLOODPLAIN TO CWSEL

      0.231       40       983      1000       40       40       40
      2032.1     816.    2028.7      828.    2026.6     843.    2023.2     852.    2020.2      862.
GR   2018.5     873.    2017.0      880.    2015.0     888.    2014.2     897.    2014.3      907.
GR   2014.3     917.    2016.6      922.    2019.0     930.    2020.7     933.    2022.9      946.
GR   2021.0     973.    2018.2      982.    2014.7     983.    2014.5     994.    2014.5     1000.
GR   2015.4    1010.    2015.3     1015.    2015.3    1017.    2015.3    1022.    2015.4     1032.
GR   2015.4    1036.    2015.9     1061.    2015.9    1072.    2016.3    1087.    2019.1     1125.
GR   2020.2    1166.    2020.8     1196.    2021.0    1246.    2021.6    1268.    2022.2     1278.
GR   2022.3    1295.    2022.2     1306.    2025.6    1321.    2030.3    1335.    2032.2     1347.

NC    0.060     0.060     0.030       0.1       0.3
ET                        9.1                                                     898.      1035.
X1    0.279        11       992      1012       240       260       250
GR   2032.0     505.    2028.0      518.    2024.0     540.    2021.3     635.    2020.0     992.0
GR   2019.6    1000.    2020.0     1012.    2024.0    1089.    2028.0    1100.    2032.0     1110.
GR   2036.0    1125.

ET                        9.1                                                     900.     1036.89
X1    0.335        22       988      1016       305       300       300
GR   2040.0     530.    2036.7      540.    2034.8     546.    2029.1     570.    2028.6      581.
GR   2028.9     601.    2028.4      632.    2028.1     674.    2028.3     733.    2028.0      784.
GR   2028.0     819.    2028.5      842.    2028.9     865.    2028.2     904.    2027.9      939.
GR   2027.2     966.    2026.2      988.    2026.1    1000.    2026.6    1016.    2027.6     1027.
GR   2028.4    1036.    2040.0     1048.
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			9.1						878.	1016.33
X1	0.407	29	993	1016	385	380	380			
GR	2048.2	591.	2043.3	596.	2040.9	608.	2038.8	615.	2037.5	619.
GR	2036.4	624.	2035.8	628.	2036.0	670.	2036.3	707.	2035.7	752.
GR	2035.2	756.	2036.7	784.	2036.3	857.	2035.1	878.	2035.2	907.
GR	2035.6	928.	2035.6	948.	2035.1	965.	2034.9	966.	2034.4	980.
GR	2033.7	986.	2033.7	992.	2033.7	993.	2033.7	998.	2033.7	1000.
GR	2033.8	1016.	2043.6	1017.	2050.1	1027.	2060.0	1030.		
ET			9.1						891.	1104.99
X1	0.496	32	995	1013	415	470	470			
GR	2060.3	740.	2057.6	744.	2054.6	754.	2051.9	758.	2048.7	769.
GR	2046.7	770.	2044.9	774.	2045.1	788.	2044.3	799.	2045.6	817.
GR	2045.1	861.	2044.9	891.	2045.3	928.	2046.5	967.	2048.9	970.
GR	2046.0	976.	2044.5	981.	2044.1	989.	2044.0	995.	2043.3	1000.
GR	2043.4	1004.	2043.6	1008.	2043.6	1009.	2043.6	1011.	2043.7	1013.
GR	2044.3	1021.	2046.5	1037.	2046.7	1052.	2045.3	1100.	2047.9	1109.
GR	2054.7	1119.	2060.2	1131.						
ET			9.1						932.65	1199.10
X1	0.578	54	984	1006	450	440	430			
GR	2072.3	662.	2069.4	664.	2064.9	676.	2060.3	686.	2059.0	690.
GR	2059.3	712.	2060.3	737.	2060.3	739.	2060.3	740.	2060.3	741.
GR	2060.3	744.	2060.3	774.	2059.3	800.	2058.6	817.	2058.8	842.
GR	2058.8	869.	2059.2	882.	2059.6	905.	2059.2	916.	2058.3	922.
[illegible]	2058.1	934.	2058.0	944.	2057.7	956.	2057.6	960.	2057.4	967.
[illegible]	2057.4	968.	2057.3	970.	2057.2	977.	2056.4	980.	2056.1	984.
GR	2055.8	985.	2056.1	1000.	2056.2	1006.	2056.2	1018.	2056.2	1034.
GR	2056.9	1044.	2057.5	1054.	2057.3	1059.	2056.9	1072.	2056.6	1077.
GR	2056.6	1079.	2056.6	1082.	2056.6	1088.	2056.6	1095.	2056.6	1118.
GR	2056.6	1131.	2056.6	1153.	2055.9	1170.	2056.2	1183.	2056.4	1189.
GR	2056.2	1196.	2059.3	1201.	2062.6	1211.	2068.1	1224.		
ET			9.1						816.81	1020.30
X1	0.708	28	982	1002	680	730	690			
GR	2088.4	801.	2085.9	806.	2080.8	813.	2077.2	819.	2076.0	822.
GR	2075.9	827.	2077.5	855.	2077.5	888.	2077.6	913.	2077.6	914.
GR	2078.1	925.	2078.4	930.	2078.3	936.	2077.7	943.	2077.7	951.
GR	2077.1	953.	2076.3	955.	2075.7	962.	2075.3	969.	2074.6	974.
GR	2074.5	982.	2073.8	1000.	2074.0	1001.	2074.2	1002.	2076.0	1017.
GR	2082.1	1025.	2084.9	1033.	2088.6	1048.				
ET			9.1						927.25	1155.81
X1	0.773	26	986	1007	345	315	340			
GR	2100.8	900.	2098.6	902.	2091.3	915.	2089.3	925.	2083.8	929.
GR	2084.6	947.	2085.6	968.	2085.3	975.	2084.9	983.	2084.2	986.
GR	2084.2	995.	2084.2	1000.	2084.3	1001.	2084.4	1007.	2084.5	1008.
GR	2084.6	1010.	2085.9	1017.	2086.0	1026.	2084.2	1031.	2084.5	1065.
GR	2085.3	1089.	2084.2	1118.	2083.9	1132.	2084.5	1153.	2094.8	1170.
GR	2100.5	1185.								

			9.1						951.99	1136.40
X1	0.858	29	988	1012	445	480	450			
GR	2112.1	946.	2098.8	949.	2097.0	957.	2096.1	959.	2096.0	964.
GR	2095.9	967.	2095.8	976.	2095.8	980.	2095.8	981.	2096.6	988.
GR	2095.8	998.	2095.8	999.	2095.8	1000.	2095.8	1003.	2095.9	1012.
GR	2096.2	1056.	2096.5	1077.	2096.5	1085.	2096.5	1086.	2096.5	1088.
GR	2096.5	1089.	2096.5	1094.	2096.5	1106.	2097.1	1120.	2097.2	1135.
GR	2100.5	1140.	2107.0	1145.	2108.7	1154.	2112.4	1165.		
ET			9.1						955.20	1030.18
X1	0.960	26	988	1010	570	490	540			
GR	2124.7	923.	2123.8	930.	2121.2	934.	2120.3	935.	2117.9	939.
GR	2115.9	943.	2113.5	951.	2111.0	955.	2109.4	956.	2108.0	958.
GR	2107.0	960.	2107.2	979.	2107.2	988.	2107.2	995.	2107.2	996.
GR	2107.1	1000.	2107.3	1003.	2107.3	1006.	2107.3	1010.	2107.7	1018.
GR	2107.7	1023.	2107.9	1024.	2110.4	1030.	2113.5	1032.	2117.7	1035.
GR	2124.1	1041.								
ET			9.1						847.90	1015.63
X1	1.051	31	991	1013	460	510	480			
GR	2132.4	817.	2130.7	822.	2126.6	828.	2125.1	837.	2122.5	847.
GR	2121.0	858.	2120.5	869.	2120.0	873.	2120.6	888.	2120.7	910.
GR	2120.7	932.	2120.7	945.	2120.5	963.	2119.9	967.	2119.6	971.
GR	2119.1	980.	2118.9	984.	2118.8	987.	2118.5	991.	2118.1	993.
GR	2118.0	998.	2118.0	1000.	2118.0	1003.	2118.0	1006.	2118.5	1013.
GR	2120.8	1014.	2126.6	1020.	2130.6	1031.	2134.4	1035.	2136.6	1041.
GR	2137.0	1047.								
ET			9.1						928.11	1023.36
X1	1.140	32	980	1000	460	480	470			
GR	2148.4	901.	2145.6	902.	2141.9	920.	2135.1	924.	2132.3	936.
GR	2130.9	940.	2131.1	968.	2131.1	978.	2131.1	980.	2131.1	990.
GR	2131.1	992.	2131.1	996.	2131.1	1000.	2131.3	1005.	2131.6	1012.
GR	2131.6	1013.	2131.5	1015.	2132.7	1021.	2133.9	1023.	2135.9	1026.
GR	2138.0	1031.	2139.1	1037.	2139.9	1041.	2139.5	1046.	2138.7	1052.
GR	2138.4	1059.	2138.7	1067.	2140.1	1071.	2141.4	1089.	2143.2	1095.
GR	2147.3	1114.	2148.2	1123.						
ET			9.1						973.99	1060.48
X1	1.242	35	987	1009	550	550	540			
GR	2160.1	947.	2159.6	951.	2156.8	955.	2154.6	960.	2152.0	965.
GR	2150.3	969.	2147.8	975.	2145.6	978.	2145.6	982.	2144.9	985.
GR	2144.5	987.	2144.0	990.	2143.8	994.	2143.8	996.	2143.8	1000.
GR	2144.2	1005.	2144.2	1009.	2144.4	1011.	2144.7	1013.	2144.8	1014.
GR	2145.2	1016.	2145.2	1017.	2145.3	1018.	2145.6	1019.	2145.7	1020.
GR	2145.9	1027.	2145.9	1032.	2145.6	1039.	2144.9	1042.	2144.8	1045.
GR	2144.9	1050.	2145.2	1058.	2151.3	1063.	2158.3	1075.	2160.2	1076.

			9.1						932.15	1017.95
X1	1.340	22	990	1013	500	500	515			
GR	2172.1	908.	2172.1	909.	2167.7	914.	2162.3	923.	2159.2	931.
GR	2156.7	939.	2154.8	940.	2155.1	943.	2155.7	948.	2155.7	957.
GR	2155.8	965.	2155.8	972.	2155.9	982.	2155.9	990.	2156.0	997.
GR	2156.1	1000.	2156.1	1001.	2156.2	1007.	2156.2	1013.	2162.6	1025.
GR	2168.7	1037.	2172.2	1049.						
ET			9.1						894.20	1016.14
X1	1.440	25	995	1014	530	510	530			
GR	2184.2	875.	2182.6	879.	2177.4	885.	2172.8	893.	2171.8	899.
GR	2170.8	902.	2170.0	903.	2170.1	913.	2170.5	932.	2171.0	950.
GR	2170.4	957.	2170.6	962.	2170.4	968.	2169.9	971.	2169.4	973.
GR	2169.2	981.	2168.9	988.	2168.7	995.	2168.5	1000.	2168.5	1006.
GR	2168.5	1007.	2168.6	1014.	2174.2	1017.	2179.8	1026.	2184.8	1049.
ET			9.1						831.61	1130.56
X1	1.550	48	987	1013	520	600	580			
GR	2196.7	798.	2194.5	806.	2192.0	813.	2189.9	821.	2189.1	828.
GR	2188.3	839.	2187.8	851.	2188.0	862.	2187.6	873.	2187.4	878.
GR	2187.5	881.	2187.4	886.	2187.4	905.	2186.5	913.	2186.5	920.
GR	2186.5	925.	2187.0	926.	2187.6	947.	2187.0	971.	2186.6	987.
GR	2186.5	1000.	2186.6	1013.	2186.6	1019.	2186.6	1023.	2186.6	1025.
GR	2186.6	1026.	2186.7	1027.	2187.1	1032.	2187.2	1036.	2187.4	1041.
GR	2187.5	1043.	2187.7	1049.	2187.7	1056.	2187.7	1058.	2187.6	1061.
[illegible]	2187.6	1062.	2187.5	1072.	2187.8	1072.01	2188.1	1088.	2188.1	1103.
[illegible]	2188.1	1112.	2188.1	1121.	2188.1	1125.	2188.0	1128.	2187.9	1129.
GR	2190.9	1134.	2192.9	1139.	2196.3	1145.				

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .082

3265 DIVIDED FLOW

CONFLUENCE OF WASH O: UNNAMED WASH #12
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
UC (HASSAYAMPA RIVER MILE 49.52)
UD (HASSAYAMPA RIVER MILE 49.61)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED BY SLOPE AREA METHOD

.082	2.24	1996.34	1996.33	1996.34	1996.92	.58	.00	.00	1994.10
1995.0	.9	392.3	1601.8	.7	37.2	365.1	.0	.0	1994.20
.00	1.21	10.54	4.39	.060	.025	.045	.000	1994.10	999.34
.011050	0.	0.	0.	0	4	0	.00	325.87	1342.53

FLOW DISTRIBUTION FOR SECNO= .08 CWSEL= 1996.34

STA=	999.	1000.	1017.	1106.	1154.	1177.	1213.	1246.	1257.	1283.	1321.	1343.
PER Q=	.0	19.7	5.3	12.0	9.6	16.5	13.8	5.1	11.4	6.5	.2	
AREA=	.7	37.2	40.3	59.5	38.9	64.4	55.8	19.7	45.2	37.6	3.7	
VEL=	1.2	10.5	2.6	4.0	4.9	5.1	4.9	5.1	5.0	3.4	1.1	
DEPTH=	1.1	2.2	.5	1.2	1.7	1.8	1.7	1.8	1.7	1.0	.2	

*SECNO .163

3301 HV CHANGED MORE THAN HVINS

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


7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      965.0    1020.0  TYPE=      1  TARGET=       55.000
            ET RECORD - STATION 1020. TO ELIMINATE INEFFECTIVE
                        FLOW AREA IN RIGHT OVERBANK DOWNSTREAM
                        OF 3 - 10' X 8' RCB

            MAPPED FLOODPLAIN TO CWSEL

     .163      6.55   2009.15   2009.15      .00   2011.54      2.39      3.01       .54   2005.20
   1995.0     113.1    1786.7      95.3     31.8     136.9      23.0       2.9       1.8   2005.00
     .01      3.56     13.05      4.15     .060      .025      .045      .000   2002.60    975.98
  .004818     430.      430.      430.        0        20         0       .00     44.02   1020.00


FLOW DISTRIBUTION FOR SECNO=       .16          CWSEL=   2009.15

STA=     976.     978.     987.    1010.    1011.    1018.    1020.
 PER Q=      .2      5.5     89.6      1.1      3.5       .1
  AREA=     2.6     29.2    136.9      4.0     17.5      1.5
   VEL=     1.5      3.7     13.1      5.6      4.0      1.6
 DEPTH=     1.3      3.2      6.0      4.0      2.5       .7

CCHV=     .600 CEHV=     .800
*SECNO  .205
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      2016.30 ELREA=      2016.30

            DOWNSTREAM FACE: 3 - 10' X 8' RCB
     .205      4.95   2013.25   2013.25      .00   2015.76      2.51      1.45       .09   2008.30
   1995.0        .0    1995.0        .0       .0     157.1        .0       3.9       2.0   2008.30
     .02       .00     12.70       .00     .000      .030      .000      .000   2008.30    984.15
  .007785     240.      240.      240.        0        15         0       .00     31.70   1015.85


FLOW DISTRIBUTION FOR SECNO=       .20          CWSEL=   2013.25

STA=     984.    1016.
 PER Q=    100.0
  AREA=    157.1
   VEL=     12.7
 DEPTH=      5.0
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ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.015	.40	3.00	.00	6.40	10.00	97.70	8	1	2013.10	2008.30

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

CCHV= .600 CEHV= .800
*SECNO .224

SPECIAL CULVERT INLET CONTROL
EGIC = 2022.283 EGOC = 2021.871 PCWSE= 2013.255 ELTRD= 2026.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.71

IAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
2022.28	2021.87	6.52	0.	1995.	7.593	192.0	2026.10	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2026.05 ELREA= 2028.25

UPSTREAM FACE: 3 - 10' X 8' RCB (~1.6' OF SEDIMENT)

.224	8.29	2021.39	.00	.00	2022.28	.90	6.52	.00	2013.10
1995.0	.0	1995.0	.0	.0	262.7	.0	4.4	2.1	2013.10
.02	.00	7.59	.00	.000	.015	.000	.000	2013.10	984.15
.000350	98.	98.	98.	3	0	0	.00	31.70	1015.85

FLOW DISTRIBUTION FOR SECNO= .22 CWSEL= 2021.39

STA= 984. 1016.
PER Q= 100.0
AREA= 262.7
VEL= 7.6
DEPTH= 8.3

.600 CEHV= .800

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

*SECNO .231

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS= 944.0 1055.0 TYPE= 1 TARGET= 111.000
ET RECORD - STATIONS 944. & 1055. TO SATISFY
1 TO 1 FLOW CONTRACTION UPSTREAM
OF 3 - 10' X 8' RCB

MAPPED FLOODPLAIN TO CWSEL

.231	8.08	2022.28	2018.63	.00	2022.63	.35	.02	.33	2014.70
1995.0	51.5	855.5	1088.0	41.5	131.1	380.6	4.7	2.2	2014.50
.02	1.24	6.52	2.86	.060	.030	.060	.000	2014.20	954.84
.001138	40.	40.	40.	3	11	0	.00	100.16	1055.00

FLOW DISTRIBUTION FOR SECNO= .23 CWSEL= 2022.28

STA=	955.	973.	982.	983.	1000.	1010.	1015.	1017.	1022.	1032.	1036.	1055.
PER Q=	.4	1.9	.3	42.9	11.5	5.3	2.1	5.3	10.5	4.2	15.5	
AREA=	11.6	24.1	5.8	131.1	73.3	34.6	14.0	34.9	69.3	27.5	127.1	
VEL=	.6	1.6	1.1	6.5	3.1	3.0	3.1	3.1	3.0	3.0	2.4	
DEPTH=	.6	2.7	5.8	7.7	7.3	6.9	7.0	7.0	6.9	6.9	6.7	

CCHV= .100 CEHV= .300
*SECNO .279

.279	3.33	2022.93	2021.82	.00	2023.02	.09	.36	.03	2020.00
1995.0	1586.0	292.5	116.5	862.3	62.7	82.9	9.2	3.8	2020.00
.05	1.84	4.67	1.41	.060	.030	.060	.000	2019.60	577.51
.001937	240.	250.	260.	2	14	0	.00	490.97	1068.48

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 2022.93

STA=	578.	635.	992.	1012.	1068.
PER Q=	2.2	77.3	14.7	5.8	
AREA=	47.0	815.4	62.7	82.9	
VEL=	1.0	1.9	4.7	1.4	
DEPTH=	.8	2.3	3.1	1.5	

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

*SECNO .335
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.335	3.21	2029.31	2029.31	.00	2029.80	.50	1.01	.12	2026.20
1995.0	1139.9	740.6	114.5	468.1	85.2	36.5	14.7	7.2	2026.60
.07	2.44	8.69	3.14	.060	.030	.060	.000	2026.10	569.12
.006980	305.	300.	300.	0	10	0	.00	467.82	1036.94

FLOW DISTRIBUTION FOR SECNO= .34 CWSEL= 2029.31

STA=	569.	674.	733.	784.	819.	865.	939.	966.	988.	1016.	1027.	1037.
PER Q=	7.5	7.3	6.8	5.7	3.7	7.9	7.2	11.3	37.1	4.3	1.5	
AREA=	81.0	65.4	59.1	45.8	38.3	73.6	47.5	57.4	85.2	24.3	12.2	
VEL=	1.8	2.2	2.3	2.5	1.9	2.1	3.0	3.9	8.7	3.5	2.4	
DEPTH=	.8	1.1	1.2	1.3	.8	1.0	1.8	2.6	3.0	2.2	1.2	

*SECNO .407
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.407	3.31	2037.01	2037.01	.00	2037.62	.61	2.83	.03	2033.70
1995.0	1266.1	728.6	.3	449.8	75.4	.5	19.7	11.0	2033.80
.09	2.81	9.67	.65	.060	.030	.060	.000	2033.70	621.22
.007826	385.	380.	380.	0	8	0	.00	395.11	1016.33

FLOW DISTRIBUTION FOR SECNO= .41 CWSEL= 2037.01

STA=	621.	670.	707.	752.	784.	878.	907.	928.	948.	965.	980.	986.	992.
PER Q=	5.9	3.2	5.0	4.3	6.2	9.0	5.1	3.9	4.4	6.8	4.0	4.8	
AREA=	51.2	31.9	45.5	36.0	64.9	54.0	33.8	28.2	28.2	35.1	17.8	19.9	
VEL=	2.3	2.0	2.2	2.4	1.9	3.3	3.0	2.8	3.1	3.9	4.5	4.9	
DEPTH=	1.0	.9	1.0	1.1	.7	1.9	1.6	1.4	1.7	2.3	3.0	3.3	

STA=	992.	993.	1016.	1016.
PER Q=	.8	36.5	.0	
AREA=	3.3	75.4	.5	
VEL=	4.9	9.7	.7	
DEPTH=	3.3	3.3	1.6	

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

*SECNO .496

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.496	3.44	2046.74	2046.74	.00	2047.40	.65	3.81	.01	2044.00
1995.0	1136.1	610.8	248.0	333.6	57.6	84.7	24.6	14.5	2043.70
.11	3.41	10.61	2.93	.060	.030	.060	.000	2043.30	769.98
.009763	415.	470.	470.	0	8	0	.00	327.85	1104.99

FLOW DISTRIBUTION FOR SECNO= .50 CWSEL= 2046.74

STA=	770.	788.	799.	817.	861.	891.	928.	967.	989.	995.	1013.	1021.	1037.
PER Q=	4.7	4.4	5.8	9.4	9.3	10.4	3.6	5.5	3.8	30.6	5.3	3.2	
AREA=	28.1	22.5	32.2	61.2	52.2	60.7	32.8	27.6	16.1	57.6	21.9	21.5	
VEL=	3.4	3.9	3.6	3.0	3.5	3.4	2.2	4.0	4.7	10.6	4.8	3.0	
DEPTH=	1.6	2.0	1.8	1.4	1.7	1.6	.8	1.3	2.7	3.2	2.7	1.3	

	1037.	1100.	1105.
Q=	3.6	.3	
AREA=	37.7	3.6	
VEL=	1.9	1.9	
DEPTH=	.6	.7	

*SECNO .578
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.578	2.32	2058.12	2058.12	.00	2058.82	.70	5.67	.01	2056.10
1995.0	96.8	506.9	1391.3	30.1	46.6	303.7	28.9	17.5	2056.20
.13	3.22	10.88	4.58	.060	.030	.060	.000	2055.80	932.67
.017791	450.	430.	440.	0	19	0	.00	266.43	1199.10

FLOW DISTRIBUTION FOR SECNO= .58 CWSEL= 2058.12

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

STA=	933.	984.	1006.	1018.	1034.	1044.	1072.	1082.	1095.	1118.	1131.	1153.	1170.
PER Q=	4.9	25.4	5.9	7.9	3.5	4.2	3.1	4.3	7.7	4.3	7.3	8.0	
AREA=	30.1	46.6	23.1	30.8	15.7	26.1	14.5	19.8	35.0	19.8	33.5	31.8	
VEL=	3.2	10.9	5.1	5.1	4.5	3.2	4.2	4.4	4.4	4.4	4.4	5.0	
DEPTH=	.6	2.1	1.9	1.9	1.6	.9	1.4	1.5	1.5	1.5	1.5	1.9	

STA=	1170.	1183.	1196.	1199.
PER Q=	7.3	5.9	.4	
AREA=	26.9	23.7	3.0	
VEL=	5.4	4.9	2.9	
DEPTH=	2.1	1.8	1.0	

*SECNO .708
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.708	4.72	2078.52	2078.52	.00	2079.51	1.00	7.34	.09	2074.50
1995.0	791.2	958.6	245.2	243.3	87.6	55.4	35.1	21.3	2074.20
.16	3.25	10.94	4.43	.060	.030	.060	.000	2073.80	816.81
.006832	680.	690.	730.	0	17	0	.00	203.49	1020.30

FLOW DISTRIBUTION FOR SECNO= .71 CWSEL= 2078.52

STA=	817.	827.	855.	888.	925.	962.	969.	974.	982.	1002.	1017.	1020.
PER Q=	3.4	7.8	3.5	3.1	5.0	4.5	4.2	8.2	48.0	11.9	.4	
AREA=	20.0	50.8	33.5	32.4	35.9	21.1	17.8	31.7	87.6	51.2	4.1	
VEL=	3.4	3.0	2.1	1.9	2.8	4.3	4.7	5.1	10.9	4.6	2.0	
DEPTH=	2.0	1.8	1.0	.9	1.0	3.0	3.6	4.0	4.4	3.4	1.3	

*SECNO .773
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.773	2.40	2086.20	2086.20	.00	2086.94	.74	3.68	.03	2084.20
1995.0	372.2	459.9	1162.9	80.2	41.1	230.1	38.0	23.0	2084.40
.17	4.64	11.20	5.05	.060	.030	.060	.000	2083.80	927.25
.020928	345.	340.	315.	0	8	0	.00	228.55	1155.81

FLOW DISTRIBUTION FOR SECNO= .77 CWSEL= 2086.20

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

STA=	927.	947.	968.	986.	1007.	1031.	1065.	1089.	1118.	1132.	1153.	1156.
PER Q=	10.6	4.4	3.7	23.1	3.6	17.0	6.7	9.7	9.0	12.0	.3	
AREA=	38.1	23.1	19.0	41.1	19.5	62.9	31.2	42.1	30.1	42.0	2.4	
VEL=	5.5	3.8	3.9	11.2	3.7	5.4	4.3	4.6	6.0	5.7	2.9	
DEPTH=	1.9	1.1	1.1	2.0	.8	1.9	1.3	1.5	2.2	2.0	.9	

*SECNO .858
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.858	2.33	2098.13	2098.13	.00	2098.99	.86	9.24	.04	2096.60
1995.0	375.4	579.8	1039.7	68.5	51.4	209.7	41.6	25.2	2095.90
.19	5.48	11.28	4.96	.060	.030	.060	.000	2095.80	951.99
.018834	445.	450.	480.	0	8	0	.00	184.41	1136.40

FLOW DISTRIBUTION FOR SECNO= .86 CWSEL= 2098.13

STA=	952.	964.	976.	981.	988.	1012.	1056.	1077.	1085.	1094.	1106.	1120.	1136.
PER Q=	3.9	7.9	3.5	3.5	29.1	25.3	9.3	3.1	3.5	4.6	3.8	2.5	
AREA=	16.4	27.0	11.6	13.5	51.4	91.4	37.3	13.0	14.6	19.5	18.6	15.3	
VEL=	4.7	5.8	6.0	5.2	11.3	5.5	5.0	4.7	4.7	4.7	4.1	3.3	
DEPTH=	1.4	2.3	2.3	1.9	2.1	2.1	1.8	1.6	1.6	1.6	1.3	.9	

*SECNO .960

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.960	3.67	2110.67	2110.67	.00	2112.29	1.62	8.36	.23	2107.20
1995.0	711.0	990.5	293.5	109.9	75.9	52.3	45.0	26.8	2107.30
.21	6.47	13.05	5.62	.060	.030	.060	.000	2107.00	955.20
.013325	570.	540.	490.	0	14	0	.00	74.97	1030.18

FLOW DISTRIBUTION FOR SECNO= .96 CWSEL= 2110.67

STA=	955.	956.	958.	960.	979.	988.	1010.	1018.	1023.	1024.	1030.
PER Q=	.0	.8	1.8	22.7	10.3	49.6	7.8	4.4	.8	1.6	
AREA=	.5	3.9	6.3	67.9	31.3	75.9	25.4	14.9	2.9	9.1	
VEL=	1.4	3.9	5.7	6.7	6.6	13.1	6.2	5.9	5.7	3.6	
DEPTH=	.6	2.0	3.2	3.6	3.5	3.4	3.2	3.0	2.9	1.5	

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

*SECNO 1.051

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.051	4.38	2122.38	2122.38	.00	2123.42	1.04	4.49	.06	2118.50
1995.0	962.4	1024.8	7.9	278.8	93.7	4.0	48.4	28.1	2118.50
.23	3.45	10.94	1.96	.060	.030	.060	.000	2118.00	847.90
.007082	460.	480.	510.	0	11	0	.00	167.74	1015.63

FLOW DISTRIBUTION FOR SECNO= 1.05 CWSEL= 2122.38

STA=	848.	869.	888.	910.	932.	945.	963.	971.	980.	984.	991.	1013.	1016.
PER Q=	3.2	6.8	5.7	5.4	3.2	4.9	3.6	6.0	3.2	6.3	51.4	.4	
AREA=	24.9	39.7	38.0	36.9	21.8	32.0	19.2	27.3	13.5	25.5	93.7	4.0	
VEL=	2.5	3.4	3.0	2.9	2.9	3.1	3.7	4.4	4.7	4.9	10.9	2.0	
DEPTH=	1.2	2.1	1.7	1.7	1.7	1.8	2.4	3.0	3.4	3.6	4.3	1.5	

1.140
MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.140	3.24	2134.14	2134.14	.00	2135.52	1.38	4.70	.10	2131.10
1995.0	894.2	786.8	314.0	141.8	60.8	55.2	51.7	29.5	2131.10
.24	6.31	12.94	5.69	.060	.030	.060	.000	2130.90	928.11
.015497	460.	470.	480.	0	15	0	.00	95.25	1023.36

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 2134.14

STA=	928.	940.	968.	978.	980.	1000.	1005.	1012.	1021.	1023.
PER Q=	3.9	29.1	9.9	2.0	39.4	4.7	5.6	5.2	.2	
AREA=	17.4	87.9	30.4	6.1	60.8	14.7	18.8	20.0	1.7	
VEL=	4.4	6.6	6.5	6.5	12.9	6.3	6.0	5.2	2.4	
DEPTH=	1.5	3.1	3.0	3.0	3.0	2.9	2.7	2.2	.7	

*SECNO 1.242
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.242	4.42	2148.22	2148.22	.00	2149.72	1.50	6.35	.04	2144.50
1995.0	140.3	1144.4	710.3	31.2	92.9	147.3	55.1	30.6	2144.20
.26	4.49	12.31	4.82	.060	.030	.060	.000	2143.80	973.99
.009083	550.	540.	550.	0	11	0	.00	86.49	1060.48

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

FLOW DISTRIBUTION FOR SECNO= 1.24 CWSEL= 2148.22

STA=	974.	985.	987.	1009.	1013.	1017.	1027.	1039.	1045.	1050.	1058.	1060.
PER Q=	5.1	1.9	57.4	4.4	3.3	5.5	6.2	4.8	4.5	6.5	.4	
AREA=	24.2	7.0	92.9	15.2	12.9	25.3	28.9	19.0	16.9	25.4	3.7	
VEL=	4.2	5.4	12.3	5.7	5.1	4.4	4.2	5.1	5.3	5.1	2.3	
DEPTH=	2.2	3.5	4.2	3.8	3.2	2.5	2.4	3.2	3.4	3.2	1.5	

*SECNO 1.340
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.340	4.04	2158.84	2158.84	.00	2160.35	1.51	6.27	.00	2155.90
1995.0	1148.3	822.8	23.9	167.0	63.4	6.5	58.0	31.6	2156.20
.27	6.87	12.99	3.66	.060	.030	.060	.000	2154.80	932.15
.017809	500.	515.	500.	0	11	0	.00	85.80	1017.95

FLOW DISTRIBUTION FOR SECNO= 1.34 CWSEL= 2158.84

STA=	932.	939.	940.	943.	948.	957.	965.	972.	982.	990.	1013.	1018.
Q=	1.2	.7	4.8	6.5	10.0	8.7	7.4	10.3	8.0	41.2	1.2	
EA=	7.3	3.1	11.7	17.2	28.3	24.7	21.3	29.9	23.5	63.4	6.5	
VEL=	3.4	4.2	8.1	7.5	7.1	7.0	6.9	6.9	6.8	13.0	3.7	
DEPTH=	1.1	3.1	3.9	3.4	3.1	3.1	3.0	3.0	2.9	2.8	1.3	

*SECNO 1.440
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.440	4.10	2172.60	2172.60	.00	2173.81	1.21	6.57	.03	2168.70
1995.0	1057.9	927.3	9.8	238.1	77.1	4.3	61.4	32.9	2168.60
.29	4.44	12.03	2.28	.060	.030	.060	.000	2168.50	894.20
.009128	530.	530.	510.	0	5	0	.00	121.94	1016.14

FLOW DISTRIBUTION FOR SECNO= 1.44 CWSEL= 2172.60

STA=	894.	913.	932.	950.	962.	971.	981.	988.	995.	1014.	1016.
PER Q=	6.7	9.0	6.0	4.5	4.0	8.4	6.9	7.7	46.5	.5	
AREA=	33.5	43.7	33.3	23.8	20.0	32.3	24.9	26.6	77.1	4.3	
VEL=	4.0	4.1	3.6	3.7	4.0	5.2	5.5	5.8	12.0	2.3	
DEPTH=	1.8	2.3	1.9	2.0	2.2	3.2	3.6	3.8	4.1	2.0	

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

*SECNO 1.550

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.550	2.34	2188.84	2188.84	.00	2189.48	.64	6.15	.06	2186.60
1995.0	895.9	602.2	496.9	225.3	59.5	139.0	66.1	35.5	2186.60
.32	3.98	10.12	3.57	.060	.030	.060	.000	2186.50	831.61
.013861	520.	580.	600.	0	11	0	.00	298.95	1130.56

FLOW DISTRIBUTION FOR SECNO= 1.55 CWSEL= 2188.84

STA=	832.	873.	886.	905.	913.	920.	925.	947.	971.	987.	1013.	1019.	1025.
PER Q=	4.5	3.2	5.1	3.4	4.2	3.0	6.7	7.2	7.7	30.2	3.4	3.4	
AREA=	33.2	17.8	27.3	15.1	16.4	11.7	34.4	36.9	32.6	59.5	13.4	13.4	
VEL=	2.7	3.6	3.7	4.4	5.1	5.1	3.9	3.9	4.7	10.1	5.0	5.0	
DEPTH=	.8	1.4	1.4	1.9	2.3	2.3	1.6	1.5	2.0	2.3	2.2	2.2	

	1025.	1032.	1043.	1061.	1088.	1125.	1131.
Q=	3.3	3.4	3.5	4.3	3.3	.5	
AREA=	14.1	17.2	21.2	28.3	27.3	4.0	
VEL=	4.7	3.9	3.3	3.0	2.4	2.4	
DEPTH=	2.0	1.6	1.2	1.0	.7	.7	

FLOODWAY DETERMINATION
1.0 FT TARGET INCREASE
T3 WASH O: UNNAMED WASH #12

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3							1997.34	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

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

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .082

3470 ENCROACHMENT STATIONS= 999.3 1200.0 TYPE= 1 TARGET= 200.660
CONFLUENCE OF WASH O: UNNAMED WASH #12
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
UC (HASSAYAMPA RIVER MILE 49.52)
UD (HASSAYAMPA RIVER MILE 49.61)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED BY SLOPE AREA METHOD

.082	3.24	1997.34	1997.04	1996.34	1997.93	.59	.00	.00	1994.10
1995.0	1.5	531.2	1462.3	1.4	54.2	354.6	.0	.0	1994.20
.00	1.05	9.80	4.12	.060	.025	.045	.000	1994.10	999.34
.005783	0.	0.	0.	0	10	0	.00	200.66	1200.00

*SECNO .163

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 976.0 1020.0 TYPE= 1 TARGET= 44.020
ET RECORD - STATION 1020. TO ELIMINATE INEFFECTIVE
FLOW AREA IN RIGHT OVERBANK DOWNSTREAM
OF 3 - 10' X 8' RCB

MAPPED FLOODPLAIN TO CWSEL

CNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.163	6.55	2009.15	2009.15	2009.15	2011.54	2.39	2.26	.54	2005.20
1995.0	113.1	1786.6	95.3	31.8	136.9	23.0	3.0	1.2	2005.00
.01	3.56	13.05	4.15	.060	.025	.045	.000	2002.60	975.98
.004814	430.	430.	430.	0	17	0	.00	44.02	1020.00

CCHV= .600 CEHV= .800
*SECNO .205
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 2016.30 ELREA= 2016.30

DOWNSTREAM FACE: 3 - 10' X 8' RCB

.205	4.96	2013.26	2013.26	2013.25	2015.76	2.50	1.45	.09	2008.30
1995.0	.0	1995.0	.0	.0	157.1	.0	3.9	1.4	2008.30
.02	.00	12.70	.00	.000	.030	.000	.000	2008.30	984.15
.007779	240.	240.	240.	0	15	0	.00	31.70	1015.85

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.015	.40	3.00	.00	6.40	10.00	97.70	8	1	2013.10	2008.30

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

CCHV= .600 CEHV= .800
*SECNO .224

SPECIAL CULVERT INLET CONTROL
EGIC = 2022.283 EGOC = 2021.871 PCWSE= 2013.256 ELTRD= 2026.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.71

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
2022.28	2021.87	6.52	0.	1995.	7.593	192.0	2026.10	0.

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      2026.05 ELREA=      2028.25

            UPSTREAM FACE: 3 - 10' X 8' RCB  (~1.6' OF SEDIMENT)
      .224      8.29   2021.39       .00   2021.39   2022.28       .90      6.52       .00   2013.10
    1995.0        .0    1995.0        .0        .0     262.7        .0       4.4       1.5   2013.10
      .02       .00      7.59       .00      .000      .015      .000      .000   2013.10    984.15
   .000350       98.       98.       98.         3         0         0       .00     31.70   1015.85


CCHV=     .600 CEHV=     .800
*SECNO  .231

3301 HV CHANGED MORE THAN HVINS


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


3470 ENCROACHMENT STATIONS=      954.8    1055.0  TYPE=      1  TARGET=      100.160
            ET RECORD - STATIONS 944. & 1055. TO SATISFY
                        1 TO 1 FLOW CONTRACTION UPSTREAM
                        OF 3 - 10' X 8' RCB

            MAPPED FLOODPLAIN TO CWSEL

      .231      8.08   2022.28   2018.63   2022.28   2022.63       .35       .02       .33   2014.70
    1995.0      51.5     855.5    1088.0      41.5     131.1     380.6       4.8       1.5   2014.50
      .02      1.24      6.52      2.86      .060      .030      .060      .000   2014.20    954.84
   .001138       40.       40.       40.         3        11         0       .00    100.16   1055.00


CCHV=     .100 CEHV=     .300
*SECNO  .279

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .29


3470 ENCROACHMENT STATIONS=      898.0    1035.0  TYPE=      1  TARGET=      137.000
      .279      2.97   2022.57   2022.41   2022.93   2023.49       .92       .69       .17   2020.00
    1995.0    1158.9     636.2     199.9     225.7      55.5      45.4       7.3       2.2   2020.00
      .03      5.13     11.47      4.40      .060      .030      .060      .000   2019.60    898.00
   .003786       240.      250.      260.         2        22         0       .00    137.00   1035.00
```

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

*SECNO .335
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 900.0 1036.9 TYPE= 1 TARGET= 136.890

.335	3.57	2029.67	2029.67	2029.31	2030.79	1.12	3.47	.06	2026.20
1995.0	762.8	1051.2	181.1	184.7	95.3	44.0	9.6	3.2	2026.60
.04	4.13	11.04	4.12	.060	.030	.060	.000	2026.10	900.00
.009704	305.	300.	300.	0	11	0	.00	136.89	1036.89

*SECNO .407
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 878.0 1016.3 TYPE= 1 TARGET= 138.330

.407	3.58	2037.28	2037.28	2037.01	2038.38	1.10	3.74	.00	2033.70
1995.0	1060.8	933.8	.5	251.2	81.5	.6	12.5	4.4	2033.80
.06	4.22	11.45	.77	.060	.030	.060	.000	2033.70	878.00
.009887	385.	380.	380.	0	5	0	.00	138.33	1016.33

*SECNO .496

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 891.0 1105.0 TYPE= 1 TARGET= 213.990

.496	4.09	2047.39	2047.39	2046.74	2048.24	.85	4.03	.02	2044.00
1995.0	750.9	766.1	478.0	200.7	69.2	144.2	16.2	6.1	2043.70
.07	3.74	11.06	3.31	.060	.030	.060	.000	2043.30	891.00
.008311	415.	470.	470.	0	8	0	.00	208.97	1104.99

*SECNO .578
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 932.7 1199.1 TYPE= 1 TARGET= 266.450

.578	2.34	2058.14	2058.14	2058.12	2058.82	.69	5.09	.02	2056.10
1995.0	97.9	505.4	1391.7	30.8	46.9	306.2	20.3	8.5	2056.20
.10	3.18	10.78	4.54	.060	.030	.060	.000	2055.80	932.65
.017327	450.	430.	440.	0	11	0	.00	266.45	1199.10

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

*SECNO .708
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 816.8 1020.3 TYPE= 1 TARGET= 203.490

.708	4.72	2078.52	2078.52	2078.52	2079.51	.99	7.25	.09	2074.50
1995.0	791.8	958.1	245.2	243.7	87.7	55.4	26.5	12.3	2074.20
.12	3.25	10.93	4.42	.060	.030	.060	.000	2073.80	816.81
.006812	680.	690.	730.	0	17	0	.00	203.49	1020.30

*SECNO .773
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 927.3 1155.8 TYPE= 1 TARGET= 228.560

.773	2.40	2086.20	2086.20	2086.20	2086.94	.74	3.67	.03	2084.20
1995.0	372.2	459.8	1163.0	80.3	41.1	230.3	29.3	14.0	2084.40
.14	4.64	11.19	5.05	.060	.030	.060	.000	2083.80	927.25
.020867	345.	340.	315.	0	8	0	.00	228.55	1155.81

*SECNO .858
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 952.0 1136.4 TYPE= 1 TARGET= 184.410

.858	2.33	2098.13	2098.13	2098.13	2098.99	.86	9.23	.04	2096.60
1995.0	375.4	579.9	1039.7	68.5	51.4	209.6	33.0	16.2	2095.90
.16	5.48	11.29	4.96	.060	.030	.060	.000	2095.80	952.00
.018866	445.	450.	480.	0	8	0	.00	184.40	1136.40

*SECNO .960

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 955.2 1030.2 TYPE= 1 TARGET= 74.980

.960	3.67	2110.67	2110.67	2110.67	2112.29	1.62	8.36	.23	2107.20
1995.0	711.0	990.5	293.5	109.9	75.9	52.3	36.4	17.8	2107.30
.17	6.47	13.05	5.61	.060	.030	.060	.000	2107.00	955.20
.013319	570.	540.	490.	0	14	0	.00	74.97	1030.18

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

*SECNO 1.051

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 847.9 1015.6 TYPE= 1 TARGET= 167.730

1.051	4.38	2122.38	2122.38	2122.38	2123.42	1.04	4.48	.06	2118.50
1995.0	962.7	1024.4	7.9	279.0	93.8	4.0	39.7	19.1	2118.50
.19	3.45	10.93	1.95	.060	.030	.060	.000	2118.00	847.90
.007068	460.	480.	510.	0	11	0	.00	167.73	1015.63

*SECNO 1.140
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 928.1 1023.4 TYPE= 1 TARGET= 95.250

1.140	3.25	2134.15	2134.15	2134.14	2135.52	1.38	4.68	.10	2131.10
95.0	894.2	786.7	314.1	142.1	60.9	55.3	43.1	20.5	2131.10
.20	6.29	12.91	5.68	.060	.030	.060	.000	2130.90	928.11
.015397	460.	470.	480.	0	15	0	.00	95.25	1023.36

*SECNO 1.242
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 974.0 1060.5 TYPE= 1 TARGET= 86.490

1.242	4.42	2148.22	2148.22	2148.22	2149.72	1.50	6.33	.04	2144.50
1995.0	140.4	1144.3	710.3	31.2	93.0	147.4	46.4	21.6	2144.20
.22	4.49	12.31	4.82	.060	.030	.060	.000	2143.80	973.99
.009070	550.	540.	550.	0	11	0	.00	86.49	1060.48

*SECNO 1.340
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 932.2 1018.0 TYPE= 1 TARGET= 85.800

1.340	4.06	2158.86	2158.86	2158.84	2160.35	1.49	6.23	.00	2155.90
1995.0	1147.8	823.1	24.1	167.8	63.7	6.6	49.4	22.6	2156.20
.24	6.84	12.93	3.65	.060	.030	.060	.000	2154.80	932.15
.017524	500.	515.	500.	0	11	0	.00	85.80	1017.95

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

*SECNO 1.440
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 894.2 1016.1 TYPE= 1 TARGET= 121.940

1.440	4.10	2172.60	2172.60	2172.60	2173.81	1.21	6.53	.03	2168.70
1995.0	1057.9	927.4	9.8	238.0	77.0	4.3	52.8	23.9	2168.60
.25	4.44	12.04	2.28	.060	.030	.060	.000	2168.50	894.20
.009133	530.	530.	510.	0	5	0	.00	121.94	1016.14

*SECNO 1.550

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 831.6 1130.6 TYPE= 1 TARGET= 298.950

1.550	2.34	2188.84	2188.84	2188.84	2189.48	.64	6.15	.06	2186.60
95.0	896.0	601.9	497.1	225.6	59.5	139.2	57.5	26.5	2186.60
.28	3.97	10.11	3.57	.060	.030	.060	.000	2186.50	831.61
.013813	520.	580.	600.	0	11	0	.00	298.95	1130.56

THIS RUN EXECUTED 29JUN92 16:01:27

****
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

WASH O: UNNAMED WASH #12

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.082	.00	.00	.00	1994.10	1995.00	1996.34	1996.33	1996.92	110.50	10.54	403.09	189.79
	.082	.00	.00	.00	1994.10	1995.00	1997.34	1997.04	1997.93	57.83	9.80	410.18	262.34
*	.163	430.00	.00	.00	2002.60	1995.00	2009.15	2009.15	2011.54	48.18	13.05	191.65	287.43
*	.163	430.00	.00	.00	2002.60	1995.00	2009.15	2009.15	2011.54	48.14	13.05	191.70	287.54
	.205	240.00	.00	.00	2008.30	1995.00	2013.25	2013.25	2015.76	77.85	12.70	157.06	226.11
*	.205	240.00	.00	.00	2008.30	1995.00	2013.26	2013.26	2015.76	77.79	12.70	157.10	226.20
*	.224	97.70	2026.10	2019.50	2013.10	1995.00	2021.39	.00	2022.28	3.50	7.59	262.74	1066.09
*	.224	97.70	2026.10	2019.50	2013.10	1995.00	2021.39	.00	2022.28	3.50	7.59	262.74	1066.09
*	.231	40.00	.00	.00	2014.20	1995.00	2022.28	2018.63	2022.63	11.38	6.52	553.29	591.30
*	.231	40.00	.00	.00	2014.20	1995.00	2022.28	2018.63	2022.63	11.38	6.52	553.29	591.30
	.279	250.00	.00	.00	2019.60	1995.00	2022.93	2021.82	2023.02	19.37	4.67	1007.86	453.32
*	.279	250.00	.00	.00	2019.60	1995.00	2022.57	2022.41	2023.49	137.86	11.47	326.62	169.91
*	.335	300.00	.00	.00	2026.10	1995.00	2029.31	2029.31	2029.80	69.80	8.69	589.79	238.79
*	.335	300.00	.00	.00	2026.10	1995.00	2029.67	2029.67	2030.79	97.04	11.04	323.90	202.52
*	.407	380.00	.00	.00	2033.70	1995.00	2037.01	2037.01	2037.62	78.26	9.67	525.67	225.52
*	.407	380.00	.00	.00	2033.70	1995.00	2037.28	2037.28	2038.38	98.87	11.45	333.36	200.64
*	.496	470.00	.00	.00	2043.30	1995.00	2046.74	2046.74	2047.40	97.63	10.61	475.91	201.91
*	.496	470.00	.00	.00	2043.30	1995.00	2047.39	2047.39	2048.24	83.11	11.06	414.17	218.84
*	.578	430.00	.00	.00	2055.80	1995.00	2058.12	2058.12	2058.82	177.91	10.88	380.34	149.57
*	.578	430.00	.00	.00	2055.80	1995.00	2058.14	2058.14	2058.82	173.27	10.78	383.85	151.56
*	.708	690.00	.00	.00	2073.80	1995.00	2078.52	2078.52	2079.51	68.32	10.94	386.29	241.37
	.708	690.00	.00	.00	2073.80	1995.00	2078.52	2078.52	2079.51	68.12	10.93	386.78	241.72

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.773	340.00	.00	.00	2083.80	1995.00	2086.20	2086.20	2086.94	209.28	11.20	351.37	137.90
*	.773	340.00	.00	.00	2083.80	1995.00	2086.20	2086.20	2086.94	208.67	11.19	351.71	138.11
*	.858	450.00	.00	.00	2095.80	1995.00	2098.13	2098.13	2098.99	188.34	11.28	329.63	145.37
*	.858	450.00	.00	.00	2095.80	1995.00	2098.13	2098.13	2098.99	188.66	11.29	329.45	145.25
*	.960	540.00	.00	.00	2107.00	1995.00	2110.67	2110.67	2112.29	133.25	13.05	238.09	172.82
*	.960	540.00	.00	.00	2107.00	1995.00	2110.67	2110.67	2112.29	133.19	13.05	238.12	172.87
*	1.051	480.00	.00	.00	2118.00	1995.00	2122.38	2122.38	2123.42	70.82	10.94	376.51	237.06
*	1.051	480.00	.00	.00	2118.00	1995.00	2122.38	2122.38	2123.42	70.68	10.93	376.79	237.30
*	1.140	470.00	.00	.00	2130.90	1995.00	2134.14	2134.14	2135.52	154.97	12.94	257.84	160.26
*	1.140	470.00	.00	.00	2130.90	1995.00	2134.15	2134.15	2135.52	153.97	12.91	258.37	160.78
*	1.242	540.00	.00	.00	2143.80	1995.00	2148.22	2148.22	2149.72	90.83	12.31	271.50	209.33
*	1.242	540.00	.00	.00	2143.80	1995.00	2148.22	2148.22	2149.72	90.70	12.31	271.62	209.47
*	1.340	515.00	.00	.00	2154.80	1995.00	2158.84	2158.84	2160.35	178.09	12.99	236.94	149.50
*	1.340	515.00	.00	.00	2154.80	1995.00	2158.86	2158.86	2160.35	175.24	12.93	238.13	150.70
*	1.440	530.00	.00	.00	2168.50	1995.00	2172.60	2172.60	2173.81	91.28	12.03	319.40	208.81
*	1.440	530.00	.00	.00	2168.50	1995.00	2172.60	2172.60	2173.81	91.33	12.04	319.34	208.75
	1.550	580.00	.00	.00	2186.50	1995.00	2188.84	2188.84	2189.48	138.61	10.12	423.78	169.45
	1.550	580.00	.00	.00	2186.50	1995.00	2188.84	2188.84	2189.48	138.13	10.11	424.29	169.75

: UNNAMED WASH #12

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.082	1995.00	1996.34	.00	.00	.00	325.87	.00
	.082	1995.00	1997.34	1.00	.00	1.00	200.66	.00
*	.163	1995.00	2009.15	.00	12.81	.00	44.02	430.00
*	.163	1995.00	2009.15	.00	11.81	.00	44.02	430.00
*	.205	1995.00	2013.25	.00	4.11	.00	31.70	240.00
*	.205	1995.00	2013.26	.00	4.11	.00	31.70	240.00
*	.224	1995.00	2021.39	.00	8.13	.00	31.70	97.70
*	.224	1995.00	2021.39	.00	8.13	.00	31.70	97.70
*	.231	1995.00	2022.28	.00	.89	.00	100.16	40.00
*	.231	1995.00	2022.28	.00	.89	.00	100.16	40.00
	.279	1995.00	2022.93	.00	.65	.00	490.97	250.00
*	.279	1995.00	2022.57	-.36	.29	-.36	137.00	250.00
*	.335	1995.00	2029.31	.00	6.38	.00	467.82	300.00
	.335	1995.00	2029.67	.36	7.10	.36	136.89	300.00
*	.407	1995.00	2037.01	.00	7.70	.00	395.11	380.00
*	.407	1995.00	2037.28	.27	7.61	.27	138.33	380.00
*	.496	1995.00	2046.74	.00	9.73	.00	327.85	470.00
*	.496	1995.00	2047.39	.65	10.11	.65	208.97	470.00
*	.578	1995.00	2058.12	.00	11.38	.00	266.43	430.00
*	.578	1995.00	2058.14	.01	10.75	.01	266.45	430.00
*	.708	1995.00	2078.52	.00	20.39	.00	203.49	690.00
*	.708	1995.00	2078.52	.00	20.38	.00	203.49	690.00
*	.773	1995.00	2086.20	.00	7.68	.00	228.55	340.00
*	.773	1995.00	2086.20	.00	7.68	.00	228.55	340.00
*	.858	1995.00	2098.13	.00	11.93	.00	184.41	450.00
*	.858	1995.00	2098.13	.00	11.92	.00	184.40	450.00
*	.960	1995.00	2110.67	.00	12.55	.00	74.97	540.00
*	.960	1995.00	2110.67	.00	12.55	.00	74.97	540.00
*	1.051	1995.00	2122.38	.00	11.71	.00	167.74	480.00
*	1.051	1995.00	2122.38	.00	11.71	.00	167.73	480.00
	1.140	1995.00	2134.14	.00	11.76	.00	95.25	470.00
*	1.140	1995.00	2134.15	.01	11.77	.01	95.25	470.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.242	1995.00	2148.22	.00	14.08	.00	86.49	540.00
*	1.242	1995.00	2148.22	.00	14.08	.00	86.49	540.00
*	1.340	1995.00	2158.84	.00	10.62	.00	85.80	515.00
*	1.340	1995.00	2158.86	.01	10.63	.01	85.80	515.00
*	1.440	1995.00	2172.60	.00	13.76	.00	121.94	530.00
*	1.440	1995.00	2172.60	.00	13.74	.00	121.94	530.00
*	1.550	1995.00	2188.84	.00	16.24	.00	298.95	580.00
*	1.550	1995.00	2188.84	.00	16.24	.00	298.95	580.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .163  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .163  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .163  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .205  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .224  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .224  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .231  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .231  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .279  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=     1.550  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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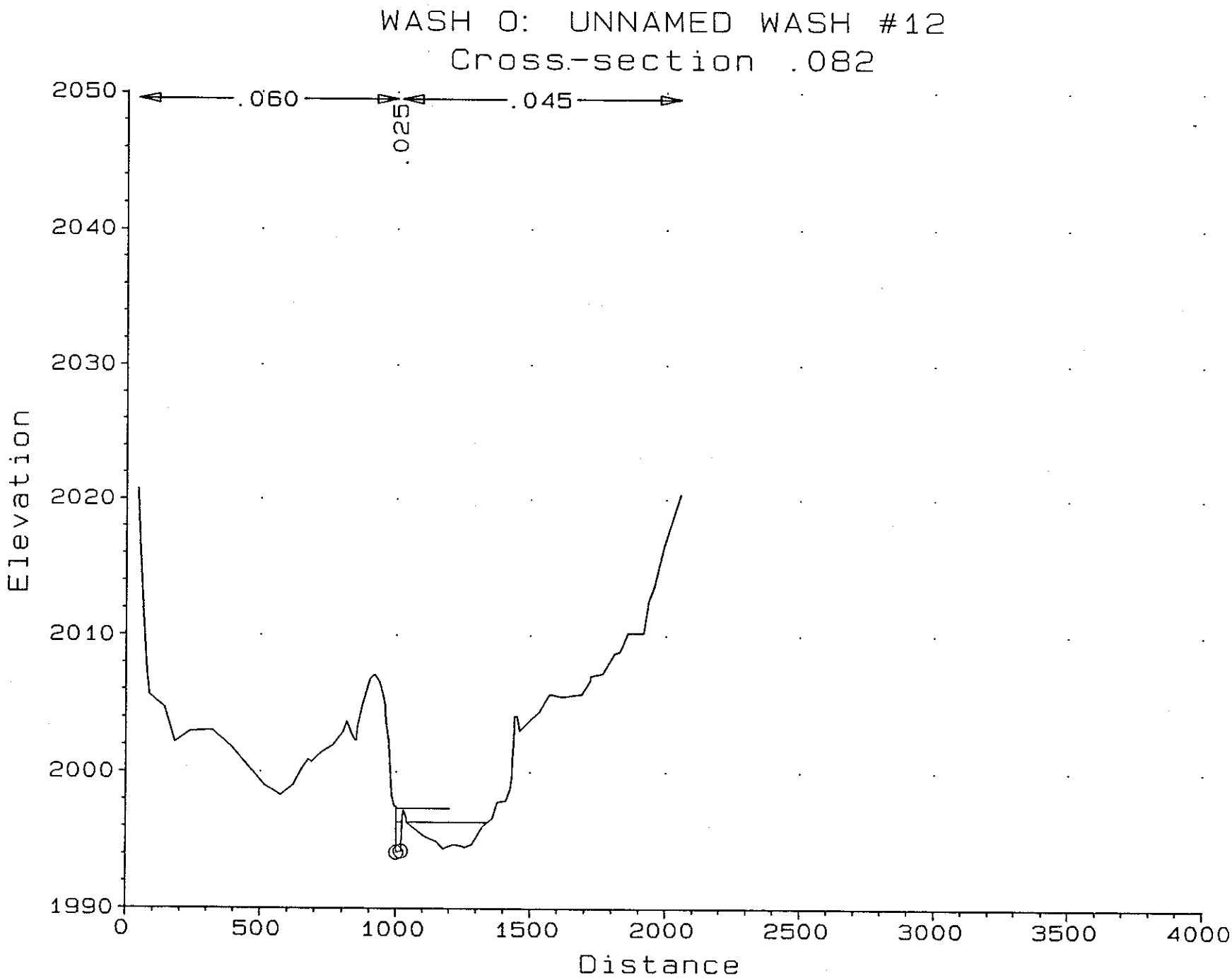
FLOODWAY DATA, WASH O: UNNAMED WASH #12
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.082	201.	410.	4.9	1997.3	1996.3	1.0
.163	44.	192.	10.4	2009.1	2009.1	.0
.205	32.	157.	12.7	2013.3	2013.3	.0
.224	32.	263.	7.6	2021.4	2021.4	.0
.231	100.	553.	3.6	2022.3	2022.3	.0
.279	137.	327.	6.1	2022.5	2022.9	-.4
.335	137.	324.	6.2	2029.7	2029.3	.4
.407	138.	333.	6.0	2037.3	2037.0	.3
.496	214.	414.	4.8	2047.3	2046.7	.6
.578	266.	384.	5.2	2058.1	2058.1	.0
.708	203.	387.	5.2	2078.5	2078.5	.0
.773	229.	352.	5.7	2086.2	2086.2	.0
.858	184.	329.	6.1	2098.1	2098.1	.0
.960	75.	238.	8.4	2110.7	2110.7	.0
1.051	168.	377.	5.3	2122.4	2122.4	.0
1.140	95.	258.	7.7	2134.1	2134.1	.0
.242	86.	272.	7.3	2148.2	2148.2	.0
1.340	86.	238.	8.4	2158.8	2158.8	.0
1.440	122.	319.	6.2	2172.6	2172.6	.0
1.550	299.	424.	4.7	2188.8	2188.8	.0


WASH O: UNNAMED WASH #12
Cross-section .082
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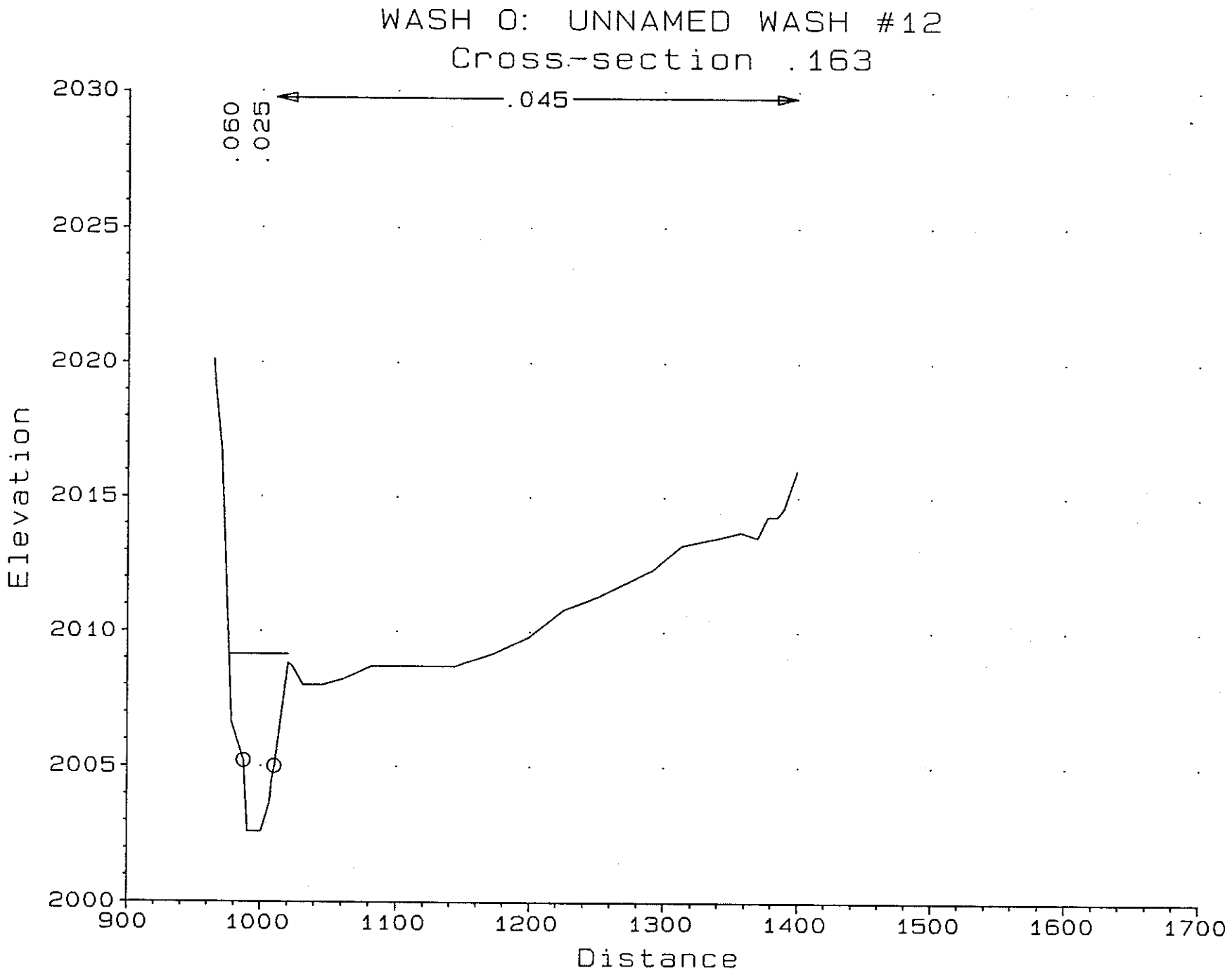
.025
.045
Elevation
2050
2040
2030
2020
2010
2000
1990
0
500
1000
1500
2000
2500
3000
3500
4000
Distance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Cross-section .163
.045
.060
.025
2030
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2010
2005
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Elevation
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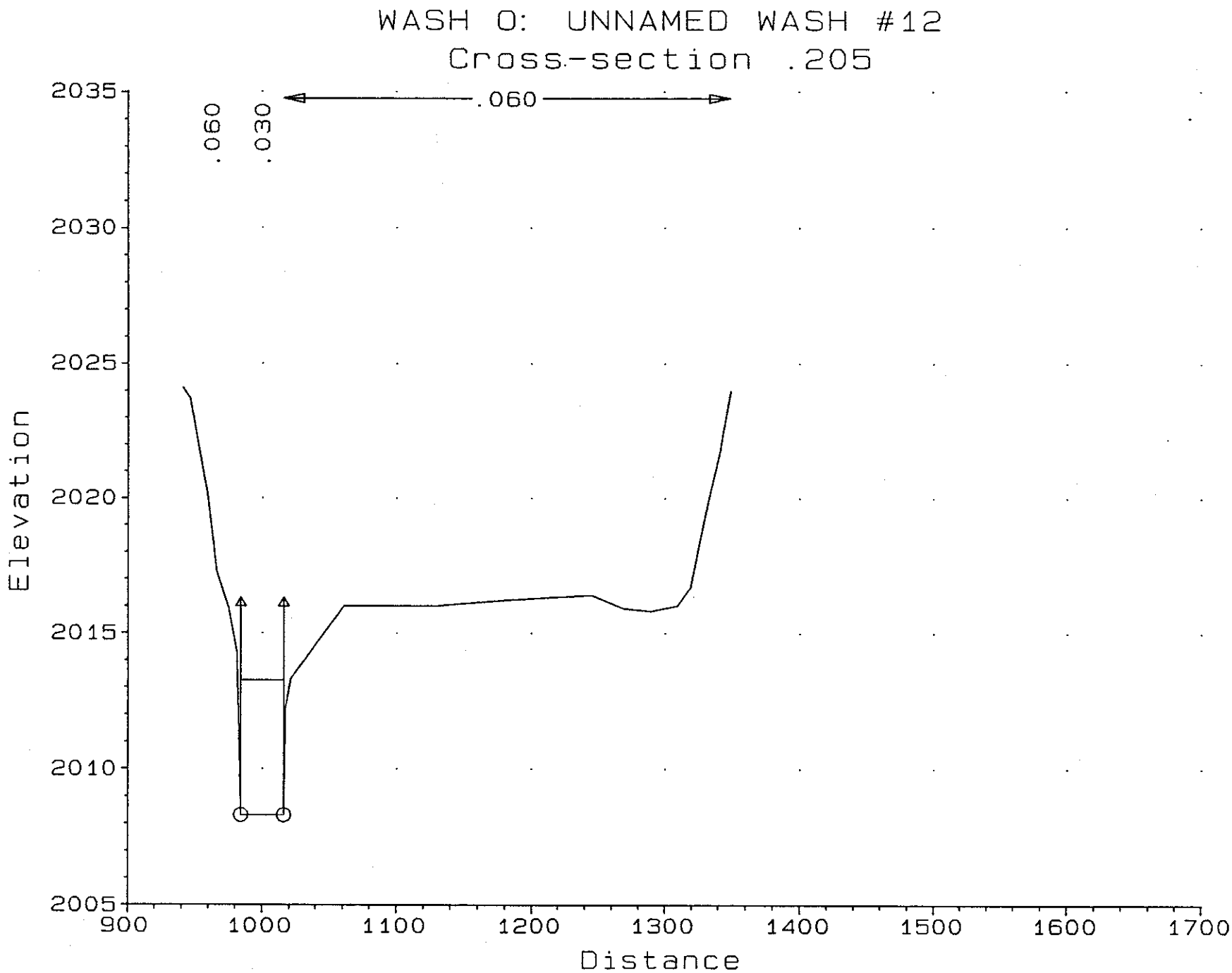
1700
Distance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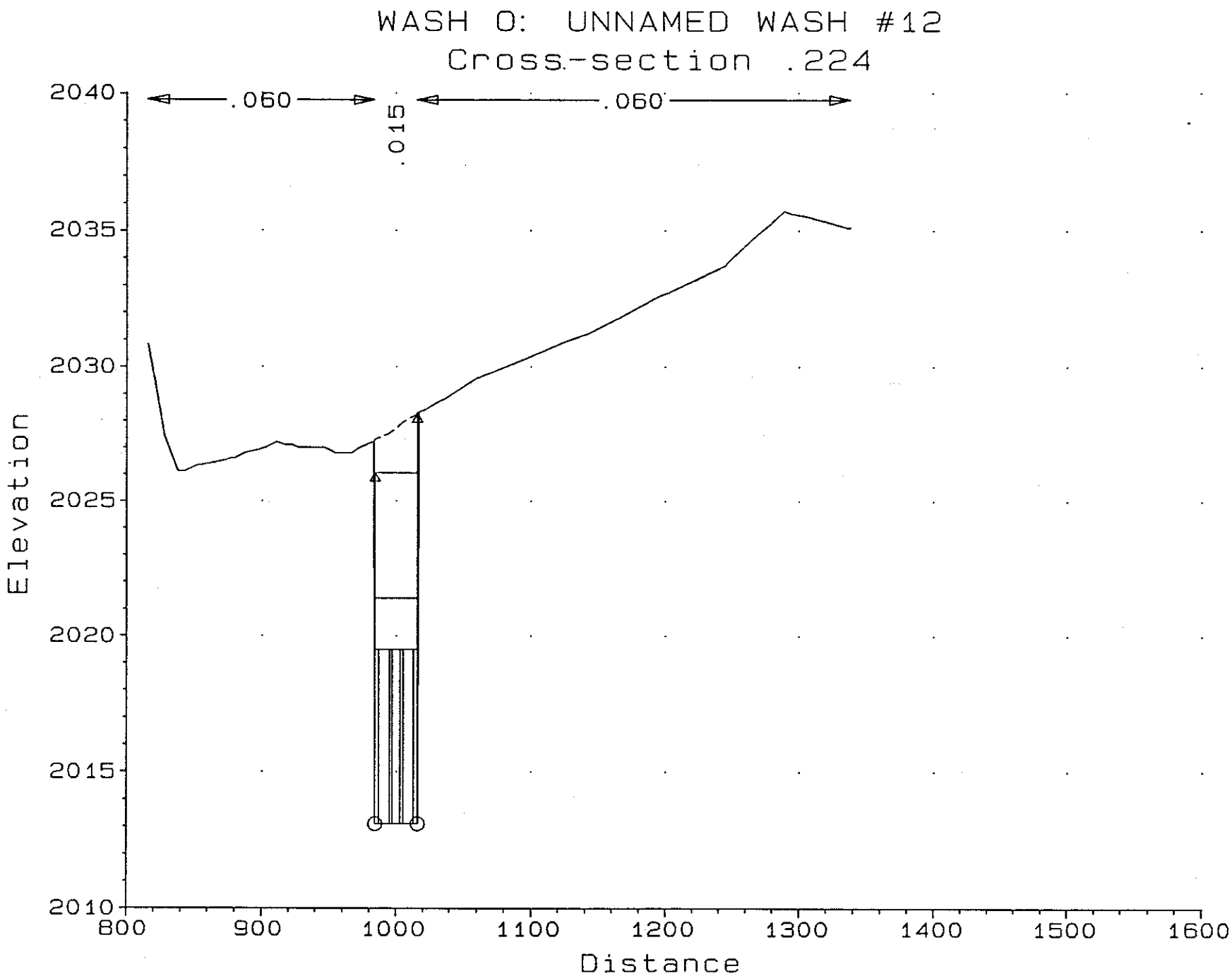
Distance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Cross-section .224
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.015
.060
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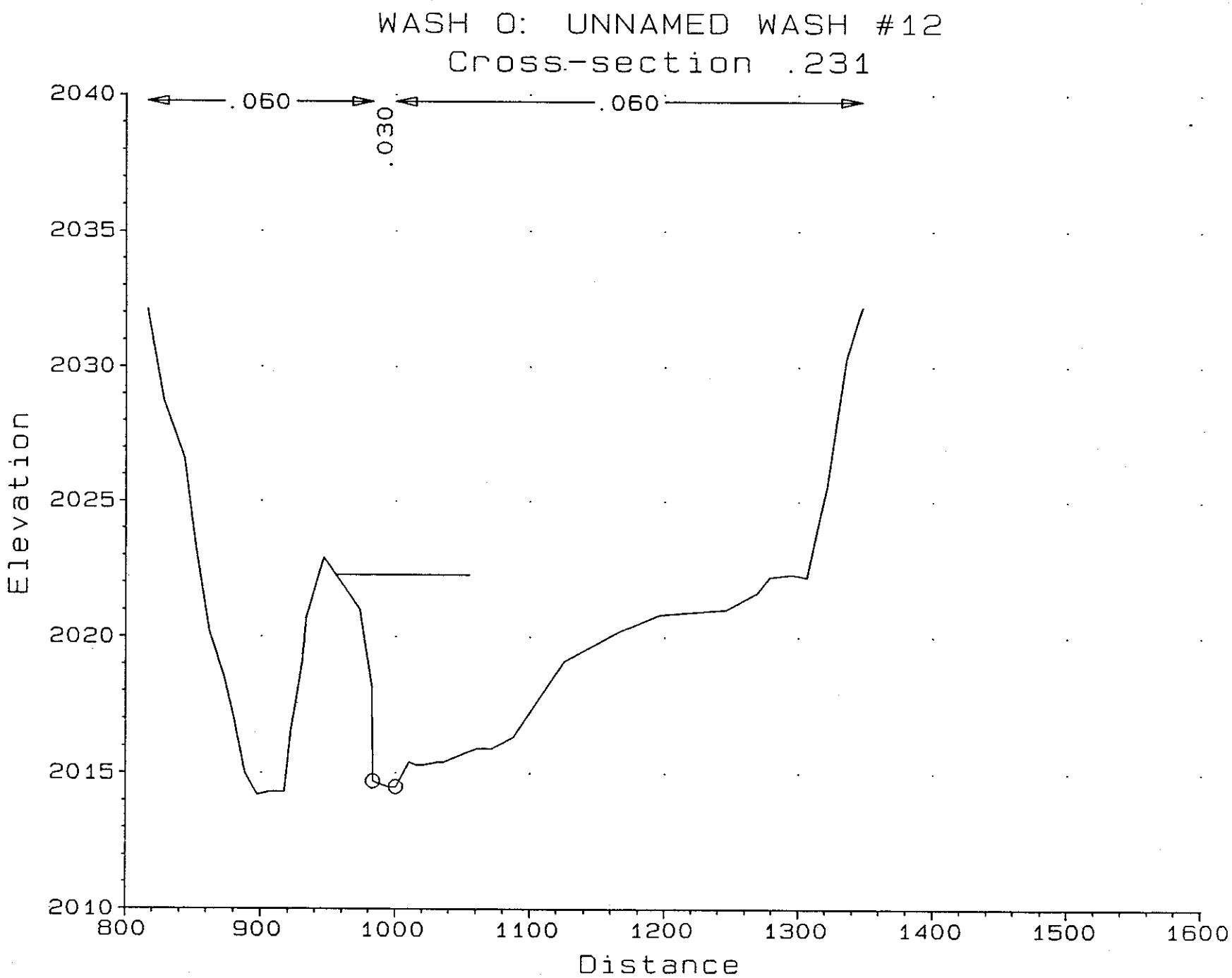
1600
Distance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.030
.060
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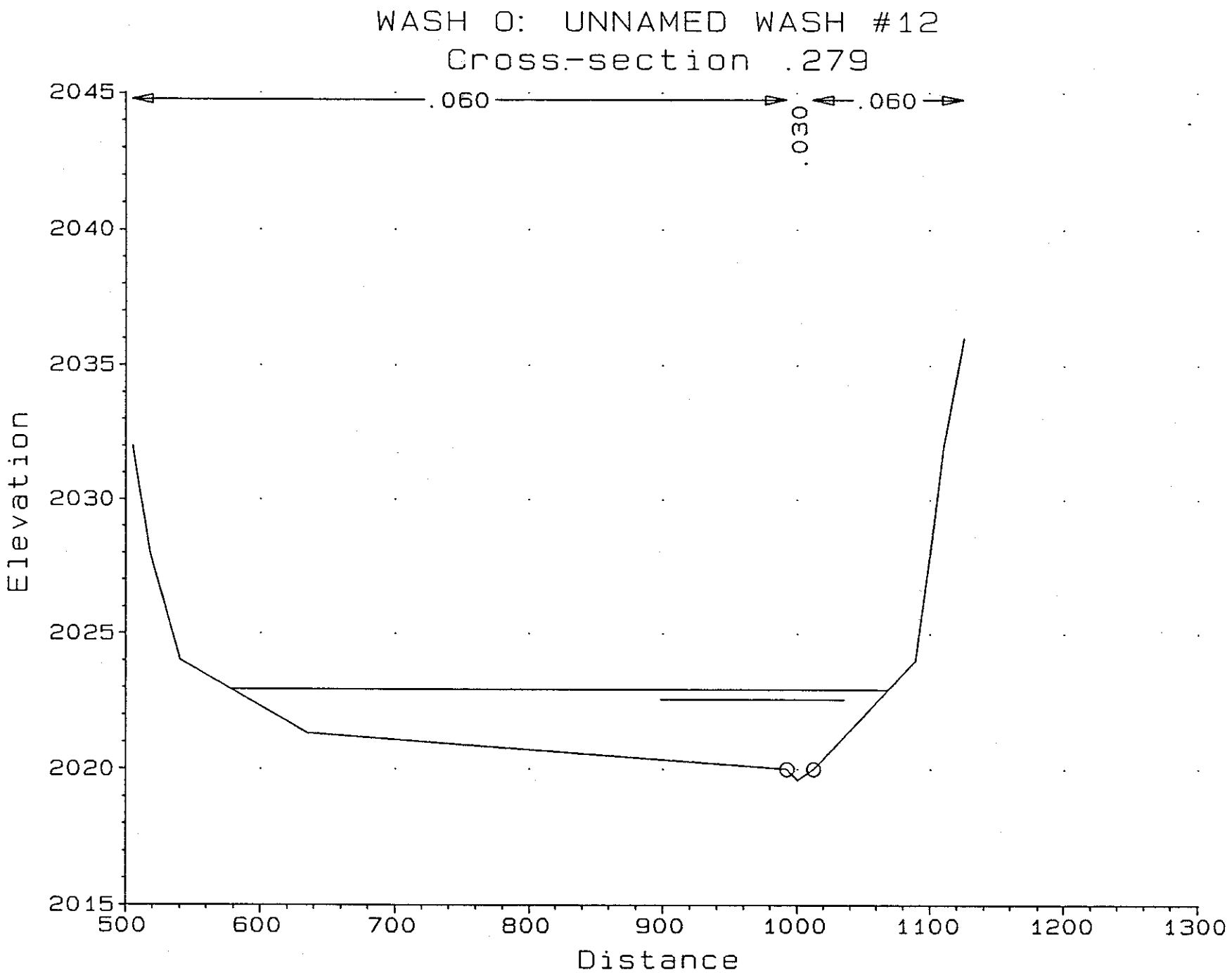
1500
1600
Distance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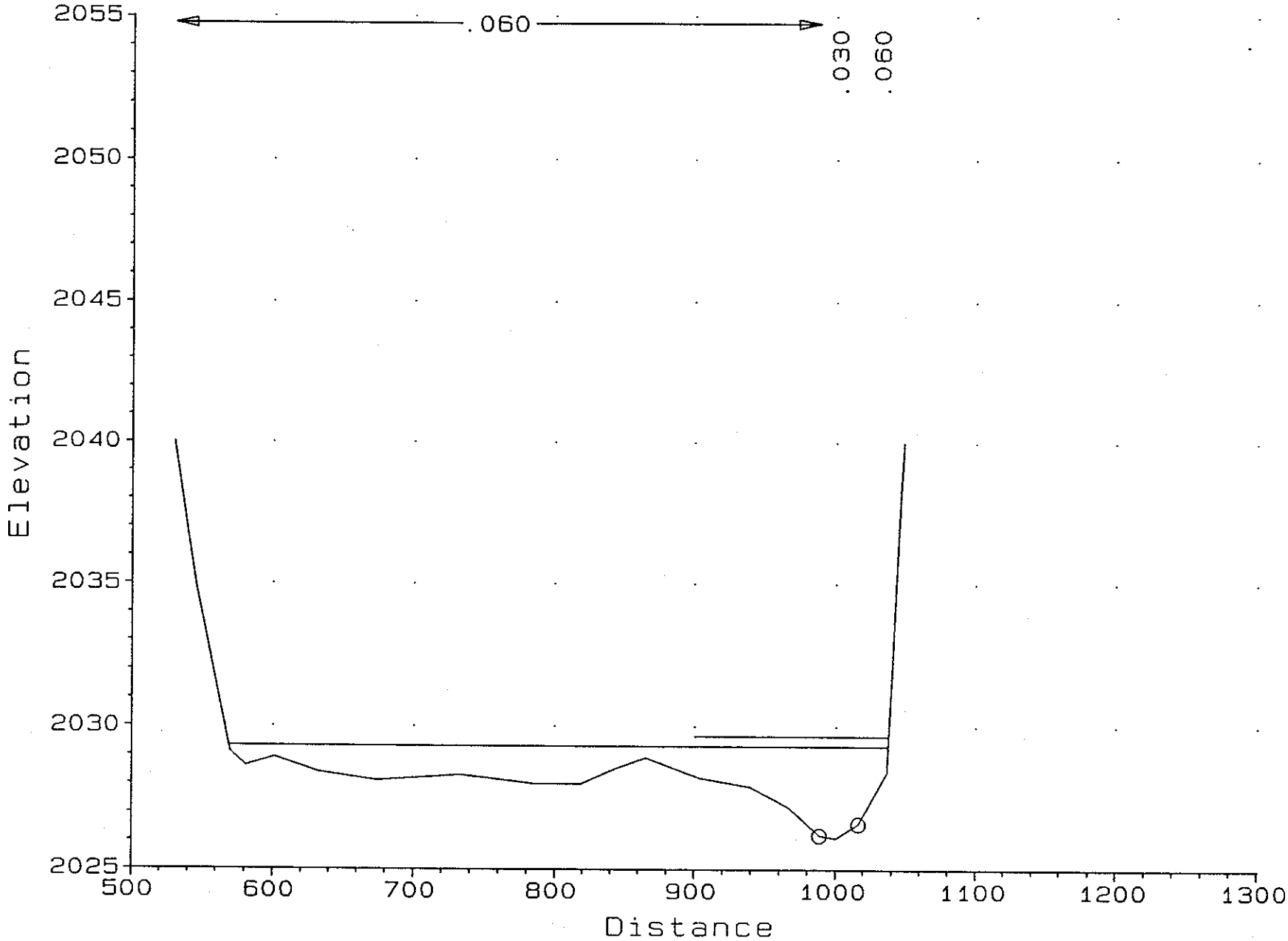
Cross-section .279
.060
.060
.030
2045
2040
2035
2030
2025
2020
2015
Elevation
500
600
700
800
900
1000
1100
1200
1300
Distance

WASH O: UNNAMED WASH #12

Cross-section .335



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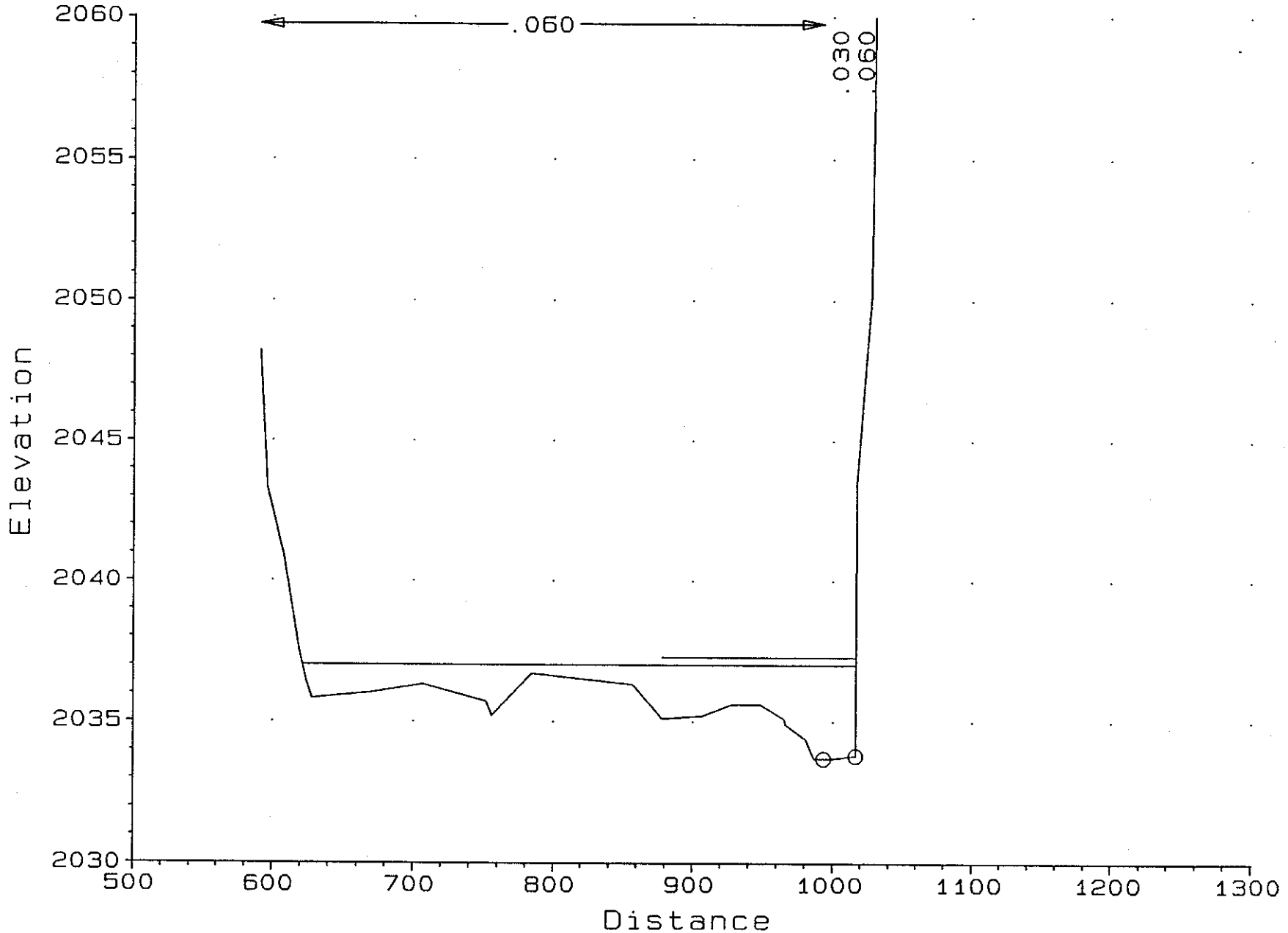
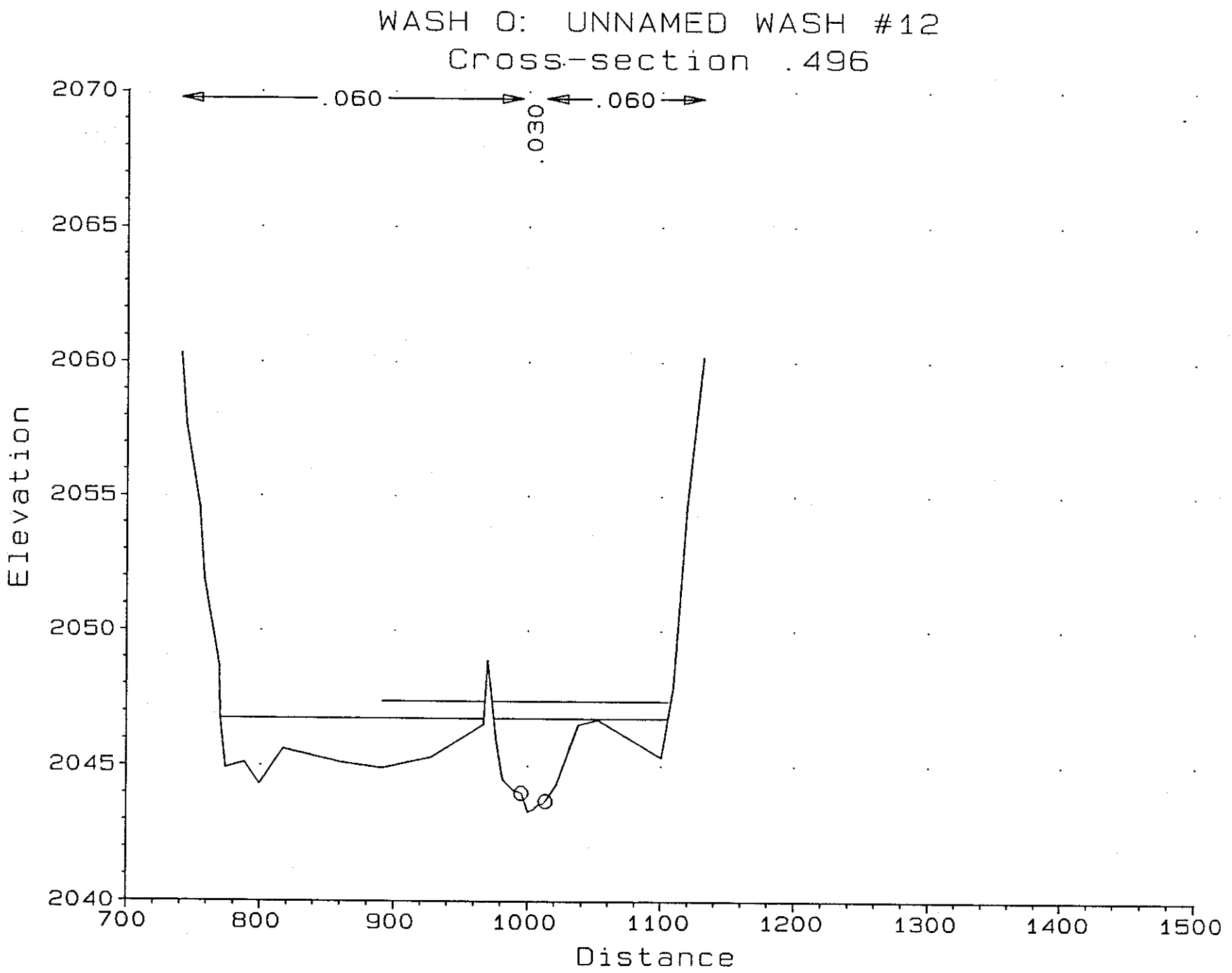
Cross-section .407

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.060
.030
2070
2065
2060
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Elevation
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1200
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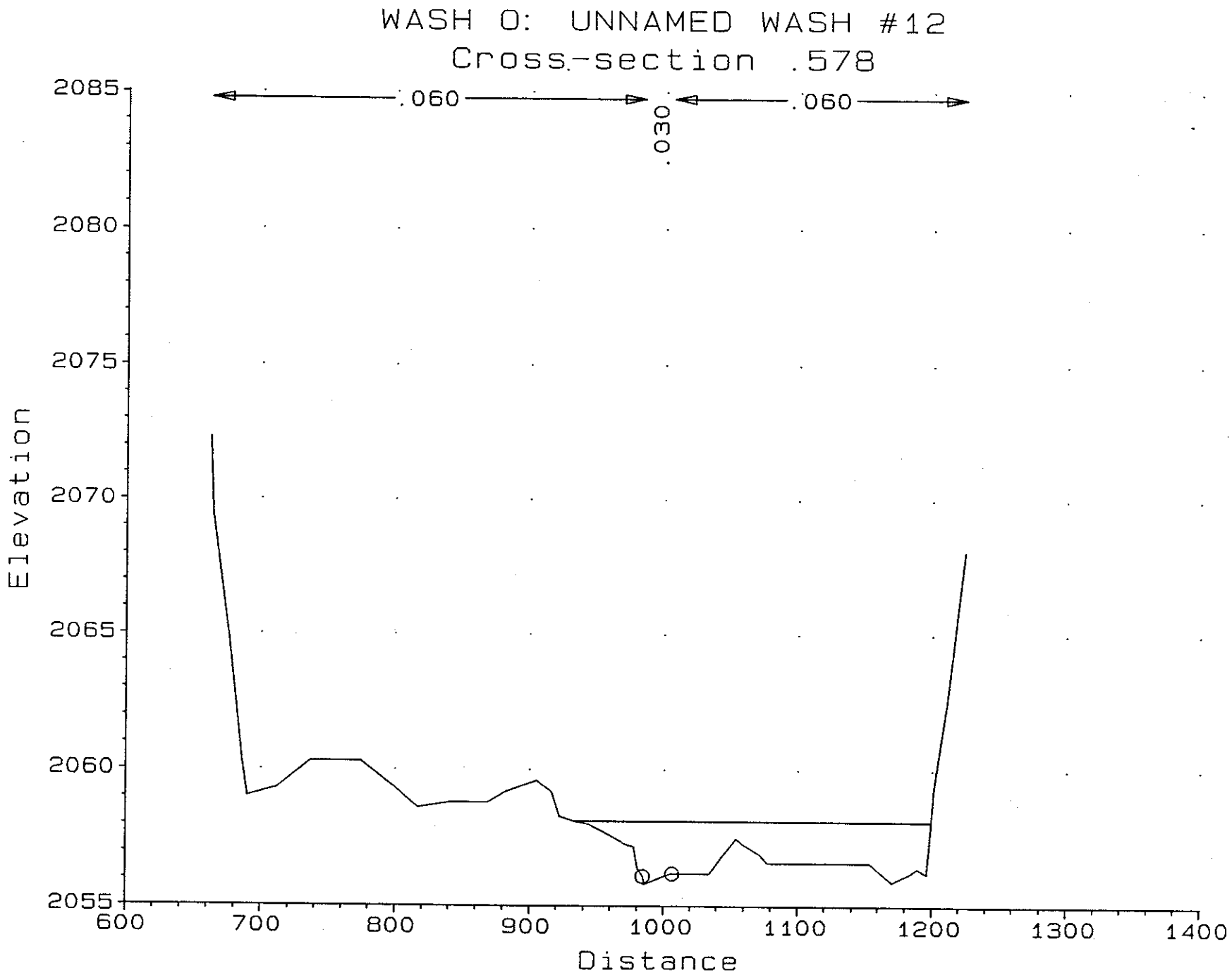
Distance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.030
.060
Elevation
2085
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2055
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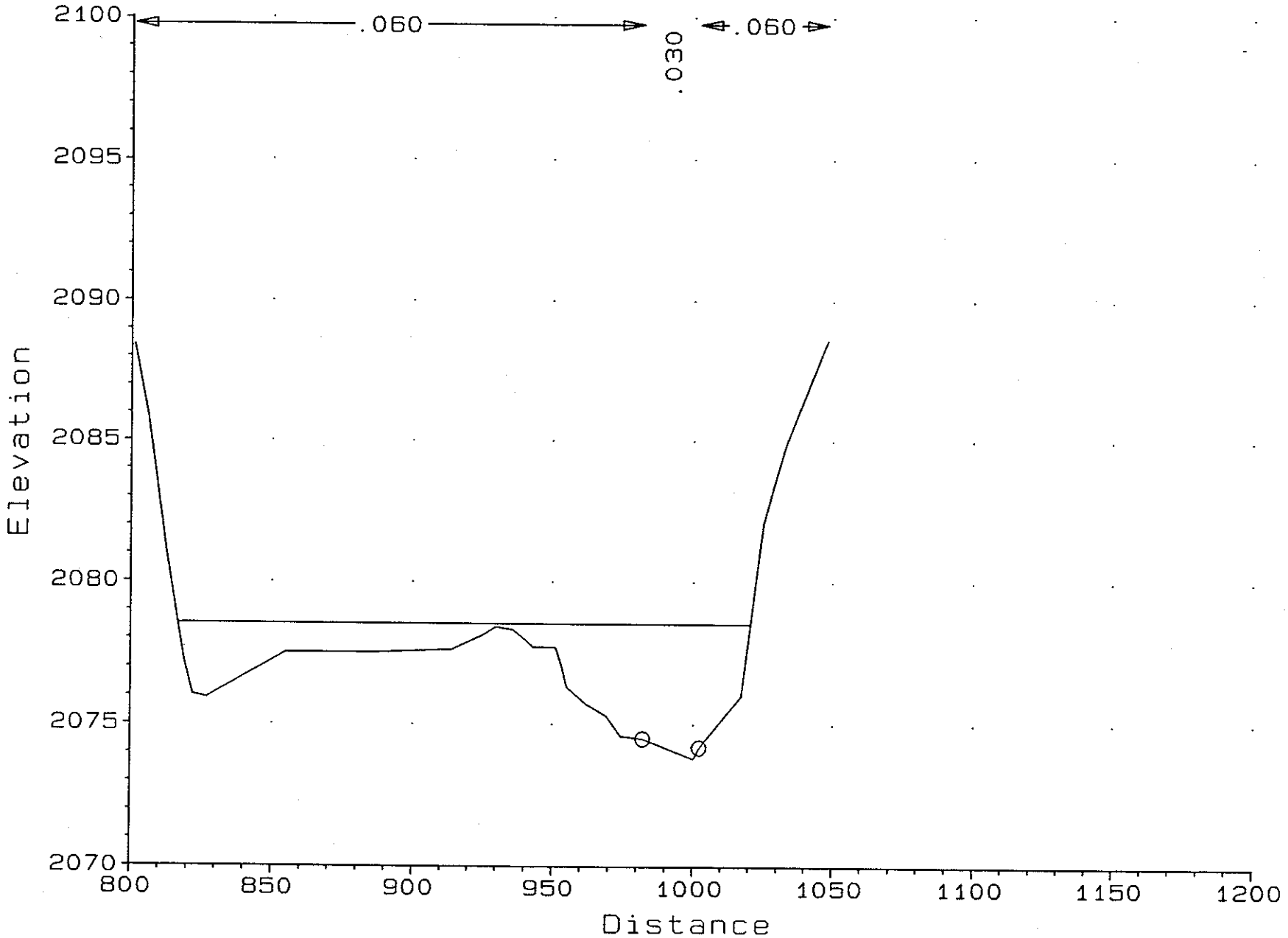
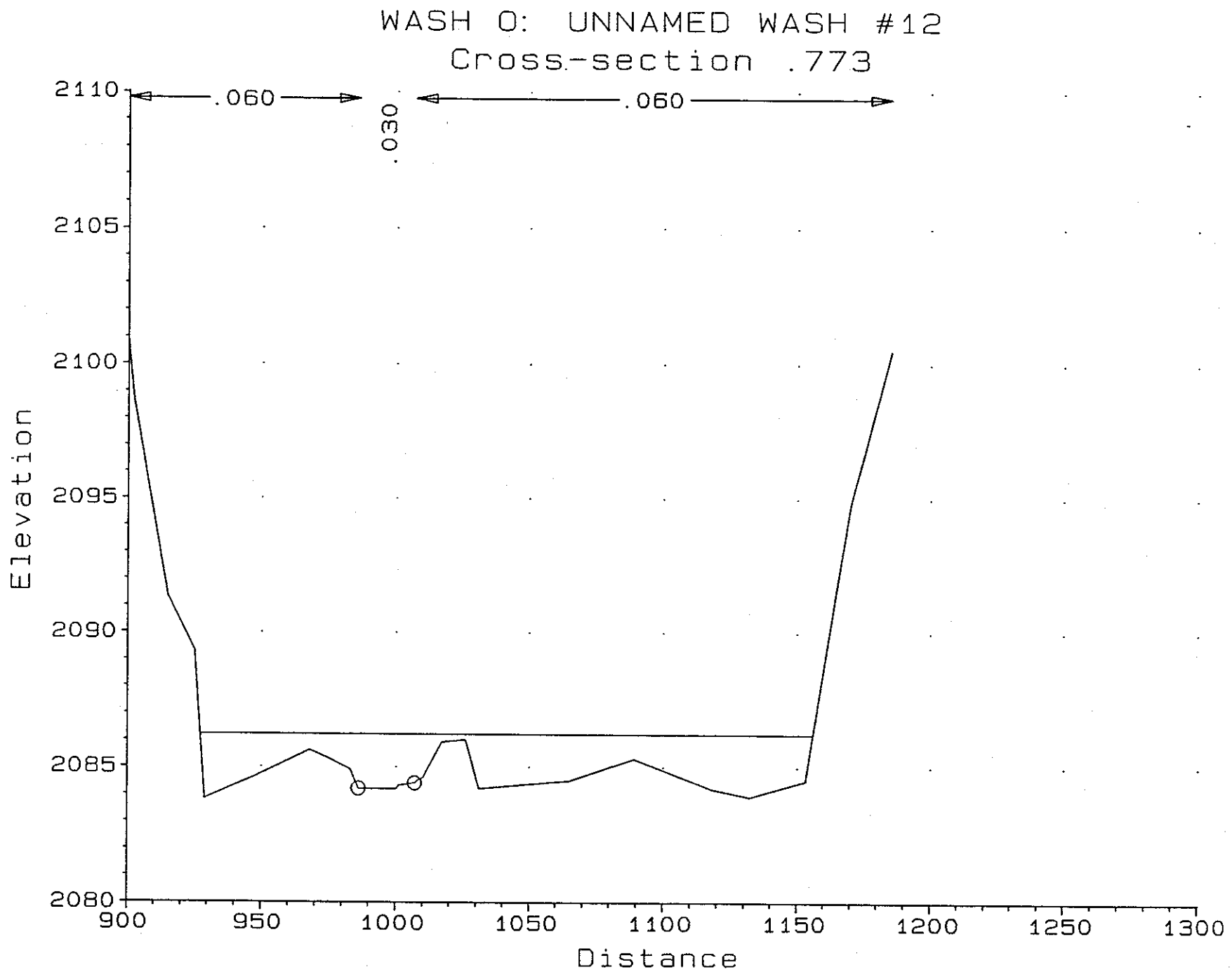
800
900
1000
1100
1200
1300
1400
Distance

WASH O: UNNAMED WASH #12
Cross-section .708

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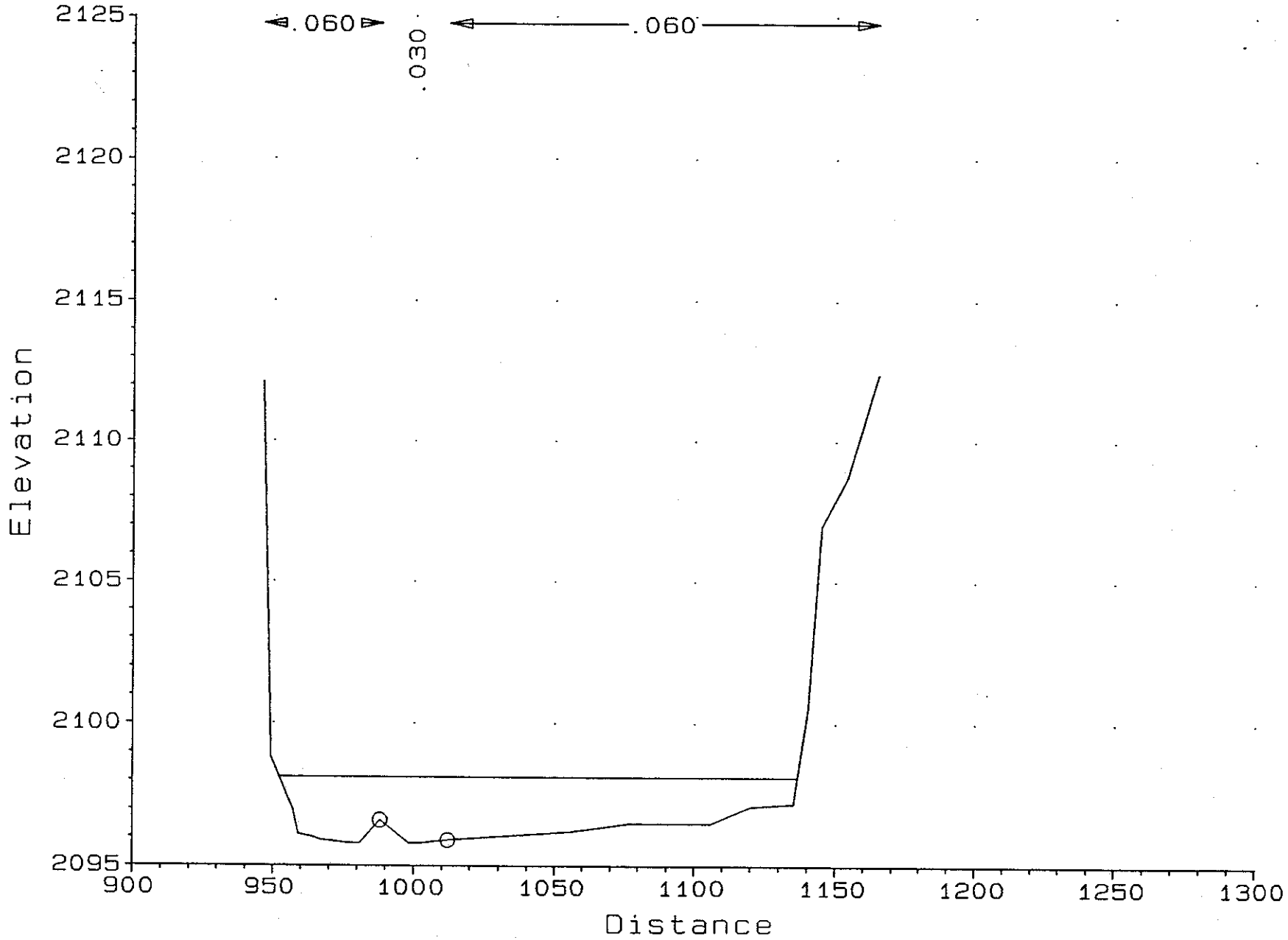
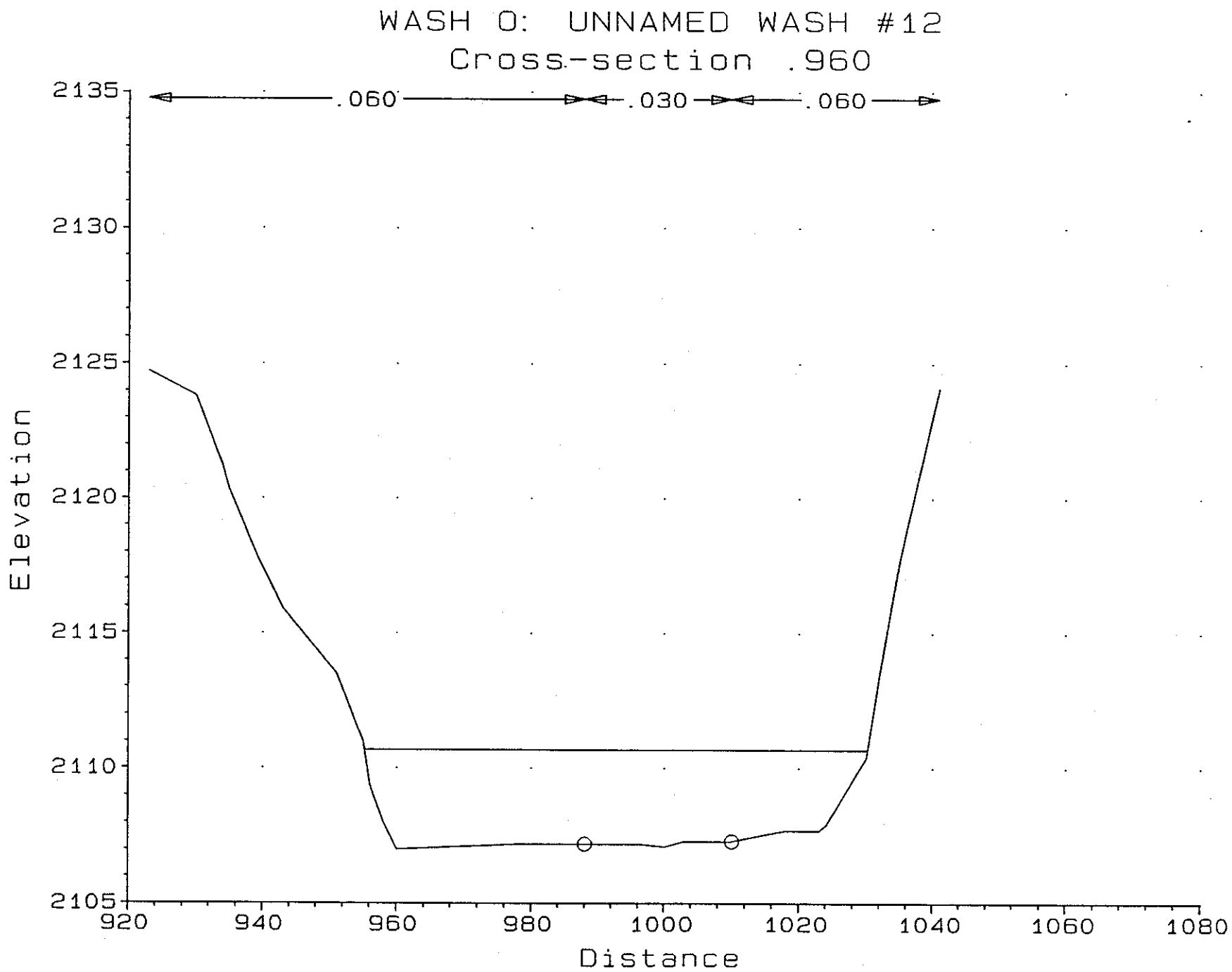
Cross-section .773
.060
.030
.060
2110
2105
2100
2095
2090
2085
2080
Elevation
900
950
1000
1050
1100
1150
1200
1250
1300
Distance

WASH O: UNNAMED WASH #12

Cross-section .858

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.030
.060
2135
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2110
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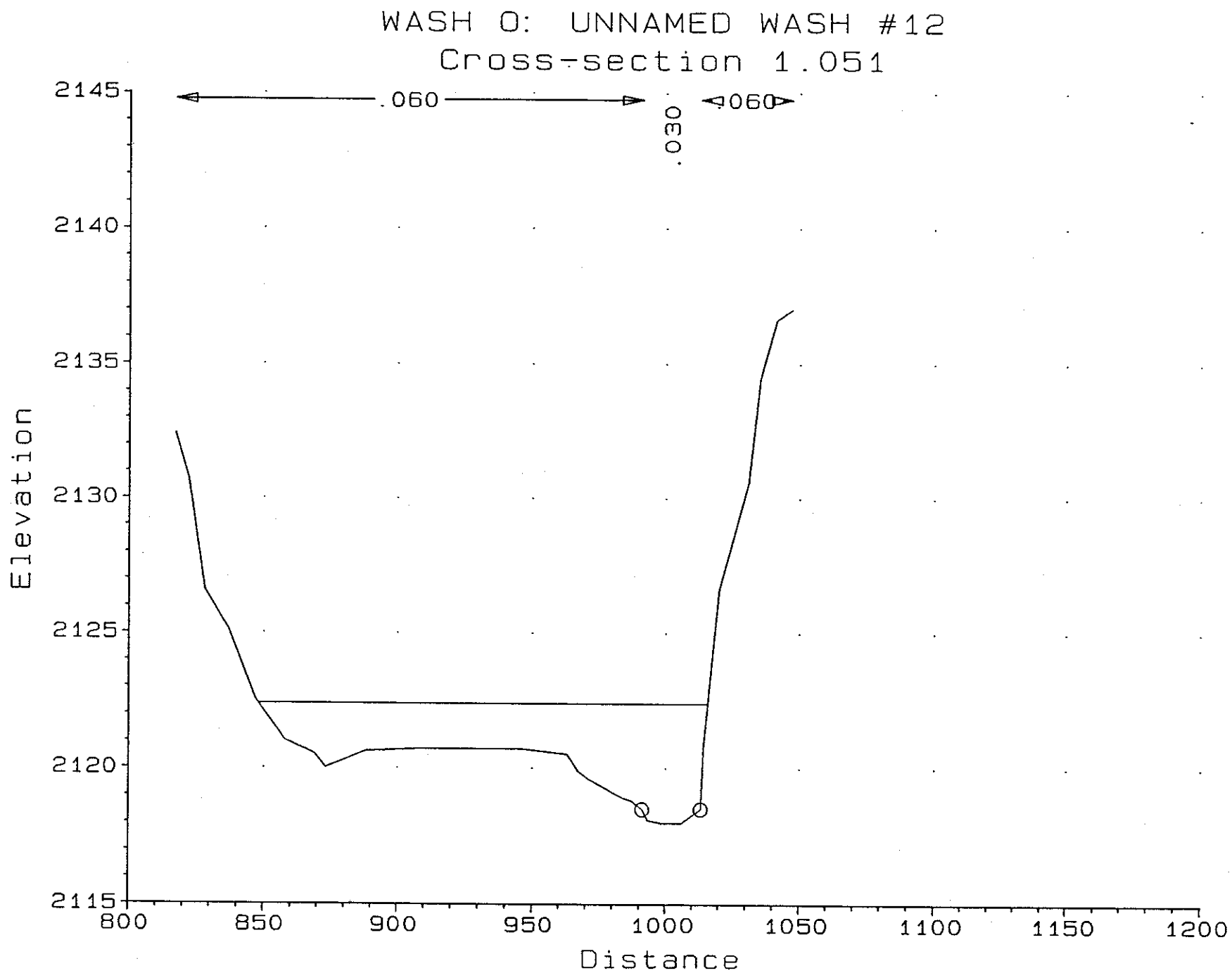
1040
1060
1080
Distance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Cross-section 1.051
.060
.060
.030
2145
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Elevation
800
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900
950
1000
1050
1100
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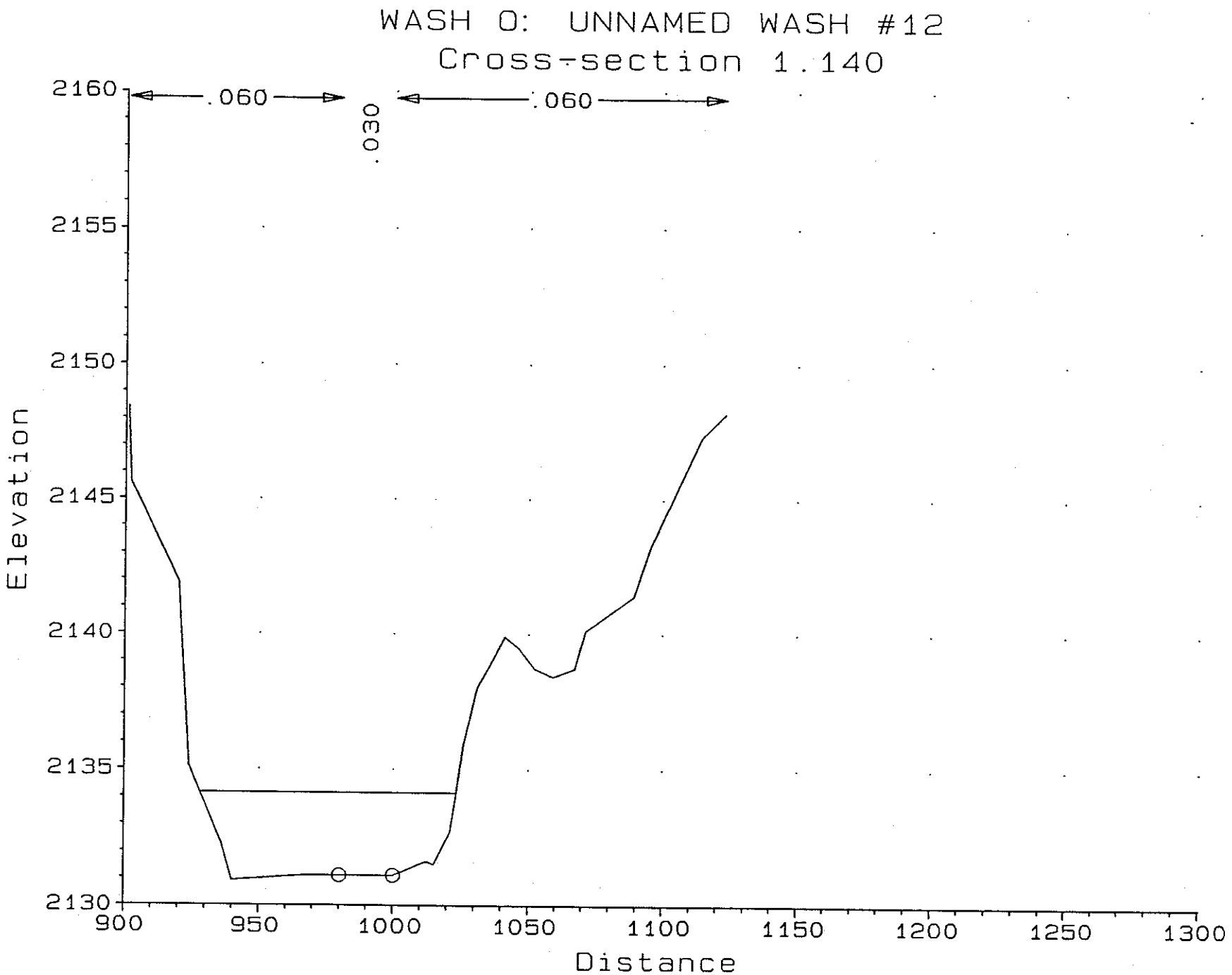
1200
Distance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.030
.060
2160
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2135
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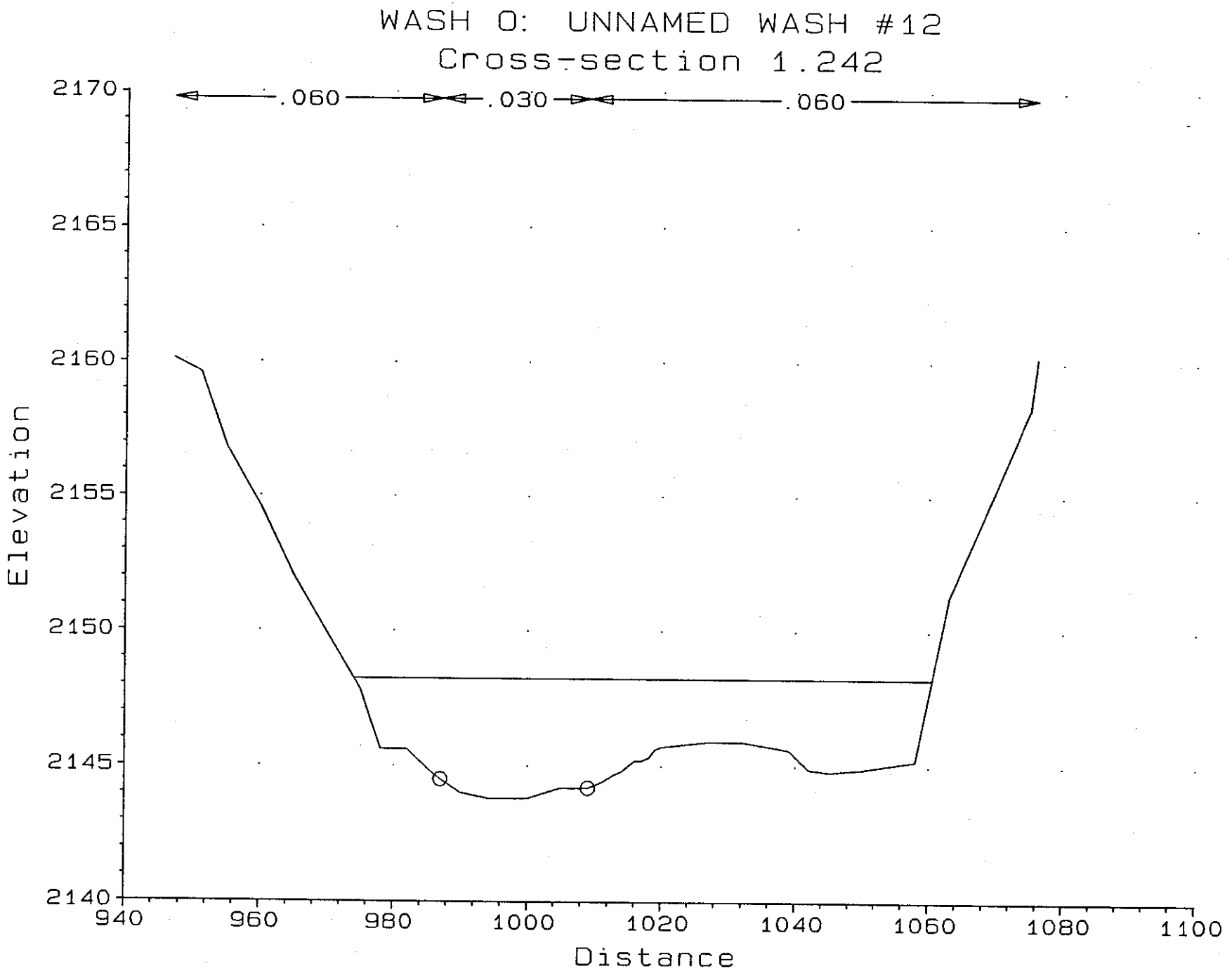
1150
1200
1250
1300
Distance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.060
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Elevation
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1000
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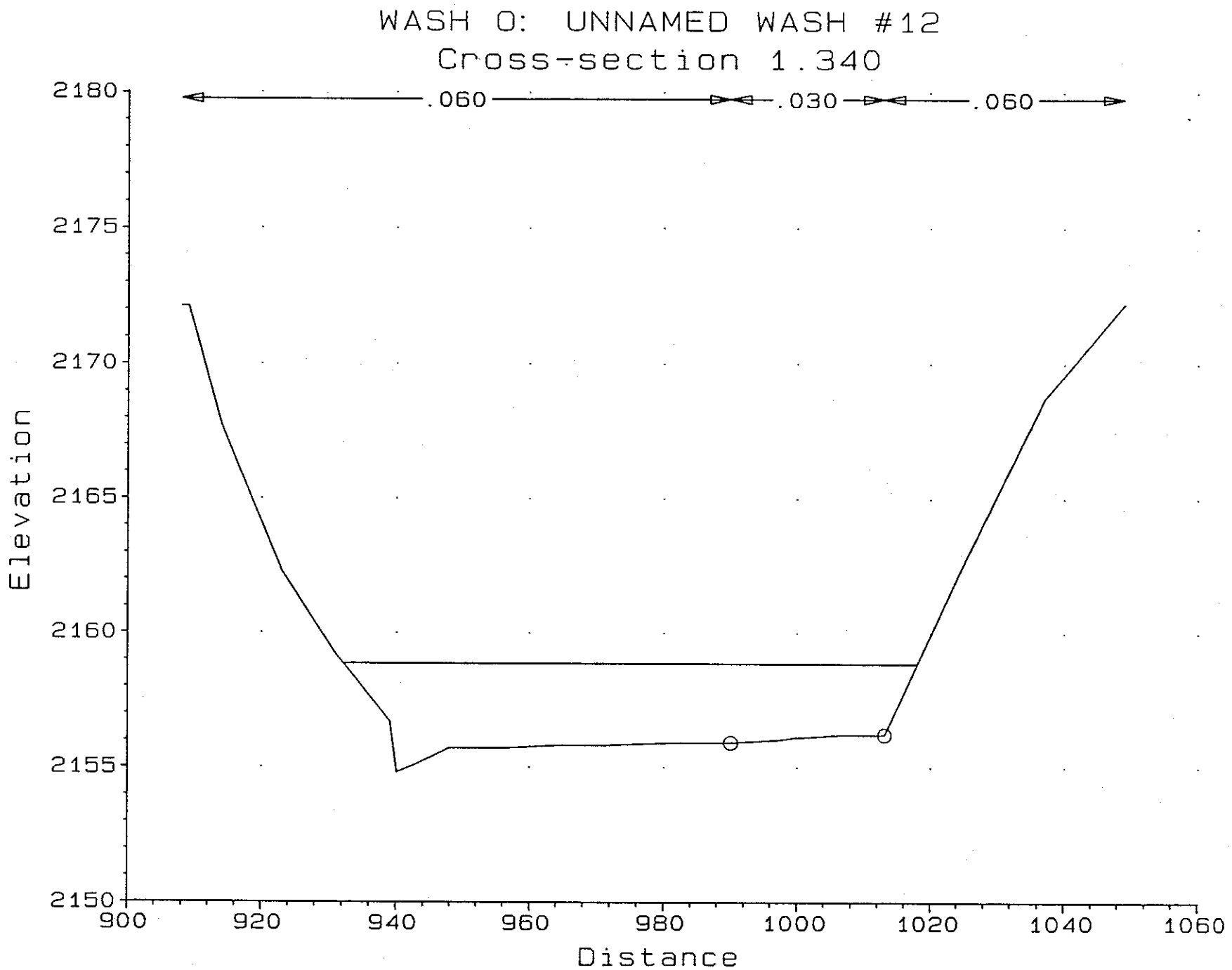
1060
1080
1100
Distance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Cross-section 1.340
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.030
.060
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2175
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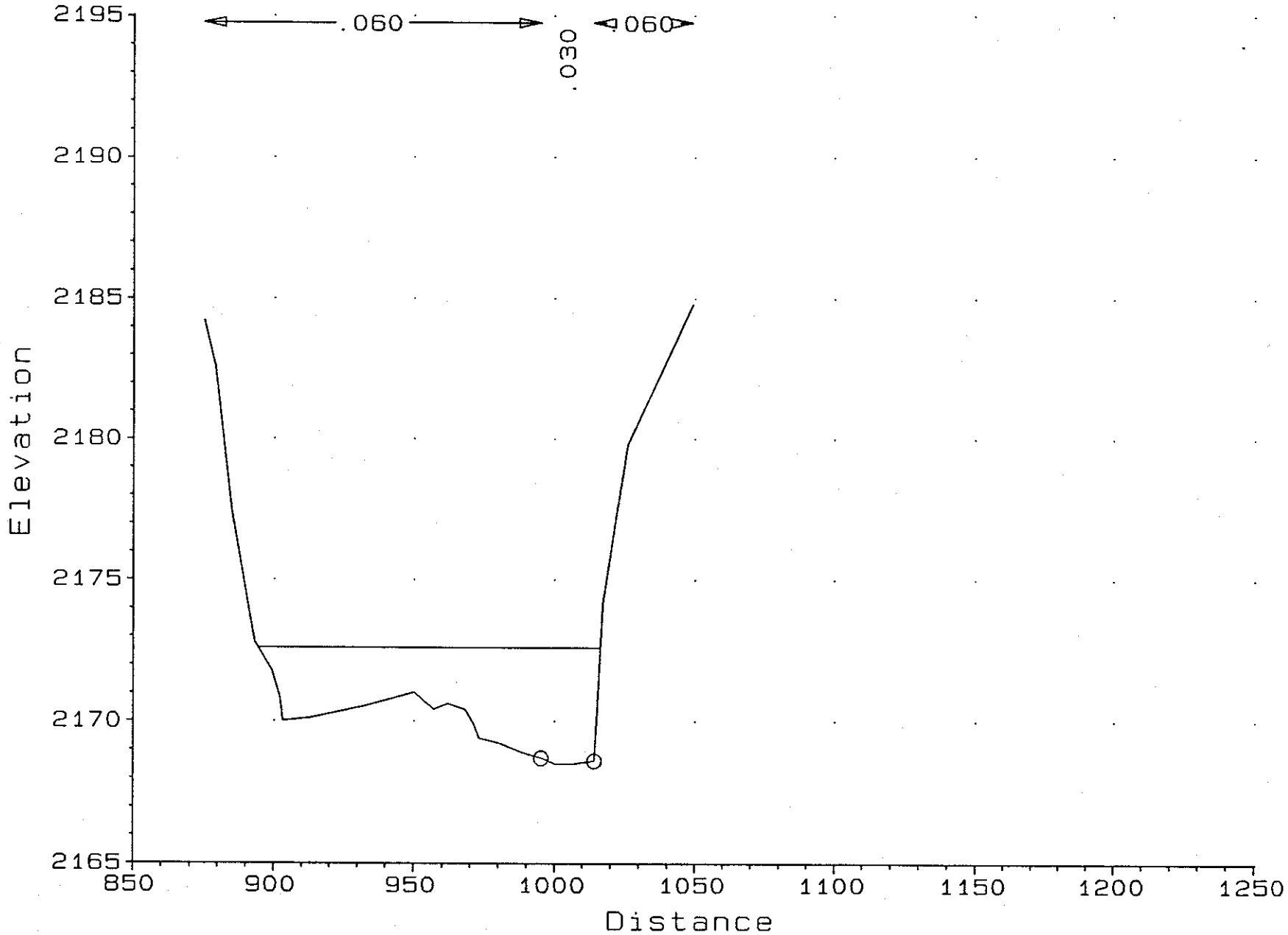
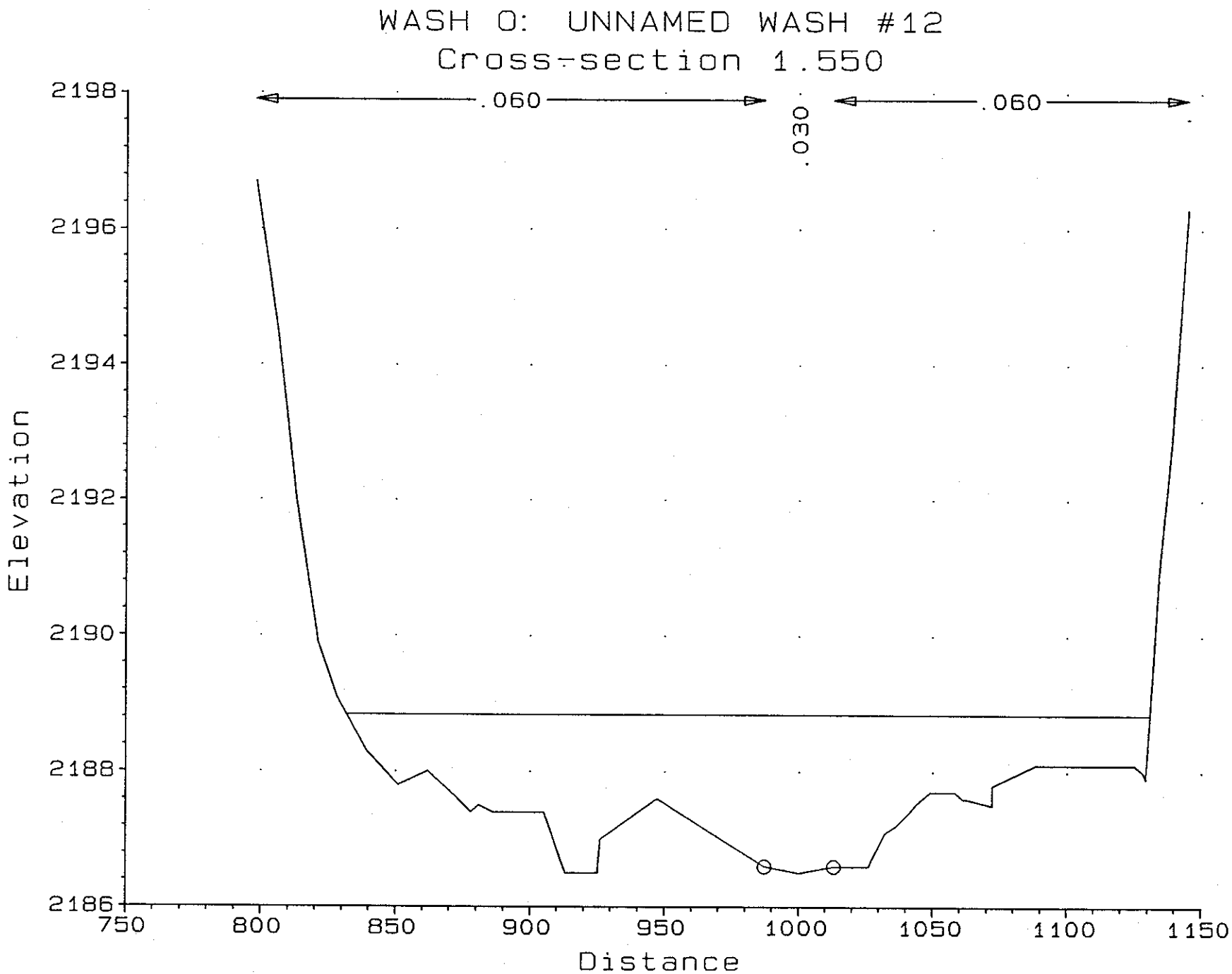
2165
2160
2155
2150
Elevation
900
920
940
960
980
1000
1020
1040
1060
Distance

WASH O: UNNAMED WASH #12
Cross-section 1.440

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Cross-section 1.550
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.030
.060
2198
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Elevation
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900
950
1000
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1100
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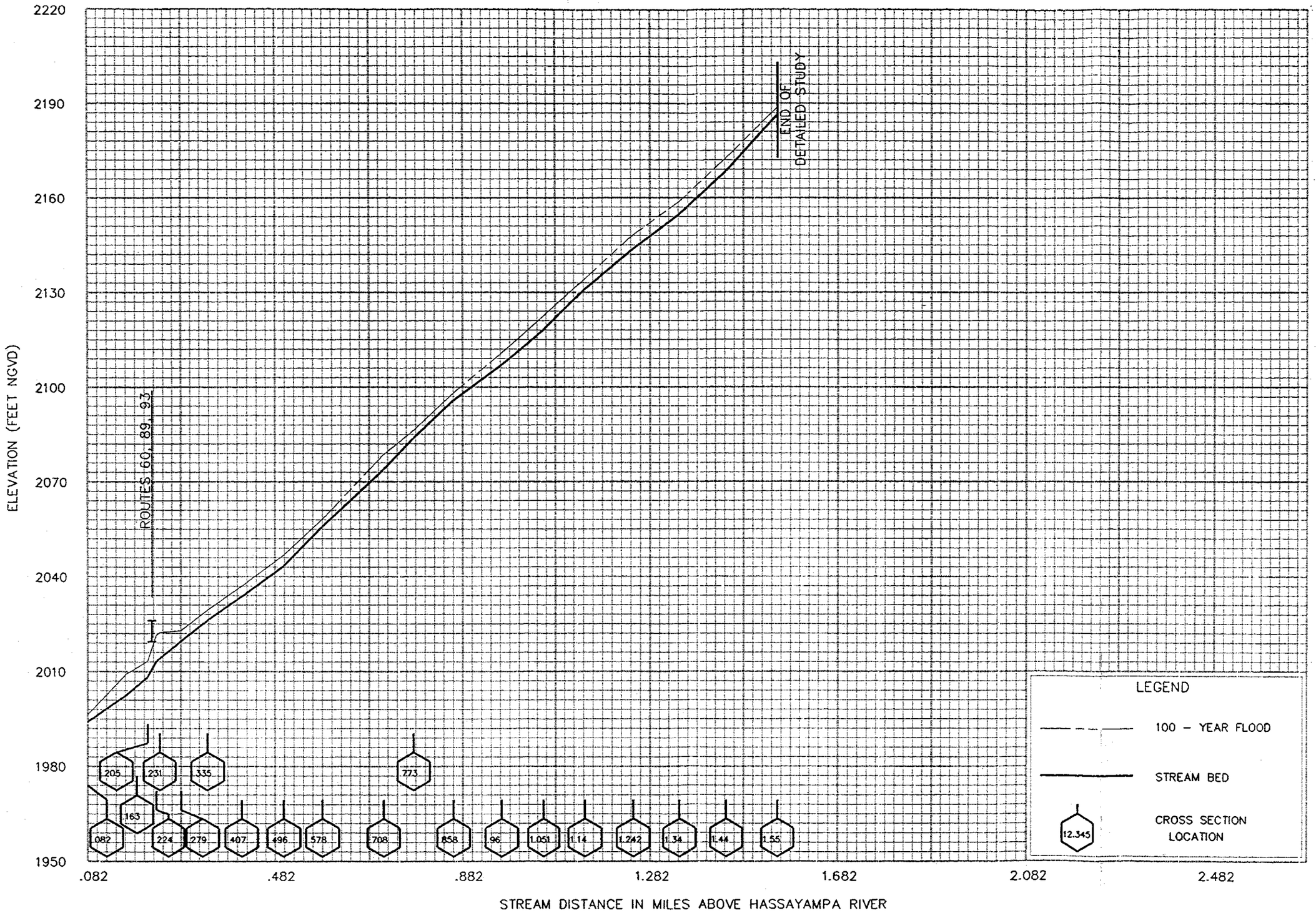
Distance



FLOOD PROFILES

UNNAMED WASH #12 (0)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/18/94 11:01:09 ACD-12-

PC FILE:WASHO.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.15: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #13 (Wash p)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1187\02\ADMIN\119702RP.063

May 1994

6.15

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: UNINCORPORATED MARICOPA COUNTY / TOWN OF WICKENBURG

Flooding Source: WASH P: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#13)
(One form for each flooding source)

Project Name /Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☒ Approximate study stream (Zone A)
☐ Detailed study stream (briefly explain methodology)

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: WASH P: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#13)

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
HASSAYAMPA R. CONFLUENCE	0.87	UNKNOWN	898

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records *(use Attachment A)*

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN of WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

lic reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH P: UNNAMED HASSAYAMPA RIVER TRIBUTARY (#13)
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.337

Upstream limit: Station 0.811

2. EFFECTIVE FIS

☐ Not studied

☒ Studied by approximate methods

Downstream limit of study ~ Same

Upstream limit of study ~ Same

☐ Studied by detailed methods

Downstream limit of study

Upstream limit of study

☐ Floodway delineated

Downstream limit of Floodway

Upstream limit of Floodway

3. HYDRAULIC ANALYSIS

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

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain:

☐ Flood control structure. Explain:

☐ Other. Explain:

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

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

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	898	898
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel 0.30

Overbanks 0.70

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

Location	FIS	Revised
NA		

Explain:

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

Data points for cross sections are based on the photogrammetric models for the topographic maps

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

All reach lengths were measured from floodplain work maps.

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

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☒ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 8.15

Specify location 0.739

3. What is the distance between the cross-sections in 2 above? ..... 260 ft

Specify location 0.739

4. What is the maximum distance between cross-sections? 370

Specify location 0.811

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0 foot

Specify location ..... —

c. What is the maximum velocity? ..... 6.9 fps

Specify location 0.739

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

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

If Yes, explain:

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

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

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

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model (*10-, 50-, 100-, and 500-year*), downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

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

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

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODING SOURCE:

PROJECT NAME/IDENTIFIER: Wickenburg ADMS FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS: New Model - See following Floodway Data Table

1-100-year (natural) Water Surface Elevation

2-Encroachment (floodway) Water Surface Elevation

3-Surcharge Value

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

Sheet 1 of 1

FLOODWAY DATA, WASH P: UNNAMED WASH #13
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.337	764.	295.	3.0	2088.7	2088.7	.0
.398	523.	384.	2.3	2093.3	2093.3	.0
.419	364.	326.	2.8	2097.1	2097.1	.0
.439	281.	227.	3.9	2098.6	2098.6	.0
.453	250.	211.	4.3	2100.6	2100.6	.0
.498	223.	235.	3.8	2106.6	2106.6	.0
.532	96.	175.	5.1	2112.5	2112.5	.0
.583	134.	207.	4.3	2116.7	2116.7	.0
.618	157.	212.	4.2	2122.1	2122.1	.0
.652	79.	155.	5.8	2126.7	2126.7	.0
.689	187.	203.	4.4	2130.8	2130.8	.0
.739	47.	131.	6.9	2138.2	2138.2	.0
.811	83.	145.	6.2	2146.8	2146.8	.0

Wickenburg ADMS FCD 89-79

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE/COASTAL MAPPING FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: _____

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

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

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

If any of the items above are marked no or N/A, please explain: No Zone A, 500-year, or coastal zones revised or delineated. Revised 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following workmaps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 FT Contour interval

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

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

Attach additional pages if needed.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

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

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

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

      If yes, justify steeper slopes_____

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

      If no, describe erosion protection provided_____

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

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

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

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

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

   If yes, attach the coastal structures form.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    25JUN92    TIME   08:32:16 *
*****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*         (916) 756-1104            *
*************************************
```

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

THIS RUN EXECUTED 25JUN92 08:32:16

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

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


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      BLACK & VEATCH PN 17676  COE & VAN LOO JN 1197-02
T3      WASH P: UNNAMED WASH #13        (FILE WASHP.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0         0         0         0         0   2088.65         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                   -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     150       200

NC    0.070     0.070     0.030       0.1       0.3
QT        2      .898       898
ET                           9.1                                                          967.85    1732.35
            CONFLUENCE OF WASH P: UNNAMED WASH #13
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 VR (HASSAYAMPA RIVER MILE 53.06)
                 VT (HASSAYAMPA RIVER MILE 53.25)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

X1    0.337        32      975.     1000.         0         0         0         0         0         0
X3       10
GR   2102.2      903.    2101.2      906.    2087.2      975.    2087.0     1000.    2087.5      1043
GR   2087.5     1083.    2087.9     1143.    2088.0     1220.    2088.2     1224.    2088.6     1260.
GR   2088.2     1325.    2088.8     1348.    2089.7     1415.    2089.5     1459.    2089.4     1503.
GR   2089.2     1566.    2089.3     1651.    2088.5     1718.    2089.1     1775.    2089.1     1816.
GR   2088.7     1862.    2089.6     1905.    2089.8     1915.    2090.2     1974.    2090.3     1985.
GR   2091.8     2035.    2091.8     2060.    2092.9     2077.    2093.0     2078.    2093.4     2080.
GR   2098.3     2094.    2104.1     2108.
```

ET			9.1						941.05	1464.43
X1	0.398	27	994	1013	335	195	310			
GR	2100.0	920.	2097.5	924.	2092.8	943.	2093.0	968.	2092.6	986.
GR	2091.6	994.	2091.1	999.	2091.1	1000.	2091.1	1006.	2091.5	1013.
GR	2093.2	1019.	2092.9	1029.	2093.1	1084.	2092.2	1125.	2092.2	1144.
GR	2092.1	1148.	2092.5	1192.	2092.7	1237.	2092.5	1271.	2092.0	1314.
GR	2092.0	1332.	2092.6	1364.	2092.7	1399.	2092.7	1412.	2093.0	1448.
GR	2093.6	1483.	2094.0	1498.						
ET			9.1						928.16	1292.58
		JACK BURDEN ROAD								
X1	0.419	17	995	1010	80	200	110			
GR	2104.0	884.	2099.4	903.	2096.7	932.	2096.5	946.	2096.6	980.
GR	2096.4	985.	2096.1	995.	2095.0	1000.	2095.0	1005.	2095.4	1010.
GR	2096.4	1111.	2096.1	1221.	2096.4	1270.	2095.8	1278.	2096.4	1286.
GR	2097.6	1298.	2104.0	1315.						
ET			9.1						912.27	1193.78
X1	0.439	22	990	1011	75	110	110			
GR	2104.0	896.	2101.4	904.	2095.7	921.	2095.7	935.	2096.7	953.
GR	2096.9	954.	2097.5	962.	2098.2	974.	2098.3	990.	2098.3	1000.
GR	2098.3	1011.	2098.6	1072.	2098.0	1097.	2097.2	1123.	2097.5	1146.
GR	2098.3	1167.	2098.5	1190.	2098.9	1202.	2098.9	1229.	2099.9	1236.
GR	2099.8	1246.	2104.0	1261.						
ET			9.1						919.62	1170.28
X1	0.453	22	990	1010	80	75	70			
GR	2108.0	917.	2103.2	919.	2099.0	920.	2098.5	934.	2097.9	941.
GR	2098.5	947.	2099.0	951.	2100.1	980.	2099.7	990.	2099.7	1000.
GR	2099.7	1010.	2100.0	1041.	2099.9	1086.	2099.9	1118.	2100.6	1171.
GR	2101.2	1211.	2101.2	1244.	2101.6	1286.	2102.0	1323.	2102.2	1339.
GR	2104.5	1345.	2108.0	1360.						
ET			9.1						939.34	1162.08
X1	0.498	17	990	1010	240	235	240			
GR	2120.0	884.	2118.6	886.	2116.2	902.	2108.2	917.	2105.9	950.
GR	2105.9	953.	2105.9	954.	2105.5	973.	2105.5	990.	2105.5	1000.
GR	2105.5	1010.	2105.5	1026.	2105.2	1086.	2105.8	1141.	2106.8	1166.
GR	2108.8	1178.	2120.0	1190.						
ET			9.1						985.48	1081.74
X1	0.532	12	991	1006	185	185	180			
GR	2124.0	962.	2121.4	966.	2116.2	976.	2110.3	991.	2110.1	995.
GR	2109.8	1000.	2110.1	1006.	2110.9	1019.	2110.0	1035.	2110.6	1055.
GR	2112.0	1081.	2124.0	1100.						
ET			9.1						973.22	1106.95
X1	0.583	12	992	1014	270	210	270			
GR	2143.9	956.	2115.5	974.	2114.8	984.	2114.4	989.	2114.2	992.
GR	2113.7	1000.	2113.9	1014.	2115.1	1031	2116.2	1067.	2115.6	1098.
GR	2116.2	1106.	2124.0	1120.						

ET			9.1						922.42	1079.45
X1	0.618	11	983.	1003.	180	190	185			
GR	2139.8	896.	2131.5	906.	2121.8	923.	2120.9	947.	2119.7	971.
GR	2119.7	983.	2119.7	1000.	2119.7	1003.	2121.5	1036.	2121.8	1079.
GR	2139.9	1104.								
ET			9.1						969.25	1047.81
X1	0.652	11	989	1009	160	185	180			
GR	2136.0	962.	2124.5	971.	2124.4	979.	2124.4	989.	2124.2	1000.
GR	2124.9	1009.	2124.9	1018.	2125.0	1031.	2125.1	1044.	2129.4	1054.
GR	2136.0	1080.								
ET			9.1						986.31	1173.21
X1	0.689	18	991	1009	185	200	195			
GR	2140.0	969.	2137.7	973.	2128.3	991.	2127.6	1000.	2127.9	1009.
GR	2128.6	1018.	2129.7	1022.	2130.5	1045.	2131.2	1070.	2131.2	1081.
GR	2130.6	1099.	2130.1	1118.	2129.4	1136.	2128.9	1150.	2128.1	1161.
GR	2127.9	1167.	2129.0	1170.	2139.9	1190.				
ET			9.1						984.45	1031.29
X1	0.739	8	996	1009	260	230	260			
GR	2144.0	970.	2134.8	993.	2134.6	994.	2134.5	996.	2134.5	1000.
GR	2134.5	1009.	2135.7	1024.	2144.0	1048.				
[illegible]			9.1						974.58	1057.68
[illegible]	0.811	9	993.	1013.	370	370	370			
GR	2160.1	941.	2149.0	972.	2144.8	977.	2145.2	993.	2145.2	1000.
GR	2145.2	1013.	2145.2	1017.	2144.7	1054.	2160.9	1082.		

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

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .337

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
CONFLUENCE OF WASH P: UNNAMED WASH #13
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
VR (HASSAYAMPA RIVER MILE 53.06)
VT (HASSAYAMPA RIVER MILE 53.25)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.
.
SWSE DETERMINED BY SLOPE AREA METHOD

.337	1.65	2088.65	2088.65	2088.65	2089.02	.37	.00	.00	2087.20
898.0	10.2	300.3	587.5	5.2	38.8	250.9	.0	.0	2087.00
.00	1.97	7.74	2.34	.070	.030	.070	.000	2087.00	967.85
.013611	0.	0.	0.	0	4	0	.00	401.45	1732.35

FLOW DISTRIBUTION FOR SECNO= .34 CWSEL= 2088.65

STA=	968.	975.	1000.	1043.	1083.	1143.	1220.	1224.	1260.	1325.	1342.	1718.	1732.
PER Q=	1.1	33.4	20.8	13.9	15.2	11.8	.4	1.0	1.8	.4	.0	.1	
AREA=	5.2	38.8	60.2	46.0	57.1	54.0	2.2	9.0	16.3	3.9	1.0	1.1	
VEL=	2.0	7.7	3.1	2.7	2.4	2.0	1.7	1.0	1.0	.9	.4	.4	
DEPTH=	.7	1.6	1.4	1.2	1.0	.7	.6	.3	.3	.2	.0	.1	

*SECNO .398
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

CNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.398	2.18	2093.28	2093.28	.00	2093.61	.33	2.61	.00	2091.60
898.0	42.6	294.4	561.0	28.1	38.8	317.8	1.7	2.2	2091.50
.02	1.51	7.59	1.77	.070	.030	.070	.000	2091.10	941.05
.009079	335.	310.	195.	0	14	0	.00	523.38	1464.43

FLOW DISTRIBUTION FOR SECNO= .40 CWSEL= 2093.28

STA=	941.	994.	1013.	1125.	1144.	1192.	1237.	1271.	1314.	1332.	1364.	1399.	1448.
PER Q=	4.7	32.8	7.2	4.9	10.7	5.4	4.0	10.2	6.1	7.0	3.7	3.2	
AREA=	28.1	38.8	49.3	20.6	47.7	30.7	23.2	44.4	23.1	31.4	22.1	23.1	
VEL=	1.5	7.6	1.3	2.1	2.0	1.6	1.6	2.1	2.4	2.0	1.5	1.2	
DEPTH=	.5	2.0	.4	1.1	1.0	.7	.7	1.0	1.3	1.0	.6	.5	

STA=	1448.	1464.
PER Q=	.1	
AREA=	2.3	
VEL=	.5	
DEPTH=	.1	

.419
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
JACK BURDEN ROAD

.419	2.06	2097.06	2097.06	.00	2097.38	.33	1.79	.00	2096.10
898.0	57.5	224.4	616.1	35.2	27.1	262.9	3.2	4.1	2095.40
.03	1.63	8.28	2.34	.070	.030	.070	.000	2095.00	928.16
.012825	80.	110.	200.	0	10	0	.00	364.42	1292.58

FLOW DISTRIBUTION FOR SECNO= .42 CWSEL= 2097.06

STA=	928.	932.	946.	980.	985.	995.	1010.	1111.	1221.	1270.	1278.	1286.	1293.
PER Q=	.1	1.0	2.9	.5	1.9	25.0	34.5	20.6	9.2	2.0	2.0	.3	
AREA=	.7	6.4	17.3	2.8	8.1	27.1	117.0	88.9	39.6	7.7	7.7	2.2	
VEL=	.8	1.4	1.5	1.6	2.1	8.3	2.7	2.1	2.1	2.3	2.3	1.1	
DEPTH=	.2	.5	.5	.6	.8	1.8	1.2	.8	.8	1.0	1.0	.3	

*SECNO .439

.439	2.93	2098.63	2098.50	.00	2098.93	.30	1.54	.00	2098.30
898.0	624.0	22.8	251.2	126.0	6.8	95.6	3.8	4.8	2098.30
.04	4.95	3.34	2.63	.070	.030	.070	.000	2095.70	912.27
.020249	75.	110.	110.	1	14	0	.00	281.51	1193.78

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

FLOW DISTRIBUTION FOR SECNO= .44 CWSEL= 2098.63

STA=	912.	921.	935.	953.	962.	990.	1011.	1123.	1146.	1167.	1194.
PER Q=	5.3	28.2	26.5	5.8	3.7	2.5	11.6	11.6	4.1	.7	
AREA=	12.8	41.0	43.7	13.2	15.3	6.8	45.6	29.3	15.2	5.4	
VEL=	3.8	6.2	5.4	3.9	2.2	3.3	2.3	3.6	2.4	1.1	
DEPTH=	1.5	2.9	2.4	1.5	.5	.3	.4	1.3	.7	.2	

*SECNO .453
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.453	2.69	2100.59	2100.59	.00	2101.00	.41	1.88	.03	2099.70
898.0	515.9	140.2	241.9	101.6	17.8	91.9	4.2	5.3	2099.70
.04	5.08	7.87	2.63	.070	.030	.070	.000	2097.90	919.62
.029474	80.	70.	75.	0	10	0	.00	250.66	1170.28

FLOW DISTRIBUTION FOR SECNO= .45 CWSEL= 2100.59

	920.	920.	934.	941.	947.	951.	980.	990.	1010.	1041.	1086.	1118.	1170.
Q=	.0	15.7	12.1	10.4	4.5	12.6	2.2	15.6	7.6	8.7	7.0	3.6	
AREA=	.3	25.8	16.7	14.3	7.4	30.2	6.9	17.8	23.0	28.8	22.1	18.1	
VEL=	1.2	5.5	6.5	6.5	5.4	3.7	2.8	7.9	3.0	2.7	2.8	1.8	
DEPTH=	.8	1.8	2.4	2.4	1.8	1.0	.7	.9	.7	.6	.7	.3	

*SECNO .498

.498	1.44	2106.64	2106.47	.00	2106.98	.34	5.98	.01	2105.50
898.0	134.4	182.4	581.2	44.3	22.9	167.6	5.4	6.6	2105.50
.06	3.03	7.98	3.47	.070	.030	.070	.000	2105.20	939.34
.021713	240.	240.	235.	5	14	0	.00	222.74	1162.08

FLOW DISTRIBUTION FOR SECNO= .50 CWSEL= 2106.64

STA=	939.	950.	953.	954.	973.	990.	1010.	1026.	1086.	1141.	1162.
PER Q=	.7	.6	.2	6.0	7.4	20.3	7.0	32.1	23.9	1.7	
AREA=	4.0	2.2	.7	17.9	19.4	22.9	18.3	77.6	62.9	8.9	
VEL=	1.6	2.6	2.6	3.0	3.4	8.0	3.4	3.7	3.4	1.8	
DEPTH=	.4	.7	.7	.9	1.1	1.1	1.1	1.3	1.1	.4	

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 .532

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.532	2.67	2112.47	2112.47	.00	2113.34	.87	3.13	.16	2110.30
898.0	15.0	388.8	494.1	6.0	36.8	131.9	6.3	7.2	2110.10
.06	2.51	10.57	3.75	.070	.030	.070	.000	2109.80	985.48
.013784	185.	180.	185.	0	17	0	.00	96.26	1081.74

FLOW DISTRIBUTION FOR SECNO= .53 CWSEL= 2112.47

STA=	985.	991.	1006.	1019.	1035.	1055.	1081.	1082.
PER Q=	1.7	43.3	11.2	14.3	20.2	9.4	.0	
AREA=	6.0	36.8	25.6	32.3	43.4	30.4	.2	
VEL=	2.5	10.6	3.9	4.0	4.2	2.8	.8	
DEPTH=	1.1	2.5	2.0	2.0	2.2	1.2	.2	

*SECNO .583
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.583	3.03	2116.73	2116.73	.00	2117.49	.76	2.46	.01	2114.20
898.0	97.0	552.4	248.6	34.2	63.3	109.5	7.3	7.8	2113.90
.07	2.83	8.73	2.27	.070	.030	.070	.000	2113.70	973.22
.007601	270.	270.	210.	0	8	0	.00	133.73	1106.95

FLOW DISTRIBUTION FOR SECNO= .58 CWSEL= 2116.73

STA=	973.	974.	984.	989.	992.	1014.	1031.	1067.	1098.	1106.	1107.
PER Q=	.0	4.4	3.6	2.7	61.5	13.3	8.4	4.7	1.2	.0	
AREA=	.5	15.8	10.7	7.3	63.3	37.9	38.9	25.8	6.6	.3	
VEL=	.9	2.5	3.1	3.3	8.7	3.2	1.9	1.6	1.6	.7	
DEPTH=	.6	1.6	2.1	2.4	2.9	2.2	1.1	.8	.8	.3	

*SECNO .618
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.618	2.43	2122.13	2122.13	.00	2122.82	.69	1.62	.01	2119.70
898.0	287.8	439.6	170.6	91.8	48.6	71.1	8.2	8.5	2119.70
.08	3.13	9.05	2.40	.070	.030	.070	.000	2119.70	922.42
.010226	180.	185.	190.	0	15	0	.00	157.03	1079.45

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

FLOW DISTRIBUTION FOR SECNO= .62 CWSEL= 2122.13

STA=	922.	947.	971.	983.	1003.	1036.	1079.	1079.
PER Q=	3.8	15.7	12.6	49.0	16.0	3.0	.0	
AREA=	18.8	43.9	29.1	48.6	50.4	20.6	.1	
VEL=	1.8	3.2	3.9	9.1	2.8	1.3	.0	
DEPTH=	.8	1.8	2.4	2.4	1.5	.5	.2	

*SECNO .652
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.652	2.54	2126.74	2126.74	.00	2127.72	.98	2.09	.09	2124.40
898.0	187.1	477.9	233.0	43.7	46.6	64.9	8.9	8.9	2124.90
.09	4.28	10.26	3.59	.070	.030	.070	.000	2124.20	969.25
.013946	160.	180.	185.	0	8	0	.00	78.57	1047.81

FLOW DISTRIBUTION FOR SECNO= .65 CWSEL= 2126.74

	969.	971.	979.	989.	1009.	1018.	1031.	1044.	1048.
Q=	.4	8.9	11.5	53.2	6.9	9.6	8.7	.7	
AREA=	2.0	18.3	23.4	46.6	16.6	23.3	22.0	3.1	
VEL=	2.0	4.4	4.4	10.3	3.8	3.7	3.6	2.1	
DEPTH=	1.1	2.3	2.3	2.3	1.8	1.8	1.7	.8	

*SECNO .689

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.689	3.15	2130.75	2130.75	.00	2131.54	.79	2.11	.02	2128.30
898.0	11.9	486.8	399.3	5.7	52.2	144.3	9.7	9.5	2127.90
.10	2.08	9.32	2.77	.070	.030	.070	.000	2127.60	986.31
.008585	185.	195.	200.	0	11	0	.00	146.36	1173.21

FLOW DISTRIBUTION FOR SECNO= .69 CWSEL= 2130.75

STA=	986.	991.	1009.	1018.	1045.	1136.	1150.	1161.	1167.	1173.
PER Q=	1.3	54.2	9.1	4.3	4.9	6.7	9.3	7.1	3.0	
AREA=	5.7	52.2	22.5	21.4	27.1	22.4	24.8	16.5	9.7	
VEL=	2.1	9.3	3.6	1.8	1.6	2.7	3.4	3.9	2.8	
DEPTH=	1.2	2.9	2.5	.8	.3	1.6	2.3	2.8	1.6	

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 .739

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.739	3.72	2138.22	2138.22	.00	2139.69	1.46	2.29	.20	2134.50
898.0	95.6	570.6	231.8	25.5	48.4	56.0	10.6	10.0	2134.50
.11	3.75	11.79	4.14	.070	.030	.070	.000	2134.50	984.45
.009826	260.	260.	230.	0	8	0	.00	46.85	1031.29

FLOW DISTRIBUTION FOR SECNO= .74 CWSEL= 2138.22

STA=	984.	993.	994.	996.	1009.	1024.	1031.
PER Q=	4.7	1.9	4.1	63.5	23.4	2.4	
AREA=	14.6	3.5	7.3	48.4	46.8	9.2	
VEL=	2.9	4.8	5.0	11.8	4.5	2.4	
DEPTH=	1.7	3.5	3.7	3.7	3.1	1.3	

.811

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.811	2.13	2146.83	2146.83	.00	2147.76	.93	5.45	.05	2145.20
898.0	152.6	350.5	394.9	31.8	32.6	80.1	11.8	10.5	2145.20
.12	4.81	10.74	4.93	.070	.030	.070	.000	2144.70	974.58
.024497	370.	370.	370.	0	11	0	.00	83.10	1057.68

FLOW DISTRIBUTION FOR SECNO= .81 CWSEL= 2146.83

STA=	975.	977.	993.	1013.	1017.	1054.	1058.
PER Q=	.8	16.2	39.0	3.3	39.2	1.4	
AREA=	2.5	29.3	32.6	6.5	69.6	3.9	
VEL=	2.8	5.0	10.7	4.6	5.1	3.1	
DEPTH=	1.0	1.8	1.6	1.6	1.9	1.1	

T1 FLOODWAY DETERMINATION
T2 1.0 FT TARGET INCREASE
T3 WASH P: UNNAMED WASH #13

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3							2088.65	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

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

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .337

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 967.8 1732.3 TYPE= 1 TARGET= 764.500
CONFLUENCE OF WASH P: UNNAMED WASH #13
AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
VR (HASSAYAMPA RIVER MILE 53.06)
VT (HASSAYAMPA RIVER MILE 53.25)
CROSS-SECTION DESIGNATION FROM:
HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
STUDY, MARICOPA COUNTY, ARIZONA AND
UNINCORPORATED AREAS. FEDERAL EMERGENCY
MANAGEMENT AGENCY, EFFECTIVE DATE
SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

SWSE DETERMINED BY SLOPE AREA METHOD

.337	1.65	2088.65	2088.65	2088.65	2089.02	.37	.00	.00	2087.20
898.0	10.2	300.1	587.6	5.2	38.8	251.2	.0	.0	2087.00
.00	1.97	7.73	2.34	.070	.030	.070	.000	2087.00	967.85
.013568	0.	0.	0.	0	4	0	.00	401.57	1732.35

*SECNO .398
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 941.0 1464.4 TYPE= 1 TARGET= 523.380

.398	2.18	2093.28	2093.28	2093.28	2093.61	.33	2.61	.00	2091.60
898.0	42.5	294.7	560.8	28.1	38.8	317.4	1.7	2.2	2091.50
.02	1.51	7.60	1.77	.070	.030	.070	.000	2091.10	941.06
.009110	335.	310.	195.	0	14	0	.00	523.32	1464.37

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

*SECNO .419
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 928.2 1292.6 TYPE= 1 TARGET= 364.420
JACK BURDEN ROAD

.419	2.06	2097.06	2097.06	2097.06	2097.38	.32	1.79	.00	2096.10
898.0	57.7	224.0	616.3	35.4	27.2	263.6	3.2	4.1	2095.40
.03	1.63	8.25	2.34	.070	.030	.070	.000	2095.00	928.16
.012725	80.	110.	200.	0	10	0	.00	364.42	1292.58

*SECNO .439

3470 ENCROACHMENT STATIONS= 912.3 1193.8 TYPE= 1 TARGET= 281.510

.439	2.92	2098.62	2098.50	2098.63	2098.92	.30	1.54	.00	2098.30
898.0	625.1	22.5	250.4	125.7	6.8	94.9	3.8	4.8	2098.30
.04	4.97	3.33	2.64	.070	.030	.070	.000	2095.70	912.28
20444	75.	110.	110.	1	14	0	.00	281.39	1193.67

*SECNO .453
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 919.6 1170.3 TYPE= 1 TARGET= 250.660

.453	2.69	2100.59	2100.59	2100.59	2101.00	.41	1.90	.03	2099.70
898.0	516.8	140.1	241.1	101.4	17.7	91.4	4.2	5.3	2099.70
.04	5.10	7.89	2.64	.070	.030	.070	.000	2097.90	919.62
.029774	80.	70.	75.	0	10	0	.00	250.42	1170.04

*SECNO .498

3470 ENCROACHMENT STATIONS= 939.3 1162.1 TYPE= 1 TARGET= 222.740

.498	1.45	2106.65	2106.47	2106.64	2106.99	.34	5.98	.01	2105.50
898.0	134.5	182.4	581.1	44.4	22.9	168.0	5.4	6.6	2105.50
.06	3.03	7.96	3.46	.070	.030	.070	.000	2105.20	939.34
.021540	240.	240.	235.	5	14	0	.00	222.74	1162.08

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

*SECNO .532

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 985.5 1081.7 TYPE= 1 TARGET= 96.260

.532	2.67	2112.47	2112.47	2112.47	2113.34	.87	3.11	.16	2110.30
898.0	15.0	388.6	494.4	6.0	36.9	132.2	6.3	7.2	2110.10
.06	2.50	10.54	3.74	.070	.030	.070	.000	2109.80	985.48
.013686	185.	180.	185.	0	17	0	.00	96.26	1081.74

*SECNO .583
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 973.2 1106.9 TYPE= 1 TARGET= 133.730

.583	3.03	2116.73	2116.73	2116.73	2117.49	.76	2.45	.01	2114.20
98.0	97.0	552.5	248.5	34.2	63.3	109.4	7.3	7.8	2113.90
.07	2.83	8.73	2.27	.070	.030	.070	.000	2113.70	973.22
.007607	270.	270.	210.	0	8	0	.00	133.73	1106.95

*SECNO .618
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 922.4 1079.4 TYPE= 1 TARGET= 157.030

.618	2.43	2122.13	2122.13	2122.13	2122.82	.69	1.62	.01	2119.70
898.0	287.8	439.5	170.7	91.9	48.6	71.2	8.2	8.5	2119.70
.08	3.13	9.05	2.40	.070	.030	.070	.000	2119.70	922.42
.010212	180.	185.	190.	0	15	0	.00	157.03	1079.45

*SECNO .652
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 969.3 1047.8 TYPE= 1 TARGET= 78.560

.652	2.54	2126.74	2126.74	2126.74	2127.72	.98	2.08	.09	2124.40
898.0	187.1	477.9	233.1	43.7	46.6	65.0	8.9	8.9	2124.90
.09	4.28	10.26	3.59	.070	.030	.070	.000	2124.20	969.25
013925	160.	180.	185.	0	8	0	.00	78.56	1047.81

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

*SECNO .689

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 986.3 1173.2 TYPE= 1 TARGET= 186.900

.689	3.16	2130.76	2130.76	2130.75	2131.54	.78	2.10	.02	2128.30
898.0	12.0	486.2	399.8	5.8	52.3	145.0	9.7	9.4	2127.90
.10	2.07	9.30	2.76	.070	.030	.070	.000	2127.60	986.31
.008512	185.	195.	200.	0	11	0	.00	146.71	1173.21

*SECNO .739

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
[illegible] CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 984.5 1031.3 TYPE= 1 TARGET= 46.840

.739	3.74	2138.24	2138.24	2138.22	2139.69	1.44	2.26	.20	2134.50
898.0	95.9	569.9	232.2	25.7	48.6	56.5	10.6	10.0	2134.50
.11	3.73	11.71	4.11	.070	.030	.070	.000	2134.50	984.45
.009625	260.	260.	230.	0	11	0	.00	46.84	1031.29

*SECNO .811

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 974.6 1057.7 TYPE= 1 TARGET= 83.100

.811	2.13	2146.83	2146.83	2146.83	2147.76	.92	5.38	.05	2145.20
898.0	152.6	350.6	394.8	31.8	32.7	80.1	11.8	10.5	2145.20
.12	4.80	10.73	4.93	.070	.030	.070	.000	2144.70	974.58
.024417	370.	370.	370.	0	11	0	.00	83.10	1057.68

THIS RUN EXECUTED 25JUN92 08:32:40

****
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

WASH P: UNNAMED WASH #13

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.337	.00	.00	.00	2087.00	898.00	2088.65	2088.65	2089.02	136.11	7.74	294.83	76.97
*	.337	.00	.00	.00	2087.00	898.00	2088.65	2088.65	2089.02	135.68	7.73	295.22	77.09
*	.398	310.00	.00	.00	2091.10	898.00	2093.28	2093.28	2093.61	90.79	7.59	384.76	94.24
*	.398	310.00	.00	.00	2091.10	898.00	2093.28	2093.28	2093.61	91.10	7.60	384.25	94.09
	.419	110.00	.00	.00	2095.00	898.00	2097.06	2097.06	2097.38	128.25	8.28	325.24	79.29
*	.419	110.00	.00	.00	2095.00	898.00	2097.06	2097.06	2097.38	127.25	8.25	326.13	79.61
	.439	110.00	.00	.00	2095.70	898.00	2098.63	2098.50	2098.93	202.49	3.34	228.39	63.11
	.439	110.00	.00	.00	2095.70	898.00	2098.62	2098.50	2098.92	204.44	3.33	227.36	62.81
*	.453	70.00	.00	.00	2097.90	898.00	2100.59	2100.59	2101.00	294.74	7.87	211.35	52.31
*	.453	70.00	.00	.00	2097.90	898.00	2100.59	2100.59	2101.00	297.74	7.89	210.55	52.04
	.498	240.00	.00	.00	2105.20	898.00	2106.64	2106.47	2106.98	217.13	7.98	234.77	60.94
	.498	240.00	.00	.00	2105.20	898.00	2106.65	2106.47	2106.99	215.40	7.96	235.37	61.19
*	.532	180.00	.00	.00	2109.80	898.00	2112.47	2112.47	2113.34	137.84	10.57	174.68	76.49
*	.532	180.00	.00	.00	2109.80	898.00	2112.47	2112.47	2113.34	136.86	10.54	175.10	76.76
*	.583	270.00	.00	.00	2113.70	898.00	2116.73	2116.73	2117.49	76.01	8.73	206.99	103.00
*	.583	270.00	.00	.00	2113.70	898.00	2116.73	2116.73	2117.49	76.07	8.73	206.92	102.96
*	.618	185.00	.00	.00	2119.70	898.00	2122.13	2122.13	2122.82	102.26	9.05	211.49	88.80
*	.618	185.00	.00	.00	2119.70	898.00	2122.13	2122.13	2122.82	102.12	9.05	211.61	88.86
*	.652	180.00	.00	.00	2124.20	898.00	2126.74	2126.74	2127.72	139.46	10.26	155.18	76.04
*	.652	180.00	.00	.00	2124.20	898.00	2126.74	2126.74	2127.72	139.25	10.26	155.26	76.10
*	.689	195.00	.00	.00	2127.60	898.00	2130.75	2130.75	2131.54	85.85	9.32	202.28	96.92
	.689	195.00	.00	.00	2127.60	898.00	2130.76	2130.76	2131.54	85.12	9.30	203.07	97.33

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.739	260.00	.00	.00	2134.50	898.00	2138.22	2138.22	2139.69	98.26	11.79	129.91	90.59
*	.739	260.00	.00	.00	2134.50	898.00	2138.24	2138.24	2139.69	96.25	11.71	130.86	91.53
*	.811	370.00	.00	.00	2144.70	898.00	2146.83	2146.83	2147.76	244.97	10.74	144.44	57.37
*	.811	370.00	.00	.00	2144.70	898.00	2146.83	2146.83	2147.76	244.17	10.73	144.59	57.47

: UNNAMED WASH #13

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.337	898.00	2088.65	.00	.00	.00	401.45	.00
*	.337	898.00	2088.65	.00	.00	.00	401.57	.00
*	.398	898.00	2093.28	.00	4.63	.00	523.38	310.00
*	.398	898.00	2093.28	.00	4.63	.00	523.32	310.00
*	.419	898.00	2097.06	.00	3.78	.00	364.42	110.00
*	.419	898.00	2097.06	.00	3.78	.00	364.42	110.00
	.439	898.00	2098.63	.00	1.57	.00	281.51	110.00
	.439	898.00	2098.62	.00	1.56	.00	281.39	110.00
*	.453	898.00	2100.59	.00	1.96	.00	250.66	70.00
*	.453	898.00	2100.59	.00	1.96	.00	250.42	70.00
	.498	898.00	2106.64	.00	6.05	.00	222.74	240.00
	.498	898.00	2106.65	.00	6.06	.00	222.74	240.00
*	.532	898.00	2112.47	.00	5.83	.00	96.26	180.00
	.532	898.00	2112.47	.00	5.83	.00	96.26	180.00
*	.583	898.00	2116.73	.00	4.26	.00	133.73	270.00
*	.583	898.00	2116.73	.00	4.26	.00	133.73	270.00
*	.618	898.00	2122.13	.00	5.40	.00	157.03	185.00
*	.618	898.00	2122.13	.00	5.40	.00	157.03	185.00
*	.652	898.00	2126.74	.00	4.61	.00	78.57	180.00
*	.652	898.00	2126.74	.00	4.61	.00	78.56	180.00
*	.689	898.00	2130.75	.00	4.01	.00	146.36	195.00
*	.689	898.00	2130.76	.01	4.01	.01	146.71	195.00
*	.739	898.00	2138.22	.00	7.47	.00	46.85	260.00
*	.739	898.00	2138.24	.02	7.49	.02	46.84	260.00
*	.811	898.00	2146.83	.00	8.61	.00	83.10	370.00
*	.811	898.00	2146.83	.00	8.59	.00	83.10	370.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .337  PROFILE=  2  CRITICAL DEPTH ASSUMED

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CAUTION SECNO=      .398  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      .398  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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```
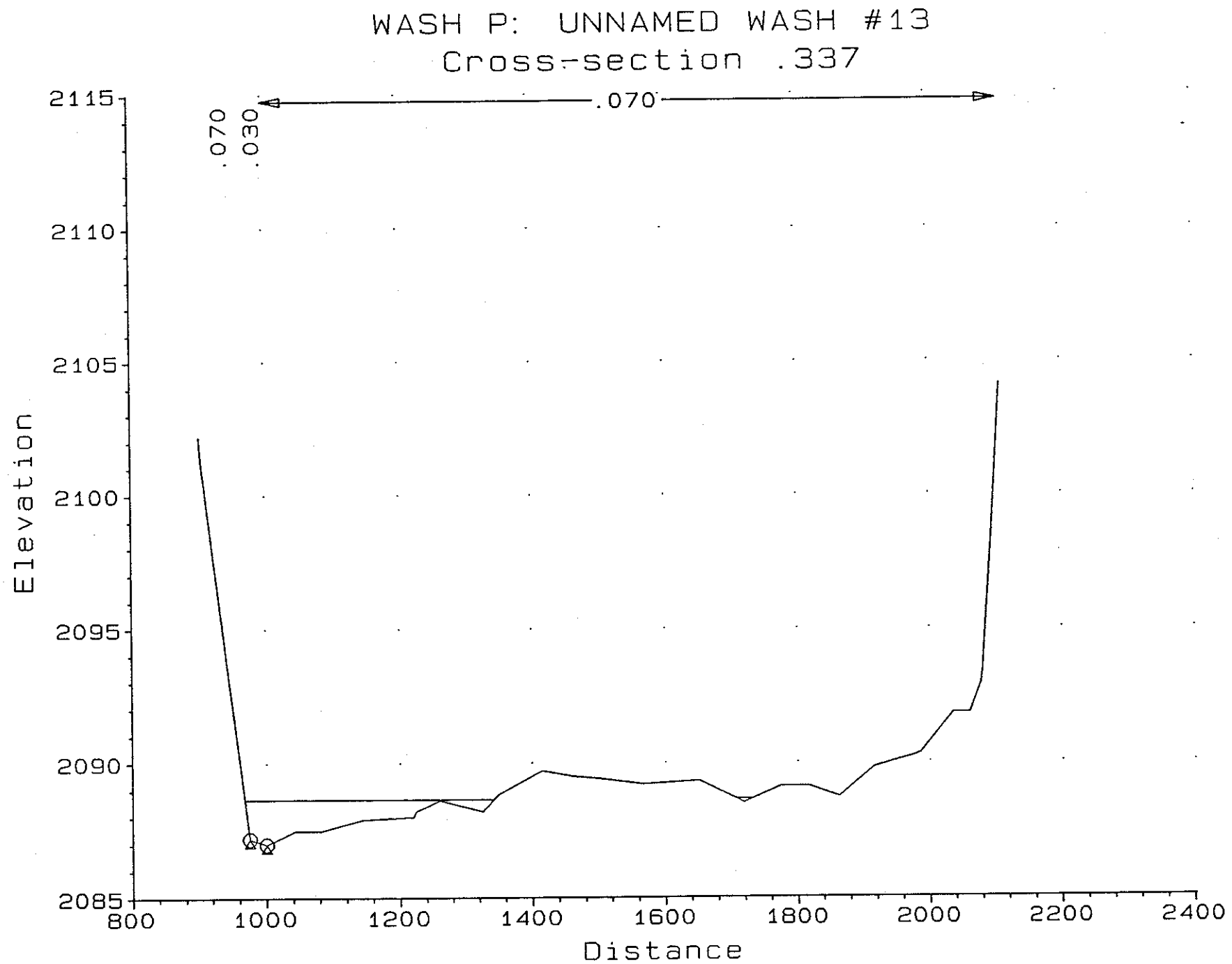

ON SECNO= .811 PROFILE= 2 MINIMUM SPECIFIC ENERGY

FLOODWAY DATA, WASH P: UNNAMED WASH #13
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.337	764.	295.	3.0	2088.7	2088.7	.0
.398	523.	384.	2.3	2093.3	2093.3	.0
.419	364.	326.	2.8	2097.1	2097.1	.0
.439	281.	227.	3.9	2098.6	2098.6	.0
.453	250.	211.	4.3	2100.6	2100.6	.0
.498	223.	235.	3.8	2106.6	2106.6	.0
.532	96.	175.	5.1	2112.5	2112.5	.0
.583	134.	207.	4.3	2116.7	2116.7	.0
.618	157.	212.	4.2	2122.1	2122.1	.0
.652	79.	155.	5.8	2126.7	2126.7	.0
.689	187.	203.	4.4	2130.8	2130.8	.0
.739	47.	131.	6.9	2138.2	2138.2	.0
.811	83.	145.	6.2	2146.8	2146.8	.0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2105
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2090
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Elevation
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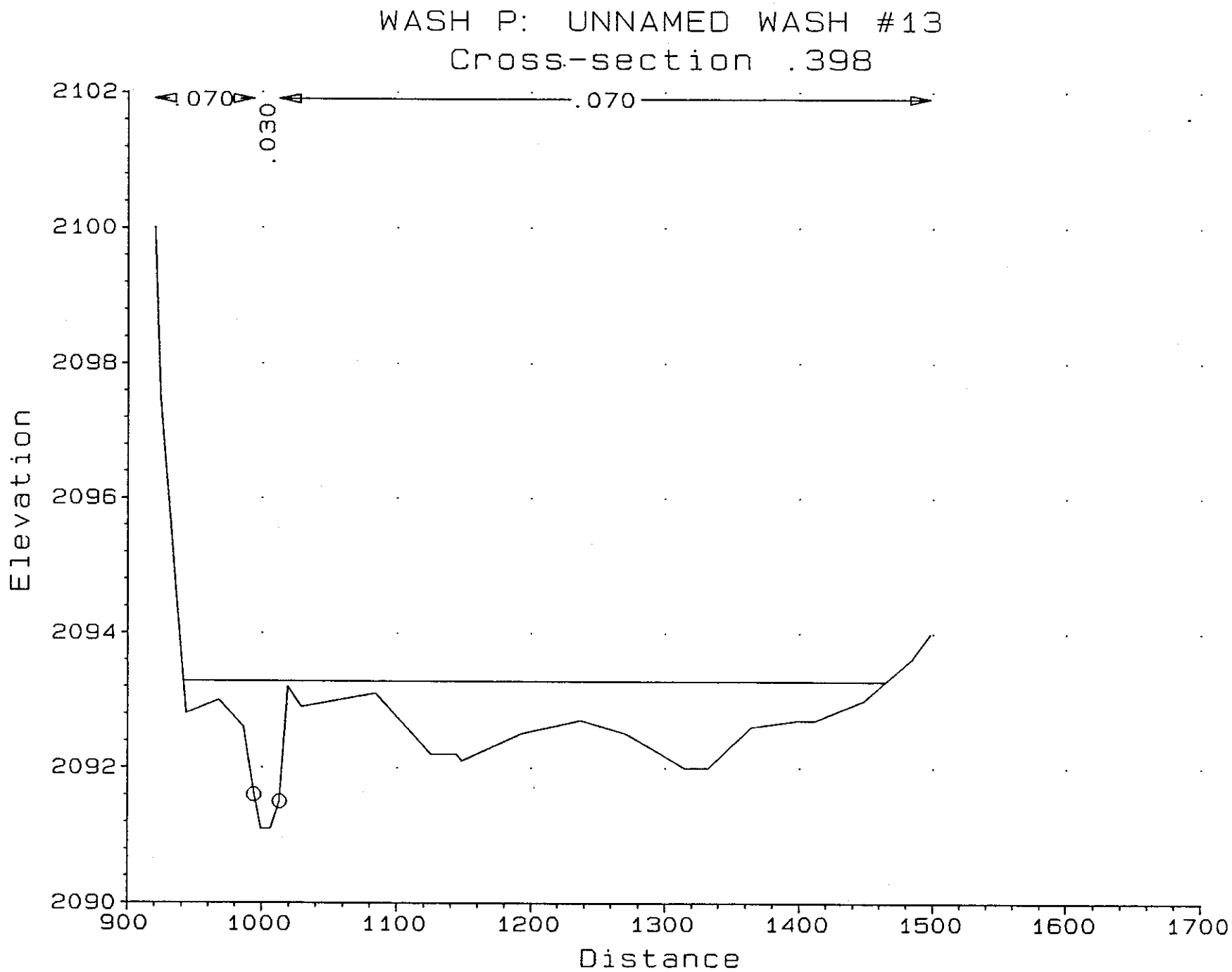
1000
1200
1400
1600
1800
2000
2200
2400
Distance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2098
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2094
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Elevation
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1000
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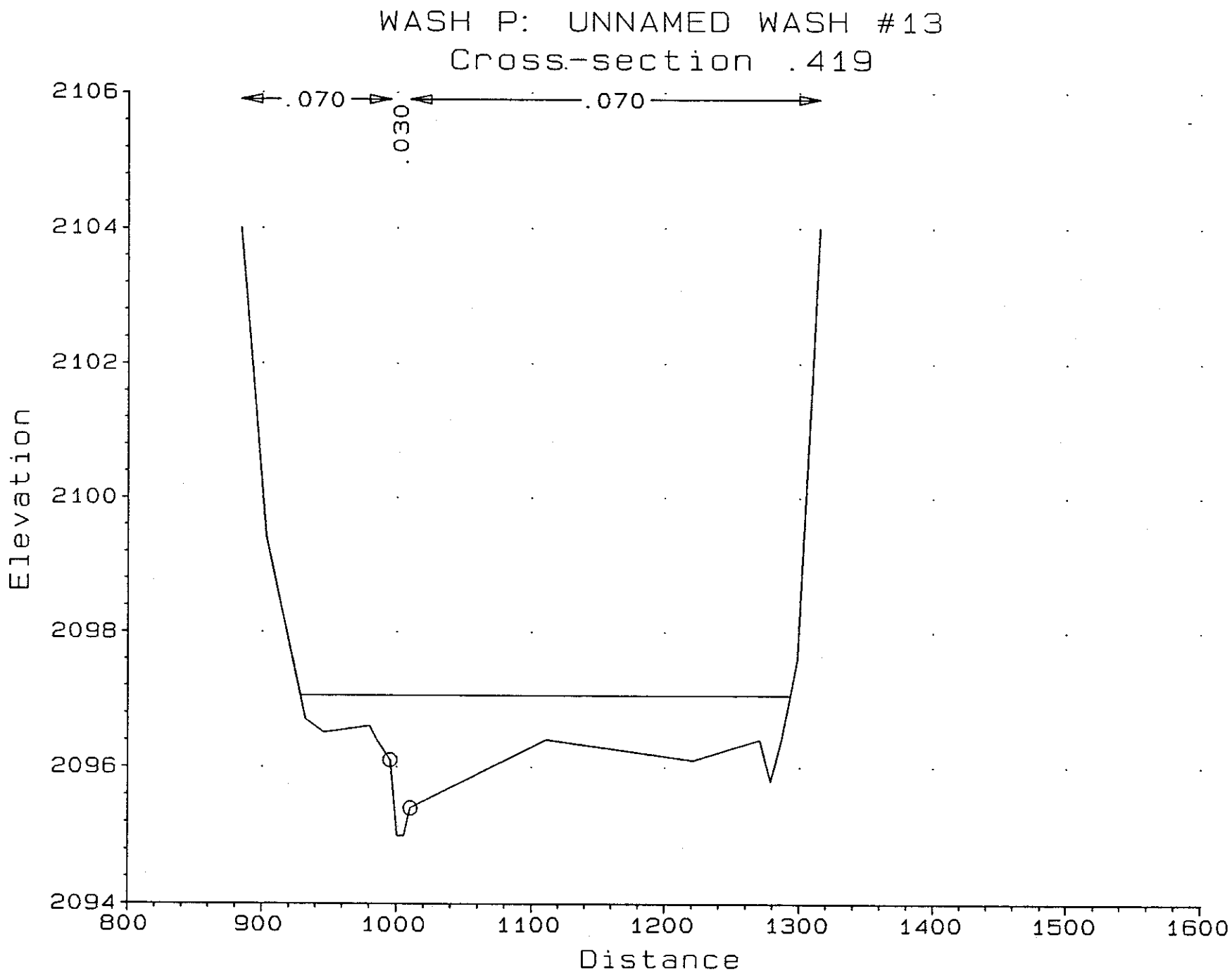
1500
1600
1700
Distance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Cross-section .419
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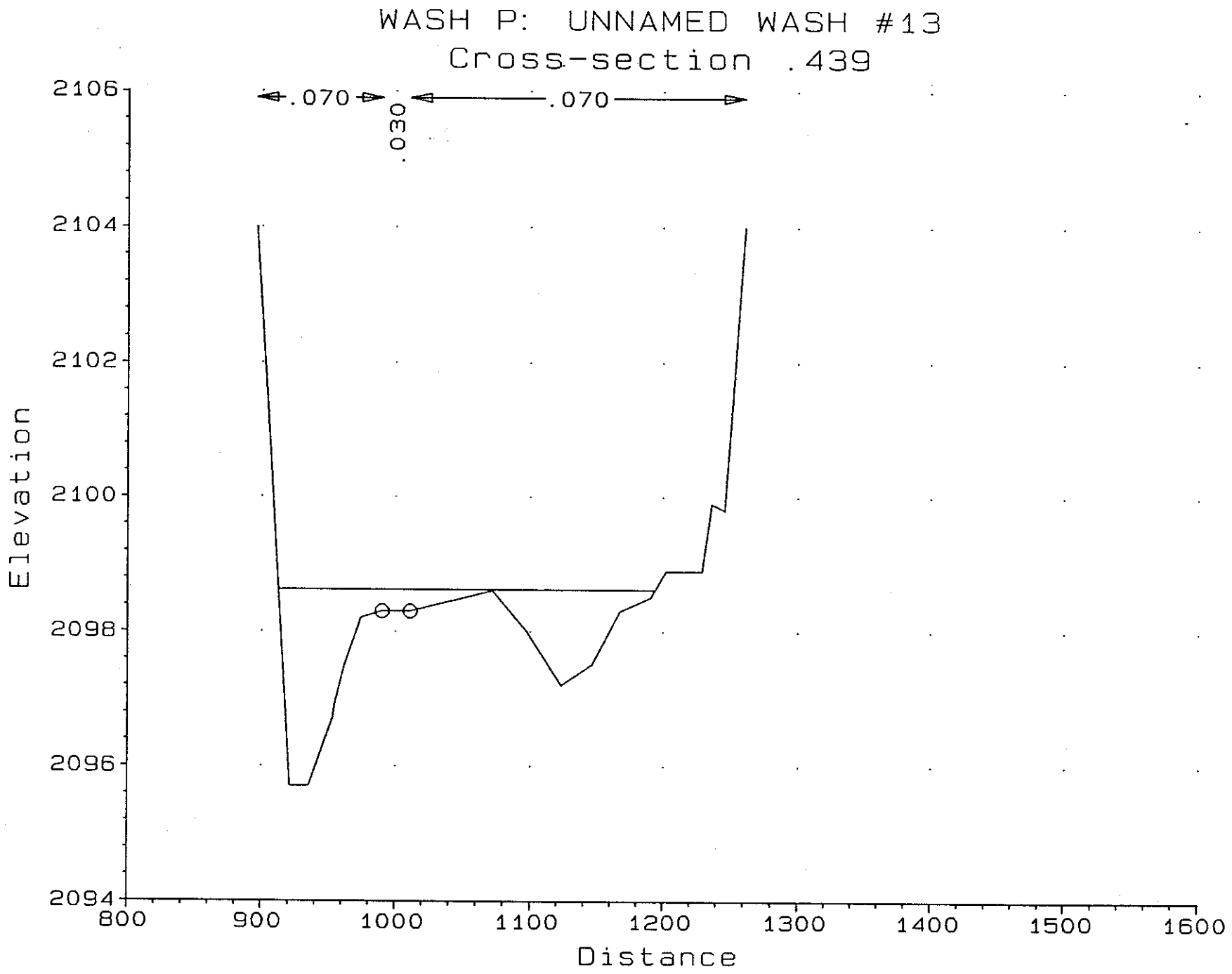
.030
.070
2106
2104
2102
2100
2098
2096
2094
Elevation
800
900
1000
1100
1200
1300
1400
1500
1600
Distance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Cross-section .439
.070
.070
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2106
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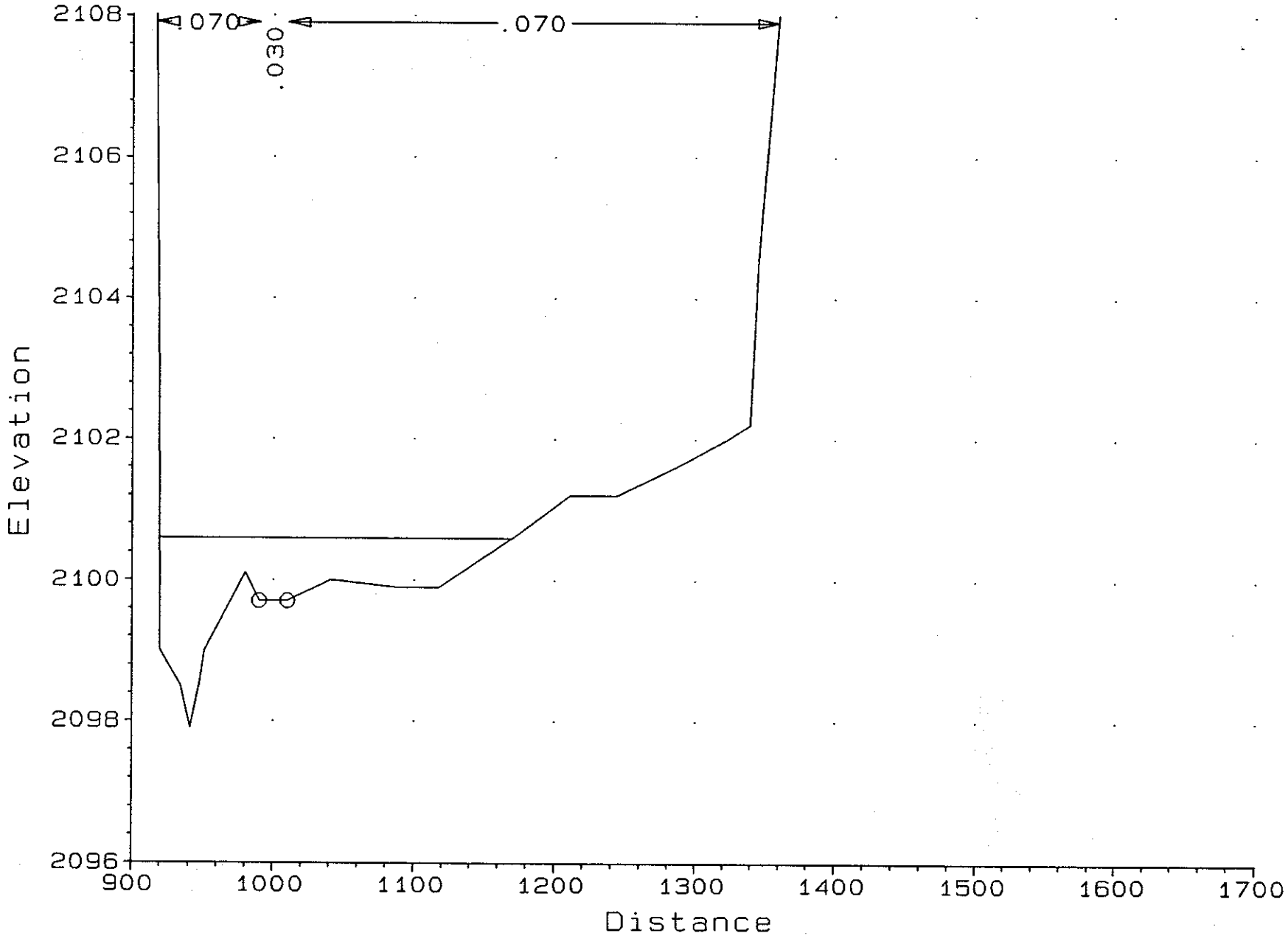
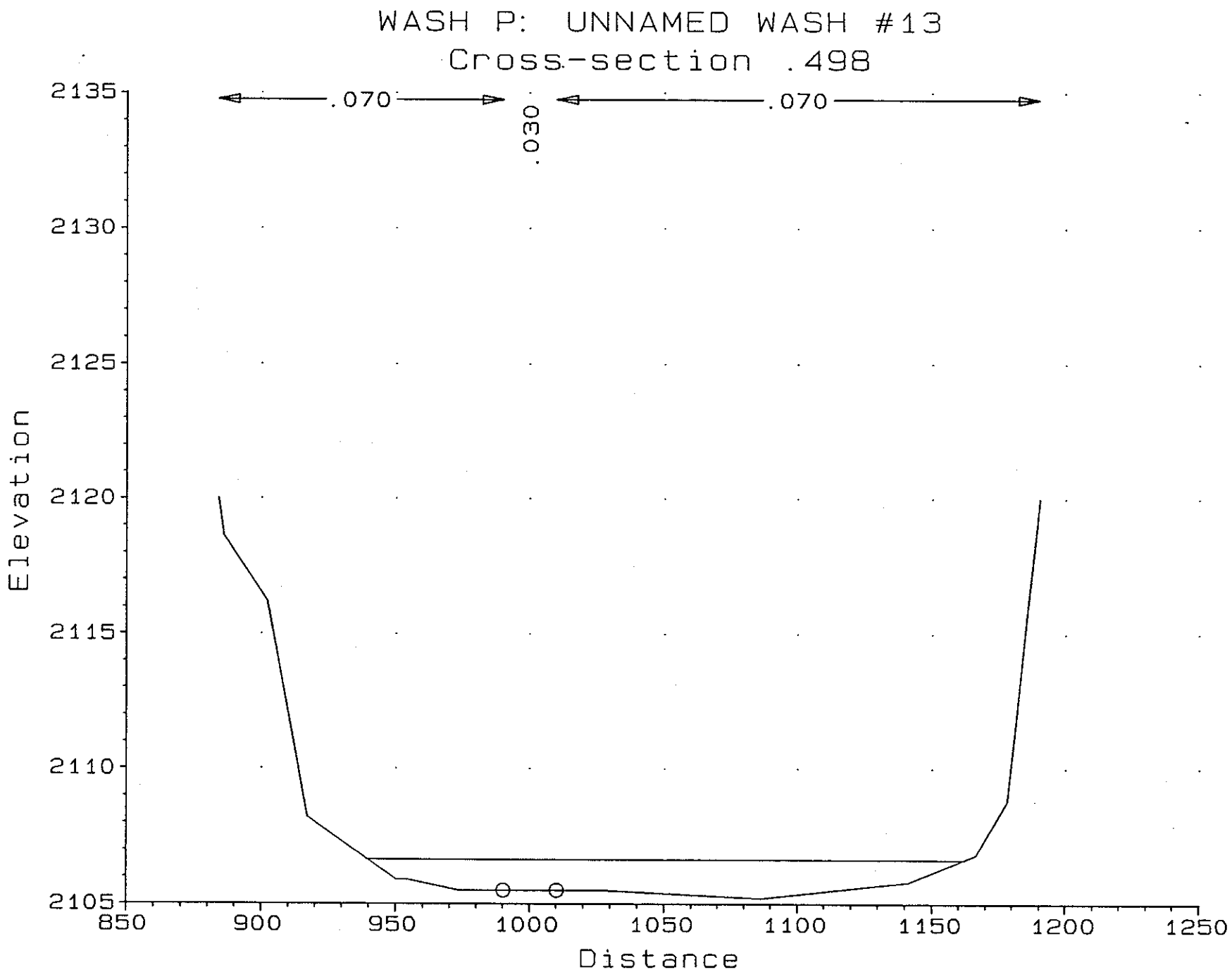
2100
2098
2096
2094
Elevation
800
900
1000
1100
1200
1300
1400
1500
1600
Distance

WASH P: UNNAMED WASH #13
Cross-section .453

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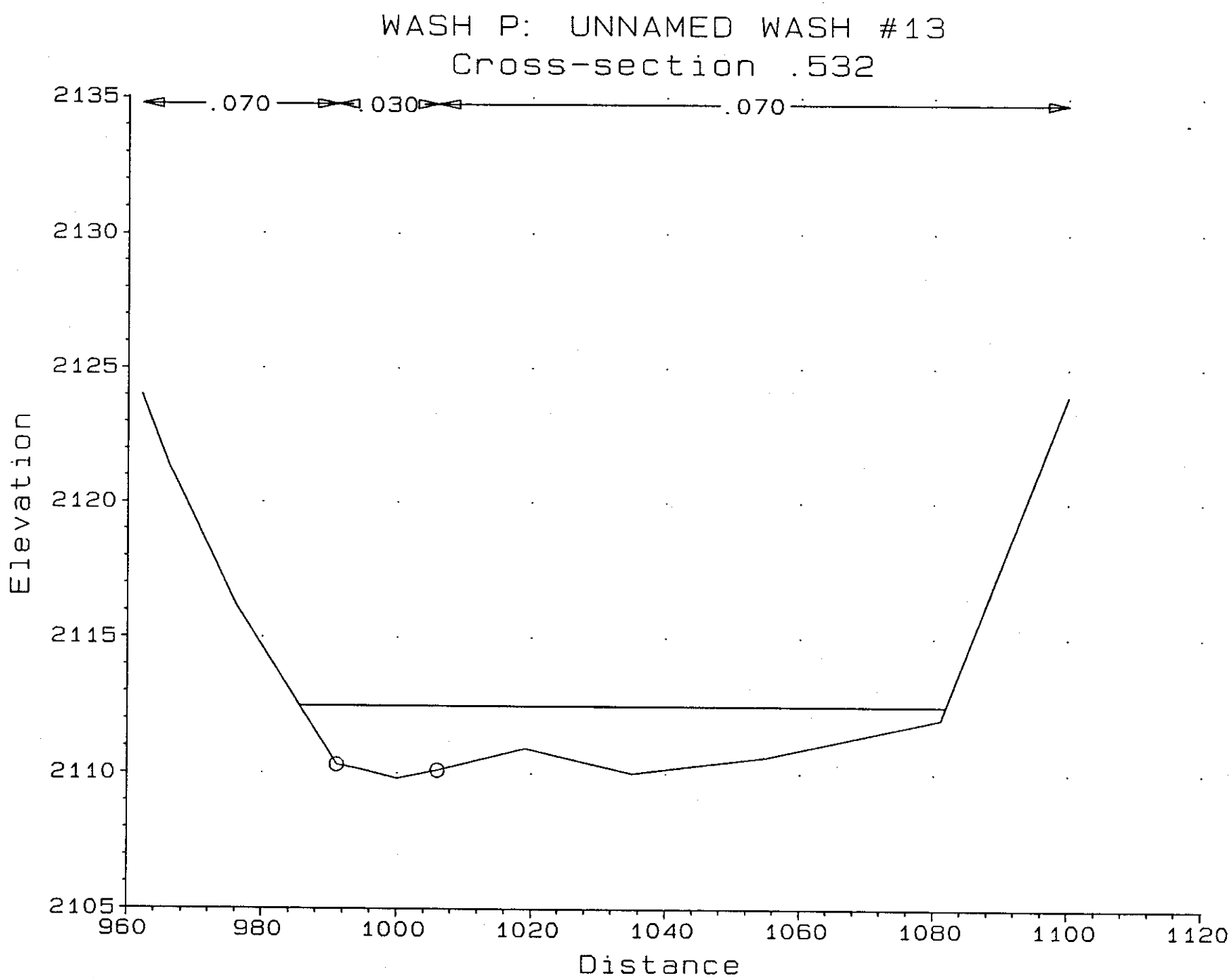
Distance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.030
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Elevation
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1000
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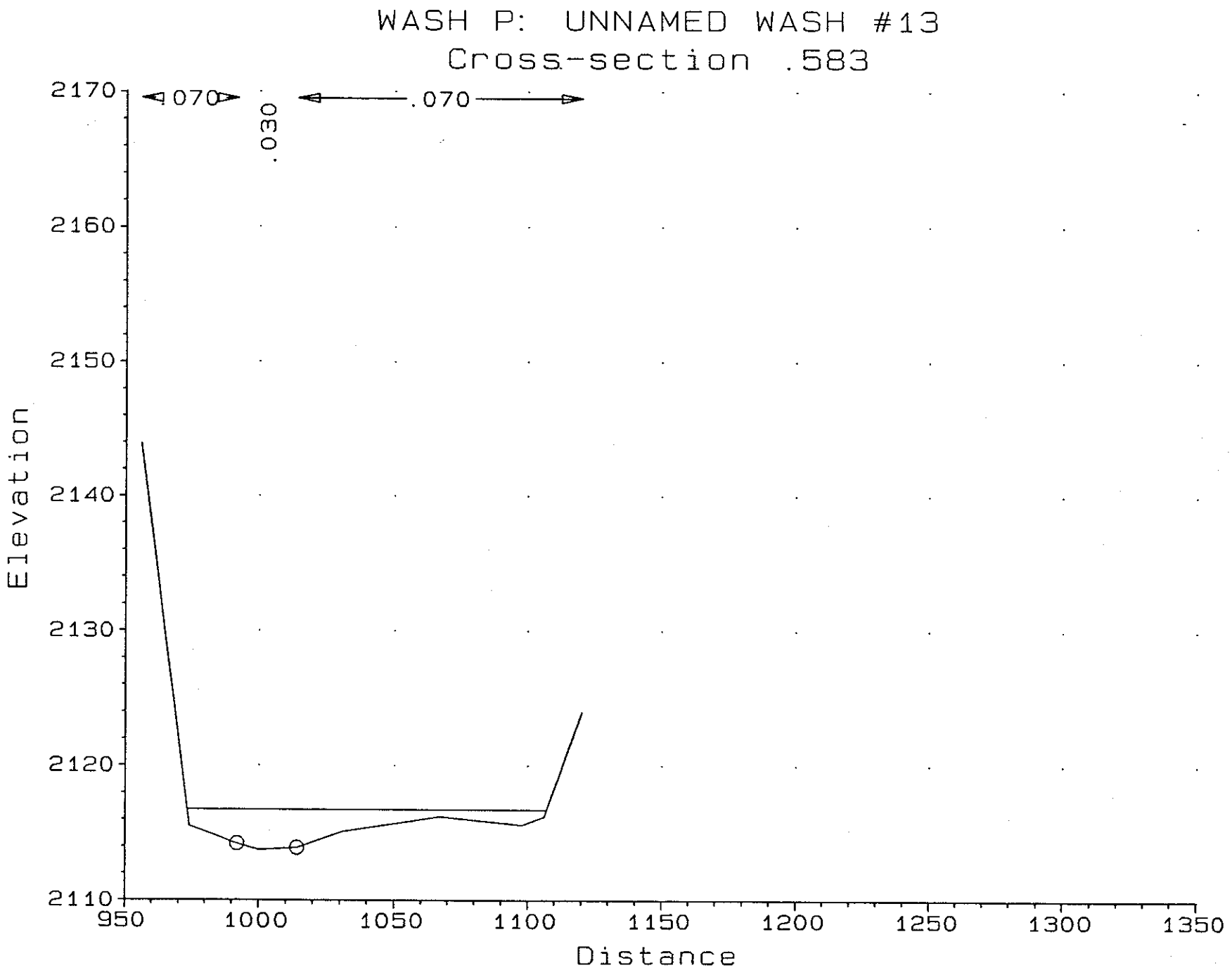
1080
1100
1120
Distance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2140
2130
2120
2110
Elevation
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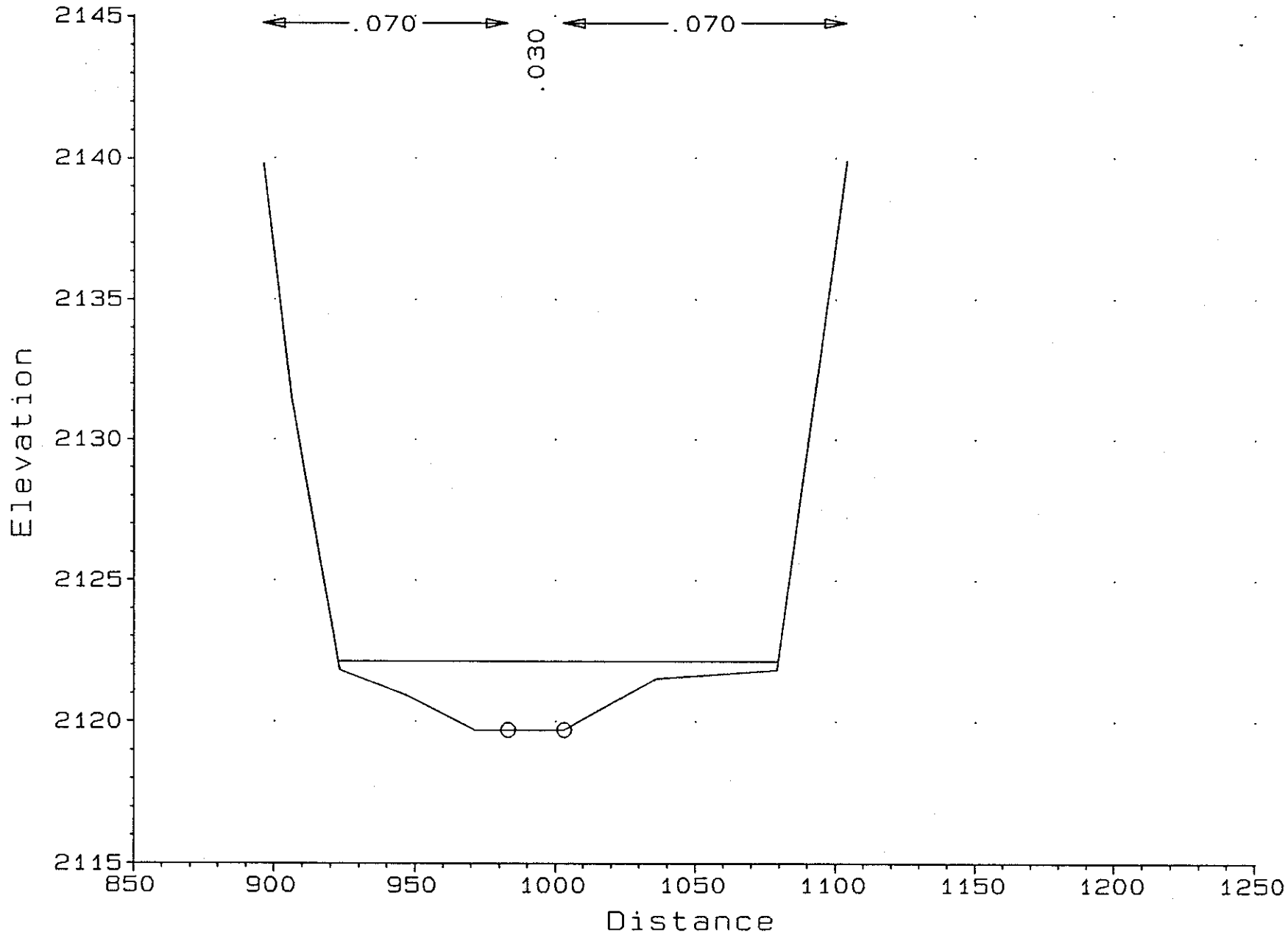
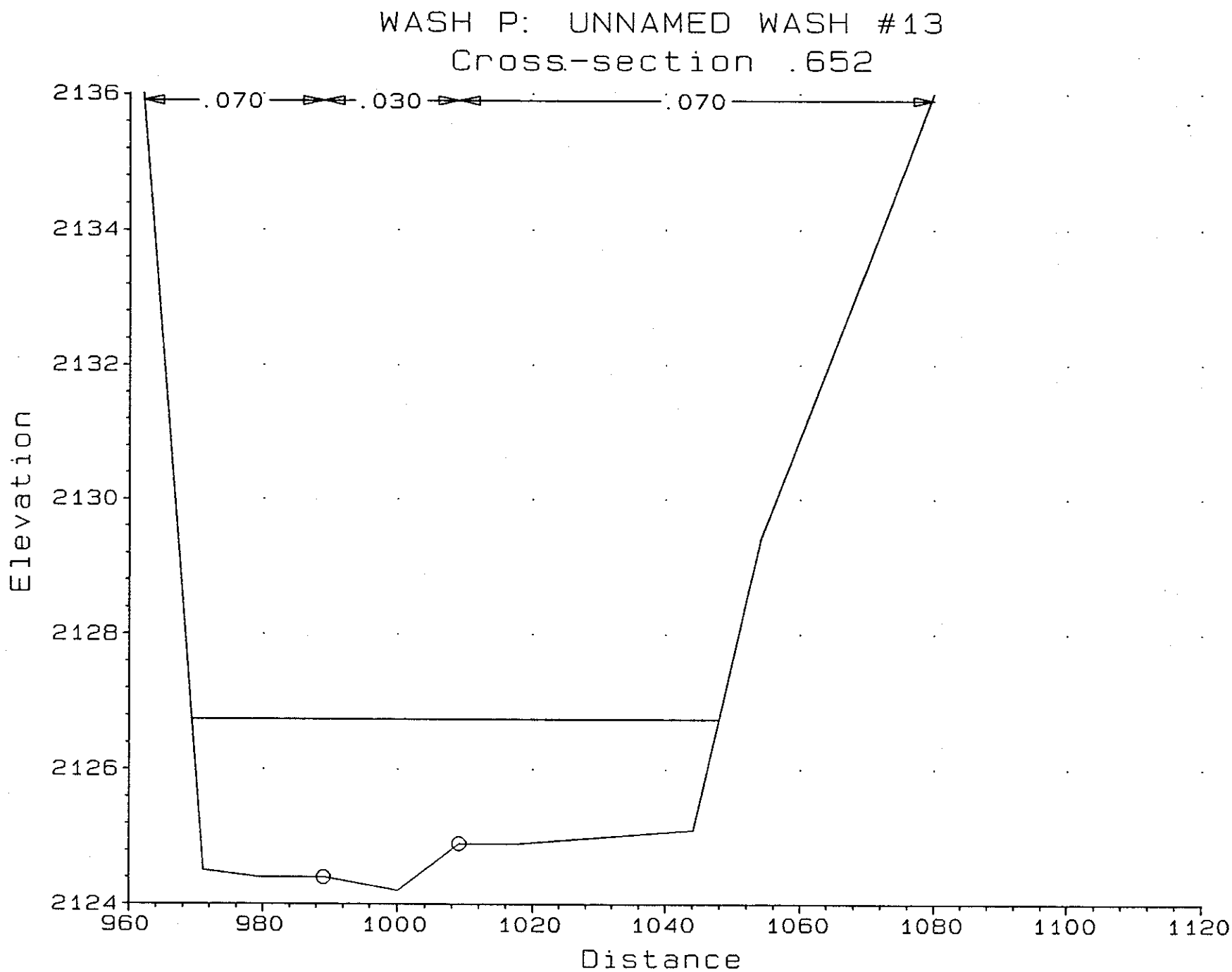
1000
1050
1100
1150
1200
1250
1300
1350
Distance

WASH P: UNNAMED WASH #13

Cross-section .618

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.030
.070
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2134
2132
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Elevation
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1040
1060
1080
1100
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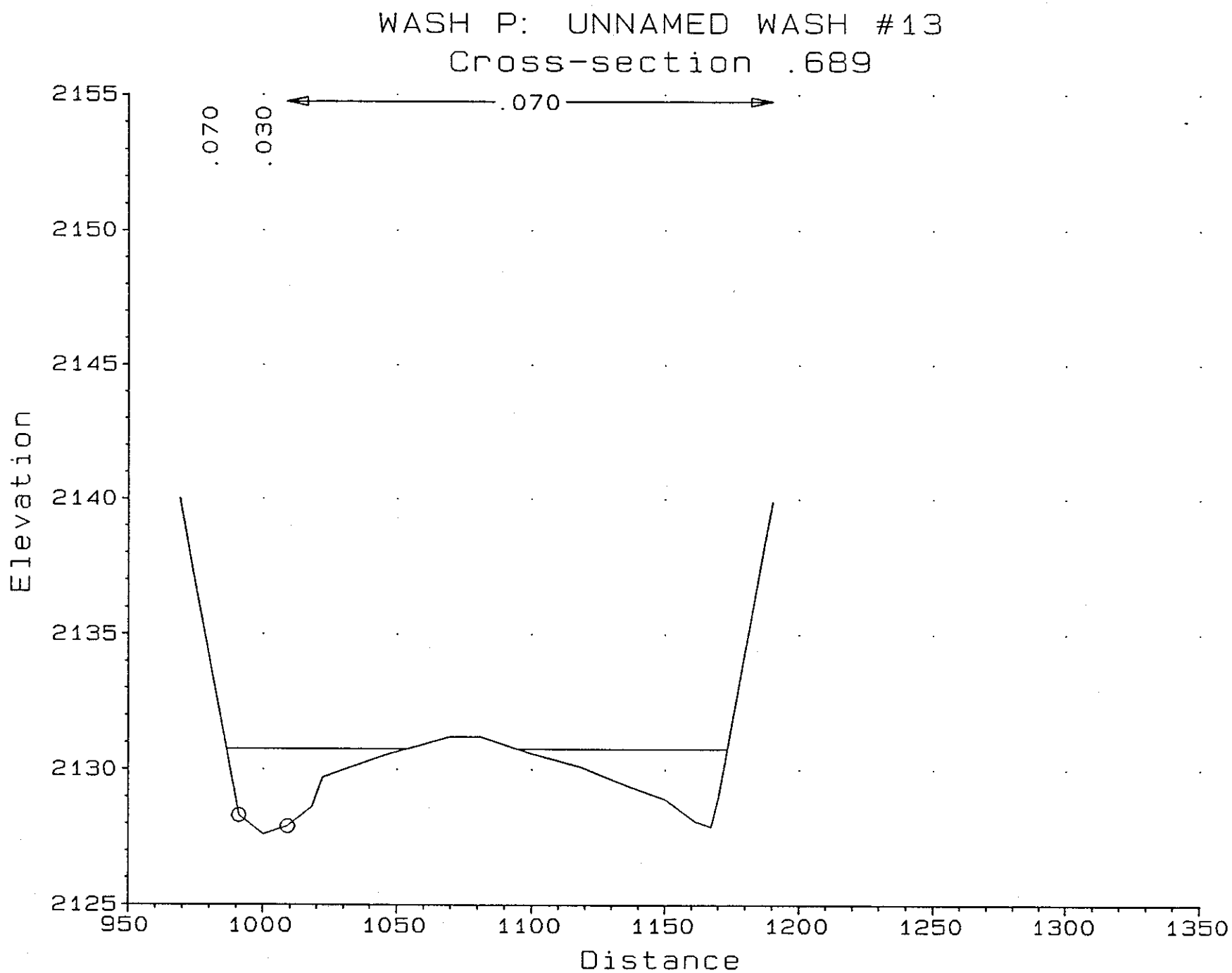
Distance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.070
.030
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2145
2140
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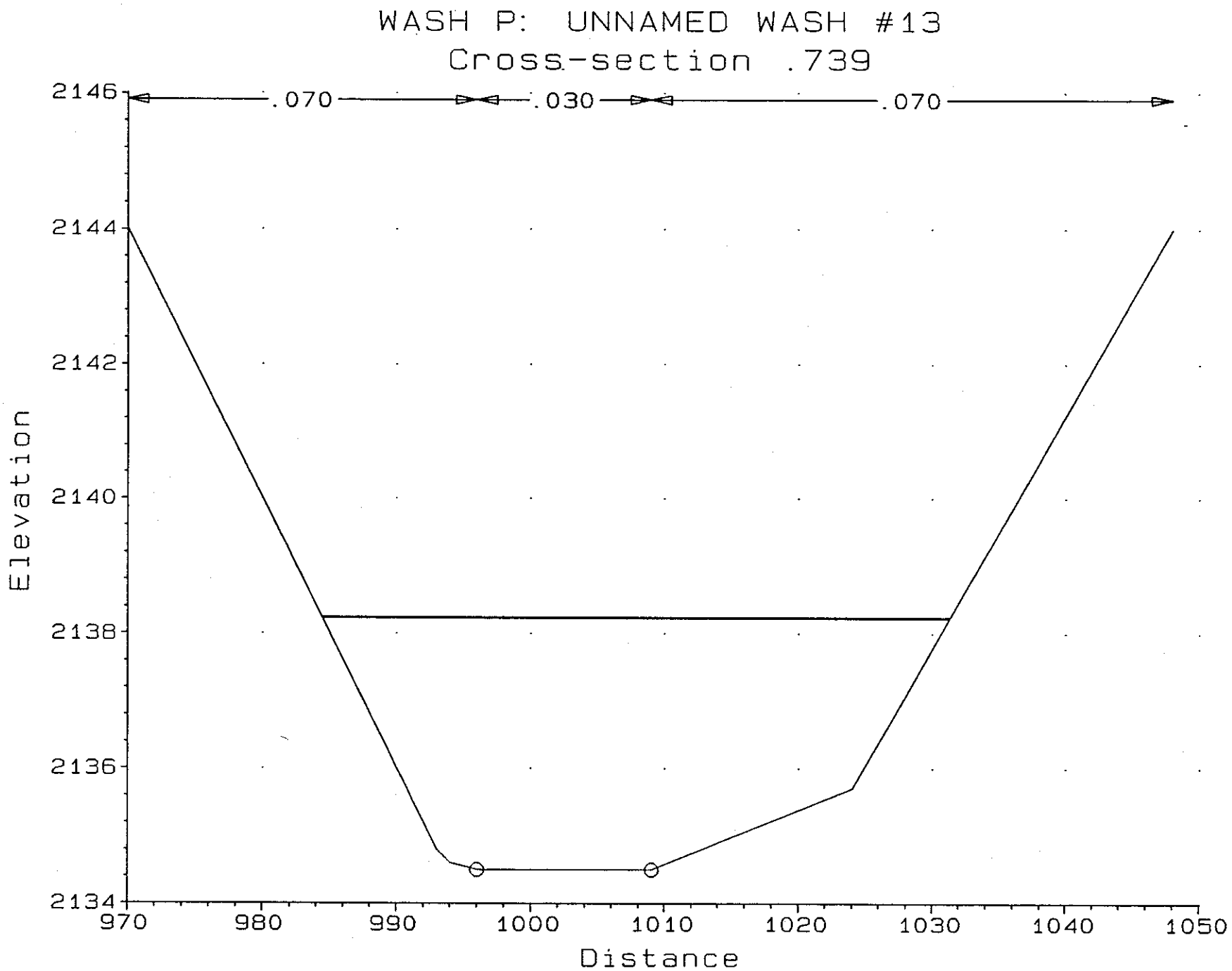
2130
2125
Elevation
950
1000
1050
1100
1150
1200
1250
1300
1350
Distance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2144
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2136
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Elevation
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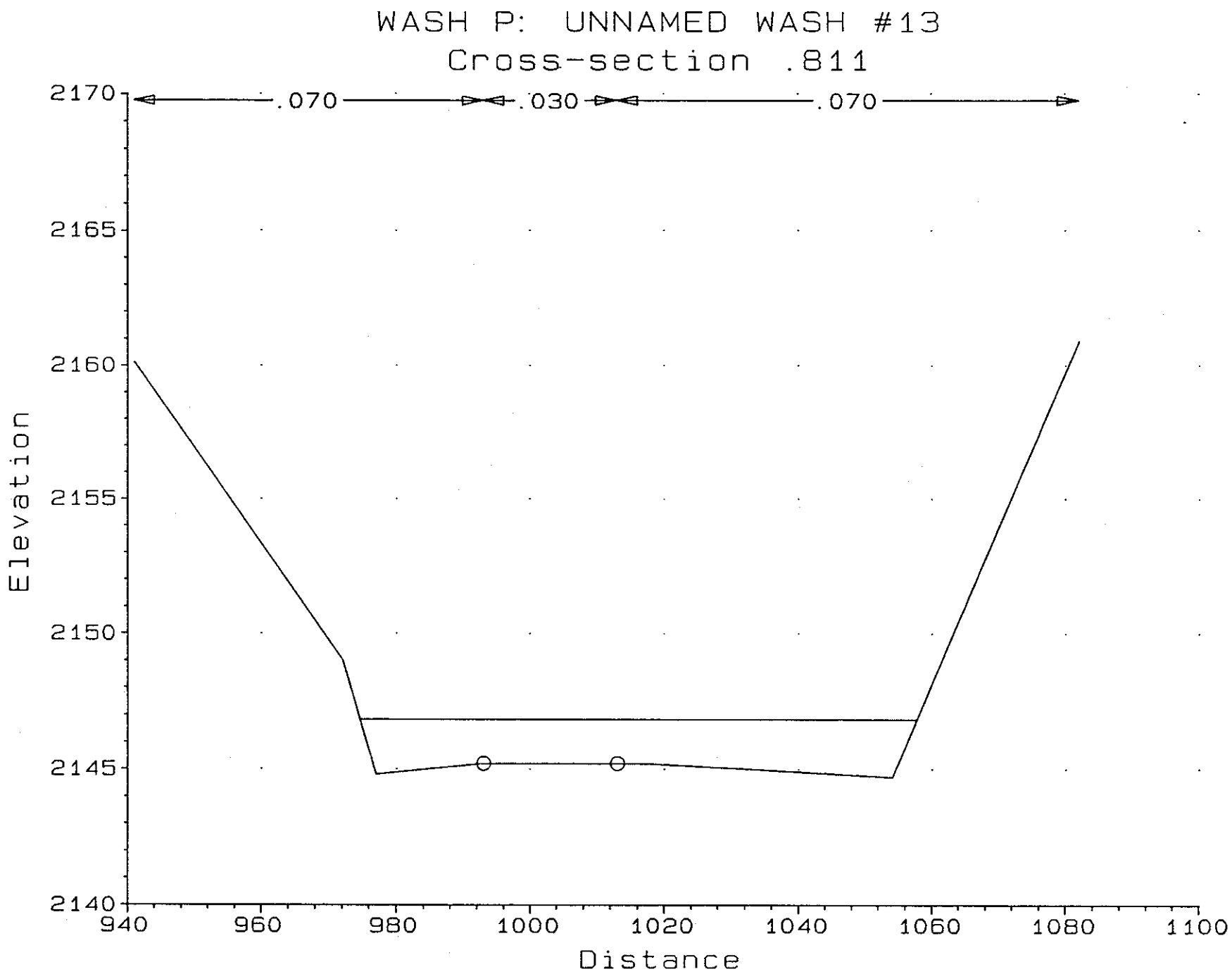
990
1000
1010
1020
1030
1040
1050
Distance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.070
2170
2165
2160
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Elevation
940
960
980
1000
1020
1040
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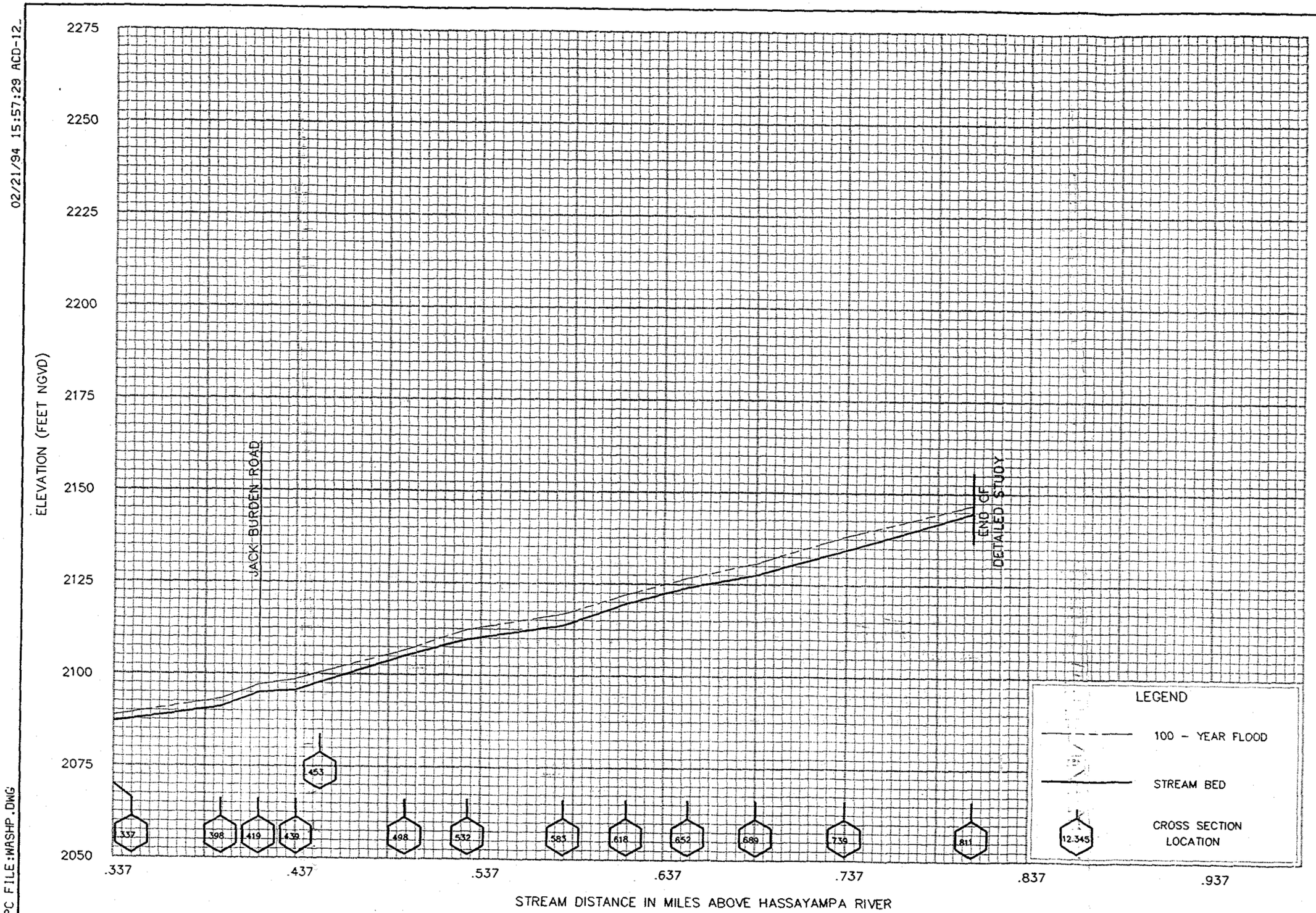
1080
1100
Distance



FLOOD PROFILES

UNNAMED WASH #13 (P)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS