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ATTACHMENT H

EXTREME VELOCITIES IN THE
UPPER ACUSHNET RIVER
ESTIMATED BY THE DAMBRK MODEL

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EXTREME VELOCITIES IN THE UPPER ACUSHNET RIVER ESTIMATED BY THE DAMBRK MODEL

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1. INTRODUCTION

The Acushnet River estuary north of Coggeshall Street is the most highly PCB contaminated region of New Bedford Harbor. Sediment PCB concentrations in excess of 30,000 ppm have been measured. One alternative which has been proposed to isolate the highly PCB-laden sediments in the upper estuary from the rest of the environment involves capping the most contaminated area with clean materials.

The proposed cap would be approximately 45 cm (1.5 ft) thick and would be placed on top of the existing sediments. However, because the sediments are very poorly consolidated in the upper estuary, the weight of the cap will cause consolidation of the bottom sediments as excess water is squeezed out. Therefore the net elevation increase of the channel bottom will be approximately 22-26 cm instead of the entire 45 cm of the cap (Balsam, pers. comm.). Primary consolidation is expected to be essentially complete within a period of one year from cap placement. Accordingly the analyses done for this study assume the post-consolidation channel geometry after cap placement.

The capping material may be subject to erosion due to high current velocities which could result from either storm surge or increased river flow due to rainfall-induced runoff. This study was undertaken to determine the probable current velocities to be expected from either of these mechanisms.

The hurricane barrier at the entrance to the harbor protects the upper estuary from surges generated by offshore storms (e.g., hurricanes, winter storms, etc.). The U.S. Army Corps operational guidelines indicate that the barrier is to be closed if the sea surface elevation is greater than 1.5 m (5 ft) (U.S. Army Corps of Engineers, 1982). In routine operation, the barrier is closed typically once per month even though the sea elevation is less than 1.5 m (5 ft), hence the estuary receives more than adequate protection from surges. Storm surges hence pose no problem with respect to cap integrity.

The second area of concern is the markedly increased runoff and flooding associated with extreme rainfall events, such as occur during the 10, 25, 50 or 100 year storm events. Under these conditions, the substantial increase in runoff associated with these storms causes the Acushnet River to flood, cross sectional area velocities to increase and, if sufficiently high, for capping sediments to resuspend and be transported seaward.

To assess the potential erosion of the cap, an analysis of the impact of flooding conditions on current velocities in the upper Acushnet River was made. Section 2 details the application of the DAMBRK model to determine river velocities due to excess rainfall. Conclusions are presented in Section 3.

2. MAXIMUM VELOCITY IN THE UPPER ESTUARY

The upper estuary of New Bedford Harbor is typically a region of low velocity as evidenced by bottom sediments comprised of organic-rich silts and clays, indicating a depositional environment (Ebasco, 1987). By contrast, sediments in the lower estuary are predominantly coarser sands and gravels, indicative of a faster current regime.

Stronger currents in the upper estuary are possible due to increased river flow resulting from extreme rainfall events. Although the mean freshwater inflow at the head of the estuary is 0.85 m^3/s, Balsam (1989) estimated the peak flow rate in the Acushnet River due to the 50-year storm event to be 39.6 m^3/s. Other researchers have estimated the peak flow resulting from a 100-year storm to be 38.2 m^3/s (Table 2.1). Obviously there is considerable variation in the estimation of peak flow versus storm return period depending on the author and technique employed. The Balsam 50-year flow was used in the analysis to determine current magnitudes. However, the magnitude of the flow is such that it could be considered a 50 to 100 year storm.

Table 2.1. Estimates of peak flow rates for the Acushnet River.

	Peak Flow Rate (m^3/s) (ft^3/sec)			
Storm Return Period	NUS (1984)	US Army Corps (1987)	Balsam (1989) (HEC-1)	FEMA (1982)
100 year	38.2 (1350)	38.2 (1350)	-	17.8 (630)
50 year	22.7 (800)	24.9 (980)	39.6 (1397)	13.5 (475)
25 year	20.5 (723)	20.9 (740)	24.6 (867)	-
10 year	17.0 (600)	13.47 (475)	11.1 (392)	7.9 (280)

Note: The U.S. Army Corps of Engineers (1961) estimate is an average over a 5 hour storm and results in 18.4 m^3/s for the 100 year storm.

To estimate the current velocities in the upper estuary resulting from the 50-year storm flood, the DAMBRK model, developed by the National Weather Service (Fread, 1988), was used. The model was developed to estimate flow characteristics, such as

travel time and water surface elevations, downstream of a dam failure. The model also includes a provision for routing any flood hydrograph through the downstream river or channel, accounting for the effects of downstream storage, frictional resistance and downstream bridges and/or dams. This feature made the model highly attractive for the present application since the upstream flood hydrograph was available for the 50-year storm. DAMBRK is a widely tested and accepted model, in use by most federal/state agencies in the U.S. and in over 40 nations around the world.

2.1 DAMBRK Model: Theoretical Background

The model utilizes the dynamic wave method of hydraulic flood routing. The dynamic wave method is based on the complete one-dimensional equations of unsteady flow which are used to route the dam-break flood hydrograph through the downstream valley. This method employs an expanded version of the original Saint-Venant equations. The expanded Saint-Venant equations consist of a conservation of mass equation and a conservation of momentum equation with additional terms for the effect of expansion/contractions, channel sinuosity and non-Newtonian flow.

The assumptions made in the derivation of the Saint-Venant equations include:

1. The flow is one-dimensional such that depth and velocity vary only in the longitudinal direction; values are constant across the channel cross-section.

2. Flow is assumed to vary gradually along the channel so that hydrostatic pressure prevails and vertical accelerations are neglected.

3. The longitudinal axis of the channel is approximately a straight line.

4. The bottom slope of the channel is small and the channel bed is fixed; scour and deposition are neglected.

5. Resistance coefficients for steady uniform turbulent flow are applicable so that equations such as Manning's can be used to describe resistance effects.

6. The fluid is incompressible and of constant density.

The conservation of mass is expressed as

$$\frac{\partial Q}{\partial x} + \frac{\partial s(A+A_o)}{\partial t} - q = 0 \tag{2.1}$$

and the conservation of momentum is expressed as

$$\frac{\partial (sQ)}{\partial t} + \frac{\partial (\beta Q^2/A)}{\partial x} + gA(\frac{\partial h}{\partial x} + S_f + S_e + S_i) + L' = 0 \tag{2.2}$$

where

- Q = flow
- h = water surface elevation
- A = active cross-sectional area of flow
- A_o = inactive (off-channel storage) cross-sectional area
- s = sinuosity factor which varies with h
- x = longitudinal distance along the channel (valley)
- t = time
- q = lateral inflow or outflow per lineal distance along the channel (inflow is positive)
- β = the momentum coefficient for velocity distribution
- g = acceleration due to gravity
- S_f = boundary friction slope
- S_e = expansion-contraction slope
- S_i = additional friction slope associated with internal viscous dissipation of non-Newtonian fluids
- L' = momentum effect of lateral flow assumed to enter or exit perpendicular to the direction of the main flow.

These equations constitute a system of partial differential equations which are solved by a weighted four-point implicit finite difference technique. A detailed description of the model's theory and application is given in Fread (1988).

The model's principal limitation is that it can only analyze flow through a single waterway as opposed to a network of interactive channels. However, for the Acushnet River application this limitation is unimportant.

Other limitations are due to DAMBRK's governing equations and the uncertainty associated with some of the parameters used within the model. Neglecting the two-

dimensional nature of the flow can be important when a constricted flow expands onto a wide, flat floodplain. However, judicious specification of cross-sections and off-channel storage widths can minimize the neglected two-dimensional effect. The model does not account for enlargement of channel cross-sectional area due to scour. Some uncertainty is also inherent in the selection of Manning's n; however the effect is considerably damped during computations, and a sensitivity analysis using low and high n values can be undertaken to provide an envelope of possible flood peak elevations.

2.2 DAMBRK Model: Application

The DAMBRK model was applied to the upper estuary to determine river velocities resulting from a 50-year storm with the 45 cm (1.5 ft) cap in place. Primary consolidation after cap placement is assumed to have occurred such that the net elevation increase of the channel bottom is only 22-26 cm instead of 45 cm. The channel geometry was specified at the locations shown in Figure 2.1. The cross-section data were taken from three primary sources: bathymetric field data obtained by ASA, USCOE bathymetric charts of the Acushnet River and NOAA navigational charts. The locations of the cross-sections were selected to coincide with areas in which detailed information was available or where the channel geometry varied or allowed for off-channel storage.

The DAMBRK model requires four basic pieces of information to define each channel cross-section. The first is the downstream location of the cross-section. The second, third and fourth are the elevation, the top width and the off-channel storage top width which form a set of data that defines the cross-section. For each of N elevations, above an arbitrary datum, a channel width for the active flow area must be given. If applicable an off-channel storage width may also be given for each elevation. These data describe the cross-section as a set of stacked quadrilaterals, with sloping sides. Therefore as the water depth increases the top width of the filled portion of the channel is also increased according to the cross-section definition. Channel cross-section data are presented in Table 2.2 for the section locations shown in Figure 2.1.

The model was initialized with a discharge rate of 0.85 m^3/s at the upstream boundary located at Wood Street. This is the estimated mean annual flow of the Acushnet River. The 50-year storm hydrograph (Figure 2.2) prepared by Balsam (1989) was used to specify the upstream boundary condition. No tidal fluctuations were

Table 2.2 Cross-section data for the upper estuary used in the DAMBRK model application. All dimensions are in feet, consistent with model input. Cross-section locations are shown in Figure 2.1.

	Channel width at each section							Off-channel storage	
Elevation*	1	2	3	4	5	6	7	3	5
12.25							0		
13.25							125		
15.25							362		
16.25						0	450		
16.75				0	50	150			
17.25		0	0	50	250	400	538		
17.5	0								
17.75		30		220	470				0
18.0	30								
18.25		65	170	420	680	525			60
18.5	55								
18.75					740				150
19.25		130	420	720	775				330
19.5	102								
19.75			425					400	
20						612	700		
20.25	185	210	425					450	
21					780	650			335
22	190	255	430	725		675	788	455	
23	200	265	435	730				460	

*Elevation is measured from an arbitrary datum below the lowest point.

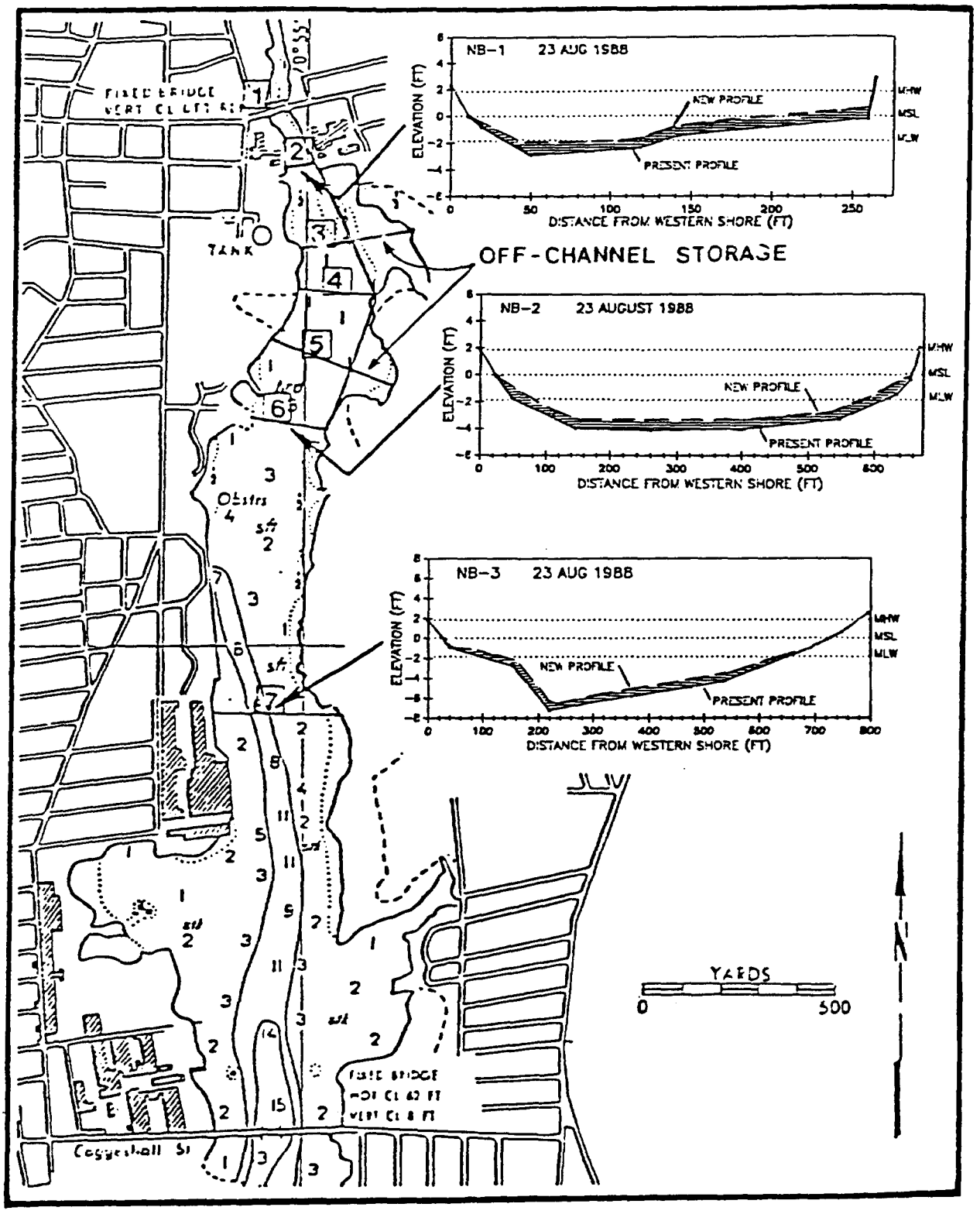

Figure 2.1 Location of specified sections in the upper estuary used by the DAMBRK model. Cross-sections show bathymetry for present conditions and after consolidation following cap placement.

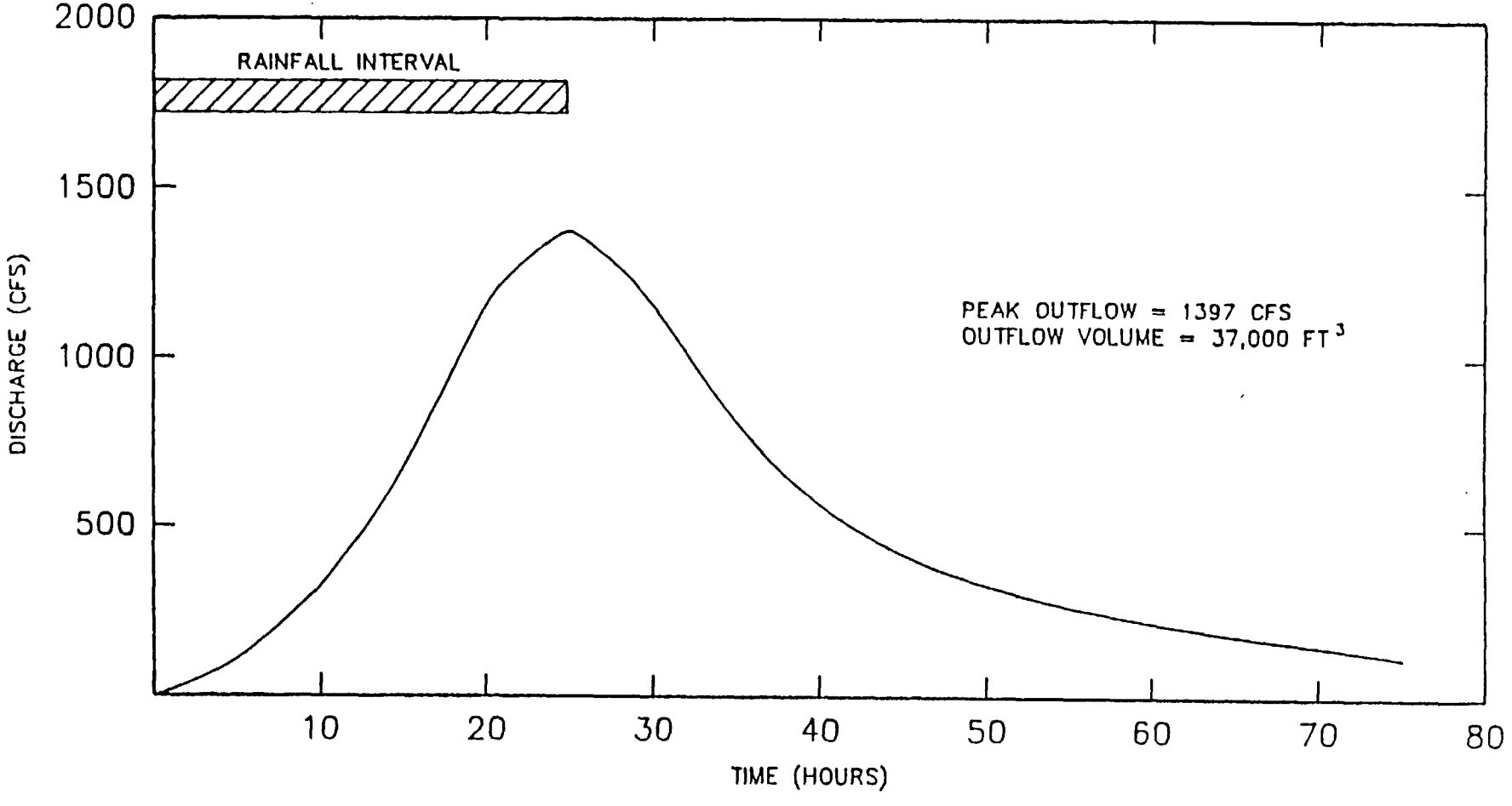

Figure 2.2 Outflow hydrograph at Saw Mill Dam for the 50-year rainfall (from Balsam, 1989).

included since the storm induced flows clearly dominate the current field in the northern portion of the upper estuary.

The flow simulation used a Manning roughness coefficient (n) of 0.025 which is typical for clean natural channels. A sensitivity study was done using values of n up to 0.04, indicative of natural channels with weeds and stones; however, larger values of n reduce the predicted velocities. Therefore the value of 0.025 was used to achieve maximum velocities in the estuary.

Two conditions were simulated. One assumes a fixed water mass below MSL (mean sea level) and the other assumes a fixed water mass below MLW (mean low water). These scenarios were selected to account for the estuarine nature of upper New Bedford Harbor. The MSL case represents mean conditions in the estuary; the MLW case represents worst-case conditions. Velocities will be greater under MLW conditions because the channel width decreases with depth and thus the storm flow travels through a smaller cross-sectional area. As the tidal elevation increases, more of the narrow channel bottom is filled with water, and the storm flow effectively travels through wider channel cross-sections, decreasing the velocity. Neither simulation included tidal fluctuations.

Complete input data files for the DAMBRK simulations are given in Appendix A.

The peak velocities in the upper estuary calculated by the DAMBRK model are summarized in Table 2.3 and shown graphically in Figures 2.3 and 2.4. Peak velocities for both cases decrease rapidly over the upper 400 m of the estuary, and show very little change in the rest of the model domain.

As expected, velocities for the MSL case are lower than for the MLW case, particularly in the lower 1100 m of the model domain. MLW case velocities of approximately 50 cm/sec are reduced to approximately 25 cm/sec in the MSL case. Comparing Figures 2.3 and 2.4 also shows that velocities predicted by the MLW case are more sensitive to channel geometry. This is evidenced by the variability in peak velocities in the lower 1100 m of the model domain shown in Figure 2.4 (MLW case) as compared with the almost constant peak velocities predicted by the MSL case (Figure 2.3) in this same region.

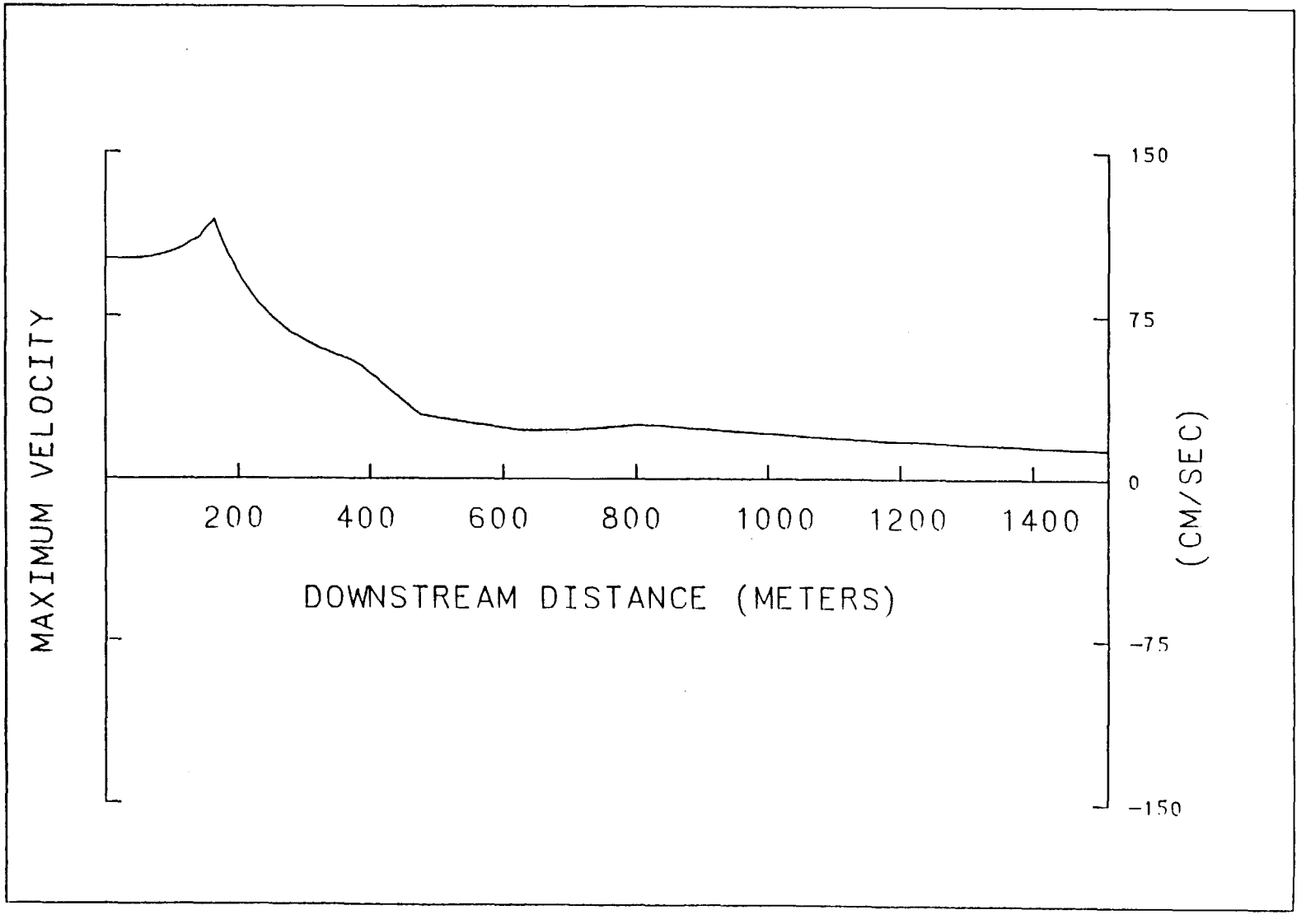

Figure 2.3 Peak velocity in the upper estuary due to a 50-year storm as a function of distance downstream from Wood Street. Results are for the MSL case with the 45 cm cap in place, after consolidation.

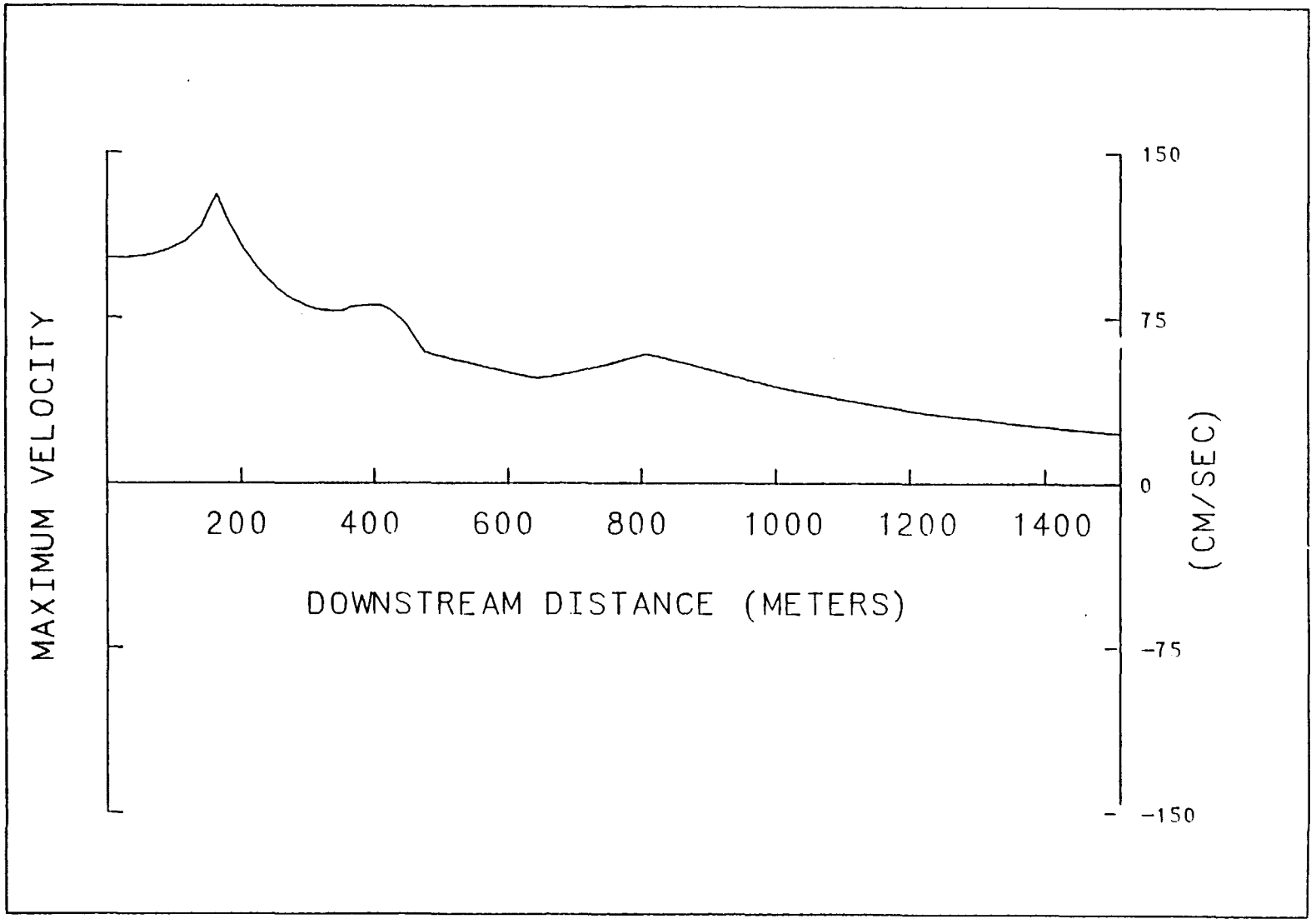

Figure 2.4 Peak velocity in the upper estuary due to a 50-year storm as a function of distance downstream from Wood Street. Results are for the MLW case with the 45 cm cap in place, after consolidation.

Table 2.3 Peak velocities in the upper estuary calculated by the DAMBRK model under 50-year storm conditions with a 45 cm cap in place, after consolidation.

Section Number	Distance downstream from Wood Street (m)	MSL case (cm/sec)	MSL case (ft/sec)	MLW case (cm/sec)	MLW case (ft/sec)
1	0	101.5	3.33	102.4	3.36
	95	103.9	3.41	106.7	3.50
2	165	119.2	3.91	130.8	4.29
	210	90.2	2.96	103.9	3.41
	250	75.0	2.46	89.6	2.94
3	365	55.5	1.82	80.2	2.63
4	475	29.9	0.98	59.1	1.94
5	640	22.3	0.73	47.2	1.55
6	805	25.6	0.84	58.8	1.93
7	1510	13.4	0.44	22.6	0.74

In the upper 400 m of the estuary the predicted velocities are much closer. The maximum velocity of 131 cm/sec predicted in the MLW case compares to 119 cm/sec in the MSL case. The maximum velocity occurs at section 2, 165 m downstream of Wood Street, in both cases. This is primarily due to the specification of bottom slope between sections 1, 2, and 3. The slope between sections 1 and 2 is steeper than that between sections 2 and 3. Therefore water moves quickly from section 1 to 2 but then slows down as the bottom slope flattens. This causes the peak in velocity observed at section 2.

The time varying nature of the flood velocities at sections 2 and 6 is shown in Figures 2.5 and 2.6, respectively, for the MSL case. Comparable plots for the MLW case are given in Figures 2.7 and 2.8. The peak velocities noted in Table 2.3 are of short duration, typically lasting for only a few hours. The velocities take approximately 25 hours to go from pre-storm conditions to peak values, in response to the storm hydrograph used to specify the flood flows.

A complete listing of the model output for both simulations is given in Appendix B.

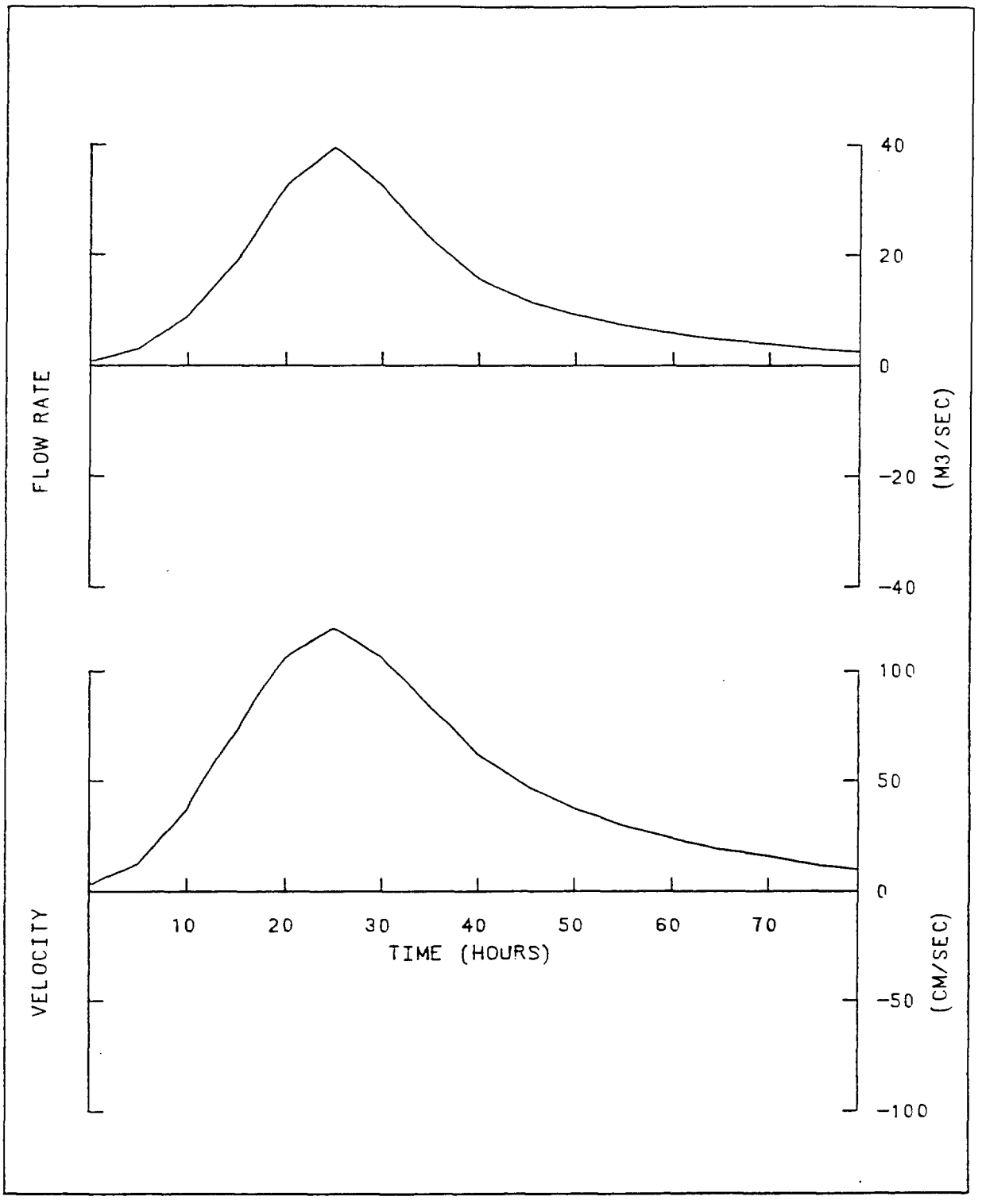

Figure 2.5 Time history of flood flow and velocity at section 2 in the upper estuary (165 m downstream of Wood Street) for the MSL case with the cap in place, after consolidation.

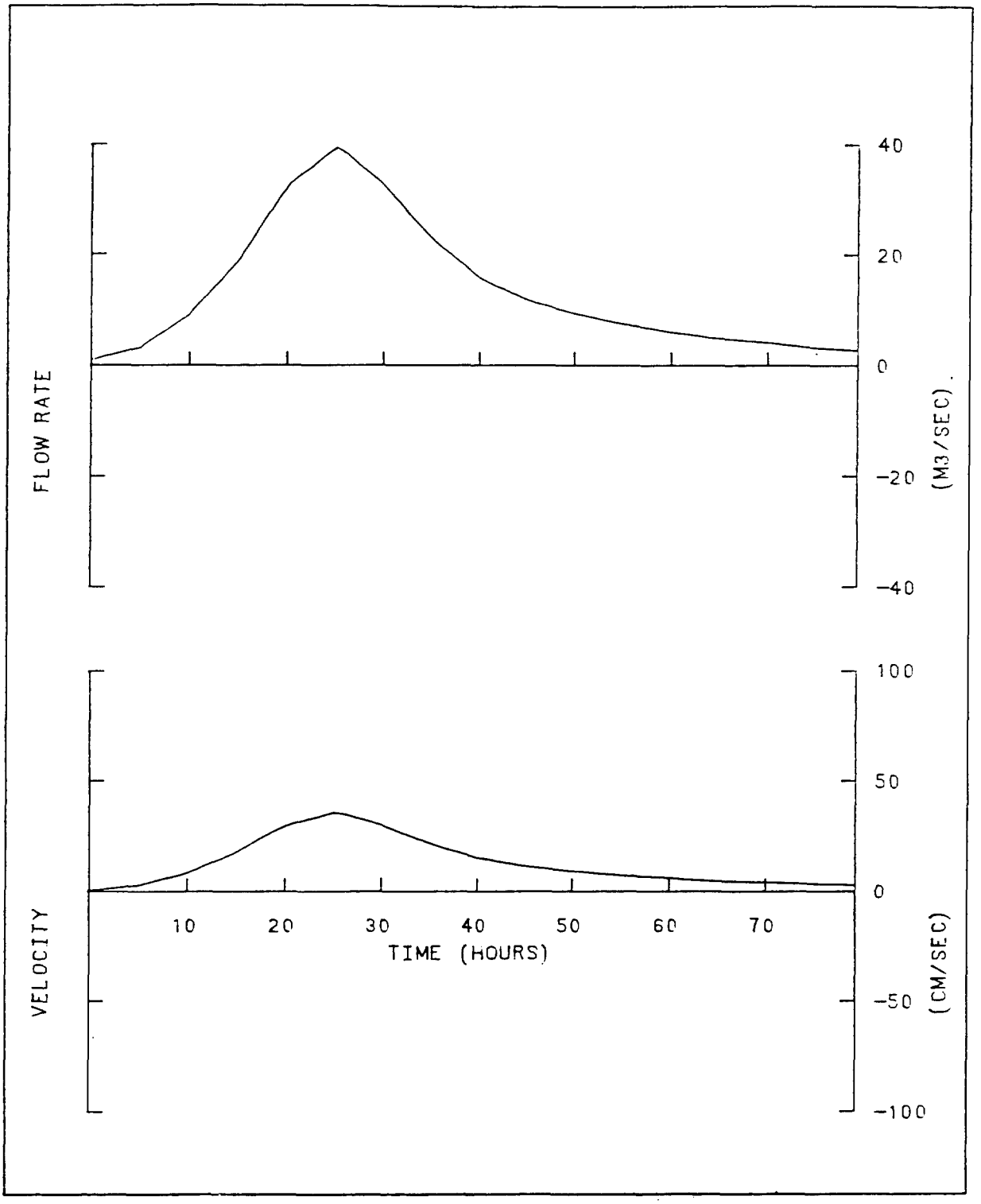

Figure 2.6 Time history of flood flow and velocity at section 6 in the upper estuary (805 m downstream of Wood Street) for the MSL case with the cap in place, after consolidation.

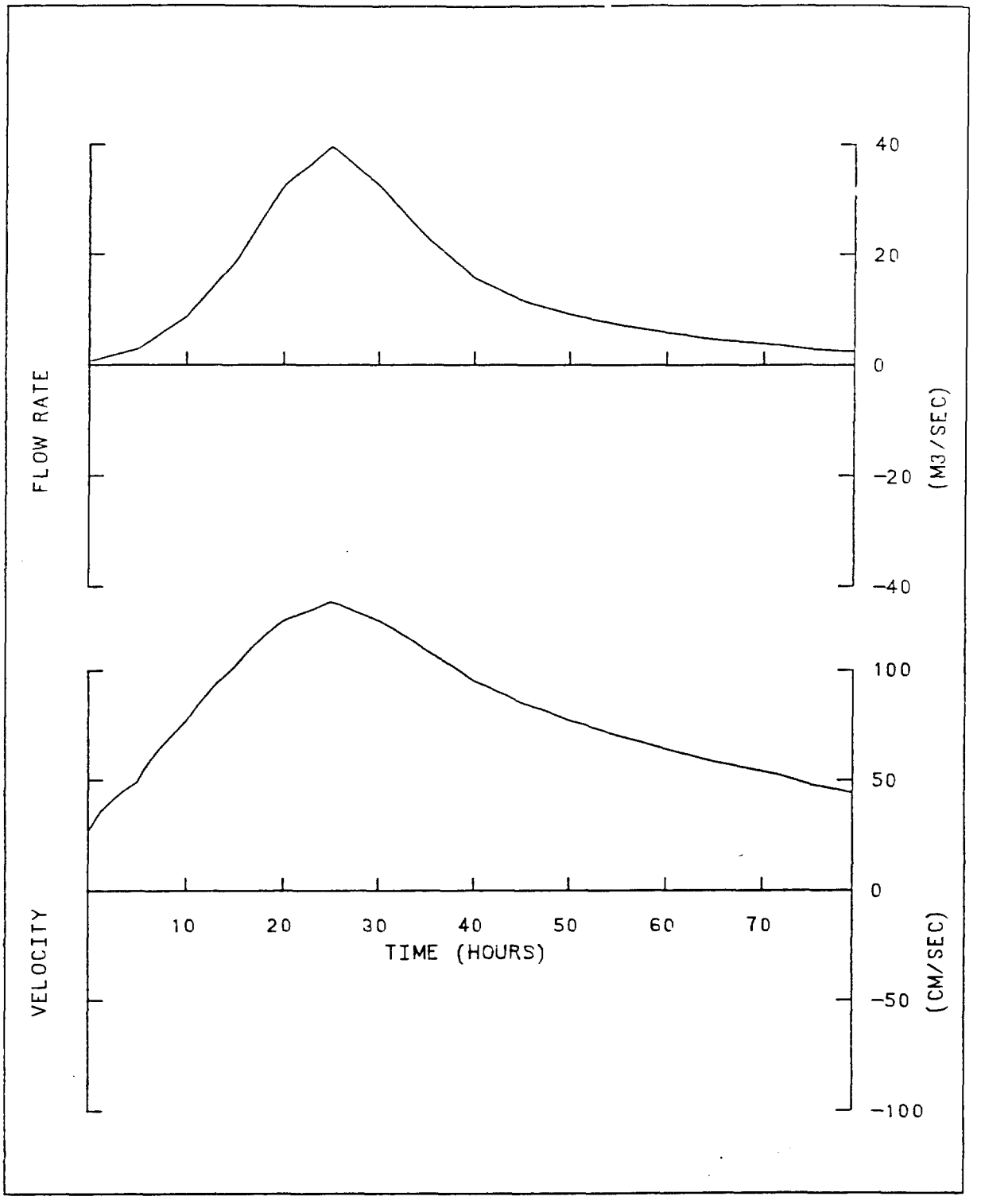

Figure 2.7 Time history of flood flow and velocity at section 2 in the upper estuary (165 m downstream of Wood Street) for the MLW case with the cap in place, after consolidation.

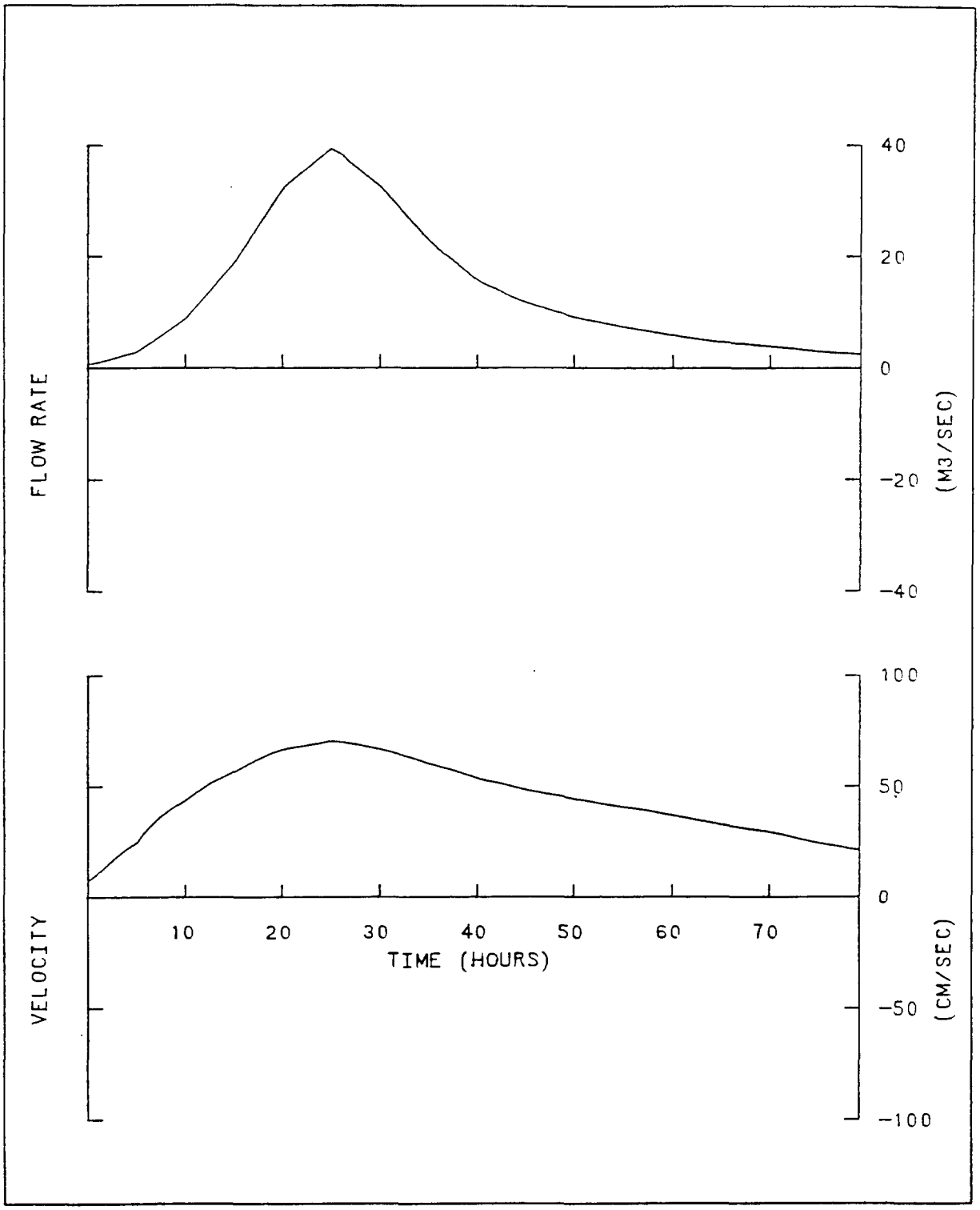

Figure 2.8 Time history of flood flow and velocity at section 6 in the upper estuary (805 m downstream of Wood Street) for the MLW case with the cap in place, after consolidation.

2.3 Comparison with Inlet-Basin Model Results

A companion study (ASA, 1989) used an inlet-basin hydrodynamic model to estimate peak velocities in the upper estuary in response to the same 50-year storm hydrograph used above. The use of a separate model to estimate velocities was done to provide an independent comparison with the DAMBRK model results. Complete details of the inlet model's assumptions and application are given in ASA (1989).

Peak velocities calculated by each model are given in Table 2.4 as a function of distance downstream from Wood Street. The inlet-basin model predicts velocities based on MSL in the channel. The DAMBRK model was run under two scenarios, MSL and MLW, as explained previously. These scenarios were run to simulate mean and worst-case conditions. Tidal fluctuations were not included by either model.

Table 2.4 Maximum velocities in the upper Acushnet River estuary computed by the inlet-basin model and the DAMBRK model, after cap placement and consolidation.

Distance downstream from Wood Street (m)	Inlet model	Velocity (cm/sec) DAMBRK model MSL case	MLW case
165	58.6	119.2	130.8
265	37.1	70.7	85.3
350	33.4	56.7	78.3
430	28.3	41.5	76.8
640	22.9	22.3	47.2
815	19.1	25.3	58.2
1000	13.1	20.7	43.6
1215	12.1	17.1	32.0

Both the inlet-basin and DAMBRK models predict maximum velocities near the head of the estuary and velocities decreasing with increasing distance downstream. Maximum velocities of 119 and 131 cm/sec calculated by the DAMBRK model compare to a maximum of 59 cm/sec calculated by the inlet-basin model. The DAMBRK model continues to predict higher velocities in the rest of the upper estuary, with velocities

approximately a factor of 2 higher than predicted by the inlet-basin model. However, the MSL case of the DAMBRK model is in reasonably good agreement with the results of the inlet-basin model in the estuary reach greater than 640 m (700 yd) downstream of Wood Street.

3. CONCLUSIONS

Applications of the DAMBRK model to the Acushnet River estuary under 50-year storm conditions indicates the maximum velocities are to be expected nearest the head of the estuary. For the 50-year storm hydrograph routed through the estuary, the maximum predicted velocity occurs 165 m south of Wood Street. If a constant water mass below MLW is included, the peak velocity is 130.8 cm/sec; if a constant water mass below MSL is considered, the peak value is 119.2 cm/sec. Peak velocities decrease with increasing distance downstream. Furthermore, peak velocities are of limited duration in response to the shape of the storm hydrograph.

The parameters used for the model application were selected to maximize calculated velocities. The simulations use a low Manning's n. The assumption of constant MLW in the estuary over the 3-day period of the storm flow also increases the predicted velocities. Tidal fluctuations, which would increase the cross-sectional area available for flood flow, were not included. The effect of ignoring the tide is illustrated by comparing the MLW and MSL cases of the DAMBRK application. Velocities in the estuary are lower under MSL conditions and would reduce even more under MHW (mean high water) conditions. The velocities predicted by the DAMBRK MLW case are therefore the maximum values to be expected in response to a 50 to 100-year storm.

Comparison of the model predictions with those of an inlet-basin model under the same flow scenario shows the DAMBRK predictions of peak velocities are approximately twice those of the inlet-basin model in the northernmost portion of the estuary. However, both the inlet-basin model and the DAMBRK model (accounting for water mass below MSL) predict reasonably similar velocities at distances greater than 640 m downstream of Wood Street.

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APPENDIX A

INPUT FILES USED FOR DAMBRK MODEL APPLICATIONS

```
 100 YR STORM       N. B. UPPER W/BALSAM   APPLIED SCIENCE ASSOC
 70 DEAN KNAUSS DR                         NARRAGANSETT, R. I.  02882
          9          0          0          3          17         2
          8         59
  5.        80.
28.       110.       320.       670.       1150.      1397.      1145.      805.
550.      410.       320.       255.       205.       160.       135.       100.
80.
          7          7          6          9          0          0          0          0
          1          2          3          4          5          6
0.
17.5      18.0       18.5       19.5       20.25      22.        23.
0.        30.        55.        102.       185.       190.       200.
0.
0.1023    0.
17.25     17.75      18.25      19.25      20.25      22.        23.
0.        30.        65.        130.       210.       255.       265.
0.
0.2273    0.
17.25     18.25      19.25      19.75      20.25      22.        23.
0.        170.       420.       425.       425.       430.       435.
0.        0.         0.         400.       450.       455.       460.
0.2955    0.
16.75     17.25      17.75      18.25      19.25      22.        23.
0.        50.        220.       420.       720.       725.       730.
0.
0.3977    0.
16.75     17.25      17.75      18.25      18.75      19.25      21.
50.       250.       470.       680.       740.       775.       780.
0.        0.         0.          60.       150.       330.       335.
0.5000
16.25     16.75      17.25      18.25      20.        21.        22.
0.        150.       400.       525.       612.       650.       675.
0.
0.9404
12.25     13.25      15.25      16.25      17.25      20.        22.
0.        125.       362.       450.       538.       700.       788.
0.
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.014      .003       .005       .008       .034       .044       .05
0.00      0.00
0.        0.0        0.         0.75       0.         0.         0.0
20.0      20.0       20.0       20.0       20.0       20.0       20.0       20.0
20.0      20.0       20.0       20.0       20.0       20.0       20.0       20.0
20.0
0.0       5.0        10.0       15.0       20.0       25.        30.        35.
40.       45.        50.        55.        60.        65.        70.        75.
80.
```

MSL CASE

```
 100 YR STORM       N. B. UPPER W/BALSAM   APPLIED SCIENCE ASSOC
 70 DEAN KNAUSS DR                         NARRAGANSETT, R. I. 02882
          9          0          0          3         17          2
          8         39
  5.        80.
28.       110.       320.       670.      1150.      1397.      1145.       805.
550.      410.       320.       255.       205.       160.       135.       100.
80.
          7          7          6          9          0          0          0          0
          1          2          3          4          5          6
0.
17.5      18.0       18.5       19.5       20.25      22.        23.
0.        30.        55.       102.       185.       190.       200.
0.
0.1023    0.
17.25     17.75      18.25      19.25      20.25      22.        23.
0.        30.        65.       130.       210.       255.       265.
0.
0.2273    0.
17.25     18.25      19.25      19.75      20.25      22.        23.
0.       170.       420.       425.       425.       430.       435.
0.        0.         0.       400.       450.       455.       460.
0.2955    0.
16.75     17.25      17.75      18.25      19.25      22.        23.
0.        50.       220.       420.       720.       725.       730.
0.
0.3977    0.
16.75     17.25      17.75      18.25      18.75      19.25      21.
50.       250.       470.       680.       740.       775.       780.
0.        0.         0.         60.       150.       330.       335.
0.5000
16.25     16.75      17.25      18.25      20.        21.        22.
0.       150.       400.       525.       612.       650.       675.
0.
0.9404
12.25     13.25      15.25      16.25      17.25      20.        22.
0.       125.       362.       450.       538.       700.       788.
0.
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.025      .025       .025       .025       .025       .025       .025
.014      .003       .005       .008       .034       .044       .05
0.00      0.00
0.        0.0        0.        0.75        0.         0.        0.0
18.0      18.0       18.0       18.0       18.0       18.0       18.0       18.0
18.0      18.0       18.0       18.0       18.0       18.0       18.0       18.0
18.0
0.0       5.0        10.0       15.0       20.0       25.        30.        35.
40.0      45.        50.        55.        60.        65.        70.        75.
80.
```

MLW CASE

APPENDIX B

OUTPUT FILES FROM DAMBRK MODEL APPLICATIONS

MSL CASE

ANALYSIS OF THE DOWNSTREAM FLOOD HYDROGRAPH

PRODUCED BY THE DAM BREAK OF

100 YR STORM

ON

N. B. UPPER W/BALSAM

ANALYSIS BY

APPLIED SCIENCE ASSOC
70 DEAN KNAUSS DR
NARRAGANSETT, R. I. 02882

BASED ON PROCEDURE DEVELOPED BY
DANNY L. FREAD, PH. D., SR. RESEARCH HYDROLOGIST

QUALITY CONTROL TESTING AND OTHER SUPPORT BY
JANICE M. LEWIS, RESEARCH HYDROLOGIST

HYDROLOGIC RESEARCH LABORATORY
W23, OFFICE OF HYDROLOGY
NOAA, NATIONAL WEATHER SERVICE
SILVER SPRING, MARYLAND 20910

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***                       ***
***  SUMMARY OF INPUT DATA  ***
***                       ***
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INPUT CONTROL PARAMETERS FOR 100 YR STORM

PARAMETER	VARIABLE	VALUE
NUMBER OF DYNAMIC ROUTING REACHES	KKN	9
TYPE OF RESERVOIR ROUTING	KUI	0
MULTIPLE DAM INDICATOR	MULDAM	0
PRINTING INSTRUCTIONS FOR INPUT SUMMARY	KDMP.	3
NO. OF RESERVOIR INFLOW HYDROGRAPH POINTS	ITEH	17
INTERVAL OF CROSS-SECTION INFO PRINTED OUT WHEN JNK=9	NPRT	2
FLOOD-PLAIN MODEL PARAMETER	KFLP	0
METRIC INPUT/OUTPUT OPTION	METRIC	0

(NPT(K),K=1,NPRT) 8 59

DHF(INTERVAL BETWEEN INPUT HYDROGRAPH ORDINATES) = 5.00 HRS.

TEH(TIME AT WHICH COMPUTATIONS TERMINATE)= 80.0000 HRS.

BREX(BREACH EXPONENT) = 0.000

MUD(MUD FLOW OPTION) = 0

IWF(TYPE OF WAVE FRONT TRACKING) = 0

KPRES(WETTED PERIMETER OPTION) = 0

KSL(LANDSLIDE PARAMETER) = 0

INFLOW HYDROGRAPH TO 100 YR STORM
****

28.00	110.00	320.00	670.00	1150.00	1397.00	1145.00	605.00
550.00	410.00	320.00	255.00	205.00	160.00	135.00	100.00
80.00							

TIME OF INFLOW HYDROGRAPH ORDINATES

0.0000	5.0000	10.0000	15.0000	20.0000	25.0000	30.0000	35.0000
40.0000	45.0000	50.0000	55.0000	60.0000	65.0000	70.0000	75.0000
80.0000							

CROSS-SECTIONAL PARAMETERS FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	VARIABLE	VALUE
NUMBER OF CROSS-SECTIONS	NS	7
MAXIMUM NUMBER OF TOP WIDTHS	NCD	7
NUMBER OF CROSS-SECTIONAL HYDROGRAPHS TO PLOT	NTP	6
TYPE OF OUTPUT OTHER THAN HYDROGRAPH PLOTS	JNK	9
CROSS-SECTIONAL SMOOTHING PARAMETER	KSA	0
DOWNSTREAM SUPERCRITICAL OR NOT	KSUPC	0
NO. OF LATERAL INFLOW HYDROGRAPHS	LQ	0
NO. OF POINTS IN GATE CONTROL CURVE	KCG	0

NUMBER OF CROSS-SECTION WHERE HYDROGRAPH DESIRED
(MAX NUMBER OF HYDROGRAPHS = 6)

1 2 3 4 5 6

CROSS-SECTIONAL VARIABLES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE
LOCATION OF CROSS-SECTION	MILE	XS(I)
ELEVATION(MSL) OF FLOODING AT CROSS-SECTION	FEET	FSTG(I)
ELEV CORRESPONDING TO EACH TOP WIDTH	FEET	HS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (ACTIVE FLOW PORTION)	FEET	BS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (OFF-CHANNEL PORTION)	FEET	BSS(K,I)
NUMBER OF CROSS-SECTION		I
NUMBER OF ELEVATION LEVEL		K

CROSS-SECTION NUMBER 1
****

XS(I) = 0.000 FSTG(I) = 0.00

HS ...	17.5	18.0	18.5	19.5	20.3	22.0	23.0
BS ...	0.0	30.0	55.0	102.0	185.0	190.0	200.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 2
****

XS(I) = 0.102 FSTG(I) = 0.00

HS ...	17.3	17.8	18.3	19.3	20.3	22.0	23.0
BS ...	0.0	30.0	65.0	130.0	210.0	255.0	265.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 3
****

XS(I) = 0.227 FSTG(I) = 0.00

HS ...	17.3	18.3	19.3	19.8	20.3	22.0	23.0
BS ...	0.0	170.0	420.0	425.0	425.0	430.0	435.0
BSS ...	0.0	0.0	0.0	400.0	450.0	455.0	460.0

CROSS-SECTION NUMBER 4
****

XS(I) = 0.296 FSTG(I) = 0.00

HS ...	16.8	17.3	17.8	18.3	19.3	22.0	23.0
BS ...	0.0	50.0	220.0	420.0	720.0	725.0	730.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 5
****

XS(I) = 0.398 FSTG(I) = 0.00

HS ...	16.8	17.3	17.8	18.3	18.8	19.3	21.0
BS ...	50.0	250.0	470.0	680.0	740.0	775.0	780.0
BSS ...	0.0	0.0	0.0	60.0	150.0	330.0	335.0

CROSS-SECTION NUMBER 6
****

XS(I) = 0.500 FSTG(I) = 0.00

HS ...	16.3	16.8	17.3	18.3	20.0	21.0	22.0
BS ...	0.0	150.0	400.0	525.0	612.0	650.0	675.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 7
****

XS(I) = 0.940 FSTG(I) = 0.00

HS ...	12.3	13.3	15.3	16.3	17.3	20.0	22.0
BS ...	0.0	125.0	362.0	450.0	538.0	700.0	788.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

HS(1, 3) IS GREATER THAN HS(1, 2).
THIS ADVERSE SLOPE MAY CAUSE PROBLEMS LATER IN THE ROUTING COMPUTATIONS IF THE BASE FLOW IS QUITE SMALL. /

HS(1, 5) IS GREATER THAN HS(1, 4).
THIS ADVERSE SLOPE MAY CAUSE PROBLEMS LATER IN THE ROUTING COMPUTATIONS IF THE BASE FLOW IS QUITE SMALL. /

MANNING N ROUGHNESS COEFFICIENTS FOR THE GIVEN REACHES
(CM(K,I),K=1,NCS) WHERE I = REACH NUMBER
****

REACH	1 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	2 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	3 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	4 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	5 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	6 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025

CROSS-SECTIONAL VARIABLES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE
MINIMUM COMPUTATIONAL DISTANCE USED BETWEEN CROSS-SECTIONS	MILE	DXM(I)
CONTRACTION - EXPANSION COEFFICIENTS BETWEEN CROSS-SECTIONS		FKC(I)

REACH NUMBER	DXM(I)	FKC(I)
1	0.014	0.000
2	0.003	0.000
3	0.005	0.000
4	0.008	0.000
5	0.034	0.000
6	0.044	0.000

DOWNSTREAM FLOW PARAMETERS FOR N.B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE	VALUE
MAX DISCHARGE AT DOWNSTREAM EXTREMITY	CFS	QMAXD	0.0
MAX LATERAL OUTFLOW PRODUCING LOSSES	CFS /FEET	QLL	0.000
INITIAL SIZE OF TIME STEP	HOUR	DTHM	0.0000
INITIAL WATER SURFACE ELEVATION DOWNSTREAM	FEET	YDN	0.75
SLOPE OF CHANNEL DOWNSTREAM OF DAM	FPM	SDM	0.00
THETA WEIGHTING FACTOR		THETA	0.00
CONVERGENCE CRITERION FOR STAGE	FEET	EPSY	0.000
TIME AT WHICH DAM STARTS TO FAIL	HOUR	TFI	0.00

I=	1	XS=	0.00	QS=	2191.	YE=	22.93	DEP=	5.43	TP=	25.00	DXM= 0.00
I=	2	XS=	0.10	QS=	1678.	YE=	21.91	DEP=	4.66	TP=	25.06	DXM= 0.01
I=	3	XS=	0.23	QS=	1539.	YE=	20.73	DEP=	3.48	TP=	25.17	DXM= 0.00
I=	4	XS=	0.30	QS=	1492.	YE=	19.04	DEP=	2.29	TP=	25.21	DXM= 0.00
I=	5	XS=	0.40	QS=	1459.	YE=	18.76	DEP=	2.01	TP=	25.30	DXM= 0.01
I=	6	XS=	0.50	QS=	1444.	YE=	18.32	DEP=	2.07	TP=	25.39	DXM= 0.03
I=	7	XS=	0.94	QS=	1430.	YE=	15.00	DEP=	2.75	TP=	25.60	DXM= 0.04

COMPUTATIONS WILL USE THE FOLLOWING DXM VALUES

0.014 0.003 0.005 0.008 0.034 0.044

DOWNSTREAM STAGE HYDROGRAPH

20. 20. 20. 20. 20. 20. 20. 20.
20. 20. 20. 20. 20. 20. 20. 20.
20.

TIME ORDINATES FOR DOWNSTREAM STAGE HYDROGRAPH

0 5. 10. 15. 20. 25. 30. 35.
40. 45. 50. 55. 60. 65. 70. 75.
00.

TOTAL NUMBER OF CROSS SECTIONS (ORIGINAL+INTERPOLATED) (N) = 87 (MAXINUM ALLOWABLE = 200

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***                       ***
***  SUMMARY OF OUTPUT DATA ***
***                       ***
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CROSS-SECTION NO.	MILE	BOTTOM ELEVATION FEET
1	0.00	17.10
2	0.10	17.25
3	0.23	17.25
4	0.30	16.75
5	0.40	16.75
6	0.50	16.25
7	0.94	12.25

REACH NO.	REACH LENGTH MILE	SLOPE FPM
1	0.10	2.44
2	0.13	0.00
3	0.07	7.00
4	0.10	0.00
5	0.10	4.09
6	0.44	9.08

MESAGE

SLOPE INFORMATION FOR INPUT REACHES

REACH NO.	WATER ELEVATION FEET	HYDRAULIC DEPTH FEET	BOTTOM SLOPE FPM	DYNAMIC SLOPE FPM	TOTAL SLOPE FPM	CRITICAL SLOPE FPM	MANNING'S N
1	17.38	0.13	2.44	0.02	2.46	96.25	0.025
1	17.88	0.23	2.44	0.02	2.47	76.37	0.025
1	18.38	0.50	2.44	0.03	2.47	60.63	0.025
1	19.38	1.02	2.44	0.04	2.48	47.65	0.025
1	20.25	1.30	2.44	0.04	2.48	44.09	0.025
1	22.00	2.81	2.44	0.05	2.49	34.12	0.025
1	23.00	3.66	2.44	0.06	2.50	31.22	0.025
2	17.25	0.23	0.10	0.13	0.23	78.40	0.025
2	18.00	0.46	0.10	0.17	0.27	62.23	0.025
2	18.75	0.85	0.10	0.21	0.31	50.85	0.025
2	19.50	1.30	0.10	0.25	0.35	44.13	0.025
2	20.25	1.74	0.10	0.28	0.38	40.04	0.025
2	22.00	3.30	0.10	0.37	0.47	32.34	0.025
2	23.00	4.21	0.10	0.42	0.52	29.79	0.025
3	17.00	0.22	7.33	0.01	7.34	79.53	0.025
3	17.75	0.44	7.33	0.02	7.35	63.12	0.025
3	18.50	0.72	7.33	0.02	7.35	53.73	0.025
3	19.00	0.98	7.33	0.02	7.35	48.39	0.025
3	19.75	1.41	7.33	0.02	7.36	42.92	0.025
3	22.00	3.77	7.33	0.03	7.37	30.93	0.025
3	23.00	4.73	7.33	0.04	7.37	28.67	0.025
4	16.75	0.16	0.10	0.11	0.21	88.52	0.025

4	17.25	0.27	0.10	0.14	0.24	72.57	0.025
4	17.75	0.47	0.10	0.17	0.27	61.23	0.025
4	18.25	0.71	0.10	0.20	0.30	53.71	0.025
4	19.00	1.17	0.10	0.24	0.34	45.69	0.025
4	20.63	2.72	0.10	0.34	0.44	34.50	0.025
4	22.00	4.08	0.10	0.41	0.51	30.12	0.025
5	16.50	0.15	4.89	0.01	4.90	90.02	0.025
5	17.00	0.28	4.89	0.02	4.90	73.45	0.025
5	17.50	0.47	4.89	0.02	4.91	60.87	0.025
5	18.25	0.98	4.89	0.03	4.91	48.46	0.025
5	19.38	1.87	4.89	0.03	4.92	39.05	0.025
5	20.13	2.48	4.89	0.04	4.92	35.54	0.025
5	21.50	3.82	4.89	0.04	4.93	30.78	0.025
6	14.25	0.18	9.08	0.01	9.09	84.95	0.025
6	15.00	0.36	9.08	0.01	9.10	67.42	0.025
6	16.25	0.95	9.08	0.02	9.10	48.94	0.025
6	17.25	1.63	9.08	0.02	9.11	40.86	0.025
6	18.63	2.68	9.08	0.03	9.11	34.65	0.025
6	20.50	4.01	9.08	0.03	9.11	30.29	0.025
6	22.00	5.17	9.08	0.03	9.12	27.83	0.025

SNC(K,1)= 1.00 1.00 1.00 1.00 1.00 1.00 1.00

NUMBER OF INTERMEDIATE STATIONS NN(NS) 87

NUMBER OF TIME STEPS NNU 17

INITIAL CONDITIONS

I=	1	X=	0.000	YN=	18.56	DEPN=	1.06	YC=	18.05	DEPC=	0.55	IFR= 0	ITN=	9	ITC= 9
I=	2	X=	0.015	YN=	18.53	DEPN=	1.06	YC=	18.02	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	3	X=	0.029	YN=	18.49	DEPN=	1.06	YC=	17.99	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	4	X=	0.044	YN=	18.43	DEPN=	1.06	YC=	17.95	DEPC=	0.55	IFR= 0	ITN=	9	ITC= 9
I=	5	X=	0.058	YN=	18.41	DEPN=	1.05	YC=	17.91	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	6	X=	0.073	YN=	18.37	DEPN=	1.05	YC=	17.88	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	7	X=	0.088	YN=	18.34	DEPN=	1.05	YC=	17.85	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	8	X=	0.102	YN=	18.37	DEPN=	1.12	YC=	17.81	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	9	X=	0.105	YN=	18.38	DEPN=	1.13	YC=	17.79	DEPC=	0.54	IFR= 0	ITN=	9	ITC= 9
I=	10	X=	0.108	YN=	18.39	DEPN=	1.14	YC=	17.77	DEPC=	0.52	IFR= 0	ITN=	9	ITC= 9
I=	11	X=	0.111	YN=	18.40	DEPN=	1.15	YC=	17.76	DEPC=	0.51	IFR= 0	ITN=	9	ITC= 9

I=	12	X=	0.114	YN=	18.40	DEPN=	1.15	YC=	17.75	DEPC=	0.50	IFR=	0	ITN=	9	ITC=	9
I=	13	X=	0.118	YN=	18.41	DEPN=	1.16	YC=	17.74	DEPC=	0.49	IFR=	0	ITN=	9	ITC=	9
I=	14	X=	0.121	YN=	18.41	DEPN=	1.16	YC=	17.73	DEPC=	0.48	IFR=	0	ITN=	9	ITC=	9
I=	15	X=	0.124	YN=	18.42	DEPN=	1.17	YC=	17.72	DEPC=	0.47	IFR=	0	ITN=	9	ITC=	9
I=	16	X=	0.127	YN=	18.42	DEPN=	1.17	YC=	17.72	DEPC=	0.47	IFR=	0	ITN=	9	ITC=	9
I=	17	X=	0.130	YN=	18.42	DEPN=	1.17	YC=	17.70	DEPC=	0.45	IFR=	0	ITN=	9	ITC=	9
I=	18	X=	0.133	YN=	18.42	DEPN=	1.17	YC=	17.70	DEPC=	0.45	IFR=	0	ITN=	9	ITC=	9
I=	19	X=	0.136	YN=	18.43	DEPN=	1.18	YC=	17.69	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	20	X=	0.139	YN=	18.43	DEPN=	1.18	YC=	17.69	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	21	X=	0.142	YN=	18.43	DEPN=	1.18	YC=	17.68	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	22	X=	0.145	YN=	18.43	DEPN=	1.18	YC=	17.68	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	23	X=	0.148	YN=	18.45	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	24	X=	0.151	YN=	18.45	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	25	X=	0.154	YN=	18.45	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	26	X=	0.157	YN=	18.45	DEPN=	1.20	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	27	X=	0.160	YN=	18.45	DEPN=	1.20	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	28	X=	0.163	YN=	18.31	DEPN=	1.06	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	29	X=	0.166	YN=	18.41	DEPN=	1.16	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	30	X=	0.169	YN=	18.39	DEPN=	1.14	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	31	X=	0.172	YN=	18.38	DEPN=	1.13	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	32	X=	0.175	YN=	18.36	DEPN=	1.11	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	33	X=	0.179	YN=	18.34	DEPN=	1.09	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	34	X=	0.182	YN=	18.32	DEPN=	1.07	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	35	X=	0.185	YN=	18.31	DEPN=	1.06	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	36	X=	0.188	YN=	18.29	DEPN=	1.04	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	37	X=	0.191	YN=	18.27	DEPN=	1.02	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	38	X=	0.194	YN=	18.24	DEPN=	0.99	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	39	X=	0.197	YN=	18.22	DEPN=	0.97	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	40	X=	0.200	YN=	18.20	DEPN=	0.95	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	41	X=	0.203	YN=	18.18	DEPN=	0.93	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	42	X=	0.206	YN=	18.15	DEPN=	0.90	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	43	X=	0.209	YN=	18.12	DEPN=	0.87	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	44	X=	0.212	YN=	18.10	DEPN=	0.85	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	45	X=	0.215	YN=	18.06	DEPN=	0.81	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	46	X=	0.218	YN=	18.03	DEPN=	0.78	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	TC=	9
I=	47	X=	0.221	YN=	17.99	DEPN=	0.74	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	48	X=	0.224	YN=	17.93	DEPN=	0.68	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	49	X=	0.227	YN=	17.83	DEPN=	0.58	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	50	X=	0.233	YN=	17.79	DEPN=	0.58	YC=	17.58	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	51	X=	0.238	YN=	17.76	DEPN=	0.59	YC=	17.54	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	52	X=	0.243	YN=	17.72	DEPN=	0.59	YC=	17.51	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	53	X=	0.248	YN=	17.69	DEPN=	0.59	YC=	17.47	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	54	X=	0.254	YN=	17.67	DEPN=	0.61	YC=	17.45	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	55	X=	0.259	YN=	17.63	DEPN=	0.61	YC=	17.41	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	56	X=	0.264	YN=	17.60	DEPN=	0.62	YC=	17.37	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	57	X=	0.269	YN=	17.58	DEPN=	0.63	YC=	17.34	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	58	X=	0.275	YN=	17.54	DEPN=	0.64	YC=	17.31	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	59	X=	0.280	YN=	17.53	DEPN=	0.66	YC=	17.28	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	60	X=	0.285	YN=	17.52	DEPN=	0.69	YC=	17.25	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	61	X=	0.290	YN=	17.50	DEPN=	0.71	YC=	17.23	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	62	X=	0.295	YN=	17.64	DEPN=	0.89	YC=	17.21	DEPC=	0.46	IFR=	0	ITN=	9	ITC=	9
I=	63	X=	0.304	YN=	17.64	DEPN=	0.89	YC=	17.14	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	64	X=	0.313	YN=	17.63	DEPN=	0.88	YC=	17.09	DEPC=	0.34	IFR=	0	ITN=	9	ITC=	9
I=	65	X=	0.321	YN=	17.62	DEPN=	0.87	YC=	17.05	DEPC=	0.30	IFR=	0	ITN=	9	ITC=	9
I=	66	X=	0.330	YN=	17.61	DEPN=	0.86	YC=	17.03	DEPC=	0.28	IFR=	0	ITN=	9	ITC=	9
I=	67	X=	0.338	YN=	17.59	DEPN=	0.84	YC=	17.00	DEPC=	0.25	IFR=	0	ITN=	9	ITC=	9
I=	68	X=	0.347	YN=	17.37	DEPN=	0.62	YC=	16.98	DEPC=	0.23	IFR=	0	ITN=	9	ITC=	9
I=	69	X=	0.355	YN=	17.32	DEPN=	0.57	YC=	16.98	DEPC=	0.23	IFR=	0	ITN=	8	ITC=	8
I=	70	X=	0.364	YN=	17.28	DEPN=	0.53	YC=	16.95	DEPC=	0.20	IFR=	0	ITN=	8	ITC=	8
I=	71	X=	0.372	YN=	17.24	DEPN=	0.49	YC=	16.94	DEPC=	0.19	IFR=	0	ITN=	8	ITC=	8

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I=   72   X=   0.381   YN=    17.19   DEPN=    0.44   YC=    16.94   DEPC=    0.19   IFR= 0   ITN=   0   ITC=   8
I=   73   X=   0.389   YN=    17.16   DEPN=    0.41   YC=    16.93   DEPC=    0.18   IFR= 0   ITN=   0   ITC=   8
I=   74   X=   0.398   YN=    17.11   DEPN=    0.36   YC=    16.92   DEPC=    0.17   IFR= 0   ITN=   0   ITC=   8
I=   75   X=   0.432   YN=    16.98   DEPN=    0.40   YC=    16.78   DEPC=    0.19   IFR= 0   ITN=   0   ITC=   8
I=   76   X=   0.466   YN=    16.89   DEPN=    0.44   YC=    16.66   DEPC=    0.24   IFR= 0   ITN=   9   ITC=   9
I=   77   X=   0.500   YN=    16.70   DEPN=    0.45   YC=    16.55   DEPC=    0.30   IFR= 0   ITN=   9   ITC=   9
I=   78   X=   0.544   YN=    16.32   DEPN=    0.47   YC=    16.16   DEPC=    0.31   IFR= 0   ITN=   9   ITC=   9
I=   79   X=   0.588   YN=    15.94   DEPN=    0.49   YC=    15.76   DEPC=    0.31   IFR= 0   ITN=   9   ITC=   9
I=   80   X=   0.632   YN=    15.56   DEPN=    0.51   YC=    15.38   DEPC=    0.33   IFR= 0   ITN=   9   ITC=   9
I=   81   X=   0.676   YN=    15.17   DEPN=    0.52   YC=    15.00   DEPC=    0.35   IFR= 0   ITN=   9   ITC=   9
I=   82   X=   0.720   YN=    14.79   DEPN=    0.54   YC=    14.61   DEPC=    0.36   IFR= 0   ITN=   9   ITC=   9
I=   83   X=   0.764   YN=    14.42   DEPN=    0.57   YC=    14.22   DEPC=    0.37   IFR= 0   ITN=   9   ITC=   9
I=   84   X=   0.808   YN=    14.03   DEPN=    0.58   YC=    13.83   DEPC=    0.38   IFR= 0   ITN=   9   ITC=   9
I=   85   X=   0.852   YN=    13.64   DEPN=    0.59   YC=    13.44   DEPC=    0.39   IFR= 0   ITN=   9   ITC=   9
I=   86   X=   0.896   YN=    13.26   DEPN=    0.61   YC=    13.06   DEPC=    0.41   IFR= 0   ITN=   9   ITC=   9
I=   87   X=   0.940   YN=    12.87   DEPN=    0.62   YC=    12.66   DEPC=    0.41   IFR= 0   ITN=   9   ITC=   9

      (IFR(I),I=1,N)
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0

 IN=   87      YNN=     20.00     DEP=     7.75
      I=   86      X=   0.896    GIL=     28.    YIL=    20.00    DEP=    7.35    ITB=   5
      I=   85      X=   0.852    GIL=     28.    YIL=    20.00    DEP=    6.95    ITB=   4
      I=   84      X=   0.808    GIL=     28.    YIL=    20.00    DEP=    6.55    ITB=   4
      I=   83      X=   0.764    GIL=     28.    YIL=    20.00    DEP=    6.15    ITB=   4
      I=   82      X=   0.720    GIL=     28.    YIL=    20.00    DEP=    5.75    ITB=   4
      I=   81      X=   0.676    GIL=     28.    YIL=    20.00    DEP=    5.35    ITB=   4
      I=   80      X=   0.632    GIL=     28.    YIL=    20.00    DEP=    4.95    ITB=   4
      I=   79      X=   0.588    GIL=     28.    YIL=    20.00    DEP=    4.55    ITB=   4
      I=   78      X=   0.544    GIL=     28.    YIL=    20.00    DEP=    4.15    ITB=   4
      I=   77      X=   0.500    GIL=     28.    YIL=    20.00    DEP=    3.75    ITB=   4
      I=   76      X=   0.466    GIL=     28.    YIL=    20.00    DEP=    3.59    ITB=   4
      I=   75      X=   0.432    GIL=     28.    YIL=    20.00    DEP=    3.42    ITB=   4
      I=   74      X=   0.398    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   73      X=   0.389    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   72      X=   0.381    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   71      X=   0.372    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   70      X=   0.364    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   69      X=   0.355    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   68      X=   0.347    GIL=     28.    YIL=    20.00    DEP=    3.25    ITB=   4
      I=   67      X=   0.338    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   66      X=   0.330    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   65      X=   0.321    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   64      X=   0.313    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   63      X=   0.304    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   62      X=   0.295    GIL=     28.    YIL=    20.01    DEP=    3.26    ITB=   4
      I=   61      X=   0.290    GIL=     28.    YIL=    20.01    DEP=    3.22    ITB=   4
      I=   60      X=   0.285    GIL=     28.    YIL=    20.01    DEP=    3.18    ITB=   4
      I=   59      X=   0.280    GIL=     28.    YIL=    20.01    DEP=    3.15    ITB=   4
      I=   58      X=   0.275    GIL=     28.    YIL=    20.01    DEP=    3.11    ITB=   4
```

I=	57	X=	0.269	QIL=	28.	YIL=	20.01	DEP=	3.07	ITB=	4
I=	56	X=	0.264	QIL=	28.	YIL=	20.01	DEP=	3.03	ITB=	4
I=	55	X=	0.259	QIL=	28.	YIL=	20.02	DEP=	3.00	ITB=	4
I=	54	X=	0.254	QIL=	28.	YIL=	20.02	DEP=	2.96	ITB=	4
I=	53	X=	0.248	QIL=	28.	YIL=	20.02	DEP=	2.92	ITB=	4
I=	52	X=	0.243	QIL=	28.	YIL=	20.02	DEP=	2.89	ITB=	4
I=	51	X=	0.238	QIL=	28.	YIL=	20.02	DEP=	2.85	ITB=	4
I=	50	X=	0.233	QIL=	28.	YIL=	20.02	DEP=	2.81	ITB=	4
I=	49	X=	0.227	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	48	X=	0.224	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	47	X=	0.221	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	46	X=	0.218	QIL=	28	YIL=	20.03	DEP=	2.78	ITB=	4
I=	45	X=	0.215	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	44	X=	0.212	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	43	X=	0.209	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	42	X=	0.206	QIL=	28.	YIL=	20.03	DEP=	2.78	ITB=	4
I=	41	X=	0.203	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	40	X=	0.200	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	39	X=	0.197	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	38	X=	0.194	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	37	X=	0.191	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	36	X=	0.188	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	35	X=	0.185	QIL=	28.	YIL=	20.04	DEP=	2.79	ITB=	4
I=	34	X=	0.182	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	33	X=	0.179	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	32	X=	0.175	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	31	X=	0.172	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	30	X=	0.169	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	29	X=	0.166	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	28	X=	0.163	QIL=	28.	YIL=	20.05	DEP=	2.80	ITB=	4
I=	27	X=	0.160	QIL=	28.	YIL=	20.06	DEP=	2.81	ITB=	4
I=	26	X=	0.157	QIL=	28.	YIL=	20.06	DEP=	2.81	ITB=	4
I=	25	X=	0.154	QIL=	28.	YIL=	20.06	DEP=	2.81	ITB=	4
I=	24	X=	0.151	QIL=	28.	YIL=	20.06	DEP=	2.81	ITB=	4
I=	23	X=	0.148	QIL=	28.	YIL=	20.06	DEP=	2.81	ITB=	4
I=	22	X=	0.145	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	4
I=	21	X=	0.142	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	4
I=	20	X=	0.139	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	19	X=	0.136	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	18	X=	0.133	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	17	X=	0.130	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	16	X=	0.127	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	15	X=	0.124	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	14	X=	0.121	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	13	X=	0.118	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	12	X=	0.114	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	11	X=	0.111	QIL=	28	YIL=	20.07	DEP=	2.82	ITB=	5
I=	10	X=	0.108	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	9	X=	0.105	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	8	X=	0.102	QIL=	28.	YIL=	20.07	DEP=	2.82	ITB=	5
I=	7	X=	0.088	QIL=	28.	YIL=	20.07	DEP=	2.78	ITB=	5
I=	6	X=	0.073	QIL=	28.	YIL=	20.07	DEP=	2.75	ITB=	5
I=	5	X=	0.058	QIL=	28.	YIL=	20.07	DEP=	2.71	ITB=	5
I=	4	X=	0.044	QIL=	28.	YIL=	20.07	DEP=	2.68	ITB=	5
I=	3	X=	0.029	QIL=	28.	YIL=	20.07	DEP=	2.64	ITB=	5
I=	2	X=	0.015	QIL=	28.	YIL=	20.07	DEP=	2.60	ITB=	5
I=	1	X=	0.000	QIL=	28.	YIL=	20.07	DEP=	2.57	ITB=	5

INITIAL CONDITIONS

(QDI(I), I=1, N)

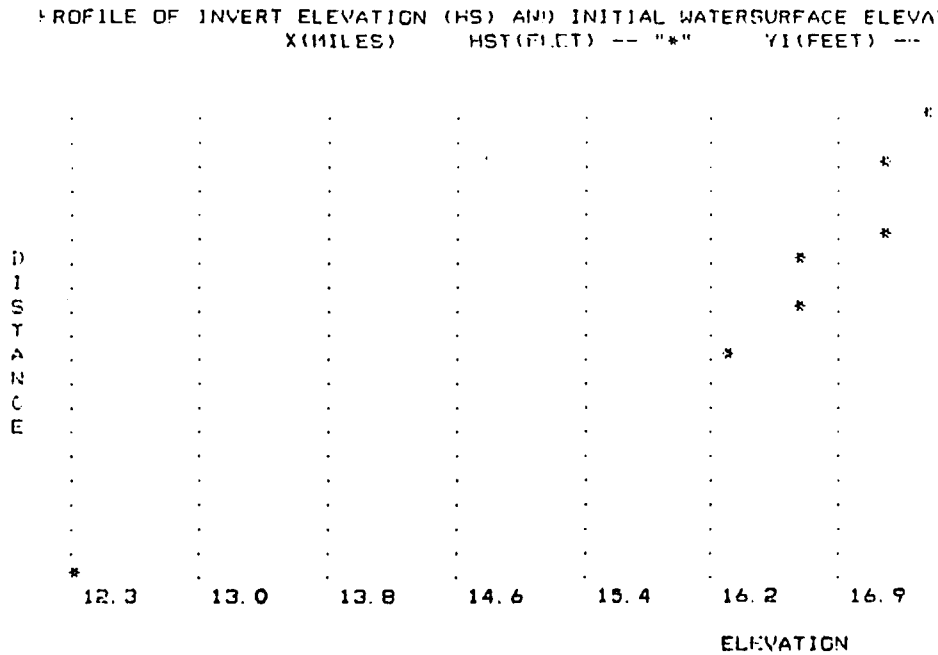
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	

(YI(I), I=1, N)

20.07	20.07	20.07	20.07	20.07	20.07	20.07	20.07
20.07	20.07	20.07	20.07	20.07	20.07	20.07	20.07
20.07	20.07	20.07	20.07	20.07	20.07	20.06	20.06
20.06	20.06	20.06	20.05	20.05	20.05	20.05	20.05
20.05	20.05	20.04	20.04	20.04	20.04	20.04	20.04
20.04	20.03	20.03	20.03	20.03	20.03	20.03	20.03
20.03	20.02	20.02	20.02	20.02	20.02	20.02	20.01
20.01	20.01	20.01	20.01	20.01	20.01	20.01	20.01
20.01	20.01	20.01	20.00	20.00	20.00	20.00	20.00
20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
20.00	20.00	20.00	20.00	20.00	20.00	20.00	

PROFILE OF INVERT ELEVATION (HS) AND INITIAL WATERSURFACE ELEVATION (YI) ALONG WATERWAY (X)

X(MILES) HST(FEET) -- "*" YI(FEET) -- "+"



X	HS	YI	DEPTH
0.00	17.50	20.07	2.57
0.10	17.25	20.07	2.82
0.23	17.25	20.03	2.78
0.30	16.75	20.01	3.26
0.40	16.75	20.00	3.25
0.50	16.25	20.00	3.75
0.94	12.25	20.00	7.75

TIME PARAMETERS OF OUTFLOW HYDROGRAPH IMMEDIATELY DOWNSTREAM OF DAM

PARAMETER	UNITS	VARIABLE	VALUE
TIME TO FAILURE	HR	TFH	25.000
TIME TO START OF RISING LIMB OF HYDROGRAPH	HR	TFQ	0.000
TIME TO PEAK	HR	TP	25.000
TIME STEP SIZE	HR	DTHI	1.250

TT = 0.0000 DTH = 1.2500 ITERR = 0
GU(1) = 28.00 YU(1) = 20.07 GU(N) = 28.00 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	20.07	0.11	262.	195.	195.	0.028	0.0250	0.00	0.00	0.0	0.0	2.82
59	0.280	20.01	0.02	1122.	653.	757.	0.028	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.03 IIFR= 1 FRM=0.00 IIFM= 87

TT = 0.0000 DTH = 1.2500 ITERR = 1
GU(1) = 28.00 YU(1) = 20.07 GU(N) = 47.71 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	20.07	0.12	262.	195.	195.	0.032	0.0250	0.00	0.00	0.0	0.0	2.82
59	0.280	20.01	0.04	1122.	653.	757.	0.044	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.03 IIFR= 1 FRM=0.00 IIFM= 87

TT = 0.0000 DTH = 1.2500 ITERR = 1
GU(1) = 28.00 YU(1) = 20.07 GU(N) = 35.03 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	20.07	0.11	262.	195.	195.	0.029	0.0250	0.00	0.00	0.0	0.0	2.82
59	0.280	20.01	0.03	1122.	653.	757.	0.034	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.03 IIFR= 1 FRM=0.00 IIFM= 87

TT = 1.2500 DTH = 1.2500 ITERR = 1
GU(1) = 48.50 YU(1) = 20.07 GU(N) = 63.17 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.20	262.	195.	195.	0.051	0.0250	0.00	0.00	0.0	0.0	2.82
59	0.280	20.01	0.05	1122.	653.	757.	0.061	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.04 IIFR= 1 FRM=0.00 IIFM= 87

TT = 2.5000 DTH = 1.2500 ITERR = 1
GU(1) = 69.00 YU(1) = 20.07 GU(N) = 78.39 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.27	262.	195.	195.	0.071	0.0250	0.00	0.00	0.0	0.0	2.82
59	0.280	20.01	0.07	1122.	653.	757.	0.077	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.06 IIFR= 1 FRM=0.00 IIFM= 87

TT = 3.7500 DTH = 1.2500 ITERR = 1
GU(1) = 89.50 YU(1) = 20.07 GU(N) = 101.76 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.35	262.	195.	195.	0.092	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.09	1122.	653.	757.	0.100	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.08 IIFR= 1 FRM=0.00 IIFM= 87

TT = 5.0000 DTH = 1.2500 ITERR = 1
GU(1) = 110.00 YU(1) = 20.07 GU(N) = 119.77 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.43	262.	195.	195.	0.112	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.11	1122.	653.	757.	0.118	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.10 IIFR= 1 FRM=0.00 IIFM= 87

TT = 6.2500 DTH = 1.2500 ITERR = 1
GU(1) = 162.50 YU(1) = 20.07 GU(N) = 171.66 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.62	262.	195.	195.	0.164	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.15	1122.	653.	757.	0.170	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.15 IIFR= 1 FRM=0.00 IIFM= 87

TT = 7.5000 DTH = 1.2500 ITERR = 1
GU(1) = 215.00 YU(1) = 20.13 GU(N) = 221.75 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.82	262.	195.	195.	0.215	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.20	1122.	653.	757.	0.221	0.0250	0.00	0.00	0.0	0.0	3.15

GU(1) = 670.00 YU(1) = 20.67 GU(N) = 665.19 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.17	2.37	282.	203.	203.	0.668	0.0250	0.00	0.10	0.0	0.4	2.92
59	0.280	20.03	0.59	1132.	653.	757.	0.666	0.0250	0.00	0.02	0.0	0.1	3.16

FRDM= 0.36 IIFR= 8 FRM=0.02 IIFM= 87

TT = 16.2500 DTH = 1.2500 ITERR = 1
GU(1) = 790.00 YU(1) = 20.79 GU(N) = 781.72 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.22	2.69	293.	208.	208.	0.787	0.0250	0.00	0.15	0.0	0.4	2.97
59	0.280	20.04	0.69	1139.	653.	757.	0.784	0.0250	0.00	0.03	0.0	0.1	3.17

FRDM= 0.40 IIFR= 8 FRM=0.02 IIFM= 87

TT = 17.5000 DTH = 1.2500 ITERR = 1
GU(1) = 910.00 YU(1) = 20.92 GU(N) = 902.88 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.28	2.97	303.	211.	211.	0.908	0.0250	0.00	0.21	0.0	0.4	3.03
59	0.280	20.05	0.79	1146.	653.	757.	0.905	0.0250	0.00	0.04	0.0	0.1	3.18

FRDM= 0.44 IIFR= 8 FRM=0.02 IIFM= 87

TT = 18.7500 DTH = 1.2500 ITERR = 1
GU(1) = 1030.00 YU(1) = 21.03 GU(N) = 1021.42 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.34	3.23	318.	212.	212.	1.028	0.0250	0.00	0.27	0.0	0.5	3.09
59	0.280	20.06	0.89	1154.	653.	757.	1.024	0.0250	0.00	0.05	0.0	0.1	3.19

FRDM= 0.47 IIFR= 8 FRM=0.03 IIFM= 87

TT = 20.0000 DTH = 1.2500 ITERR = 1
GU(1) = 1150.00 YU(1) = 21.14 GU(N) = 1141.51 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.40	3.47	331.	214.	214.	1.148	0.0250	0.00	0.33	0.0	0.5	3.15
59	0.280	20.07	0.98	1163.	653.	757.	1.144	0.0250	0.00	0.06	0.0	0.1	3.21

FRDM= 0.49 IIFR= 8 FRM=0.03 IIFM= 87

TT = 21.2500 DTH = 1.2500 ITERR = 0
GU(1) = 1211.75 YU(1) = 21.19 GU(N) = 1209.93 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.43	3.59	337.	215.	215.	1.211	0.0250	0.00	0.36	0.0	0.5	3.18

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59      0.280    20.03      1.04     1168.      653.      757.       1.211   0.0250      0.00      0.07      0.0      0.1      3.22
        FRDM=    0.50  IIFR=    8  FRM=0.03 IIFM=   87


        TT =  22.5000          DTH =  1.2500          ITERR =   1
        QU(1) =    1273.50     YU(1) =      21.25  QU(N) =    1267.04  YU(N) =      20.00

 I      X(I)       Y          V          A          B          BT         Q          CMM        FKC       WAVHT     DISV     FRD     DEPTH
****    ******* *********   *******  ********  ********   *******  *********  ********   *******   *******  ******  ******  ********
 8      0.102    20.46      3.70      344.      215.      215.       1.272   0.0250      0.00      0.39      0.0      0.5      3.21
59      0.280    20.09      1.08     1173.      653.      757.       1.269   0.0250      0.00      0.08      0.0      0.1      3.22
        FRDM=    0.52  IIFR=    8  FRM=0.03 IIFM=   87


        TT =  23.7500          DTH =  1.2500          ITERR =   1
        QU(1) =    1335.25     YU(1) =      21.30  QU(N) =    1331.52  YU(N) =      20.00

 I      X(I)       Y          V          A          B          BT         Q          CMM        FKC       WAVHT     DISV     FRD     DEPTH
****    ******* *********   *******  ********  ********   *******  *********  ********   *******   *******  ******  ******  ********
 8      0.102    20.49      3.81      350.      216.      216.       1.334   0.0250      0.00      0.42      0.0      0.5      3.24
59      0.280    20.10      1.13     1179.      653.      757.       1.333   0.0250      0.00      0.09      0.0      0.1      3.23
        FRDM=    0.53  IIFR=    8  FRM=0.04 IIFM=   87


        TT =  25.0000          DTH =  1.2500          ITERR =   1
        QU(1) =    1397.00     YU(1) =      21.35  QU(N) =    1391.54  YU(N) =      20.00

 I      X(I)       Y          V          A          B          BT         Q          CMM        FKC       WAVHT     DISV     FRD     DEPTH
****    ******* *********   *******  ********  ********   *******  *********  ********   *******   *******  ******  ******  ********
 8      0.102    20.52      3.91      357.      217.      217.       1.396   0.0250      0.00      0.45      0.0      0.5      3.27
59      0.280    20.11      1.18     1184.      653.      757.       1.393   0.0250      0.00      0.09      0.0      0.2      3.24
        FRDM=    0.54  IIFR=    8  FRM=0.04 IIFM=   87


        TT =  26.2500          DTH =  1.2500          ITERR =   1
        QU(1) =    1334.00     YU(1) =      21.30  QU(N) =    1345.67  YU(N) =      20.00

 I      X(I)       Y          V          A          B          BT         Q          CMM        FKC       WAVHT     DISV     FRD     DEPTH
****    ******* *********   *******  ********  ********   *******  *********  ********   *******   *******  ******  ******  ********
 8      0.102    20.49      3.81      351.      216.      216.       1.337   0.0250      0.00      0.43      0.0      0.5      3.24
59      0.280    20.10      1.14     1178.      653.      757.       1.341   0.0250      0.00      0.09      0.0      0.1      3.23
        FRDM=    0.53  IIFR=    8  FRM=0.04 IIFM=   87


        TT =  27.5000          DTH =  1.2500          ITERR =   1
        QU(1) =    1271.00     YU(1) =      21.25  QU(N) =    1271.70  YU(N) =      20.00

 I      X(I)       Y          V          A          B          BT         Q          CMM        FKC       WAVHT     DISV     FRD     DEPTH
****    ******* *********   *******  ********  ********   *******  *********  ********   *******   *******  ******  ******  ********
 8      0.102    20.46      3.70      344.      215.      215.       1.271   0.0250      0.00      0.39      0.0      0.5      3.21
59      0.280    20.09      1.08     1173.      653.      757.       1.272   0.0250      0.00      0.08      0.0      0.1      3.22
        FRDM=    0.52  IIFR=    8  FRM=0.03 IIFM=   87
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TT = 28.7500 DTH = 1.2500 ITERR = 1
GU(1) = 1208.00 YU(1) = 21.19 GU(N) = 1215.13 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.43	3.59	327.	215.	215.	1.210	0.0250	0.00	0.36	0.0	0.5	3.18
59	0.280	20.08	1.04	1168.	653.	757.	1.213	0.0250	0.00	0.07	0.0	0.1	3.22

FRDM= 0.50 IIFR= 8 FRM=0.03 IIFM= 87

TT = 30.0000 DTH = 1.2500 ITERR = 1
GU(1) = 1145.00 YU(1) = 21.14 GU(N) = 1148.32 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.40	3.47	330.	214.	214.	1.146	0.0250	0.00	0.33	0.0	0.5	3.15
59	0.280	20.07	0.99	1162.	653	757.	1.147	0.0250	0.00	0.06	0.0	0.1	3.21

FRDM= 0.49 IIFR= 8 FRM=0.03 IIFM= 87

TT = 31.2500 DTH = 1.2500 ITERR = 1
GU(1) = 1060.00 YU(1) = 21.06 GU(N) = 1067.84 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.36	3.30	321.	213.	213.	1.062	0.0250	0.00	0.29	0.0	0.5	3.11
59	0.280	20.06	0.92	1156.	653.	757.	1.065	0.0250	0.00	0.05	0.0	0.1	3.20

FRDM= 0.47 IIFR= 8 FRM=0.03 IIFM= 87

TT = 32.5000 DTH = 1.2500 ITERR = 1
GU(1) = 975.00 YU(1) = 20.98 GU(N) = 979.84 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.31	3.13	312.	212.	212.	0.976	0.0250	0.00	0.25	0.0	0.5	3.06
59	0.280	20.05	0.85	1149.	653.	757.	0.978	0.0250	0.00	0.04	0.0	0.1	3.19

FRDM= 0.45 IIFR= 8 FRM=0.03 IIFM= 87

TT = 33.7500 DTH = 1.2500 ITERR = 1
GU(1) = 890.00 YU(1) = 20.90 GU(N) = 896.16 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.27	2.94	303.	211.	211.	0.892	0.0250	0.00	0.21	0.0	0.4	3.02
59	0.280	20.04	0.78	1144.	653.	757.	0.894	0.0250	0.00	0.03	0.0	0.1	3.18

FRDM= 0.43 IIFR= 8 FRM=0.02 IIFM= 87

TT = 35.0000 DTH = 1.2500 ITERR = 1
GU(1) = 805.00 YU(1) = 20.81 GU(N) = 810.11 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********

8	0.102	20.23	2.74	295.	208.	208.	0.807	0.0250	0.00	0.16	0.0	0.4	2.98
59	0.280	20.04	0.71	1139.	653.	757.	0.809	0.0250	0.00	0.03	0.0	0.1	3.17

FRDM= 0.41 IIFR= 8 FRM=0.02 IIFM= 87

TT = 36.2500 DTH = 1.2500 ITERR = 1
GU(1) = 741.25 YU(1) = 20.74 GU(N) = 744.24 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.20	2.59	288.	206.	206.	0.742	0.0250	0.00	0.13	0.0	0.4	2.95
59	0.280	20.03	0.65	1133.	653.	757.	0.744	0.0250	0.00	0.02	0.0	0.1	3.17

FRDM= 0.38 IIFR= 8 FRM=0.02 IIFM= 87

TT = 37.5000 DTH = 1.2500 ITERR = 1
GU(1) = 677.50 YU(1) = 20.68 GU(N) = 681.88 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.17	2.41	282.	204.	204.	0.679	0.0250	0.00	0.10	0.0	0.4	2.92
59	0.280	20.03	0.60	1132.	653.	757.	0.681	0.0250	0.00	0.01	0.0	0.1	3.16

FRDM= 0.36 IIFR= 8 FRM=0.02 IIFM= 87

TT = 38.7500 DTH = 1.2500 ITERR = 1
GU(1) = 613.75 YU(1) = 20.60 GU(N) = 616.87 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.14	2.22	277.	201.	201.	0.615	0.0250	0.00	0.08	0.0	0.3	2.89
59	0.280	20.02	0.55	1129.	653.	757.	0.616	0.0250	0.00	0.01	0.0	0.1	3.16

FRDM= 0.33 IIFR= 8 FRM=0.02 IIFM= 87

TT = 40.0000 DTH = 1.2500 ITERR = 1
GU(1) = 550.00 YU(1) = 20.53 GU(N) = 553.68 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.12	2.03	271.	199.	199.	0.551	0.0250	0.00	0.05	0.0	0.3	2.87
59	0.280	20.02	0.49	1126.	653.	757.	0.553	0.0250	0.00	0.01	0.0	0.1	3.15

FRDM= 0.31 IIFR= 6 FRM=0.01 IIFM= 87

TT = 41.2500 DTH = 1.2500 ITERR = 0
GU(1) = 515.00 YU(1) = 20.49 GU(N) = 515.49 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.10	1.92	269.	198.	198.	0.515	0.0250	0.00	0.04	0.0	0.3	2.85
59	0.280	20.02	0.46	1125.	653.	757.	0.515	0.0250	0.00	0.00	0.0	0.1	3.15

FRDM= 0.30 IIFR= 5 FRM=0.01 IIFM= 87

TT = 42.5000 DTH = 1.2500 ITERR = 1
GU(1) = 480.00 YU(1) = 20.45 GU(N) = 483.87 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.09	1.81	266.	197.	197.	0.481	0.0250	0.00	0.02	0.0	0.3	2.84
59	0.280	20.01	0.43	1123.	653	757.	0.483	0.0250	0.00	0.00	0.0	0.1	3.15

FRDM= 0.29 IIFR= 1 FRM=0.01 IIFM= 87

TT = 43.7500 DTH = 1.2500 ITERR = 1
GU(1) = 445.00 YU(1) = 20.40 GU(N) = 447.87 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.08	1.69	264.	196.	196.	0.446	0.0250	0.00	0.01	0.0	0.3	2.83
59	0.280	20.01	0.40	1122.	653.	757.	0.448	0.0250	0.00	0.00	0.0	0.1	3.15

FRDM= 0.28 IIFR= 1 FRM=0.01 IIFM= 87

TT = 45.0000 DTH = 1.2500 ITERR = 1
GU(1) = 410.00 YU(1) = 20.36 GU(N) = 414.80 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	1.57	262.	195.	195.	0.411	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.37	1122.	653.	757.	0.414	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.27 IIFR= 1 FRM=0.01 IIFM= 87

TT = 46.2500 DTH = 1.2500 ITERR = 1
GU(1) = 387.50 YU(1) = 20.33 GU(N) = 391.45 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	1.48	262.	195.	195.	0.388	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.35	1122.	653.	757.	0.391	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.27 IIFR= 1 FRM=0.01 IIFM= 87

TT = 47.5000 DTH = 1.2500 ITERR = 1
GU(1) = 365.00 YU(1) = 20.31 GU(N) = 370.47 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	1.40	262.	195.	195.	0.366	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.33	1122.	653.	757.	0.370	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.26 IIFR= 1 FRM=0.01 IIFM= 87

TT = 48.7500 DTH = 1.2500 ITERR = 1
GU(1) = 342.50 YU(1) = 20.28 GU(N) = 347.86 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	1.31	262.	195.	195.	0.343	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.31	1122.	653.	757.	0.347	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.25 IIFR= 1 FRM=0.01 IIFM= 87

TT = 50.0000 DTH = 1.2500 ITERR = 1
GU(1) = 320.00 YU(1) = 20.25 GU(N) = 326.31 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	1.22	262.	195.	195.	0.321	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.29	1122.	653.	757.	0.326	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.24 IIFR= 1 FRM=0.01 IIFM= 87

TT = 51.2625 DTH = 1.2625 ITERR = 1
GU(1) = 303.59 YU(1) = 20.23 GU(N) = 309.75 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	1.16	262.	195.	195.	0.304	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.28	1122.	653.	757.	0.309	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.24 IIFR= 1 FRM=0.01 IIFM= 87

TT = 52.5376 DTH = 1.2751 ITERR = 1
GU(1) = 287.01 YU(1) = 20.21 GU(N) = 293.89 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	1.10	262.	195.	195.	0.288	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.26	1122.	653.	757.	0.293	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.23 IIFR= 1 FRM=0.01 IIFM= 87

TT = 53.8255 DTH = 1.2879 ITERR = 1
GU(1) = 270.27 YU(1) = 20.19 GU(N) = 277.25 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	1.03	262.	195	195.	0.271	0.0250	0.00	0.00	0.0	0.2	2.82
59	0.280	20.01	0.25	1122.	653.	757.	0.276	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.22 IIFR= 1 FRM=0.01 IIFM= 87

TT = 55.1263 DTH = 1.3008 ITERR = 1
GU(1) = 253.74 YU(1) = 20.17 GU(N) = 261.29 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.97	262.	195.	195.	0.254	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.23	1122.	653.	757.	0.260	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.21 IIFR= 1 FRM=0.01 IIFM= 87

TT = 56.4400 DTH = 1.3138 ITERR = 1
GU(1) = 240.60 YU(1) = 20.15 QU(N) = 248.21 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CHM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	0.92	262.	195.	195.	0.241	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.22	1122.	653.	757.	0.247	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.20 IIFR= 1 FRM=0.01 IIFM= 87

TT = 57.7669 DTH = 1.3269 ITERR = 1
GU(1) = 227.33 YU(1) = 20.14 QU(N) = 235.34 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CHM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	0.87	262.	195.	195.	0.228	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.21	1122.	653.	757.	0.234	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.19 IIFR= 1 FRM=0.01 IIFM= 87

TT = 59.1071 DTH = 1.3402 ITERR = 1
GU(1) = 213.93 YU(1) = 20.12 QU(N) = 222.13 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CHM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	0.82	262.	195.	195.	0.215	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.20	1122.	653.	757.	0.221	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.18 IIFR= 1 FRM=0.01 IIFM= 87

TT = 60.4607 DTH = 1.3536 ITERR = 1
GU(1) = 200.85 YU(1) = 20.11 QU(N) = 209.33 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CHM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	0.77	262.	195.	195.	0.202	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.19	1122.	653.	757.	0.208	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.18 IIFR= 1 FRM=0.01 IIFM= 87

TT = 61.8278 DTH = 1.3671 ITERR = 1
GU(1) = 188.55 YU(1) = 20.10 QU(N) = 197.23 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CHM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.07	0.72	262.	195.	195.	0.189	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.17	1122.	653.	757.	0.196	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.17 IIFR= 1 FRM=0.01 IIFM= 87

TT = 63.2085 DTH = 1.3808 ITERR = 1
GU(1) = 176.12 YU(1) = 20.09 QU(N) = 185.09 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.60	262.	195.	195.	0.177	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.16	1122.	653.	757.	0.183	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.16 IIFR= 1 FRM=0.00 IIFM= 87

TT = 64.6031 DTH = 1.3946 ITERR = 1
GU(1) = 163.57 YU(1) = 20.08 GU(N) = 172.73 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.63	262.	195.	195.	0.165	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.15	1122.	653.	757.	0.171	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.15 IIFR= 1 FRM=0.00 IIFM= 87

TT = 66.0117 DTH = 1.4085 ITERR = 1
GU(1) = 154.94 YU(1) = 20.07 GU(N) = 164.22 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.60	262.	195.	195.	0.156	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.14	1122.	653.	757.	0.163	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.14 IIFR= 1 FRM=0.00 IIFM= 87

TT = 67.4343 DTH = 1.4226 ITERR = 1
GU(1) = 147.83 YU(1) = 20.07 GU(N) = 157.18 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.57	262.	195.	195.	0.149	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.14	1122.	653.	757.	0.155	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.13 IIFR= 1 FRM=0.00 IIFM= 87

TT = 68.8711 DTH = 1.4368 ITERR = 1
GU(1) = 140.64 YU(1) = 20.07 GU(N) = 150.10 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.54	262.	195.	195.	0.142	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.13	1122.	653.	757.	0.148	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.13 IIFR= 1 FRM=0.00 IIFM= 87

TT = 70.3223 DTH = 1.4512 ITERR = 1
GU(1) = 132.74 YU(1) = 20.07 GU(N) = 142.29 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	********	*******	*******	******	******	********
8	0.102	20.07	0.51	262.	195.	195.	0.134	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.13	1122.	653.	757.	0.141	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.12 IIFR= 1 FRM=0.00 IIFM= 87

TT = 71.7680 DTH = 1.4657 ITERR = 1
GU(1) = 122.48 YU(1) = 20.07 GU(N) = 132.19 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	20.07	0.47	262.	195.	195.	0.124	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.12	1122.	653.	757.	0.130	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.11 IIFR= 1 FRM=0.00 IIFM= 87

TT = 73.2684 DTH = 1.4804 ITERR = 1
GU(1) = 112.12 YU(1) = 20.07 GU(N) = 121.92 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	20.07	0.43	262.	195.	195.	0.114	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.11	1122.	653.	757.	0.120	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.10 IIFR= 1 FRM=0.00 IIFM= 87

TT = 74.7636 DTH = 1.4952 ITERR = 1
GU(1) = 101.65 YU(1) = 20.07 GU(N) = 111.56 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	20.07	0.39	262.	195.	195.	0.103	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.10	1122.	653.	757.	0.110	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.09 IIFR= 1 FRM=0.00 IIFM= 87

TT = 76.2738 DTH = 1.5101 ITERR = 1
GU(1) = 94.90 YU(1) = 20.07 GU(N) = 104.77 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	20.07	0.37	262.	195.	195.	0.097	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.09	1122.	653.	757.	0.103	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.09 IIFR= 1 FRM=0.00 IIFM= 87

TT = 77.7990 DTH = 1.5252 ITERR = 1
GU(1) = 88.80 YU(1) = 20.07 GU(N) = 98.70 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	20.07	0.35	262.	195.	195.	0.091	0.0250	0.00	0.00	0.0	0.1	2.82
59	0.280	20.01	0.09	1122.	653.	757.	0.097	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.08 IIFR= 1 FRM=0.00 IIFM= 87

TT = 79.3395 DTH = 1.5405 ITERR = 1
GU(1) = 82.64 YU(1) = 20.07 GU(N) = 92.51 YU(N) = 20.00

I	X(I)	Y	V	A	B	BT	G	CMH	FRC	WAVHT	DISV	FRD	DEPTH
*****	*******	*********	*******	********	********	*******	*********	********	*******	*******	*******	*******	********
5	0.102	20.07	0.02	262	195.	195.	0.084	0.0250	0.00	0.00	0.0	0.0	2.82
78	0.280	20.01	0.02	1122.	653.	757.	0.091	0.0250	0.00	0.00	0.0	0.0	3.15

FRDM= 0.08 IIFR= 1 CMM=0.00 IIFM= 87

NORMALIZED CONSERVATION OF MASS AS PERCENT OF MAX FLOW IN REACH = -0.36

ROUTING COMPLETED.

KTIME= 61 ALLOWABLE KTIME= 699 TT= 80.9

PROFILE OF CRESTS AND TIMES FOR N B. UPPER W/BALSAM
BELOW 100 YR STORM

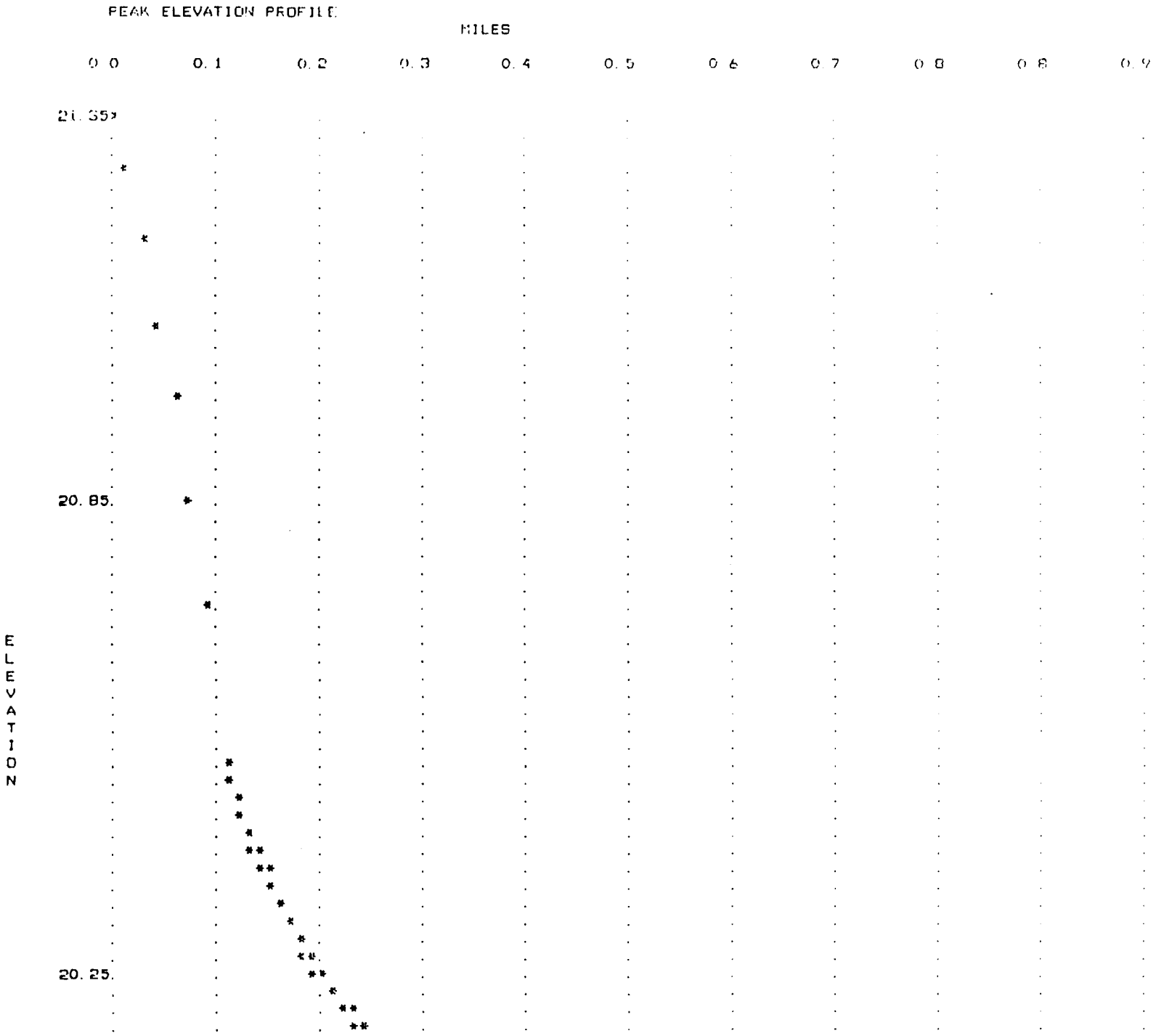
DISTANCE FROM DAM MILE	MAX ELEV FEET	MAX FLOW CFS	TIME MAX ELEV-HRS	MAX VEL FPS	FLOOD ELEV FEET	TIME FLOOD ELEV-HRS
0.000	21.35	1397	25.000	3.33	0.00	0.00
0.015	21.27	1396	25.000	3.32	0.00	0.00
0.029	21.18	1396	25.000	3.33	0.00	0.00
0.044	21.08	1396	25.000	3.36	0.00	0.00
0.058	20.97	1396	25.000	3.41	0.00	0.00
0.073	20.85	1396	25.000	3.50	0.00	0.00
0.088	20.71	1395	25.000	3.65	0.00	0.00
0.102	20.52	1395	25.000	3.91	0.00	0.00
0.105	20.51	1395	25.000	3.77	0.00	0.00
0.108	20.49	1395	25.000	3.64	0.00	0.00
0.111	20.47	1395	25.000	3.53	0.00	0.00
0.114	20.46	1395	25.000	3.41	0.00	0.00
0.118	20.45	1395	25.000	3.31	0.00	0.00
0.121	20.43	1395	25.000	3.22	0.00	0.00
0.124	20.42	1395	25.000	3.13	0.00	0.00
0.127	20.41	1395	25.000	3.04	0.00	0.00
0.130	20.40	1395	25.000	2.96	0.00	0.00
0.133	20.39	1395	25.000	2.89	0.00	0.00
0.136	20.38	1395	25.000	2.82	0.00	0.00
0.139	20.37	1395	25.000	2.75	0.00	0.00
0.142	20.36	1395	25.000	2.69	0.00	0.00
0.145	20.35	1395	25.000	2.63	0.00	0.00
0.148	20.34	1395	25.000	2.58	0.00	0.00
0.151	20.33	1395	25.000	2.53	0.00	0.00
0.154	20.33	1395	25.000	2.48	0.00	0.00
0.157	20.32	1395	25.000	2.43	0.00	0.00
0.160	20.31	1395	25.000	2.39	0.00	0.00
0.163	20.30	1395	25.000	2.35	0.00	0.00
0.166	20.29	1395	25.000	2.31	0.00	0.00
0.169	20.29	1394	25.000	2.27	0.00	0.00
0.172	20.28	1394	25.000	2.23	0.00	0.00
0.175	20.27	1394	25.000	2.20	0.00	0.00
0.179	20.27	1394	25.000	2.17	0.00	0.00
0.182	20.26	1394	25.000	2.14	0.00	0.00
0.185	20.25	1394	25.000	2.11	0.00	0.00
0.188	20.25	1394	25.000	2.08	0.00	0.00
0.191	20.24	1394	25.000	2.05	0.00	0.00
0.194	20.23	1394	25.000	2.03	0.00	0.00
0.197	20.23	1394	25.000	2.00	0.00	0.00
0.200	20.22	1394	25.000	1.98	0.00	0.00
0.203	20.21	1394	25.000	1.96	0.00	0.00
0.206	20.21	1394	25.000	1.94	0.00	0.00
0.209	20.20	1394	25.000	1.92	0.00	0.00
0.212	20.19	1394	25.000	1.90	0.00	0.00
0.215	20.19	1394	25.000	1.88	0.00	0.00
0.218	20.18	1394	25.000	1.86	0.00	0.00
0.221	20.18	1394	25.000	1.85	0.00	0.00

0.224	20.17	1394	25.000	1.83	0.00	0.00

PROFILE OF CRESTS AND TIMES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

DISTANCE FROM DAM MILE	MAX ELEV FEET	MAX FLOW CFS	TIME MAX ELEV-HRS	MAX VEL FPS	FLOOD ELEV FEET	TIME FLOOD ELEV-HRS
********	********	********	********	********	**********	**********
0.227	20.16	1394	25.000	1.82	0.00	0.00
0.233	20.16	1393	25.000	1.78	0.00	0.00
0.238	20.15	1393	25.000	1.73	0.00	0.00
0.243	20.14	1393	25.000	1.68	0.00	0.00
0.248	20.13	1393	25.000	1.61	0.00	0.00
0.254	20.12	1393	25.000	1.54	0.00	0.00
0.259	20.12	1393	25.000	1.47	0.00	0.00
0.264	20.11	1393	25.000	1.40	0.00	0.00
0.269	20.11	1393	25.000	1.32	0.00	0.00
0.275	20.11	1393	25.000	1.25	0.00	0.00
0.280	20.11	1393	25.000	1.18	0.00	0.00
0.285	20.10	1393	25.000	1.11	0.00	0.00
0.290	20.10	1393	25.000	1.04	0.00	0.00
0.295	20.10	1393	25.000	0.98	0.00	0.00
0.304	20.10	1393	25.000	0.95	0.00	0.00
0.313	20.09	1393	25.000	0.92	0.00	0.00
0.321	20.09	1393	25.000	0.90	0.00	0.00
0.330	20.09	1393	25.000	0.88	0.00	0.00
0.338	20.08	1393	25.000	0.86	0.00	0.00
0.347	20.08	1392	25.000	0.83	0.00	0.00
0.355	20.08	1392	25.000	0.82	0.00	0.00
0.364	20.08	1392	25.000	0.80	0.00	0.00
0.372	20.08	1392	25.000	0.78	0.00	0.00
0.381	20.07	1392	25.000	0.76	0.00	0.00
0.389	20.07	1392	25.000	0.74	0.00	0.00
0.398	20.07	1392	25.000	0.73	0.00	0.00
0.432	20.06	1392	25.000	0.76	0.00	0.00
0.466	20.05	1392	25.000	0.80	0.00	0.00
0.500	20.04	1391	25.000	0.84	0.00	0.00
0.544	20.03	1391	25.000	0.77	0.00	0.00
0.588	20.02	1391	25.000	0.72	0.00	0.00
0.632	20.02	1391	25.000	0.67	0.00	0.00
0.676	20.01	1391	25.000	0.62	0.00	0.00
0.720	20.01	1391	25.000	0.58	0.00	0.00
0.764	20.01	1391	25.000	0.55	0.00	0.00
0.808	20.01	1391	25.000	0.52	0.00	0.00
0.852	20.00	1391	25.000	0.49	0.00	0.00
0.896	20.00	1391	25.000	0.46	0.00	0.00
0.940	20.00	1391	0.000	0.44	0.00	0.00

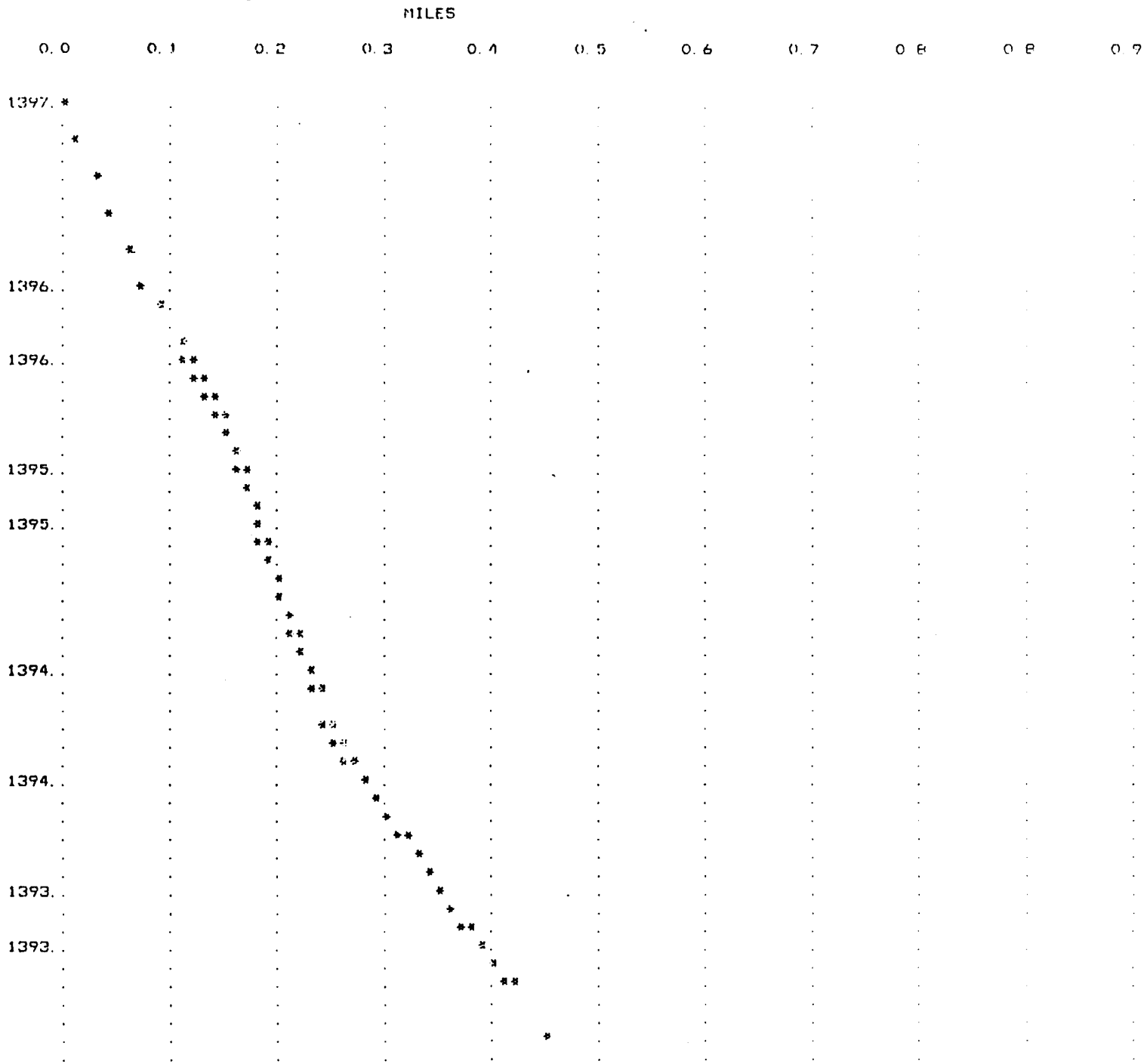
PEAK ELEVATION PROFILE



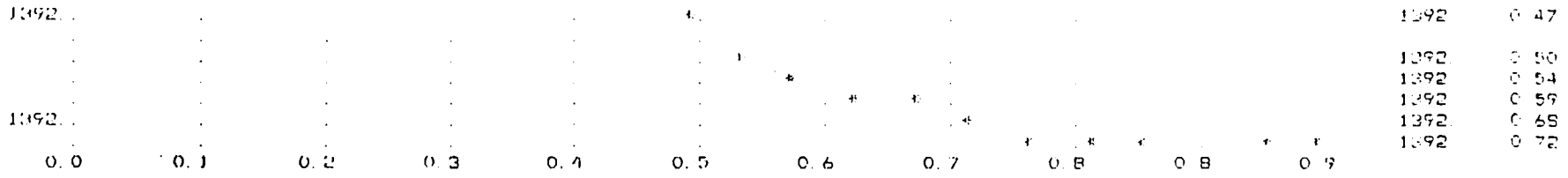
ELEV FEET	MILE
21.3	0.0
21.3	0.0
21.2	0.0
21.1	0.0
21.0	0.1
20.9	0.1
20.7	0.1
20.5	0.1
20.5	0.1
20.5	0.1
20.4	0.1
20.4	0.1
20.4	0.1
20.4	0.1
20.4	0.1
20.3	0.2
20.3	0.2
20.3	0.2
20.3	0.2
20.2	0.2
20.2	0.2
20.2	0.2
20.2	0.2

20.09
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
20.2 0.2
20.1 0.2
20.1 0.3
20.1 0.3
20.1 0.4
20.0 0.5
20.0 0.6

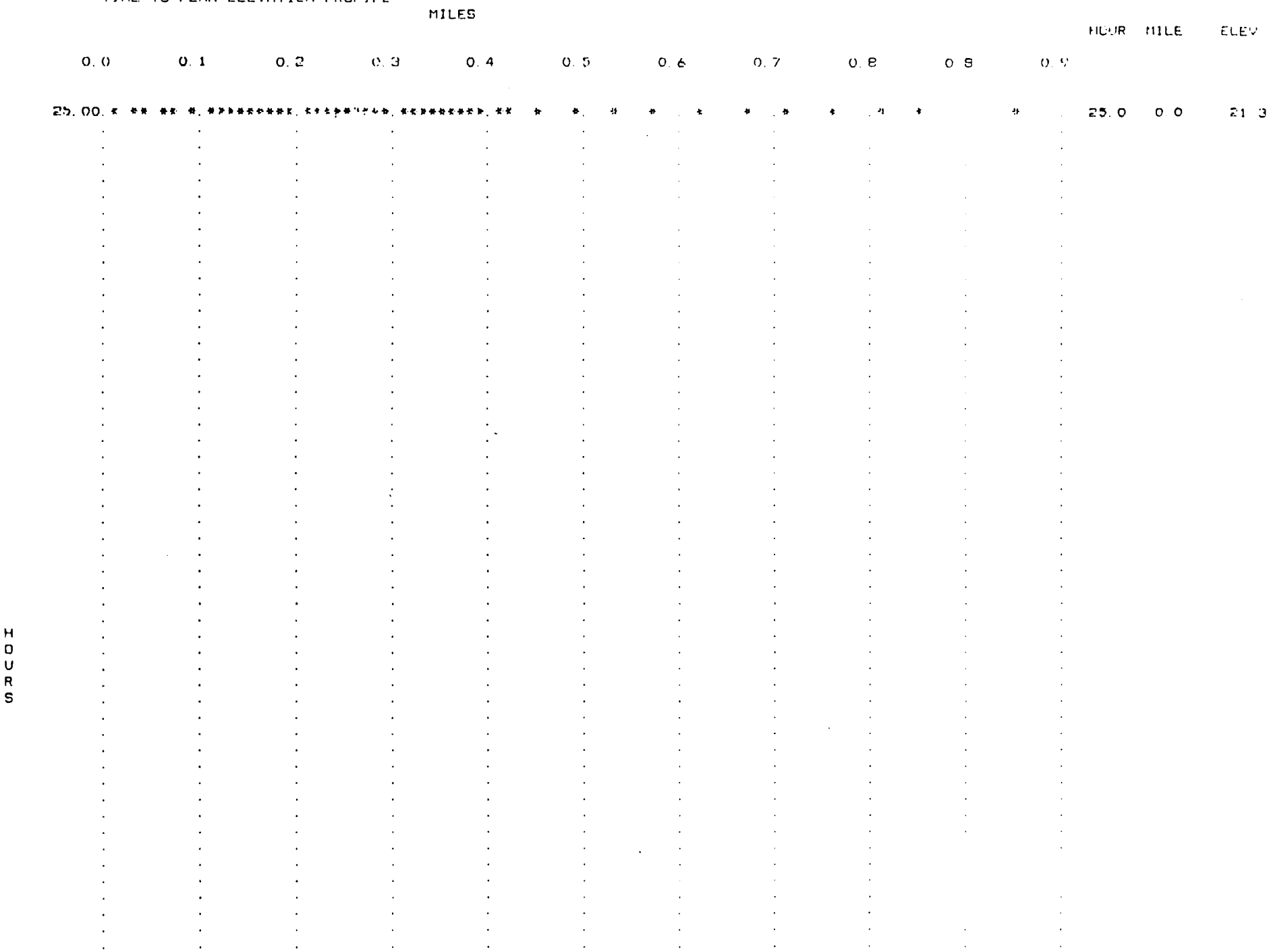
PEAK DISCHARGE PROFILE

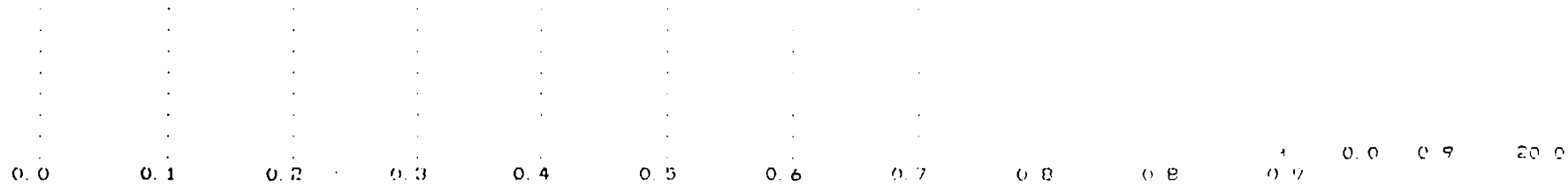


DISCHARGE CFS	MILE
1397.	0.00
1397.	0.01
1397.	0.03
1396.	0.04
1396.	0.06
1396.	0.07
1396.	0.09
1396.	0.10
1396.	0.11
1396.	0.12
1396.	0.13
1395.	0.14
1395.	0.14
1395.	0.15
1395.	0.16
1395.	0.16
1395.	0.17
1395.	0.17
1395.	0.18
1395.	0.18
1395.	0.19
1394.	0.20
1394.	0.20
1394.	0.21
1394.	0.21
1394.	0.22
1394.	0.22
1394.	0.23
1394.	0.24
1394.	0.25
1394.	0.26
1394.	0.27
1393.	0.29
1393.	0.30
1393.	0.31
1393.	0.32
1393.	0.33
1393.	0.35
1393.	0.36
1393.	0.37
1393.	0.38
1393.	0.39
1392.	0.43


1392
1392
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.8
0.9
1392 0.47
1392 0.50
1392 0.54
1392 0.59
1392 0.65
1392 0.72

TIME TO PEAK ELEVATION PROFILE




0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0.0
0.9
20.0

K	TTP(K)	YC(K,I),I=1,NII)					
*****	********	**********					
1	0.000	20.07	20.07	20.03	20.01	20.00	20.00
2	1.250	20.07	20.07	20.03	20.01	20.00	20.00
3	2.500	20.07	20.07	20.03	20.01	20.00	20.00
4	3.750	20.07	20.07	20.03	20.01	20.00	20.00
5	5.000	20.07	20.07	20.03	20.01	20.00	20.00
6	6.250	20.07	20.07	20.03	20.01	20.00	20.00
7	7.500	20.13	20.07	20.03	20.01	20.00	20.00
8	8.750	20.18	20.07	20.03	20.01	20.00	20.00
9	10.000	20.25	20.07	20.03	20.01	20.00	20.00
10	11.250	20.36	20.07	20.03	20.01	20.01	20.00
11	12.500	20.47	20.10	20.03	20.02	20.01	20.01
12	13.750	20.57	20.13	20.03	20.02	20.01	20.01
13	15.000	20.67	20.17	20.04	20.03	20.02	20.01
14	16.250	20.79	20.22	20.06	20.03	20.02	20.01
15	17.500	20.92	20.28	20.08	20.05	20.03	20.02
16	18.750	21.03	20.34	20.10	20.06	20.04	20.02
17	20.000	21.14	20.40	20.12	20.07	20.05	20.03
18	21.250	21.19	20.43	20.13	20.08	20.05	20.03
19	22.500	21.25	20.46	20.14	20.08	20.06	20.03
20	23.750	21.30	20.49	20.15	20.09	20.06	20.04
21	25.000	21.35	20.52	20.16	20.10	20.07	20.04
22	26.250	21.30	20.49	20.15	20.09	20.06	20.04
23	27.500	21.25	20.46	20.14	20.08	20.06	20.03
24	28.750	21.19	20.43	20.13	20.08	20.05	20.03
25	30.000	21.14	20.40	20.12	20.07	20.05	20.03
26	31.250	21.06	20.36	20.10	20.06	20.04	20.02
27	32.500	20.98	20.31	20.09	20.05	20.03	20.02
28	33.750	20.90	20.27	20.07	20.04	20.03	20.02
29	35.000	20.81	20.23	20.06	20.03	20.02	20.01
30	36.250	20.74	20.20	20.05	20.03	20.02	20.01
31	37.500	20.68	20.17	20.04	20.02	20.02	20.01
32	38.750	20.60	20.14	20.04	20.02	20.01	20.01
33	40.000	20.53	20.12	20.03	20.02	20.01	20.01
34	41.250	20.49	20.10	20.03	20.01	20.01	20.01
35	42.500	20.45	20.09	20.03	20.01	20.01	20.00
36	43.750	20.40	20.08	20.03	20.01	20.01	20.00
37	45.000	20.36	20.07	20.03	20.01	20.01	20.00
38	46.250	20.33	20.07	20.03	20.01	20.01	20.00
39	47.500	20.31	20.07	20.03	20.01	20.00	20.00
40	48.750	20.28	20.07	20.03	20.01	20.00	20.00
41	50.000	20.25	20.07	20.03	20.01	20.00	20.00
42	51.263	20.23	20.07	20.03	20.01	20.00	20.00
43	52.538	20.21	20.07	20.03	20.01	20.00	20.00
44	53.826	20.19	20.07	20.03	20.01	20.00	20.00
45	55.126	20.17	20.07	20.03	20.01	20.00	20.00
46	56.440	20.15	20.07	20.03	20.01	20.00	20.00
47	57.767	20.14	20.07	20.03	20.01	20.00	20.00
48	59.107	20.12	20.07	20.03	20.01	20.00	20.00
49	60.461	20.11	20.07	20.03	20.01	20.00	20.00
50	61.828	20.10	20.07	20.03	20.01	20.00	20.00
51	63.209	20.09	20.07	20.03	20.01	20.00	20.00

52	64.603	20.08	20.07	20.03	20.01	20.00	20.00
53	66.012	20.07	20.07	20.03	20.01	20.00	20.00
54	67.434	20.07	20.07	20.03	20.01	20.00	20.00
55	68.871	20.07	20.07	20.03	20.01	20.00	20.00
56	70.322	20.07	20.07	20.03	20.01	20.00	20.00
57	71.788	20.07	20.07	20.03	20.01	20.00	20.00
58	73.268	20.07	20.07	20.03	20.01	20.00	20.00
59	74.764	20.07	20.07	20.03	20.01	20.00	20.00
60	76.274	20.07	20.07	20.03	20.01	20.00	20.00
61	77.799	20.07	20.07	20.03	20.01	20.00	20.00

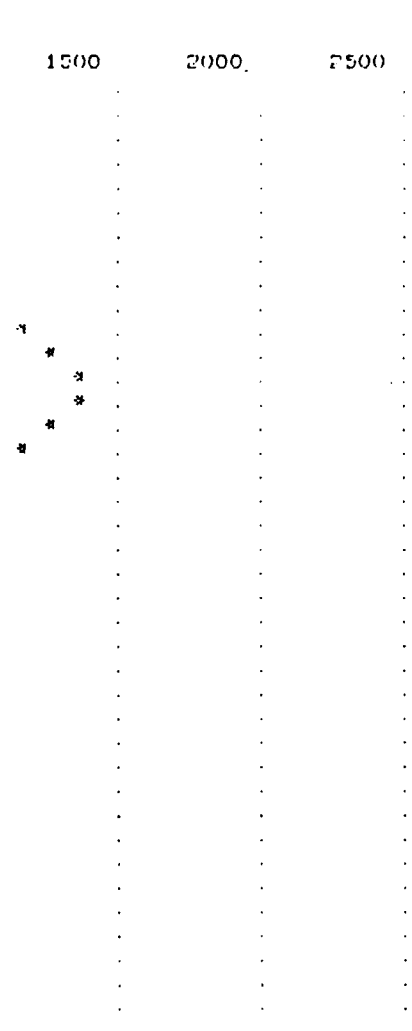
52	64.603	0.16	0.16	0.17	0.17	0.17	0.17
53	66.012	0.15	0.16	0.16	0.16	0.16	0.16
54	67.434	0.15	0.15	0.15	0.16	0.16	0.16
55	68.871	0.14	0.14	0.15	0.15	0.15	0.15
56	70.322	0.13	0.13	0.14	0.14	0.14	0.14
57	71.788	0.12	0.12	0.13	0.13	0.13	0.13
58	73.268	0.11	0.11	0.12	0.12	0.12	0.12
59	74.764	0.10	0.10	0.11	0.11	0.11	0.11
60	76.274	0.09	0.10	0.10	0.10	0.10	0.10
61	77.799	0.09	0.09	0.10	0.10	0.10	0.10

K	TTP(K)	QC(K,I),I=1,NTT)					
*****	********	**********					
1	0.000	0.03	0.03	0.03	0.03	0.03	0.03
2	1.250	0.05	0.05	0.06	0.06	0.06	0.06
3	2.500	0.07	0.07	0.08	0.08	0.08	0.08
4	3.750	0.09	0.09	0.10	0.10	0.10	0.10
5	5.000	0.11	0.11	0.12	0.12	0.12	0.12
6	6.250	0.16	0.16	0.17	0.17	0.17	0.17
7	7.500	0.22	0.21	0.22	0.22	0.22	0.22
8	8.750	0.27	0.27	0.27	0.27	0.27	0.27
9	10.000	0.32	0.32	0.32	0.32	0.32	0.32
10	11.250	0.41	0.41	0.41	0.41	0.41	0.41
11	12.500	0.50	0.49	0.49	0.49	0.49	0.49
12	13.750	0.58	0.58	0.58	0.58	0.58	0.58
13	15.000	0.67	0.67	0.67	0.67	0.67	0.67
14	16.250	0.79	0.79	0.78	0.78	0.78	0.78
15	17.500	0.91	0.91	0.91	0.90	0.90	0.90
16	18.750	1.03	1.03	1.03	1.02	1.02	1.02
17	20.000	1.15	1.15	1.14	1.14	1.14	1.14
18	21.250	1.21	1.21	1.21	1.21	1.21	1.21
19	22.500	1.27	1.27	1.27	1.27	1.27	1.27
20	23.750	1.34	1.33	1.33	1.33	1.33	1.33
21	25.000	1.40	1.40	1.39	1.39	1.39	1.39
22	26.250	1.33	1.34	1.34	1.34	1.34	1.34
23	27.500	1.27	1.27	1.27	1.27	1.27	1.27
24	28.750	1.21	1.21	1.21	1.21	1.21	1.21
25	30.000	1.15	1.15	1.15	1.15	1.15	1.15
26	31.250	1.06	1.06	1.06	1.07	1.07	1.07
27	32.500	0.98	0.98	0.98	0.98	0.98	0.98
28	33.750	0.89	0.89	0.89	0.89	0.90	0.90
29	35.000	0.81	0.81	0.81	0.81	0.81	0.81
30	36.250	0.74	0.74	0.74	0.74	0.74	0.74
31	37.500	0.68	0.68	0.68	0.68	0.68	0.68
32	38.750	0.61	0.61	0.62	0.62	0.62	0.62
33	40.000	0.55	0.55	0.55	0.55	0.55	0.55
34	41.250	0.52	0.52	0.52	0.52	0.52	0.52
35	42.500	0.48	0.48	0.48	0.48	0.48	0.48
36	43.750	0.45	0.45	0.45	0.45	0.45	0.45
37	45.000	0.41	0.41	0.41	0.41	0.41	0.41
38	46.250	0.39	0.39	0.39	0.39	0.39	0.39
39	47.500	0.37	0.37	0.37	0.37	0.37	0.37
40	48.750	0.34	0.34	0.35	0.35	0.35	0.35
41	50.000	0.32	0.32	0.32	0.33	0.33	0.33
42	51.263	0.30	0.30	0.31	0.31	0.31	0.31
43	52.538	0.29	0.29	0.29	0.29	0.29	0.29
44	53.826	0.27	0.27	0.28	0.28	0.28	0.28
45	55.126	0.25	0.25	0.26	0.26	0.26	0.26
46	56.440	0.24	0.24	0.25	0.25	0.25	0.25
47	57.767	0.23	0.23	0.23	0.23	0.23	0.23
48	59.107	0.21	0.21	0.22	0.22	0.22	0.22
49	60.461	0.20	0.20	0.21	0.21	0.21	0.21
50	61.828	0.19	0.19	0.19	0.20	0.20	0.20
51	63.209	0.18	0.18	0.18	0.18	0.18	0.18

DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 1
BELOW 100 YR STORM AT MILE 0.00

GAGE ZERO = 17.50 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 21.35 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.85 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1377 CFS AT TIME = 25.000 HOURS

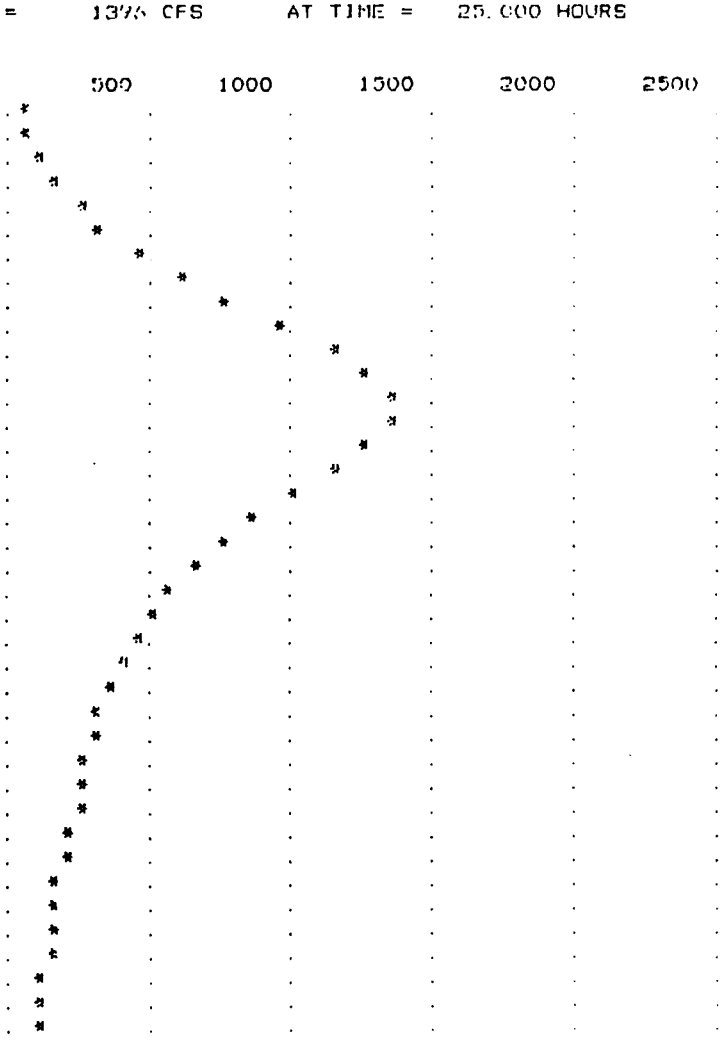
TIME HR	STAGE FEET	FLOW CFS
0	2.6	28
2	2.6	61
4	2.6	94
6	2.6	152
8	2.7	236
10	2.8	320
12	2.9	460
14	3.1	600
16	3.3	766
18	3.5	958
20	3.6	1150
22	3.7	1249
24	3.8	1348
26	3.8	1347
28	3.7	1246
30	3.6	1145
32	3.5	1009
34	3.4	873
36	3.3	754
38	3.1	652
40	3.0	550
42	3.0	494
44	2.9	438
46	2.8	392
48	2.8	356
50	2.7	320
52	2.7	294
54	2.7	268
56	2.7	245
58	2.6	225
60	2.6	205
62	2.6	187
64	2.6	169
66	2.6	155
68	2.6	145
70	2.6	134
72	2.6	121
74	2.6	107
76	2.6	96



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 8
BELOW 100 YR STORM AT MILE 0.10

GAGE ZERO = 17.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.52 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.27 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1378 CFS AT TIME = 25.000 HOURS

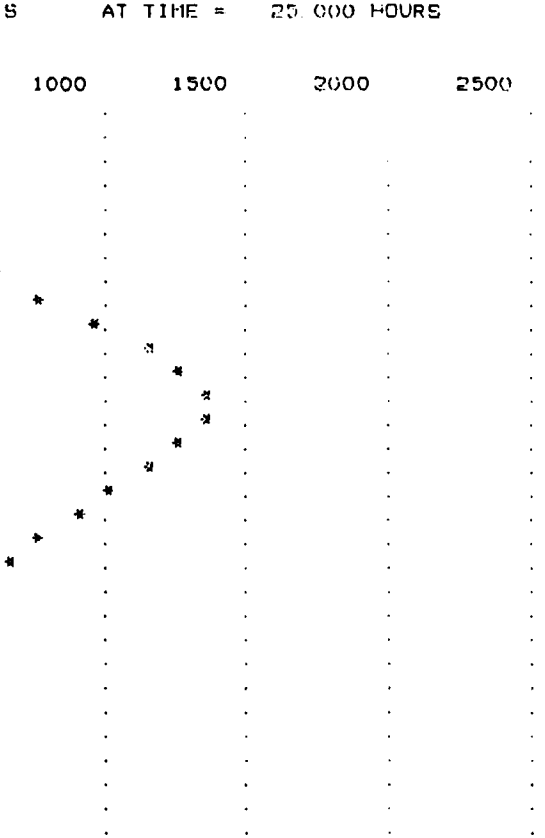
TIME HR	STAGE FEET	FLOW CFS
0	2.8	29
2	2.8	63
4	2.8	96
6	2.8	153
8	2.8	236
10	2.8	319
12	2.8	458
14	2.9	598
16	3.0	763
18	3.1	956
20	3.2	1148
22	3.2	1248
24	3.2	1347
26	3.2	1348
28	3.2	1247
30	3.1	1146
32	3.1	1011
34	3.0	875
36	3.0	755
30	2.9	653
40	2.9	551
42	2.8	495
44	2.8	439
46	2.8	392
48	2.8	356
50	2.8	321
52	2.8	294
54	2.8	268
56	2.8	246
58	2.8	226
60	2.8	206
62	2.8	188
64	2.8	170
66	2.8	156
68	2.8	146
70	2.8	136
72	2.8	123
74	2.8	109
76	2.8	98



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 49
BELOW 100 YR STORM AT MILE 0.23

GAGE ZERO = 17.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.16 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 2.91 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1374 CFS AT TIME = 25.000 HOURS

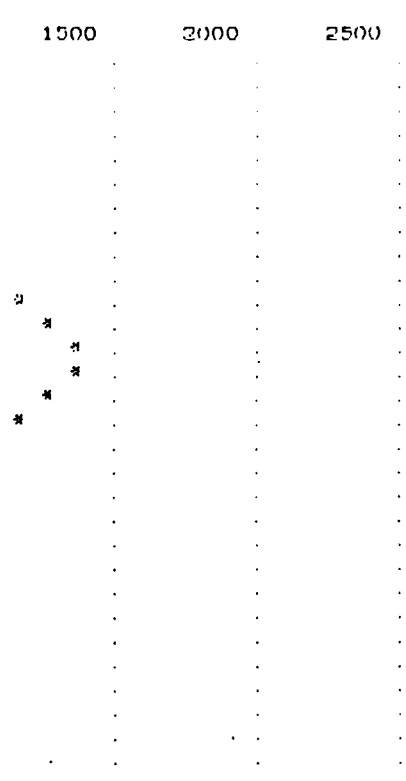
TIME HR	STAGE FEET	FLOW CFS
0	2.8	33
2	2.8	69
4	2.8	102
6	2.8	159
8	2.8	240
10	2.8	323
12	2.8	459
14	2.8	597
16	2.8	761
18	2.8	953
20	2.9	1145
22	2.9	1246
24	2.9	1345
26	2.9	1351
28	2.9	1248
30	2.9	1147
32	2.8	1013
34	2.8	877
36	2.8	756
38	2.8	654
40	2.8	552
42	2.8	496
44	2.8	440
46	2.8	395
48	2.8	360
50	2.8	325
52	2.8	299
54	2.8	273
56	2.8	250
58	2.8	230
60	2.8	211
62	2.8	193
64	2.8	175
66	2.8	161
68	2.8	151
70	2.8	141
72	2.8	128
74	2.8	114
76	2.8	103



DISCHARGE HYDROGRAPH FOR N. B. UPPER W/BALSAM ... STATION NUMBER 62
BELOW 100 YR STORM AT MILE 0.30

GAGE ZERO = 16.75 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.10 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.39 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1373 CFS AT TIME = 25.000 HOURS

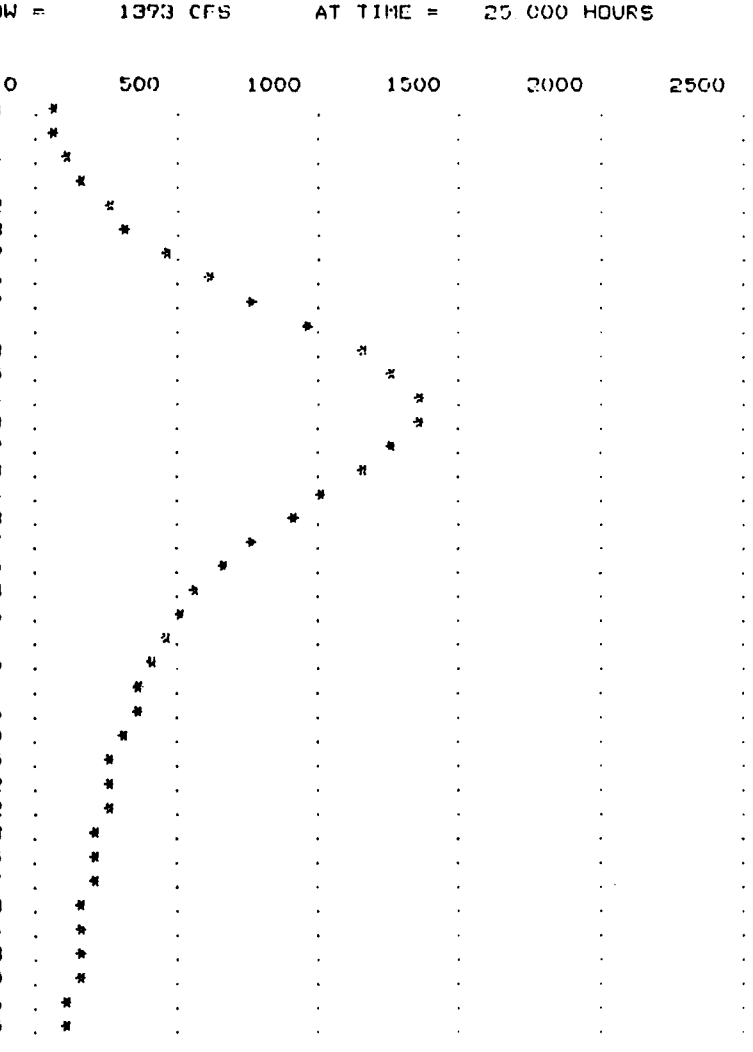
TIME HR	STAGE FEET	FLOW CFS
0	3.3	34
2	3.3	71
4	3.3	104
6	3.3	160
8	3.3	241
10	3.3	324
12	3.3	459
14	3.3	596
16	3.3	760
18	3.3	952
20	3.3	1144
22	3.3	1246
24	3.3	1345
26	3.3	1352
28	3.3	1248
30	3.3	1147
32	3.3	1013
34	3.3	877
36	3.3	757
38	3.3	655
40	3.3	553
42	3.3	496
44	3.3	441
46	3.3	396
48	3.3	361
50	3.3	326
52	3.3	300
54	3.3	274
56	3.3	252
58	3.3	232
60	3.3	212
62	3.3	194
64	3.3	177
66	3.3	163
68	3.3	153
70	3.3	142
72	3.3	129
74	3.3	115
76	3.3	104



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 74
BELOW 100 YR STORM AT MILE 0.40

GAGE ZERO = 16.75 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.07 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.37 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1393 CFS AT TIME = 25.000 HOURS

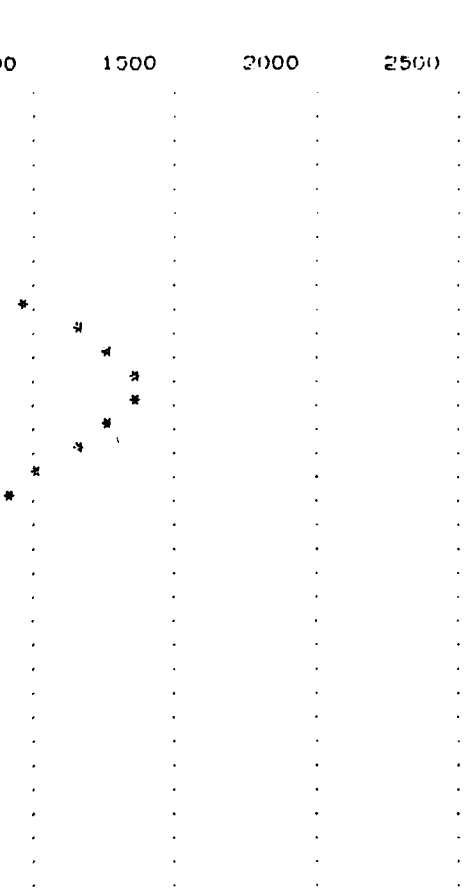
TIME HR	STAGE FEET	FLOW CFS
0	3.3	34
2	3.3	71
4	3.3	104
6	3.3	161
8	3.3	242
10	3.3	323
12	3.3	459
14	3.3	596
16	3.3	759
18	3.3	951
20	3.3	1143
22	3.3	1245
24	3.3	1344
26	3.3	1353
28	3.3	1249
30	3.3	1148
32	3.3	1014
34	3.3	878
36	3.3	757
38	3.3	655
40	3.3	553
42	3.3	496
44	3.3	441
46	3.3	396
48	3.3	361
50	3.3	326
52	3.3	300
54	3.3	275
56	3.3	252
58	3.3	232
60	3.3	213
62	3.3	195
64	3.3	177
66	3.3	163
68	3.3	154
70	3.3	143
72	3.3	130
74	3.3	116
76	3.3	105



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 77
BELOW 100 YR STORM AT MILE 0.50

GAGE ZERO = 16.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.04 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.79 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1392 CFS AT TIME = 25.000 HOURS

TIME HR	STAGE FEET	FLOW CFS
0	3.8	35
2	3.8	72
4	3.8	105
6	3.8	161
8	3.8	242
10	3.8	323
12	3.8	459
14	3.8	595
16	3.8	759
18	3.8	951
20	3.8	1142
22	3.8	1245
24	3.8	1344
26	3.8	1354
28	3.8	1249
30	3.8	1148
32	3.8	1015
34	3.8	879
36	3.8	757
38	3.8	656
40	3.8	553
42	3.8	496
44	3.8	441
46	3.8	396
48	3.8	361
50	3.8	326
52	3.8	300
54	3.8	275
56	3.8	252
58	3.8	232
60	3.8	213
62	3.8	195
64	3.8	177
66	3.8	164
68	3.8	154
70	3.8	143
72	3.8	130
74	3.8	116
76	3.8	105



MLW CASE

ANALYSIS OF THE DOWNSTREAM FLOOD HYDROGRAPH

PRODUCED BY THE DAM BREAK OF

100 YR STORM

ON

N. R. UPPER W/BALSAM

ANALYSIS BY

APPLIED SCIENCE ASSOC
70 DEAN KNAUSS DR
NARRAGANSETT, R. I. 02882

BASED ON PROCEDURE DEVELOPED BY
DANNY L. FREAD, PH. D., SR. RESEARCH HYDROLOGIST

QUALITY CONTROL TESTING AND OTHER SUPPORT BY
JANICE M. LEWIS, RESEARCH HYDROLOGIST

HYDROLOGIC RESEARCH LABORATORY
W23, OFFICE OF HYDROLOGY
NOAA, NATIONAL WEATHER SERVICE
SILVER SPRING, MARYLAND 20910

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***                       ***
***  SUMMARY OF INPUT DATA  ***
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INPUT CONTROL PARAMETERS FOR 100 YR STORM

PARAMETER	VARIABLE	VALUE
NUMBER OF DYNAMIC ROUTING REACHES	KKN	9
TYPE OF RESERVOIR ROUTING	KUI	0
MULTIPLE DAM INDICATOR	MULDAM	0
PRINTING INSTRUCTIONS FOR INPUT SUMMARY	KDMP	3
NO. OF RESERVOIR INFLOW HYDROGRAPH POINTS	ITEH	17
INTERVAL OF CROSS-SECTION INFO PRINTED OUT WHEN JNK=9	NPRT	2
FLOOD-PLAIN MODEL PARAMETER	KFLP	0
METRIC INPUT/OUTPUT OPTION	METRIC	0

(NPT(K),K=1,NPRT) 8 59

DHF(INTERVAL BETWEEN INPUT HYDROGRAPH ORDINATES) = 5.00 HRS.

TEH(TIME AT WHICH COMPUTATIONS TERMINATE)= 80.0000 HRS.

BREX(BREACH EXPONENT) = 0.000

MUD(MUD FLOW OPTION) = 0

IWF(TYPE OF WAVE FRONT TRACKING) = 0

KPRES(WETTED PERIMETER OPTION) = 0

KSL(LANDSLIDE PARAMETER) = 0

INFLOW HYDROGRAPH TO 100 YR STORM

28.00	110.00	320.00	670.00	1150.00	1397.00	1145.00	805.00
550.00	410.00	320.00	255.00	205.00	160.00	135.00	100.00
80.00							

TIME OF INFLOW HYDROGRAPH ORDINATES

0.0000	5.0000	10.0000	15.0000	20.0000	25.0000	30.0000	35.0000
40.0000	45.0000	50.0000	55.0000	60.0000	65.0000	70.0000	75.0000
80.0000							

CROSS-SECTIONAL PARAMETERS FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	VARIABLE	VALUE
NUMBER OF CROSS-SECTIONS	NS	7
MAXIMUM NUMBER OF TOP WIDTHS	NCS	7
NUMBER OF CROSS-SECTIONAL HYDROGRAPHS TO PLOT	NTT	6
TYPE OF OUTPUT OTHER THAN HYDROGRAPH PLOTS	JNK	9
CROSS-SECTIONAL SMOOTHING PARAMETER	KSA	0
DOWNSTREAM SUPERCRITICAL OR NOT	KSUPC	0
NO. OF LATERAL INFLOW HYDROGRAPHS	LQ	0
NO. OF POINTS IN GATE CONTROL CURVE	KCG	0

NUMBER OF CROSS-SECTION WHERE HYDROGRAPH DESIRED
(MAX NUMBER OF HYDROGRAPHS = 6)

1 2 3 4 5 6

CROSS-SECTIONAL VARIABLES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE
LOCATION OF CROSS-SECTION	MILE	XS(I)
ELEVATION(MSL) OF FLOODING AT CROSS-SECTION	FEET	FSTC(I)
ELEV CORRESPONDING TO EACH TOP WIDTH	FEET	HS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (ACTIVE FLOW PORTION)	FEET	BS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (OFF-CHANNEL PORTION)	FEET	BSS(K,I)
NUMBER OF CROSS-SECTION		I
NUMBER OF ELEVATION LEVEL		K

CROSS-SECTION NUMBER 1
****

XS(I) = 0.000 FSTG(I) = 0.00

HS ...	17.5	18.0	18.5	19.5	20.3	22.0	23.0
BS ...	0.0	30.0	35.0	102.0	185.0	190.0	200.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 2
****

XS(I) = 0.102 FSTG(I) = 0.00

HS ...	17.3	17.8	18.3	19.3	20.3	22.0	23.0
BS ...	0.0	30.0	60.0	130.0	210.0	255.0	265.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 3
****

XS(I) = 0.227 FSTG(I) = 0.00

HS ...	17.3	18.3	19.3	19.8	20.3	22.0	23.0
BS ...	0.0	170.0	420.0	425.0	425.0	430.0	435.0
BSS ...	0.0	0.0	0.0	400.0	450.0	455.0	460.0

CROSS-SECTION NUMBER 4
****

XS(I) = 0.296 FSTG(I) = 0.00

HS ...	16.8	17.3	17.8	18.3	19.3	22.0	23.0
BS ...	0.0	50.0	270.0	420.0	720.0	725.0	730.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 5
****

XS(I) = 0.398 FSTG(I) = 0.00

HS ...	16.8	17.3	17.8	18.3	18.8	19.3	21.0
BS ...	50.0	250.0	470.0	680.0	740.0	775.0	780.0
BSS ...	0.0	0.0	0.0	60.0	150.0	330.0	335.0

CROSS-SECTION NUMBER 6
****

XS(I) = 0.500 FSTG(I) = 0.00

HS ...	16.3	16.8	17.3	18.3	20.0	21.0	22.0
BS ...	0.0	150.0	400.0	525.0	612.0	650.0	675.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 7
****

XS(I) = 0.940 FSTG(I) = 0.00

HS ...	12.3	13.3	15.3	16.3	17.3	20.0	22.0
BS ...	0.0	125.0	362.0	450.0	538.0	700.0	788.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

HS(1, 3) IS GREATER THAN HS(1, 2).
THIS ADVERSE SLOPE MAY CAUSE PROBLEMS LATER IN THE ROUTING COMPUTATIONS IF THE BASE FLOW IS QUITE SMALL /

HS(1, 5) IS GREATER THAN HS(1, 4).
THIS ADVERSE SLOPE MAY CAUSE PROBLEMS LATER IN THE ROUTING COMPUTATIONS IF THE BASE FLOW IS QUITE SMALL /

MANNING N ROUGHNESS COEFFICIENTS FOR THE GIVEN REACHES
(CM(K, I), K=1, NCS) WHERE I = REACH NUMBER
****

REACH	1 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	2 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	3 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	4 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	5 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025
REACH	6 ...	0.025	0.025	0.025	0.025	0.025	0.025	0.025

CROSS-SECTIONAL VARIABLES FOR N.B. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE
MINIMUM COMPUTATIONAL DISTANCE USED BETWEEN CROSS-SECTIONS	MILE	DXM(I)
CONTRACTION - EXPANSION COEFFICIENTS BETWEEN CROSS-SECTIONS		FKC(I)

REACH NUMBER	DXM(I)	FKC(I)
1	0.014	0.000
2	0.003	0.000
3	0.005	0.000
4	0.008	0.000
5	0.034	0.000
6	0.044	0.000

DOWNSTREAM FLOW PARAMETERS FOR N. P. UPPER W/BALSAM
BELOW 100 YR STORM

PARAMETER	UNITS	VARIABLE	VALUE
MAX DISCHARGE AT DOWNSTREAM EXTREMITY	CFS	QMAXD	0.0
MAX LATERAL OUTFLOW PRODUCING LOSSES	CFS /FEET	QLL	0.000
INITIAL SIZE OF TIME STEP	HOUR	DTHM	0.0000
INITIAL WATER SURFACE ELEVATION DOWNSTREAM	FEET	YDN	0.75
SLOPE OF CHANNEL DOWNSTREAM OF DAM	FPM	SOM	0.00
THETA WEIGHTING FACTOR		THETA	0.00
CONVERGENCE CRITERION FOR STAGE	FEET	EPSY	0.000
TIME AT WHICH DAM STARTS TO FAIL	HOUR	TFI	0.00

I=	1	XS=	0.00	QS=	2191.	YE=	22.93	DEP=	5.43	TP=	25.00	DXM= 0.00
I=	2	XS=	0.10	QS=	1698.	YE=	21.91	DEP=	4.66	TP=	25.06	DXM= 0.01
I=	3	XS=	0.23	QS=	1539.	YE=	20.73	DEP=	3.48	TP=	25.17	DXM= 0.00
I=	4	XS=	0.30	QS=	1492.	YE=	19.04	DEP=	2.29	TP=	25.21	DXM= 0.00
I=	5	XS=	0.40	QS=	1459.	YE=	18.76	DEP=	2.01	TP=	25.30	DXM= 0.01
I=	6	XS=	0.50	QS=	1444.	YE=	18.32	DEP=	2.07	TP=	25.38	DXM= 0.03
I=	7	XS=	0.94	QS=	1430.	YE=	15.00	DEP=	2.75	TP=	25.60	DXM= 0.04

COMPUTATIONS WILL USE THE FOLLOWING DXM VALUES

0.014 0.003 0.005 0.008 0.034 0.044

DOWNSTREAM STAGE HYDROGRAPH

18.	18.	18.	18.	18.	18.	18.	18.
18.	18.	18.	18.	18.	18.	18.	18.
18.							

TIME ORDINATES FOR DOWNSTREAM STAGE HYDROGRAPH

0.	5.	10.	15.	20.	25.	30.	35.
40.	45.	50.	55.	60.	65.	70.	75.
80.							

TOTAL NUMBER OF CROSS SECTIONS (ORIGINAL+INTERPOLATED) (N) = 87 (MAXIMUM ALLOWABLE = 200

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***                       ***
***  SUMMARY OF OUTPUT DATA ***
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CROSS-SECTION NO.	MILE	BOTTOM ELEVATION FEET
1	0.00	17.00
2	0.10	17.25
3	0.23	17.25
4	0.30	16.75
5	0.40	16.75
6	0.50	16.25
7	0.94	12.25

REACH NO.	REACH LENGTH MILE	SLOPE FPM
1	0.10	2.44
2	0.13	0.00
3	0.07	7.33
4	0.10	0.00
5	0.10	4.09
6	0.44	9.08

MESAGI

SLOPE INFORMATION FOR INPUT REACHES

REACH NO.	WATER ELEVATION FEET	HYDRAULIC DEPTH FEET	BOTTOM SLOPE FPM	DYNAMIC SLOPE FPM	TOTAL SLOPE FPM	CRITICAL SLOPE FPM	MANNING'S N
1	17.38	0.13	2.44	0.02	2.46	96.25	0.025
1	17.88	0.25	2.44	0.02	2.47	76.39	0.025
1	18.38	0.50	2.44	0.03	2.47	60.63	0.025
1	19.38	1.02	2.44	0.04	2.48	47.85	0.025
1	20.25	1.30	2.44	0.04	2.48	44.09	0.025
1	22.00	2.81	2.44	0.05	2.49	34.12	0.025
1	23.00	3.66	2.44	0.06	2.50	31.22	0.025
2	17.25	0.23	0.10	0.13	0.23	78.40	0.025
2	18.00	0.46	0.10	0.17	0.27	62.23	0.025
2	18.75	0.85	0.10	0.21	0.31	50.85	0.025
2	19.50	1.30	0.10	0.25	0.35	44.13	0.025
2	20.25	1.74	0.10	0.28	0.38	40.04	0.025
2	22.00	3.30	0.10	0.37	0.47	32.34	0.025
2	23.00	4.21	0.10	0.42	0.52	29.79	0.025
3	17.00	0.22	7.33	0.01	7.34	79.53	0.025
3	17.75	0.44	7.33	0.02	7.35	63.12	0.025
3	18.50	0.72	7.33	0.02	7.35	53.73	0.025
3	19.00	0.98	7.33	0.02	7.35	48.39	0.025
3	19.75	1.41	7.33	0.02	7.36	42.92	0.025
3	22.00	3.77	7.33	0.03	7.37	30.93	0.025
3	23.00	4.73	7.33	0.04	7.37	28.67	0.025
4	16.75	0.16	0.10	0.11	0.21	89.52	0.025

4	17.25	0.29	0.10	0.14	0.24	72.57	0.025
4	17.75	0.49	0.10	0.17	0.27	61.23	0.025
4	18.25	0.71	0.10	0.20	0.30	53.91	0.025
4	19.00	1.17	0.10	0.24	0.34	45.60	0.025
4	20.63	2.72	0.10	0.34	0.44	34.50	0.025
4	22.00	4.00	0.10	0.41	0.51	30.12	0.025
5	16.50	0.13	4.89	0.01	4.90	90.02	0.025
5	17.00	0.28	4.89	0.02	4.90	73.40	0.025
5	17.50	0.49	4.89	0.02	4.91	60.87	0.025
5	18.25	0.90	4.89	0.03	4.91	48.46	0.025
5	19.38	1.87	4.89	0.03	4.92	39.07	0.025
5	20.13	2.48	4.89	0.04	4.92	35.54	0.025
5	21.50	3.82	4.89	0.04	4.93	30.70	0.025
6	14.25	0.18	9.08	0.01	9.09	84.95	0.025
6	15.00	0.36	9.08	0.01	9.10	67.42	0.025
6	16.25	0.93	9.08	0.02	9.10	48.94	0.025
6	17.25	1.63	9.08	0.02	9.11	40.86	0.025
6	18.63	2.68	9.08	0.03	9.11	34.65	0.025
6	20.50	4.01	9.08	0.03	9.11	30.29	0.025
6	22.00	5.17	9.08	0.03	9.12	27.83	0.025

SNC(K,1)= 1.00 1.00 1.00 1.00 1.00 1.00 1.00

NUMBER OF INTERMEDIATE STATIONS NN(NS) 87

NUMBER OF TIME STEPS NNU 17

INITIAL CONDITIONS

I=	1	X=	0.000	YN=	18.56	DEPN=	1.06	YC=	18.05	DEPC=	0.55	IFR= 0	ITN=	9	ITC= 9
I=	2	X=	0.015	YN=	18.53	DEPN=	1.06	YC=	18.02	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	3	X=	0.029	YN=	18.49	DEPN=	1.06	YC=	17.99	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	4	X=	0.044	YN=	18.45	DEPN=	1.06	YC=	17.95	DEPC=	0.55	IFR= 0	ITN=	9	ITC= 9
I=	5	X=	0.058	YN=	18.41	DEPN=	1.05	YC=	17.91	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	6	X=	0.073	YN=	18.37	DEPN=	1.05	YC=	17.88	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	7	X=	0.088	YN=	18.34	DEPN=	1.05	YC=	17.85	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	8	X=	0.102	YN=	18.37	DEPN=	1.12	YC=	17.81	DEPC=	0.56	IFR= 0	ITN=	9	ITC= 9
I=	9	X=	0.105	YN=	18.38	DEPN=	1.13	YC=	17.79	DEPC=	0.54	IFR= 0	ITN=	9	ITC= 9
I=	10	X=	0.108	YN=	18.39	DEPN=	1.14	YC=	17.77	DEPC=	0.52	IFR= 0	ITN=	9	ITC= 9
I=	11	X=	0.111	YN=	18.40	DEPN=	1.15	YC=	17.76	DEPC=	0.51	IFR= 0	ITN=	9	ITC= 9

I=	12	X=	0.114	YN=	18.40	DEPN=	1.15	YC=	17.75	DEPC=	0.50	IFR=	0	ITN=	9	ITC=	9
I=	13	X=	0.118	YN=	18.41	DEPN=	1.16	YC=	17.74	DEPC=	0.49	IFR=	0	ITN=	9	ITC=	9
I=	14	X=	0.121	YN=	18.41	DEPN=	1.16	YC=	17.73	DEPC=	0.48	IFR=	0	ITN=	9	ITC=	9
I=	15	X=	0.124	YN=	18.42	DEPN=	1.17	YC=	17.72	DEPC=	0.47	IFR=	0	ITN=	9	ITC=	9
I=	16	X=	0.127	YN=	18.42	DEPN=	1.17	YC=	17.72	DEPC=	0.47	IFR=	0	ITN=	9	ITC=	9
I=	17	X=	0.130	YN=	18.42	DEPN=	1.17	YC=	17.70	DEPC=	0.45	IFR=	0	ITN=	9	ITC=	9
I=	18	X=	0.133	YN=	18.42	DEPN=	1.17	YC=	17.70	DEPC=	0.45	IFR=	0	ITN=	9	ITC=	9
I=	19	X=	0.136	YN=	18.43	DEPN=	1.18	YC=	17.69	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	20	X=	0.139	YN=	18.43	DEPN=	1.18	YC=	17.69	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	21	X=	0.142	YN=	18.43	DEPN=	1.18	YC=	17.68	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	22	X=	0.145	YN=	18.43	DEPN=	1.18	YC=	17.68	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	23	X=	0.148	YN=	18.43	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	24	X=	0.151	YN=	18.43	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	25	X=	0.154	YN=	18.43	DEPN=	1.20	YC=	17.67	DEPC=	0.42	IFR=	0	ITN=	9	ITC=	9
I=	26	X=	0.157	YN=	18.43	DEPN=	1.20	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	27	X=	0.160	YN=	18.43	DEPN=	1.20	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	28	X=	0.163	YN=	18.31	DEPN=	1.06	YC=	17.66	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	29	X=	0.166	YN=	18.41	DEPN=	1.16	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	30	X=	0.169	YN=	18.39	DEPN=	1.14	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	31	X=	0.172	YN=	18.38	DEPN=	1.13	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	32	X=	0.175	YN=	18.36	DEPN=	1.11	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	33	X=	0.179	YN=	18.34	DEPN=	1.09	YC=	17.65	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	34	X=	0.182	YN=	18.32	DEPN=	1.07	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	35	X=	0.185	YN=	18.31	DEPN=	1.06	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	36	X=	0.188	YN=	18.29	DEPN=	1.04	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	37	X=	0.191	YN=	18.27	DEPN=	1.02	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	38	X=	0.194	YN=	18.24	DEPN=	0.99	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	39	X=	0.197	YN=	18.22	DEPN=	0.97	YC=	17.64	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	40	X=	0.200	YN=	18.20	DEPN=	0.95	YC=	17.63	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	41	X=	0.203	YN=	18.18	DEPN=	0.93	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	42	X=	0.206	YN=	18.15	DEPN=	0.90	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	43	X=	0.209	YN=	18.12	DEPN=	0.87	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	44	X=	0.212	YN=	18.10	DEPN=	0.85	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	45	X=	0.215	YN=	18.06	DEPN=	0.81	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	46	X=	0.218	YN=	18.03	DEPN=	0.78	YC=	17.63	DEPC=	0.38	IFR=	0	ITN=	9	ITC=	9
I=	47	X=	0.221	YN=	17.99	DEPN=	0.74	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	48	X=	0.224	YN=	17.93	DEPN=	0.68	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	49	X=	0.227	YN=	17.83	DEPN=	0.58	YC=	17.61	DEPC=	0.36	IFR=	0	ITN=	9	ITC=	9
I=	50	X=	0.233	YN=	17.79	DEPN=	0.58	YC=	17.58	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	51	X=	0.238	YN=	17.76	DEPN=	0.59	YC=	17.54	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	52	X=	0.243	YN=	17.72	DEPN=	0.59	YC=	17.51	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	53	X=	0.248	YN=	17.69	DEPN=	0.59	YC=	17.47	DEPC=	0.37	IFR=	0	ITN=	9	ITC=	9
I=	54	X=	0.254	YN=	17.67	DEPN=	0.61	YC=	17.45	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	55	X=	0.259	YN=	17.63	DEPN=	0.61	YC=	17.41	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	56	X=	0.264	YN=	17.60	DEPN=	0.62	YC=	17.37	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	57	X=	0.269	YN=	17.58	DEPN=	0.63	YC=	17.34	DEPC=	0.40	IFR=	0	ITN=	9	ITC=	9
I=	58	X=	0.275	YN=	17.54	DEPN=	0.64	YC=	17.31	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	59	X=	0.280	YN=	17.53	DEPN=	0.66	YC=	17.28	DEPC=	0.41	IFR=	0	ITN=	9	ITC=	9
I=	60	X=	0.285	YN=	17.52	DEPN=	0.69	YC=	17.25	DEPC=	0.43	IFR=	0	ITN=	9	ITC=	9
I=	61	X=	0.290	YN=	17.50	DEPN=	0.71	YC=	17.23	DEPC=	0.44	IFR=	0	ITN=	9	ITC=	9
I=	62	X=	0.295	YN=	17.64	DEPN=	0.89	YC=	17.21	DEPC=	0.46	IFR=	0	ITN=	9	ITC=	9
I=	63	X=	0.304	YN=	17.64	DEPN=	0.89	YC=	17.14	DEPC=	0.39	IFR=	0	ITN=	9	ITC=	9
I=	64	X=	0.313	YN=	17.63	DEPN=	0.88	YC=	17.09	DEPC=	0.34	IFR=	0	ITN=	9	ITC=	9
I=	65	X=	0.321	YN=	17.62	DEPN=	0.87	YC=	17.05	DEPC=	0.30	IFR=	0	ITN=	9	ITC=	9
I=	66	X=	0.330	YN=	17.61	DEPN=	0.86	YC=	17.03	DEPC=	0.28	IFR=	0	ITN=	9	ITC=	9
I=	67	X=	0.338	YN=	17.59	DEPN=	0.84	YC=	17.00	DEPC=	0.25	IFR=	0	ITN=	9	ITC=	9
I=	68	X=	0.347	YN=	17.37	DEPN=	0.62	YC=	16.98	DEPC=	0.23	IFR=	0	ITN=	9	ITC=	9
I=	69	X=	0.355	YN=	17.32	DEPN=	0.57	YC=	16.98	DEPC=	0.23	IFR=	0	ITN=	8	ITC=	8
I=	70	X=	0.364	YN=	17.28	DEPN=	0.53	YC=	16.95	DEPC=	0.20	IFR=	0	ITN=	8	ITC=	8
I=	71	X=	0.372	YN=	17.24	DEPN=	0.49	YC=	16.94	DEPC=	0.19	IFR=	0	ITN=	8	ITC=	8

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I=   72   X=   0.381   YN=    17.19   DEPN=    0.44   YC=    16.94   DEPC=    0.19   IFR= 0   ITN=   8   ITC=   8
I=   73   X=   0.389   YN=    17.16   DEPN=    0.41   YC=    16.93   DEPC=    0.18   IFR= 0   ITN=   8   ITC=   8
I=   74   X=   0.398   YN=    17.11   DEPN=    0.36   YC=    16.92   DEPC=    0.17   IFR= 0   ITN=   8   ITC=   8
I=   75   X=   0.432   YN=    16.98   DEPN=    0.40   YC=    16.78   DEPC=    0.19   IFR= 0   ITN=   8   ITC=   8
I=   76   X=   0.466   YN=    16.85   DEPN=    0.44   YC=    16.66   DEPC=    0.24   IFR= 0   ITN=   7   ITC=   9
I=   77   X=   0.500   YN=    16.70   DEPN=    0.45   YC=    16.55   DEPC=    0.30   IFR= 0   ITN=   7   ITC=   9
I=   78   X=   0.544   YN=    16.38   DEPN=    0.47   YC=    16.16   DEPC=    0.31   IFR= 0   ITN=   7   ITC=   9
I=   79   X=   0.588   YN=    15.94   DEPN=    0.49   YC=    15.76   DEPC=    0.31   IFR= 0   ITN=   7   ITC=   9
I=   80   X=   0.632   YN=    15.56   DEPN=    0.51   YC=    15.38   DEPC=    0.33   IFR= 0   ITN=   7   ITC=   9
I=   81   X=   0.676   YN=    15.17   DEPN=    0.52   YC=    15.00   DEPC=    0.35   IFR= 0   ITN=   9   ITC=   9
I=   82   X=   0.720   YN=    14.79   DEPN=    0.54   YC=    14.61   DEPC=    0.36   IFR= 0   ITN=   9   ITC=   9
I=   83   X=   0.764   YN=    14.42   DEPN=    0.57   YC=    14.22   DEPC=    0.37   IFR= 0   ITN=   9   ITC=   9
I=   84   X=   0.808   YN=    14.03   DEPN=    0.58   YC=    13.83   DEPC=    0.38   IFR= 0   ITN=   9   ITC=   9
I=   85   X=   0.852   YN=    13.64   DEPN=    0.59   YC=    13.44   DEPC=    0.39   IFR= 0   ITN=   9   ITC=   9
I=   86   X=   0.896   YN=    13.26   DEPN=    0.61   YC=    13.06   DEPC=    0.41   IFR= 0   ITN=   9   ITC=   9
I=   87   X=   0.940   YN=    12.87   DEPN=    0.62   YC=    12.66   DEPC=    0.41   IFR= 0   ITN=   9   ITC=   9

      (IFR(I),I=1,N)
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0    0    0    0
 0    0    0    0    0    0    0

 IN=   87      YNN=      18.00      DEP=      5.75
      I=   86      X=   0.896      QIL=      28.      YIL=      18.00      DEP=      5.35      ITB=   5
      I=   85      X=   0.852      QIL=      28.      YIL=      18.00      DEP=      4.95      ITB=   4
      I=   84      X=   0.808      QIL=      28.      YIL=      18.00      DEP=      4.55      ITB=   4
      I=   83      X=   0.764      QIL=      28.      YIL=      18.00      DEP=      4.15      ITB=   4
      I=   82      X=   0.720      QIL=      28.      YIL=      18.00      DEP=      3.75      ITB=   4
      I=   81      X=   0.676      QIL=      28.      YIL=      18.00      DEP=      3.35      ITB=   4
      I=   80      X=   0.632      QIL=      28.      YIL=      18.00      DEP=      2.95      ITB=   4
      I=   79      X=   0.588      QIL=      28.      YIL=      18.00      DEP=      2.55      ITB=   5
      I=   78      X=   0.544      QIL=      28.      YIL=      18.00      DEP=      2.15      ITB=   5
      I=   77      X=   0.500      QIL=      28.      YIL=      18.00      DEP=      1.75      ITB=   5
      I=   76      X=   0.466      QIL=      28.      YIL=      18.00      DEP=      1.59      ITB=   5
      I=   75      X=   0.432      QIL=      28.      YIL=      18.00      DEP=      1.42      ITB=   5
      I=   74      X=   0.398      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   5
      I=   73      X=   0.389      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   5
      I=   72      X=   0.381      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   5
      I=   71      X=   0.372      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   5
      I=   70      X=   0.364      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   69      X=   0.355      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   68      X=   0.347      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   67      X=   0.338      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   66      X=   0.330      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   65      X=   0.321      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   64      X=   0.313      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   63      X=   0.304      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   62      X=   0.295      QIL=      28.      YIL=      18.01      DEP=      1.26      ITB=   6
      I=   61      X=   0.290      QIL=      28.      YIL=      18.02      DEP=      1.23      ITB=   6
      I=   60      X=   0.285      QIL=      28.      YIL=      18.02      DEP=      1.19      ITB=   6
      I=   59      X=   0.280      QIL=      28.      YIL=      18.02      DEP=      1.15      ITB=   6
      I=   58      X=   0.275      QIL=      28.      YIL=      18.02      DEP=      1.12      ITB=   6
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I=	57	X=	0.269	QIL=	28.	YIL=	18.02	DEP=	1.08	ITB=	6
I=	56	X=	0.264	QIL=	28.	YIL=	18.03	DEP=	1.05	ITB=	6
I=	55	X=	0.259	QIL=	28.	YIL=	18.03	DEP=	1.01	ITB=	6
I=	54	X=	0.254	QIL=	28.	YIL=	18.03	DEP=	0.98	ITB=	6
I=	53	X=	0.248	QIL=	28.	YIL=	18.04	DEP=	0.94	ITB=	6
I=	52	X=	0.243	QIL=	28.	YIL=	18.04	DEP=	0.91	ITB=	6
I=	51	X=	0.238	QIL=	28.	YIL=	18.05	DEP=	0.88	ITB=	6
I=	50	X=	0.233	QIL=	28.	YIL=	18.06	DEP=	0.84	ITB=	6
I=	49	X=	0.227	QIL=	28.	YIL=	18.06	DEP=	0.81	ITB=	6
I=	48	X=	0.224	QIL=	28.	YIL=	18.07	DEP=	0.82	ITB=	7
I=	47	X=	0.221	QIL=	28.	YIL=	18.07	DEP=	0.82	ITB=	7
I=	46	X=	0.218	QIL=	28.	YIL=	18.07	DEP=	0.82	ITB=	7
I=	45	X=	0.215	QIL=	28.	YIL=	18.08	DEP=	0.83	ITB=	6
I=	44	X=	0.212	QIL=	28.	YIL=	18.08	DEP=	0.83	ITB=	6
I=	43	X=	0.209	QIL=	28.	YIL=	18.09	DEP=	0.84	ITB=	6
I=	42	X=	0.206	QIL=	28.	YIL=	18.10	DEP=	0.85	ITB=	6
I=	41	X=	0.203	QIL=	28.	YIL=	18.10	DEP=	0.85	ITB=	6
I=	40	X=	0.200	QIL=	28.	YIL=	18.11	DEP=	0.86	ITB=	6
I=	39	X=	0.197	QIL=	28.	YIL=	18.11	DEP=	0.86	ITB=	6
I=	38	X=	0.194	QIL=	28.	YIL=	18.11	DEP=	0.86	ITB=	6
I=	37	X=	0.191	QIL=	28.	YIL=	18.12	DEP=	0.87	ITB=	6
I=	36	X=	0.188	QIL=	28.	YIL=	18.12	DEP=	0.87	ITB=	6
I=	35	X=	0.185	QIL=	28.	YIL=	18.13	DEP=	0.88	ITB=	6
I=	34	X=	0.182	QIL=	28.	YIL=	18.13	DEP=	0.88	ITB=	6
I=	33	X=	0.179	QIL=	28.	YIL=	18.14	DEP=	0.89	ITB=	6
I=	32	X=	0.175	QIL=	28.	YIL=	18.14	DEP=	0.89	ITB=	6
I=	31	X=	0.172	QIL=	28.	YIL=	18.14	DEP=	0.89	ITB=	6
I=	30	X=	0.169	QIL=	28.	YIL=	18.15	DEP=	0.90	ITB=	6
I=	29	X=	0.166	QIL=	28.	YIL=	18.15	DEP=	0.90	ITB=	6
I=	28	X=	0.163	QIL=	28.	YIL=	18.16	DEP=	0.91	ITB=	6
I=	27	X=	0.160	QIL=	28.	YIL=	18.16	DEP=	0.91	ITB=	6
I=	26	X=	0.157	QIL=	28.	YIL=	18.17	DEP=	0.92	ITB=	6
I=	25	X=	0.154	QIL=	28.	YIL=	18.17	DEP=	0.92	ITB=	6
I=	24	X=	0.151	QIL=	28.	YIL=	18.17	DEP=	0.92	ITB=	6
I=	23	X=	0.148	QIL=	28.	YIL=	18.18	DEP=	0.93	ITB=	6
I=	22	X=	0.145	QIL=	28.	YIL=	18.18	DEP=	0.93	ITB=	6
I=	21	X=	0.142	QIL=	28.	YIL=	18.19	DEP=	0.94	ITB=	6
I=	20	X=	0.139	QIL=	28.	YIL=	18.19	DEP=	0.94	ITB=	6
I=	19	X=	0.136	QIL=	28.	YIL=	18.20	DEP=	0.95	ITB=	6
I=	18	X=	0.133	QIL=	28.	YIL=	18.20	DEP=	0.95	ITB=	6
I=	17	X=	0.130	QIL=	28.	YIL=	18.21	DEP=	0.96	ITB=	6
I=	16	X=	0.127	QIL=	28.	YIL=	18.21	DEP=	0.96	ITB=	6
I=	15	X=	0.124	QIL=	28.	YIL=	18.22	DEP=	0.97	ITB=	6
I=	14	X=	0.121	QIL=	28.	YIL=	18.22	DEP=	0.97	ITB=	6
I=	13	X=	0.118	QIL=	28.	YIL=	18.23	DEP=	0.98	ITB=	6
I=	12	X=	0.114	QIL=	28.	YIL=	18.23	DEP=	0.98	ITB=	6
I=	11	X=	0.111	QIL=	28.	YIL=	18.24	DEP=	0.99	ITB=	6
I=	10	X=	0.108	QIL=	28.	YIL=	18.25	DEP=	1.00	ITB=	6
I=	9	X=	0.105	QIL=	28.	YIL=	18.25	DEP=	1.00	ITB=	6
I=	8	X=	0.102	QIL=	28.	YIL=	18.26	DEP=	1.01	ITB=	6
I=	7	X=	0.088	QIL=	28.	YIL=	18.30	DEP=	1.02	ITB=	6
I=	6	X=	0.073	QIL=	28.	YIL=	18.35	DEP=	1.02	ITB=	6
I=	5	X=	0.058	QIL=	28.	YIL=	18.39	DEP=	1.03	ITB=	6
I=	4	X=	0.044	QIL=	28.	YIL=	18.43	DEP=	1.04	ITB=	6
I=	3	X=	0.029	QIL=	28.	YIL=	18.47	DEP=	1.04	ITB=	6
I=	2	X=	0.015	QIL=	28.	YIL=	18.51	DEP=	1.04	ITB=	6
I=	1	X=	0.000	QIL=	28.	YIL=	18.55	DEP=	1.05	ITB=	6

INITIAL CONDITIONS

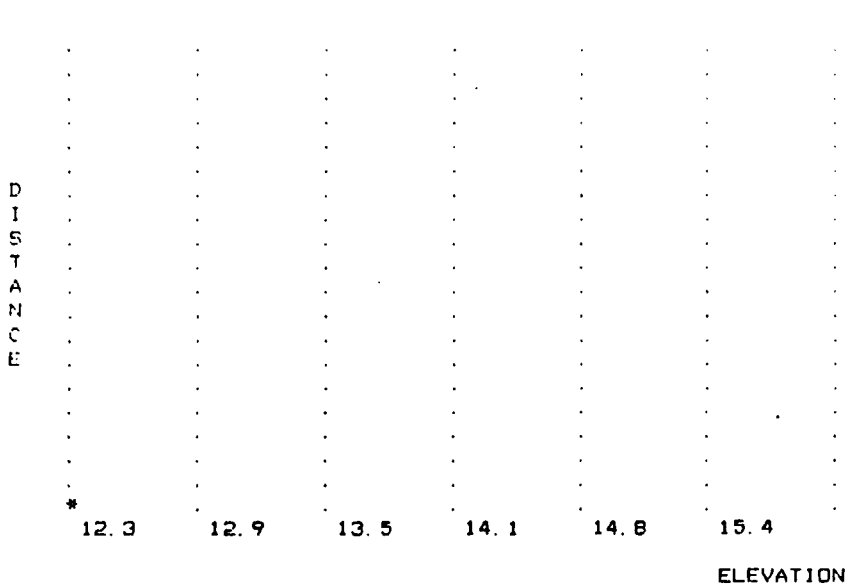
(GDI(I), I=1, N)

28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28	28.
28.	28.	28.	28.	28.	28.	28.	28.
28	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	28.
28.	28.	28.	28.	28.	28.	28.	

(YI(I), I=1, N)

18.55	18.51	18.47	18.43	18.39	18.35	18.30	18.26
18.25	18.25	18.24	18.23	18.23	18.22	18.22	18.21
18.21	18.20	18.20	18.19	18.19	18.18	18.18	18.17
18.17	18.17	18.16	18.16	18.15	18.15	18.14	18.14
18.14	18.13	18.13	18.12	18.12	18.11	18.11	18.11
18.10	18.10	18.09	18.08	18.08	18.07	18.07	18.07
18.06	18.06	18.05	18.04	18.04	18.03	18.03	18.03
18.02	18.02	18.02	18.02	18.02	18.01	18.01	18.01
18.01	18.01	18.01	18.01	18.01	18.01	18.01	18.01
18.01	18.01	18.00	18.00	18.00	18.00	18.00	18.00
18.00	18.00	18.00	18.00	18.00	18.00	18.00	

PROFILE OF INVERT ELEVATION (HS) AND INITIAL WATERSURFACE ELEVATION (YI) ALONG WATERWAY (X)
X(MILES) HST(FEET) -- "*" YI(FEET) -- "+"



X	HS	YI	DEPTH
0.00	17.50	18.55	1.05
0.10	17.25	18.26	1.01
0.23	17.25	18.06	0.81
0.30	16.75	18.01	1.26
0.40	16.75	18.01	1.26
0.50	16.25	18.00	1.75
0.94	12.25	18.00	5.75

TIME PARAMETERS OF OUTFLOW HYDROGRAPH IMMEDIATELY DOWNSTREAM OF DAM

PARAMETER	UNITS	VARIABLE	VALUE
TIME TO FAILURE	HR	TFH	25.000
TIME TO START OF RISING LIMB OF HYDROGRAPH	HR	TFD	0.000
TIME TO PEAK	HR	TP	25.000
TIME STEP SIZE	HR	DTHI	1.250

TT = 0.0000 DTH = 1.2500 ITERR = 0
GU(1) = 28.00 YU(1) = 18.55 GU(N) = 28.00 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	18.26	0.88	32.	66.	66.	0.028	0.0250	0.00	0.00	0.0	0.2	1.01
59	0.280	18.02	0.25	110.	242.	242.	0.028	0.0250	0.00	0.00	0.0	0.1	1.15

FRDM= 0.22 IIFR= 8 FRM=0.00 IIFM= 87

TT = 0.0000 DTH = 1.2500 ITERR = 1
GU(1) = 28.00 YU(1) = 18.55 GU(N) = 32.91 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	18.26	0.88	32.	66.	66.	0.028	0.0250	0.00	0.00	0.0	0.2	1.01
59	0.280	18.02	0.27	110.	242.	242.	0.030	0.0250	0.00	0.00	0.0	0.1	1.15

FRDM= 0.22 IIFR= 8 FRM=0.00 IIFM= 87

TT = 0.0000 DTH = 1.2500 ITERR = 1
GU(1) = 28.00 YU(1) = 18.55 GU(N) = 29.76 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	18.26	0.88	32.	66.	66.	0.028	0.0250	0.00	0.00	0.0	0.2	1.01
59	0.280	18.02	0.26	110.	242.	242.	0.029	0.0250	0.00	0.00	0.0	0.1	1.15

FRDM= 0.22 IIFR= 8 FRM=0.00 IIFM= 87

TT = 1.2500 DTH = 1.2500 ITERR = 2
GU(1) = 48.50 YU(1) = 18.74 GU(N) = 45.99 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	18.37	1.18	39.	73.	73.	0.046	0.0250	0.00	0.11	0.0	0.3	1.12
59	0.280	18.02	0.40	110.	242.	242.	0.044	0.0250	0.00	0.00	0.0	0.1	1.15

FRDM= 0.28 IIFR= 8 FRM=0.00 IIFM= 87

TT = 2.5000 DTH = 1.2500 ITERR = 1
GU(1) = 69.00 YU(1) = 18.92 GU(N) = 64.51 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	18.51	1.35	50.	82.	82.	0.068	0.0250	0.00	0.25	0.0	0.3	1.26
59	0.280	18.04	0.56	115.	249.	249.	0.064	0.0250	0.00	0.02	0.0	0.1	1.18

FRDM= 0.30 IIFR= 8 FRM=0.00 IIFM= 87

TT = 3.7500 DTH = 1.2500 ITERR = 1
GU(1) = 89.50 YU(1) = 19.05 GU(N) = 86.31 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	18.61	1.51	59.	88.	88.	0.088	0.0250	0.00	0.35	0.0	0.3	1.36
59	0.280	18.07	0.71	122.	257.	257.	0.087	0.0250	0.00	0.05	0.0	0.2	1.20

FRDM= 0.33 IIFR= 8 FRM=0.00 IIFM= 87

TT = 5.0000 DTH = 1.2500 ITERR = 1
GU(1) = 110.00 YU(1) = 19.17 GU(N) = 105.28 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	18.70	1.63	67.	94.	94.	0.109	0.0250	0.00	0.44	0.0	0.3	1.45
59	0.280	18.09	0.82	129.	265.	265.	0.106	0.0250	0.00	0.07	0.0	0.2	1.23

FRDM= 0.34 IIFR= 8 FRM=0.01 IIFM= 87

TT = 6.2500 DTH = 1.2500 ITERR = 2
GU(1) = 162.50 YU(1) = 19.40 GU(N) = 148.69 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	18.86	1.92	83.	105.	105.	0.159	0.0250	0.00	0.60	0.0	0.4	1.61
59	0.280	18.16	1.04	147.	286.	297.	0.152	0.0250	0.00	0.14	0.0	0.3	1.29

FRDM= 0.38 IIFR= 8 FRM=0.01 IIFM= 87

TT = 7.5000 DTH = 1.2500 ITERR = 1
GU(1) = 215.00 YU(1) = 19.60 GU(N) = 203.65 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.01	2.15	99.	114.	114.	0.213	0.0250	0.00	0.75	0.0	0.4	1.76
59	0.280	18.24	1.21	171.	311.	337.	0.208	0.0250	0.00	0.22	0.0	0.3	1.37

FRDM= 0.41 IIFR= 8 FRM=0.01 IIFM= 87

TT = 8.7500 DTH = 1.2500 ITERR = 1
GU(1) = 267.50 YU(1) = 19.78 GU(N) = 255.31 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	G	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	*******
8	0.102	19.13	2.34	113.	122.	122.	0.265	0.0250	0.00	0.87	0.0	0.4	1.89
59	0.280	18.31	1.34	194.	333.	373.	0.260	0.0250	0.00	0.29	0.0	0.3	1.45

FRDM= 0.43 IIFR= 8 FRM=0.01 IIFM= 87

TT = 10.0000 DTH = 1.2500 ITERR = 1
GU(1) = 320.00 YU(1) = 19.93 GU(N) = 307.58 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	G	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	*******
8	0.102	19.23	2.52	126.	129.	129.	0.318	0.0250	0.00	0.97	0.0	0.4	1.98
59	0.280	18.38	1.44	217.	354.	406.	0.313	0.0250	0.00	0.36	0.0	0.3	1.51

FRDM= 0.45 IIFR= 8 FRM=0.02 IIFM= 87

TT = 11.2500 DTH = 1.2500 ITERR = 2
GU(1) = 407.50 YU(1) = 20.14 GU(N) = 383.94 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	G	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	*******
8	0.102	19.37	2.77	145.	140.	140.	0.403	0.0250	0.00	1.11	0.0	0.5	2.12
59	0.280	18.47	1.57	251.	382.	451.	0.394	0.0250	0.00	0.45	0.0	0.3	1.61

FRDM= 0.48 IIFR= 8 FRM=0.02 IIFM= 87

TT = 12.5000 DTH = 1.2500 ITERR = 1
GU(1) = 495.00 YU(1) = 20.32 GU(N) = 475.00 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	G	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	*******
8	0.102	19.51	2.99	165.	151.	151.	0.492	0.0250	0.00	1.25	0.0	0.5	2.26
59	0.280	18.56	1.69	288.	411.	497.	0.485	0.0250	0.00	0.54	0.0	0.4	1.70

FRDM= 0.50 IIFR= 8 FRM=0.02 IIFM= 87

TT = 13.7500 DTH = 1.2500 ITERR = 1
GU(1) = 582.50 YU(1) = 20.46 GU(N) = 561.75 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	G	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	*******
8	0.102	19.62	3.17	183.	160.	160.	0.579	0.0250	0.00	1.36	0.0	0.5	2.37
59	0.280	18.64	1.78	321.	433.	526.	0.572	0.0250	0.00	0.62	0.0	0.4	1.78

FRDM= 0.52 IIFR= 8 FRM=0.03 IIFM= 87

TT = 15.0000 DTH = 1.2500 ITERR = 1

GU(1) = 670.00 YU(1) = 20.58 GU(N) = 649.47 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.73	3.33	200.	168.	168.	0.668	0.0250	0.00	1.47	0.0	0.5	2.46
59	0.280	18.72	1.86	354.	453.	547.	0.661	0.0250	0.00	0.70	0.0	0.4	1.85

FRDM= 0.54 IIFR= 8 FRM=0.03 IIFM= 87

TT = 16.2500 DTH = 1.2500 ITERR = 1
GU(1) = 790.00 YU(1) = 20.73 GU(N) = 759.74 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.86	3.54	222.	179.	179.	0.786	0.0250	0.00	1.60	0.0	0.6	2.61
59	0.280	18.81	1.96	395.	476.	571.	0.776	0.0250	0.00	0.79	0.0	0.4	1.94

FRDM= 0.56 IIFR= 8 FRM=0.04 IIFM= 87

TT = 17.5000 DTH = 1.2500 ITERR = 1
GU(1) = 910.00 YU(1) = 20.87 GU(N) = 883.37 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.98	3.71	244.	188.	188.	0.907	0.0250	0.00	1.72	0.0	0.6	2.73
59	0.280	18.89	2.05	438.	499.	595.	0.899	0.0250	0.00	0.88	0.0	0.4	2.03

FRDM= 0.57 IIFR= 8 FRM=0.05 IIFM= 87

TT = 18.7500 DTH = 1.2500 ITERR = 1
GU(1) = 1030.00 YU(1) = 20.99 GU(N) = 1002.67 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.09	3.87	265.	197.	197.	1.027	0.0250	0.00	1.83	0.0	0.6	2.84
59	0.280	18.97	2.13	479.	519.	617.	1.018	0.0250	0.00	0.95	0.0	0.4	2.11

FRDM= 0.59 IIFR= 8 FRM=0.05 IIFM= 87

TT = 20.0000 DTH = 1.2500 ITERR = 1
GU(1) = 1150.00 YU(1) = 21.11 GU(N) = 1122.91 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.19	4.01	286.	205.	205.	1.148	0.0250	0.00	1.93	0.0	0.6	2.94
59	0.280	19.05	2.20	518.	539.	637.	1.139	0.0250	0.00	1.03	0.0	0.4	2.18

FRDM= 0.60 IIFR= 8 FRM=0.06 IIFM= 87

TT = 21.2500 DTH = 1.2500 ITERR = 0
GU(1) = 1211.75 YU(1) = 21.17 GU(N) = 1202.67 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	20.24	4.08	297.	209.	209.	1.211	0.0250	0.00	1.98	0.0	0.6	2.99

59	0.280	19.09	2.23	542.	550.	649.	1.209	0.0250	0.00	1.07	0.0	0.4	2.23

FRDM= 0.60 IIFR= 8 FRM=0.06 IIFM= 87

TT = 22.5000 DTH = 1.2500 ITERR = 1
GU(1) = 1273.50 YU(1) = 21.22 GU(N) = 1258.19 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	******	*******	*******	*******	********	*******	******	******	*****	*****	*******
8	0.102	20.29	4.15	307.	211.	211.	1.272	0.0250	0.00	2.03	0.0	0.6	3.04
59	0.280	19.12	2.26	560.	559.	658.	1.267	0.0250	0.00	1.11	0.0	0.4	2.26

FRDM= 0.61 IIFR= 8 FRM=0.07 IIFM= 87.

TT = 23.7500 DTH = 1.2500 ITERR = 1
GU(1) = 1335.25 YU(1) = 21.28 GU(N) = 1321.86 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	******	*******	*******	*******	********	*******	******	******	*****	*****	*******
8	0.102	20.33	4.22	316.	212.	212.	1.334	0.0250	0.00	2.07	0.0	0.6	3.08
59	0.280	19.16	2.29	581.	568.	668.	1.330	0.0250	0.00	1.14	0.0	0.4	2.29

FRDM= 0.61 IIFR= 8 FRM=0.07 IIFM= 87

TT = 25.0000 DTH = 1.2500 ITERR = 1
GU(1) = 1397.00 YU(1) = 21.33 GU(N) = 1383.35 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	******	*******	*******	*******	********	*******	******	******	*****	*****	*******
8	0.102	20.37	4.29	325.	213.	213.	1.396	0.0250	0.00	2.11	0.0	0.6	3.12
59	0.280	19.19	2.32	600.	577.	677.	1.391	0.0250	0.00	1.18	0.0	0.4	2.33

FRDM= 0.61 IIFR= 8 FRM=0.07 IIFM= 87

TT = 26.2500 DTH = 1.2500 ITERR = 1
GU(1) = 1334.00 YU(1) = 21.28 GU(N) = 1357.80 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	******	*******	*******	*******	********	*******	******	******	*****	*****	*******
8	0.102	20.34	4.22	317.	212.	212.	1.337	0.0250	0.00	2.08	0.0	0.6	3.09
59	0.280	19.17	2.29	587.	571.	671.	1.345	0.0250	0.00	1.15	0.0	0.4	2.31

FRDM= 0.61 IIFR= 8 FRM=0.07 IIFM= 87

TT = 27.5000 DTH = 1.2500 ITERR = 1
GU(1) = 1271.00 YU(1) = 21.22 GU(N) = 1282.01 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	******	*******	*******	*******	********	*******	******	******	*****	*****	*******
8	0.102	20.29	4.14	307.	211.	211.	1.271	0.0250	0.00	2.03	0.0	0.6	3.04
59	0.280	19.13	2.26	564.	561.	660.	1.274	0.0250	0.00	1.11	0.0	0.4	2.27

FRDM= 0.61 IIFR= 8 FRM=0.07 IIFM= 87

TT = 28.7500 DTH = 1.2500 ITERR = 1
GU(1) = 1208.00 YU(1) = 21.17 GU(N) = 1222.74 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.24	4.07	297.	209.	209.	1.210	0.0250	0.00	1.98	0.0	0.6	2.99
59	0.280	19.10	2.23	545.	552	651.	1.215	0.0250	0.00	1.08	0.0	0.4	2.23

FRDM= 0.60 IIFR= 8 FRM=0.06 IIFM= 87

TT = 30.0000 DTH = 1.2500 ITERR = 1
GU(1) = 1145.00 YU(1) = 21.11 GU(N) = 1159.29 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.19	4.00	286.	205.	205.	1.146	0.0250	0.00	1.93	0.0	0.6	2.94
59	0.280	19.06	2.19	524.	542.	640.	1.150	0.0250	0.00	1.04	0.0	0.4	2.19

FRDM= 0.60 IIFR= 8 FRM=0.06 IIFM= 87

TT = 31.2500 DTH = 1.2500 ITERR = 1
GU(1) = 1060.00 YU(1) = 21.03 GU(N) = 1080.72 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.12	3.90	272.	200.	200.	1.062	0.0250	0.00	1.86	0.0	0.6	2.87
59	0.280	19.01	2.15	498.	529.	627.	1.069	0.0250	0.00	0.99	0.0	0.4	2.14

FRDM= 0.59 IIFR= 8 FRM=0.06 IIFM= 87

TT = 32.5000 DTH = 1.2500 ITERR = 1
GU(1) = 975.00 YU(1) = 20.94 GU(N) = 993.95 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	20.05	3.79	257.	194.	194.	0.977	0.0250	0.00	1.79	0.0	0.6	2.80
59	0.280	18.95	2.09	469.	515.	612.	0.983	0.0250	0.00	0.94	0.0	0.4	2.09

FRDM= 0.58 IIFR= 8 FRM=0.05 IIFM= 87

TT = 33.7500 DTH = 1.2500 ITERR = 1
GU(1) = 890.00 YU(1) = 20.85 GU(N) = 909.38 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.97	3.68	243.	187.	187.	0.892	0.0250	0.00	1.71	0.0	0.6	2.72
59	0.280	18.90	2.04	441.	500.	596.	0.899	0.0250	0.00	0.88	0.0	0.4	2.03

FRDM= 0.57 IIFR= 8 FRM=0.05 IIFM= 87

TT = 35.0000 DTH = 1.2500 ITERR = 1
GU(1) = 805.00 YU(1) = 20.75 GU(N) = 824.56 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********

8	0.102	19.88	3.55	227.	181.	181.	0.807	0.0250	0.00	1.62	0.0	0.6	2.63
59	0.280	18.84	1.98	411.	484.	580.	0.814	0.0250	0.00	0.82	0.0	0.4	1.97

FRDM= 0.56 IIFR= 8 FRM=0.04 IIFM= 87

TT = 36.2500 DTH = 1.2500 ITERR = 1
GU(1) = 741.25 YU(1) = 20.68 GU(N) = 754.11 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	19.82	3.45	215.	175.	175.	0.743	0.0250	0.00	1.56	0.0	0.5	2.57
59	0.280	18.79	1.93	387.	471.	566.	0.747	0.0250	0.00	0.77	0.0	0.4	1.92

FRDM= 0.55 IIFR= 8 FRM=0.04 IIFM= 87

TT = 37.5000 DTH = 1.2500 ITERR = 1
GU(1) = 677.50 YU(1) = 20.60 GU(N) = 692.92 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	19.75	3.34	203.	170.	170.	0.680	0.0250	0.00	1.49	0.0	0.5	2.50
59	0.280	18.74	1.88	365.	459.	553.	0.685	0.0250	0.00	0.72	0.0	0.4	1.88

FRDM= 0.54 IIFR= 8 FRM=0.04 IIFM= 87

TT = 38.7500 DTH = 1.2500 ITERR = 1
GU(1) = 613.75 YU(1) = 20.51 GU(N) = 628.50 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	19.67	3.23	191.	164.	164.	0.616	0.0250	0.00	1.41	0.0	0.5	2.42
59	0.280	18.69	1.82	341.	445.	539.	0.621	0.0250	0.00	0.67	0.0	0.4	1.82

FRDM= 0.53 IIFR= 8 FRM=0.03 IIFM= 87

TT = 40.0000 DTH = 1.2500 ITERR = 1
GU(1) = 550.00 YU(1) = 20.41 GU(N) = 565.03 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	19.59	3.10	178.	157.	157.	0.552	0.0250	0.00	1.33	0.0	0.5	2.34
59	0.280	18.63	1.76	318.	431.	524.	0.557	0.0250	0.00	0.62	0.0	0.4	1.77

FRDM= 0.51 IIFR= 8 FRM=0.03 IIFM= 87

TT = 41.2500 DTH = 1.2500 ITERR = 1
GU(1) = 515.00 YU(1) = 20.35 GU(N) = 520.90 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
8	0.102	19.54	3.03	170.	153.	153.	0.516	0.0250	0.00	1.28	0.0	0.5	2.29
59	0.280	18.60	1.71	302.	421.	514.	0.518	0.0250	0.00	0.58	0.0	0.4	1.73

FRDM= 0.51 IIFR= 8 FRM=0.03 IIFM= 87

TT = 42.5000 DTH = 1.2500 ITERR = 1
GU(1) = 480.00 YU(1) = 20.29 GU(N) = 489.03 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.50	2.95	163.	150.	150.	0.482	0.0250	0.00	1.24	0.0	0.5	2.25
59	0.280	18.57	1.68	289	412.	499.	0.485	0.0250	0.00	0.55	0.0	0.4	1.70

FRDM= 0.50 IIFR= 8 FRM=0.03 IIFM= 87

TT = 43.7500 DTH = 1.2500 ITERR = 1
GU(1) = 445.00 YU(1) = 20.22 GU(N) = 453.22 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.45	2.87	156.	146.	146.	0.446	0.0250	0.00	1.19	0.0	0.5	2.20
59	0.280	18.53	1.63	275.	401	481.	0.449	0.0250	0.00	0.51	0.0	0.3	1.67

FRDM= 0.49 IIFR= 8 FRM=0.02 IIFM= 87

TT = 45.0000 DTH = 1.2500 ITERR = 1
GU(1) = 410.00 YU(1) = 20.15 GU(N) = 418.25 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.39	2.78	148.	141.	141.	0.411	0.0250	0.00	1.13	0.0	0.5	2.14
59	0.280	18.50	1.59	261.	390.	464.	0.415	0.0250	0.00	0.48	0.0	0.3	1.63

FRDM= 0.48 IIFR= 8 FRM=0.02 IIFM= 87

TT = 46.2500 DTH = 1.2500 ITERR = 1
GU(1) = 387.50 YU(1) = 20.10 GU(N) = 391.87 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.35	2.72	143.	138.	138.	0.388	0.0250	0.00	1.09	0.0	0.5	2.10
59	0.280	18.47	1.56	250.	382.	451.	0.390	0.0250	0.00	0.45	0.0	0.3	1.60

FRDM= 0.47 IIFR= 8 FRM=0.02 IIFM= 87

TT = 47.5000 DTH = 1.2500 ITERR = 1
GU(1) = 365.00 YU(1) = 20.05 GU(N) = 370.58 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	******	******	********
8	0.102	19.32	2.66	138.	135.	135.	0.366	0.0250	0.00	1.06	0.0	0.5	2.07
59	0.280	18.45	1.52	242.	374.	439.	0.368	0.0250	0.00	0.43	0.0	0.3	1.58

FRDM= 0.46 IIFR= 8 FRM=0.02 IIFM= 87

TT = 48.7500 DTH = 1.2500 ITERR = 1
GU(1) = 342.50 YU(1) = 19.99 GU(N) = 347.81 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH

****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.28	2.59	133.	132.	132.	0.343	0.0250	0.00	1.02	0.0	0.5	2.03
59	0.280	18.42	1.49	232.	366.	426.	0.345	0.0250	0.00	0.40	0.0	0.3	1.55

FRDM= 0.46 IIFR= 8 FRM=0.02 IIFM= 87

TT = 50.0000 DTH = 1.2500 ITERR = 1
GU(1) = 320.00 YU(1) = 19.93 GU(N) = 325.26 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.24	2.52	127.	129.	129.	0.321	0.0250	0.00	0.98	0.0	0.4	1.99
59	0.280	18.39	1.45	222.	358.	413.	0.323	0.0250	0.00	0.37	0.0	0.3	1.53

FRDM= 0.45 IIFR= 8 FRM=0.02 IIFM= 87

TT = 51.2625 DTH = 1.2625 ITERR = 1
GU(1) = 303.59 YU(1) = 19.89 GU(N) = 306.92 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.21	2.47	123.	127.	127.	0.304	0.0250	0.00	0.95	0.0	0.4	1.96
59	0.280	18.37	1.42	215.	352.	402.	0.305	0.0250	0.00	0.35	0.0	0.3	1.51

FRDM= 0.44 IIFR= 8 FRM=0.02 IIFM= 87

TT = 52.5376 DTH = 1.2751 ITERR = 1
GU(1) = 287.01 YU(1) = 19.84 GU(N) = 290.95 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.18	2.41	119.	125.	125.	0.288	0.0250	0.00	0.92	0.0	0.4	1.93
59	0.280	18.35	1.39	208.	345.	393.	0.289	0.0250	0.00	0.33	0.0	0.3	1.49

FRDM= 0.44 IIFR= 8 FRM=0.02 IIFM= 87

TT = 53.8255 DTH = 1.2879 ITERR = 1
GU(1) = 270.27 YU(1) = 19.79 GU(N) = 274.06 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.14	2.35	115.	123.	123.	0.271	0.0250	0.00	0.88	0.0	0.4	1.89
59	0.280	18.33	1.36	200.	339.	382.	0.272	0.0250	0.00	0.31	0.0	0.3	1.46

FRDM= 0.43 IIFR= 8 FRM=0.01 IIFM= 87

TT = 55.1263 DTH = 1.3008 ITERR = 1
GU(1) = 253.74 YU(1) = 19.74 GU(N) = 257.38 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	19.11	2.29	111.	121.	121.	0.254	0.0250	0.00	0.85	0.0	0.4	1.86
59	0.280	18.31	1.33	193.	332.	371.	0.256	0.0250	0.00	0.29	0.0	0.3	1.44

FRDM= 0.42 IIFR= 8 FRM=0.01 IIFM= 87

TT = 56.4400 DTH = 1.3138 ITERR = 1
GU(1) = 240.60 YU(1) = 19.69 GU(N) = 243.23 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	19.09	2.24	107.	119.	119.	0.241	0.0250	0.00	0.82	0.0	0.4	1.82
59	0.280	18.29	1.30	187.	326.	362.	0.242	0.0250	0.00	0.27	0.0	0.3	1.42

FRDM= 0.42 IIFR= 8 FRM=0.01 IIFM= 87

TT = 57.7669 DTH = 1.3269 ITERR = 1
GU(1) = 227.33 YU(1) = 19.65 GU(N) = 230.29 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	19.05	2.19	104.	117.	117.	0.228	0.0250	0.00	0.79	0.0	0.4	1.80
59	0.280	18.27	1.27	181.	321.	353.	0.229	0.0250	0.00	0.25	0.0	0.3	1.41

FRDM= 0.41 IIFR= 8 FRM=0.01 IIFM= 87

TT = 59.1071 DTH = 1.3402 ITERR = 1
GU(1) = 213.93 YU(1) = 19.60 GU(N) = 216.78 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	19.02	2.14	100.	115.	115.	0.214	0.0250	0.00	0.76	0.0	0.4	1.77
59	0.280	18.25	1.23	175.	315.	344.	0.216	0.0250	0.00	0.23	0.0	0.3	1.39

FRDM= 0.40 IIFR= 8 FRM=0.01 IIFM= 87

TT = 60.4607 DTH = 1.3536 ITERR = 1
GU(1) = 200.85 YU(1) = 19.55 GU(N) = 203.59 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	18.99	2.08	97.	113.	113.	0.201	0.0250	0.00	0.73	0.0	0.4	1.74
59	0.280	18.23	1.20	169.	309.	334.	0.203	0.0250	0.00	0.22	0.0	0.3	1.37

FRDM= 0.40 IIFR= 8 FRM=0.01 IIFM= 87

TT = 61.8278 DTH = 1.3671 ITERR = 1
GU(1) = 188.55 YU(1) = 19.51 GU(N) = 191.12 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	*******	*******	*******	********	*******	*******	*******	******	******	********
8	0.102	18.95	2.03	93.	111.	111.	0.189	0.0250	0.00	0.69	0.0	0.4	1.70
59	0.280	18.22	1.16	164.	303.	325.	0.190	0.0250	0.00	0.20	0.0	0.3	1.35

FRDM= 0.39 IIFR= 8 FRM=0.01 IIFM= 87

TT = 63.2085 DTH = 1.3808 ITERR = 1
GU(1) = 176.12 YU(1) = 19.46 GU(N) = 178.79 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.92	1.98	69.	109.	109.	0.177	0.0250	0.00	0.66	0.0	0.4	1.67
59	0.280	18.20	1.12	158.	298.	317.	0.178	0.0250	0.00	0.18	0.0	0.3	1.33

FRDM= 0.38 IIFR= 8 FRM=0.01 IIFM= 87

TT = 64.6031 DTH = 1.3946 ITERR = 1
GU(1) = 163.57 YU(1) = 19.41 GU(N) = 166.25 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.88	1.92	86.	106.	106.	0.164	0.0250	0.00	0.62	0.0	0.4	1.63
59	0.280	18.18	1.08	153.	292.	307.	0.165	0.0250	0.00	0.16	0.0	0.3	1.31

FRDM= 0.38 IIFR= 8 FRM=0.01 IIFM= 87

TT = 66.0117 DTH = 1.4085 ITERR = 1
GU(1) = 154.94 YU(1) = 19.38 GU(N) = 156.54 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.86	1.88	83.	104.	104.	0.155	0.0250	0.00	0.60	0.0	0.4	1.61
59	0.280	18.17	1.05	149.	288.	300.	0.156	0.0250	0.00	0.15	0.0	0.3	1.30

FRDM= 0.37 IIFR= 8 FRM=0.01 IIFM= 87

TT = 67.4343 DTH = 1.4226 ITERR = 1
GU(1) = 147.83 YU(1) = 19.35 GU(N) = 149.45 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.84	1.84	80.	103.	103.	0.148	0.0250	0.00	0.58	0.0	0.4	1.59
59	0.280	18.15	1.02	146.	284.	295.	0.149	0.0250	0.00	0.14	0.0	0.3	1.29

FRDM= 0.37 IIFR= 8 FRM=0.01 IIFM= 87

TT = 68.8711 DTH = 1.4368 ITERR = 1
GU(1) = 140.64 YU(1) = 19.32 GU(N) = 142.31 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.81	1.80	78.	102	102	0.141	0.0250	0.00	0.55	0.0	0.4	1.56
59	0.280	18.14	0.99	143.	281.	290.	0.142	0.0250	0.00	0.13	0.0	0.2	1.28

FRDM= 0.36 IIFR= 8 FRM=0.01 IIFM= 87

TT = 70.3223 DTH = 1.4512 ITERR = 1
GU(1) = 132.74 YU(1) = 19.28 GU(N) = 134.59 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.79	1.76	76.	100.	100.	0.133	0.0250	0.00	0.53	0.0	0.4	1.54
59	0.280	18.13	0.96	140.	278.	284.	0.134	0.0250	0.00	0.11	0.0	0.2	1.27

FRDM= 0.36 IIFR= 8 FRM=0.01 IIFM= 87

TT = 71.7890 DTH = 1.4657 ITERR = 1
GU(1) = 122.48 YU(1) = 19.23 GU(N) = 124.94 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.75	1.71	72.	98.	98.	0.123	0.0250	0.00	0.49	0.0	0.3	1.50
59	0.280	18.12	0.91	136.	273.	277.	0.124	0.0250	0.00	0.10	0.0	0.2	1.25

FRDM= 0.35 IIFR= 8 FRM=0.01 IIFM= 87

TT = 73.2684 DTH = 1.4804 ITERR = 1
GU(1) = 112.12 YU(1) = 19.18 GU(N) = 114.39 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.71	1.65	68.	95.	95.	0.113	0.0250	0.00	0.45	0.0	0.3	1.46
59	0.280	18.10	0.86	132.	268.	270.	0.114	0.0250	0.00	0.08	0.0	0.2	1.24

FRDM= 0.34 IIFR= 8 FRM=0.01 IIFM= 87

TT = 74.7636 DTH = 1.4952 ITERR = 1
GU(1) = 101.65 YU(1) = 19.13 GU(N) = 104.06 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.67	1.58	65.	93.	93.	0.102	0.0250	0.00	0.41	0.0	0.3	1.42
59	0.280	18.09	0.81	128.	264.	264.	0.103	0.0250	0.00	0.07	0.0	0.2	1.22

FRDM= 0.33 IIFR= 8 FRM=0.01 IIFM= 87

TT = 76.2738 DTH = 1.5101 ITERR = 1
GU(1) = 94.90 YU(1) = 19.09 GU(N) = 96.33 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.64	1.54	62.	91.	91.	0.095	0.0250	0.00	0.38	0.0	0.3	1.39
59	0.280	18.08	0.77	125.	261.	261.	0.096	0.0250	0.00	0.06	0.0	0.2	1.21

FRDM= 0.33 IIFR= 8 FRM=0.01 IIFM= 87

TT = 77.7990 DTH = 1.5252 ITERR = 1
GU(1) = 88.80 YU(1) = 19.05 GU(N) = 90.48 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	********	*******	********	********	*******	********	********	*******	*******	******	******	********
8	0.102	18.62	1.50	60.	89.	89.	0.089	0.0250	0.00	0.36	0.0	0.3	1.37
59	0.280	18.07	0.73	123.	258.	258.	0.090	0.0250	0.00	0.05	0.0	0.2	1.20

FRDM= 0.32 IIFR= 8 FRM=0.00 IIFM= 87

TT = 79.3395 DTH = 1.5405 ITERR = 1
GU(1) = 82.64 YU(1) = 19.01 GU(N) = 84.27 YU(N) = 18.00

I	X(I)	Y	V	A	B	BT	Q	CMM	FKC	WAVHT	DISV	FRD	DEPTH
****	*******	*********	*******	********	********	*******	*********	********	*******	*******	*******	*******	********
8	0.102	18.59	1.45	57.	87.	87.	0.083	0.0250	0.00	0.33	0.0	0.3	1.34
59	0.280	18.06	0.69	121.	256.	256.	0.084	0.0250	0.00	0.04	0.0	0.2	1.20

FRDM= 0.32 IIFR= 8 FRM=0.00 IIFM= 67

NORMALIZED CONSERVATION OF MASS AS PERCENT OF MAX FLOW IN REACH = -0.02

ROUTING COMPLETED.

KTIME= 61 ALLOWABLE KTIME= 699 TT= 80.9

PROFILE OF CRESTS AND TIMES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

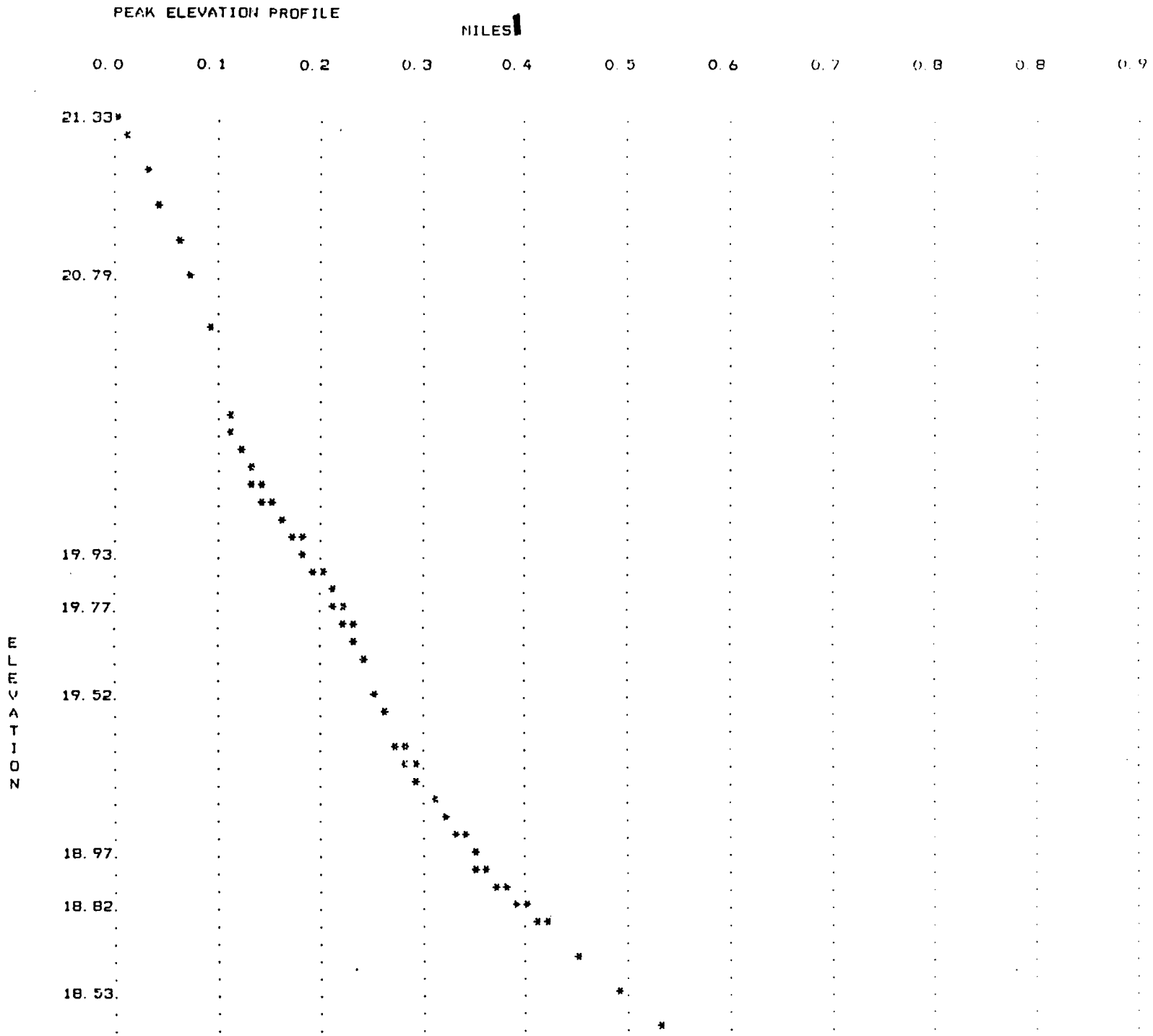
DISTANCE FROM DAM MILE	MAX ELEV FEET	MAX FLOW CFS	TIME MAX ELEV-HRS	MAX VEL FPS	FLOOD ELEV FEET	TIME FLOOD ELEV-HRS
0.000	21.33	1397	25.000	3.36	0.00	0.00
0.015	21.24	1396	25.000	3.36	0.00	0.00
0.029	21.15	1396	25.000	3.38	0.00	0.00
0.044	21.04	1396	25.000	3.42	0.00	0.00
0.058	20.93	1396	25.000	3.49	0.00	0.00
0.073	20.79	1396	25.000	3.61	0.00	0.00
0.088	20.63	1395	25.000	3.82	0.00	0.00
0.102	20.37	1395	25.000	4.29	0.00	0.00
0.105	20.35	1395	25.000	4.17	0.00	0.00
0.108	20.32	1395	25.000	4.05	0.00	0.00
0.111	20.29	1395	25.000	3.94	0.00	0.00
0.114	20.27	1395	25.000	3.84	0.00	0.00
0.118	20.24	1395	25.000	3.74	0.00	0.00
0.121	20.22	1395	25.000	3.65	0.00	0.00
0.124	20.20	1395	25.000	3.56	0.00	0.00
0.127	20.18	1395	25.000	3.48	0.00	0.00
0.130	20.16	1395	25.000	3.41	0.00	0.00
0.133	20.14	1395	25.000	3.34	0.00	0.00
0.136	20.12	1395	25.000	3.27	0.00	0.00
0.139	20.11	1395	25.000	3.21	0.00	0.00
0.142	20.09	1395	25.000	3.15	0.00	0.00
0.145	20.07	1394	25.000	3.09	0.00	0.00
0.148	20.05	1394	25.000	3.04	0.00	0.00
0.151	20.04	1394	25.000	2.99	0.00	0.00
0.154	20.02	1394	25.000	2.95	0.00	0.00
0.157	20.01	1394	25.000	2.90	0.00	0.00
0.160	19.99	1394	25.000	2.86	0.00	0.00
0.163	19.98	1394	25.000	2.83	0.00	0.00
0.166	19.96	1394	25.000	2.79	0.00	0.00
0.169	19.94	1394	25.000	2.76	0.00	0.00
0.172	19.93	1394	25.000	2.73	0.00	0.00
0.175	19.91	1394	25.000	2.70	0.00	0.00
0.179	19.90	1394	25.000	2.68	0.00	0.00
0.182	19.88	1394	25.000	2.65	0.00	0.00
0.185	19.87	1393	25.000	2.63	0.00	0.00
0.188	19.85	1393	25.000	2.61	0.00	0.00
0.191	19.84	1393	25.000	2.60	0.00	0.00
0.194	19.82	1393	25.000	2.58	0.00	0.00
0.197	19.80	1393	25.000	2.57	0.00	0.00
0.200	19.79	1393	25.000	2.56	0.00	0.00
0.203	19.77	1393	25.000	2.56	0.00	0.00
0.206	19.75	1393	25.000	2.55	0.00	0.00
0.209	19.74	1393	25.000	2.55	0.00	0.00
0.212	19.72	1393	25.000	2.55	0.00	0.00
0.215	19.70	1393	25.000	2.56	0.00	0.00
0.218	19.68	1393	25.000	2.57	0.00	0.00
0.221	19.65	1392	25.000	2.58	0.00	0.00

0.224	19.63	1392	25.000	2.60	0.00	0.00

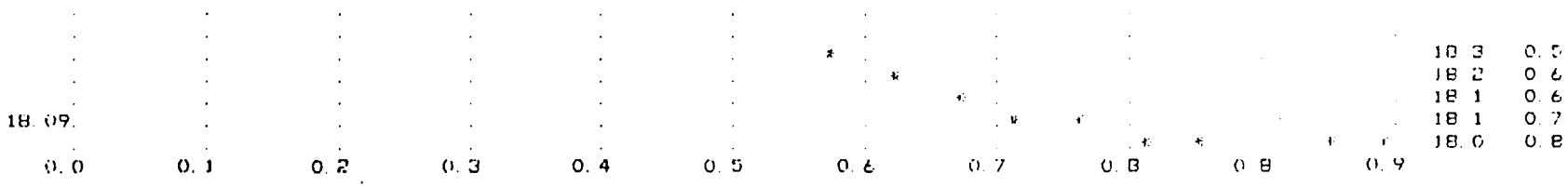
PROFILE OF CRESTS AND TIMES FOR N. B. UPPER W/BALSAM
BELOW 100 YR STORM

DISTANCE FROM DAM MILE	MAX ELEV FEET	MAX FLOW CFS	TIME MAX ELEV-HRS	MAX VEL FPS	FLOOD ELEV FEET	TIME FLOOD ELEV-HRS
********	********	********	********	********	**********	**********
0.227	19.61	1392	25.000	2.63	0.00	0.00
0.233	19.56	1392	25.000	2.64	0.00	0.00
0.238	19.52	1392	25.000	2.66	0.00	0.00
0.243	19.48	1392	25.000	2.66	0.00	0.00
0.248	19.43	1392	25.000	2.66	0.00	0.00
0.254	19.39	1391	25.000	2.64	0.00	0.00
0.259	19.35	1391	25.000	2.61	0.00	0.00
0.264	19.31	1391	25.000	2.57	0.00	0.00
0.269	19.26	1391	25.000	2.50	0.00	0.00
0.275	19.23	1391	25.000	2.42	0.00	0.00
0.280	19.19	1391	25.000	2.32	0.00	0.00
0.285	19.16	1391	25.000	2.20	0.00	0.00
0.290	19.14	1390	25.000	2.07	0.00	0.00
0.295	19.12	1390	25.000	1.94	0.00	0.00
0.304	19.08	1390	25.000	1.90	0.00	0.00
0.313	19.04	1390	25.000	1.87	0.00	0.00
0.321	19.00	1390	25.000	1.83	0.00	0.00
0.330	18.97	1389	25.000	1.80	0.00	0.00
0.338	18.93	1389	25.000	1.77	0.00	0.00
0.347	18.90	1389	25.000	1.73	0.00	0.00
0.355	18.87	1389	25.000	1.70	0.00	0.00
0.364	18.85	1388	25.000	1.67	0.00	0.00
0.372	18.82	1388	25.000	1.64	0.00	0.00
0.381	18.79	1388	25.000	1.61	0.00	0.00
0.389	18.77	1388	25.000	1.58	0.00	0.00
0.398	18.75	1387	25.000	1.55	0.00	0.00
0.432	18.64	1386	25.000	1.65	0.00	0.00
0.466	18.53	1386	25.000	1.77	0.00	0.00
0.500	18.40	1385	25.000	1.93	0.00	0.00
0.544	18.28	1384	25.000	1.75	0.00	0.00
0.588	18.19	1384	25.000	1.56	0.00	0.00
0.632	18.13	1384	25.000	1.39	0.00	0.00
0.676	18.09	1383	25.000	1.25	0.00	0.00
0.720	18.06	1383	25.000	1.13	0.00	0.00
0.764	18.04	1383	25.000	1.02	0.00	0.00
0.808	18.03	1383	25.000	0.94	0.00	0.00
0.852	18.02	1383	25.000	0.86	0.00	0.00
0.896	18.01	1383	25.000	0.80	0.00	0.00
0.940	18.00	1383	0.000	0.74	0.00	0.00

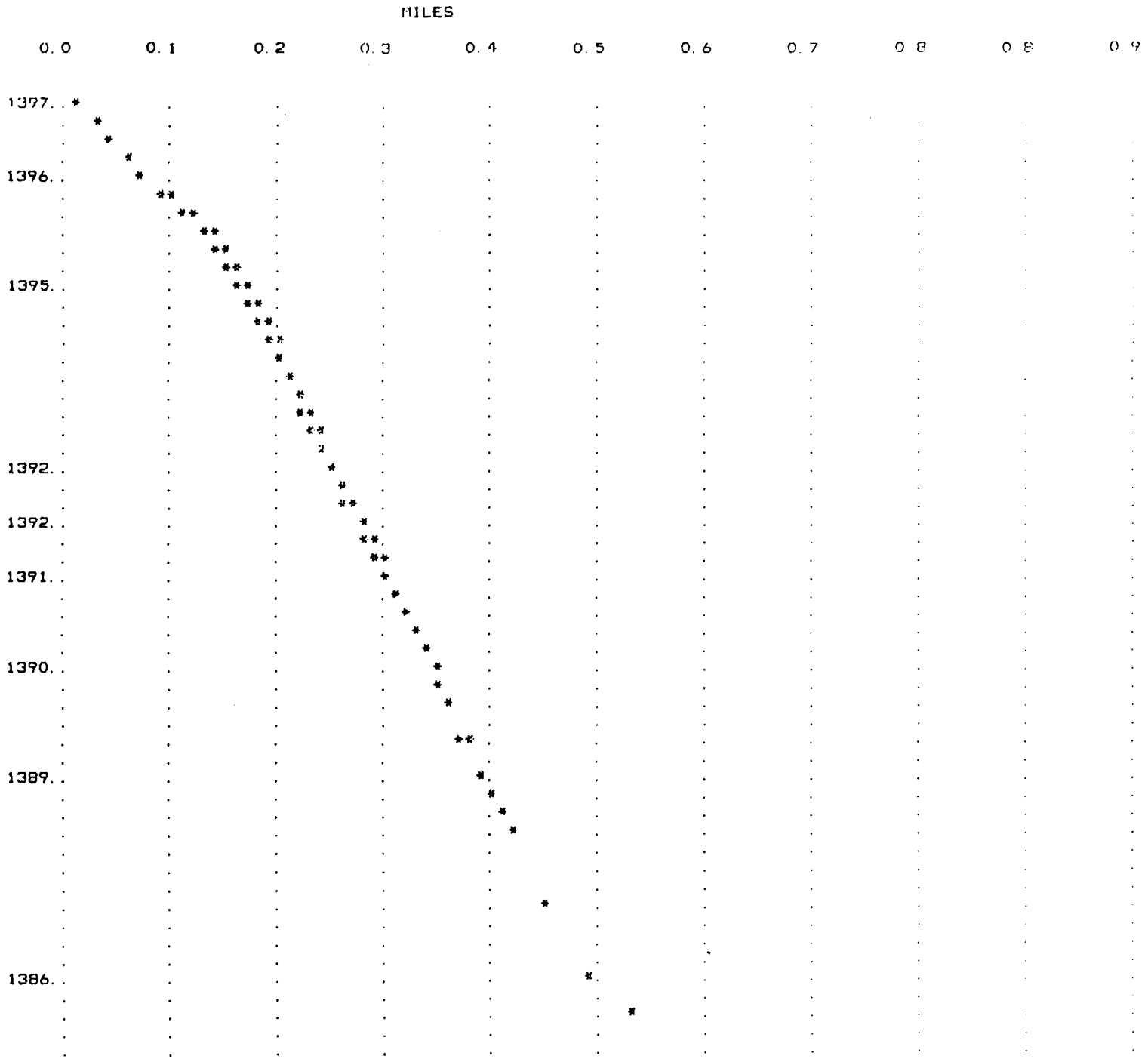
PEAK ELEVATION PROFILE



ELEV FEET	MILE
21.3	0.0
21.2	0.0
21.1	0.0
21.0	0.0
20.9	0.1
20.8	0.1
20.6	0.1
20.4	0.1
20.3	0.1
20.3	0.1
20.2	0.1
20.2	0.1
20.1	0.1
20.0	0.2
20.0	0.2
19.9	0.2
19.9	0.2
19.8	0.2
19.8	0.2
19.7	0.2
19.7	0.2
19.6	0.2
19.5	0.2
19.4	0.2
19.3	0.3
19.3	0.3
19.2	0.3
19.2	0.3
19.1	0.3
19.0	0.3
19.0	0.3
18.9	0.3
18.9	0.4
18.8	0.4
18.8	0.4
18.6	0.4
18.5	0.5
18.4	0.5


18.09
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.8
0.9
18.3 0.5
18.2 0.6
18.1 0.6
18.1 0.7
18.0 0.8

PEAK DISCHARGE PROFILE



DISCHARGE CFS	MILE
1397.	0.00
1397.	0.03
1396.	0.04
1396.	0.06
1396.	0.07
1396.	0.09
1396	0.11
1395	0.12
1395	0.14
1395	0.15
1395.	0.16
1394.	0.17
1394.	0.18
1394.	0.18
1394.	0.19
1394.	0.20
1393.	0.21
1393.	0.22
1393.	0.22
1393.	0.23
1392.	0.24
1392.	0.25
1392.	0.25
1392.	0.26
1392.	0.27
1391.	0.28
1391.	0.29
1391.	0.30
1391.	0.30
1390.	0.31
1390.	0.32
1390.	0.33
1390.	0.34
1389.	0.35
1389.	0.36
1389.	0.37
1388.	0.38
1388.	0.39
1388.	0.40
1387.	0.43
1386.	0.47
1385.	0.50

1384.
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.8
0.9
1385 0.54
1384 0.57
1384 0.63
1384 0.66
1384. 0.72
1384. 0.76

TIME TO PEAK ELEVATION PROFILE

MILES

	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9	HOUR	MILE	ELEV
25.00	* ** ** *	********	********	********	**	* *	* *	* *	* *	*	*	25.0	0.0	21.3

HOURS

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.8 0.9 0.0 0.9 18 C

K	TTP(K)	YC(K,I),I=1,NI1)					
1	0.000	18.55	18.26	18.06	18.01	18.01	18.00
2	1.250	18.74	18.37	18.08	18.01	18.01	18.00
3	2.500	18.92	18.51	18.17	18.03	18.01	18.00
4	3.750	19.05	18.61	18.23	18.05	18.01	18.00
5	5.000	19.17	18.70	18.30	18.06	18.01	18.00
6	6.250	19.40	18.86	18.42	18.12	18.03	18.01
7	7.500	19.60	19.01	18.54	18.18	18.05	18.01
8	8.750	19.78	19.13	18.64	18.25	18.07	18.02
9	10.000	19.93	19.23	18.72	18.31	18.10	18.03
10	11.250	20.14	19.37	18.84	18.40	18.15	18.05
11	12.500	20.32	19.51	18.94	18.49	18.21	18.07
12	13.750	20.46	19.62	19.03	18.57	18.26	18.09
13	15.000	20.58	19.73	19.11	18.64	18.32	18.12
14	16.250	20.73	19.86	19.21	18.73	18.39	18.16
15	17.500	20.87	19.98	19.30	18.81	18.47	18.20
16	18.750	20.99	20.09	19.38	18.89	18.54	18.25
17	20.000	21.11	20.19	19.46	18.97	18.61	18.30
18	21.250	21.17	20.24	19.50	19.01	18.65	18.33
19	22.500	21.22	20.29	19.54	19.05	18.68	18.35
20	23.750	21.28	20.33	19.57	19.08	18.71	18.38
21	25.000	21.33	20.37	19.61	19.12	18.75	18.40
22	26.250	21.28	20.34	19.58	19.10	18.73	18.39
23	27.500	21.22	20.29	19.54	19.06	18.69	18.36
24	28.750	21.17	20.24	19.51	19.02	18.66	18.34
25	30.000	21.11	20.19	19.47	18.98	18.62	18.31
26	31.250	21.03	20.12	19.41	18.93	18.58	18.28
27	32.500	20.94	20.05	19.36	18.88	18.53	18.24
28	33.750	20.85	19.97	19.30	18.82	18.48	18.21
29	35.000	20.75	19.88	19.24	18.76	18.43	18.18
30	36.250	20.68	19.82	19.19	18.71	18.38	18.15
31	37.500	20.60	19.75	19.13	18.66	18.34	18.13
32	38.750	20.51	19.67	19.08	18.61	18.30	18.11
33	40.000	20.41	19.59	19.02	18.56	18.26	18.09
34	41.250	20.35	19.54	18.98	18.52	18.23	18.08
35	42.500	20.29	19.50	18.94	18.49	18.21	18.07
36	43.750	20.22	19.45	18.90	18.46	18.19	18.06
37	45.000	20.15	19.39	18.86	18.42	18.17	18.05
38	46.250	20.10	19.35	18.83	18.40	18.15	18.05
39	47.500	20.05	19.32	18.80	18.37	18.14	18.04
40	48.750	19.99	19.28	18.77	18.35	18.12	18.04
41	50.000	19.93	19.24	18.74	18.32	18.11	18.03
42	51.263	19.89	19.21	18.71	18.30	18.10	18.03
43	52.538	19.84	19.18	18.68	18.29	18.09	18.03
44	53.826	19.79	19.14	18.66	18.27	18.08	18.02
45	55.126	19.74	19.11	18.63	18.25	18.07	18.02
46	56.440	19.69	19.08	18.60	18.23	18.07	18.02
47	57.767	19.65	19.05	18.58	18.21	18.06	18.02
48	59.107	19.60	19.02	18.56	18.20	18.05	18.01
49	60.461	19.55	18.99	18.53	18.18	18.05	18.01
50	61.828	19.51	18.95	18.50	18.16	18.04	18.01
51	63.209	19.46	18.92	18.48	18.15	18.04	18.01

52	64.603	19.41	18.88	18.45	18.13	18.03	18.01
53	65.012	19.38	18.86	18.43	18.12	18.03	18.01
54	67.434	19.35	18.84	18.41	18.11	18.03	18.01
55	68.871	19.32	18.81	18.39	18.10	18.02	18.01
56	70.322	19.28	18.79	18.37	18.10	18.02	18.01
57	71.788	19.23	18.75	18.34	18.08	18.02	18.00
58	73.268	19.18	18.71	18.31	18.07	18.02	18.00
59	74.764	19.13	18.67	18.28	18.06	18.01	18.00
60	76.274	19.09	18.64	18.26	18.05	18.01	18.00
61	77.799	19.05	18.62	18.24	18.05	18.01	18.00

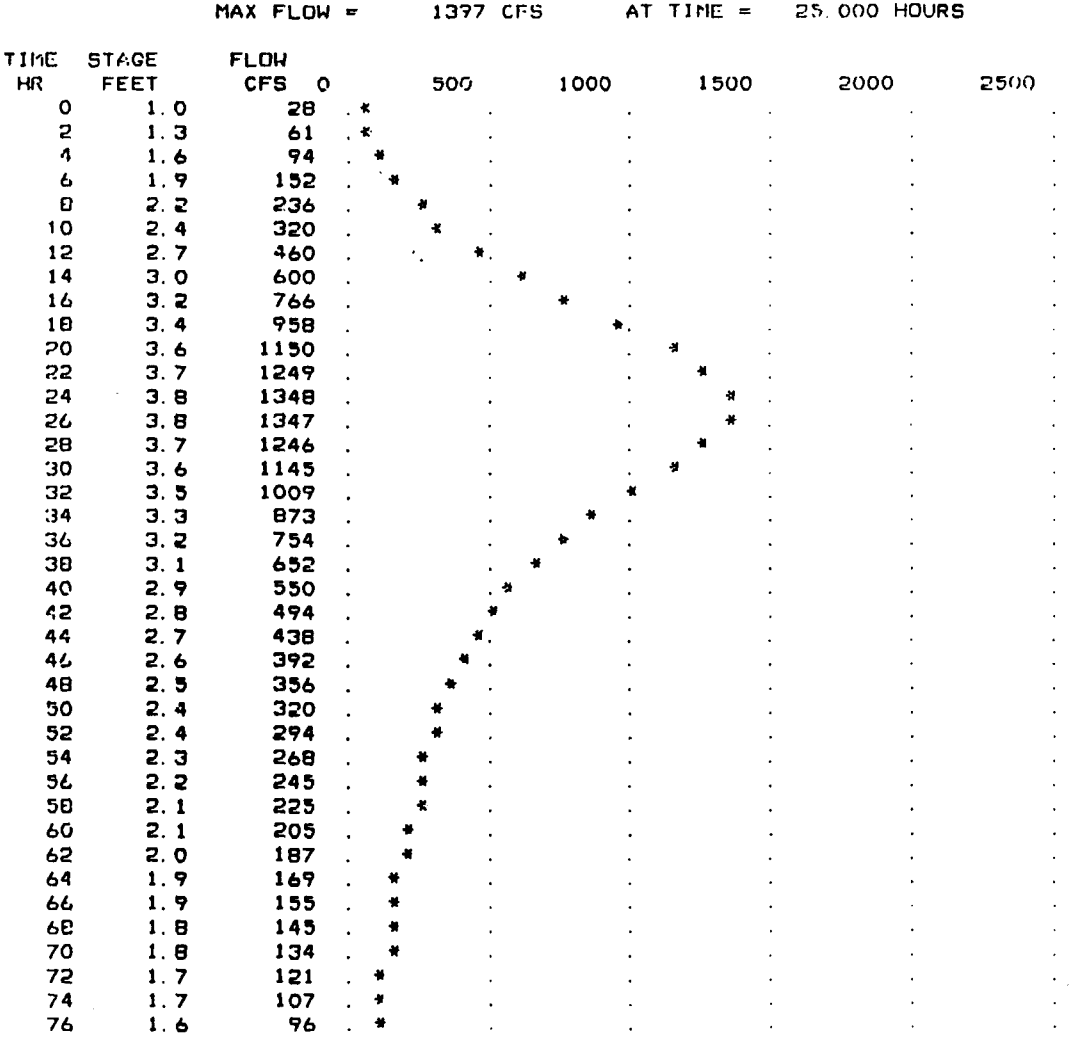
K	TTP(K)	QC(K,I),I=1,NTT)					
*****	********	**********					
1	0.000	0.03	0.03	0.03	0.03	0.03	0.03
2	1.250	0.05	0.05	0.04	0.04	0.04	0.05
3	2.500	0.07	0.07	0.07	0.06	0.06	0.06
4	3.750	0.09	0.09	0.09	0.09	0.09	0.09
5	5.000	0.11	0.11	0.11	0.11	0.11	0.10
6	6.250	0.16	0.16	0.15	0.15	0.15	0.15
7	7.500	0.22	0.21	0.21	0.21	0.21	0.20
8	8.750	0.27	0.27	0.26	0.26	0.26	0.26
9	10.000	0.32	0.32	0.31	0.31	0.31	0.31
10	11.250	0.41	0.40	0.40	0.39	0.39	0.39
11	12.500	0.50	0.49	0.49	0.48	0.48	0.48
12	13.750	0.58	0.58	0.57	0.57	0.57	0.56
13	15.000	0.67	0.67	0.66	0.66	0.65	0.65
14	16.250	0.79	0.79	0.78	0.77	0.77	0.76
15	17.500	0.91	0.91	0.90	0.90	0.89	0.89
16	18.750	1.03	1.03	1.02	1.02	1.01	1.01
17	20.000	1.15	1.15	1.14	1.14	1.13	1.13
18	21.250	1.21	1.21	1.21	1.21	1.21	1.20
19	22.500	1.27	1.27	1.27	1.27	1.26	1.26
20	23.750	1.34	1.33	1.33	1.33	1.33	1.32
21	25.000	1.40	1.40	1.39	1.39	1.39	1.39
22	26.250	1.33	1.34	1.34	1.35	1.35	1.35
23	27.500	1.27	1.27	1.27	1.27	1.28	1.28
24	28.750	1.21	1.21	1.21	1.22	1.22	1.22
25	30.000	1.15	1.15	1.15	1.15	1.15	1.16
26	31.250	1.06	1.06	1.07	1.07	1.07	1.08
27	32.500	0.98	0.98	0.98	0.98	0.99	0.99
28	33.750	0.89	0.89	0.90	0.90	0.90	0.91
29	35.000	0.81	0.81	0.81	0.81	0.82	0.82
30	36.250	0.74	0.74	0.75	0.75	0.75	0.75
31	37.500	0.68	0.68	0.68	0.69	0.69	0.69
32	38.750	0.61	0.62	0.62	0.62	0.62	0.63
33	40.000	0.55	0.55	0.56	0.56	0.56	0.56
34	41.250	0.52	0.52	0.52	0.52	0.52	0.52
35	42.500	0.48	0.48	0.48	0.49	0.49	0.49
36	43.750	0.45	0.45	0.45	0.45	0.45	0.45
37	45.000	0.41	0.41	0.41	0.41	0.42	0.42
38	46.250	0.39	0.39	0.39	0.39	0.39	0.39
39	47.500	0.37	0.37	0.37	0.37	0.37	0.37
40	48.750	0.34	0.34	0.34	0.35	0.35	0.35
41	50.000	0.32	0.32	0.32	0.32	0.32	0.33
42	51.263	0.30	0.30	0.30	0.31	0.31	0.31
43	52.538	0.29	0.29	0.29	0.29	0.29	0.29
44	53.826	0.27	0.27	0.27	0.27	0.27	0.27
45	55.126	0.25	0.25	0.26	0.26	0.26	0.26
46	56.440	0.24	0.24	0.24	0.24	0.24	0.24
47	57.767	0.23	0.23	0.23	0.23	0.23	0.23
48	59.107	0.21	0.21	0.22	0.22	0.22	0.22
49	60.461	0.20	0.20	0.20	0.20	0.20	0.20
50	61.828	0.19	0.19	0.19	0.19	0.19	0.19
51	63.209	0.18	0.18	0.18	0.18	0.18	0.18

52	64.603	0.16	0.16	0.16	0.17	0.17	0.17
53	66.012	0.15	0.16	0.16	0.16	0.16	0.16
54	67.434	0.15	0.15	0.15	0.15	0.15	0.15
55	68.871	0.14	0.14	0.14	0.14	0.14	0.14
56	70.322	0.13	0.13	0.13	0.13	0.13	0.13
57	71.788	0.12	0.12	0.12	0.12	0.12	0.12
58	73.268	0.11	0.11	0.11	0.11	0.11	0.11
59	74.764	0.10	0.10	0.10	0.10	0.10	0.10
60	76.274	0.09	0.10	0.10	0.10	0.10	0.10
61	77.799	0.09	0.09	0.09	0.09	0.09	0.09

DISCHARGE HYDROGRAPH FOR N. B. UPPER W/BALSAM ... STATION NUMBER 1
BELOW 100 YR STORM AT MILE 0.00

GAGE ZERO = 17.50 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 21.30 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.80 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1397 CFS AT TIME = 25.000 HOURS

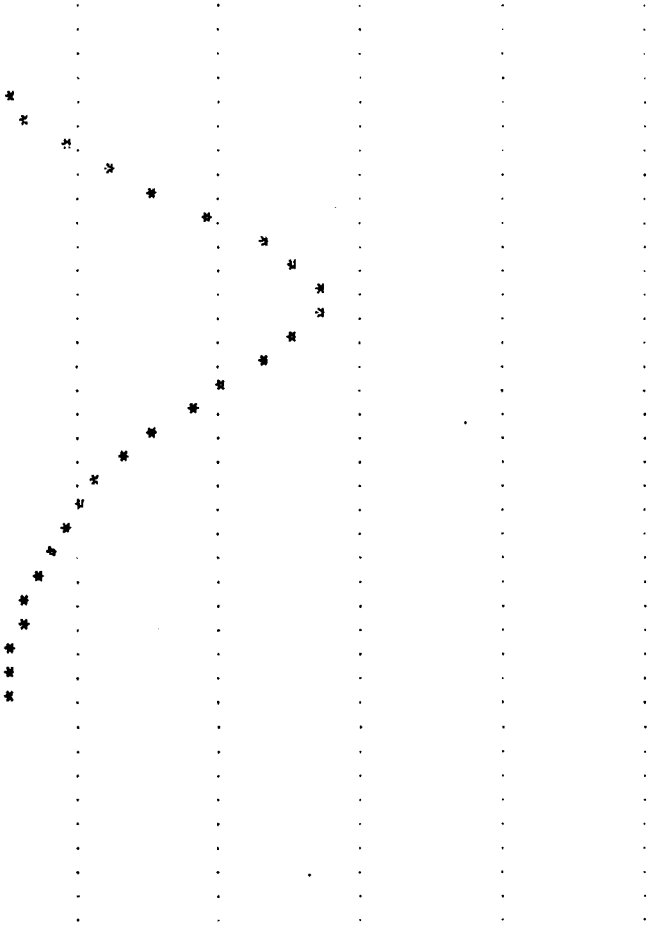
TIME HR	STAGE FEET	FLOW CFS
0	1.0	28
2	1.3	61
4	1.6	94
6	1.9	152
8	2.2	236
10	2.4	320
12	2.7	460
14	3.0	600
16	3.2	766
18	3.4	958
20	3.6	1150
22	3.7	1249
24	3.8	1348
26	3.8	1347
28	3.7	1246
30	3.6	1145
32	3.5	1009
34	3.3	873
36	3.2	754
38	3.1	652
40	2.9	550
42	2.8	494
44	2.7	438
46	2.6	392
48	2.5	356
50	2.4	320
52	2.4	294
54	2.3	268
56	2.2	245
58	2.1	225
60	2.1	205
62	2.0	187
64	1.9	169
66	1.9	155
68	1.8	145
70	1.8	134
72	1.7	121
74	1.7	107
76	1.6	96



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 8 -
BELOW 100 YR STORM AT MILE 0.10

GAGE ZERO = 17.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 20.37 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 3.12 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1396 CFS AT TIME = 25.000 HOURS

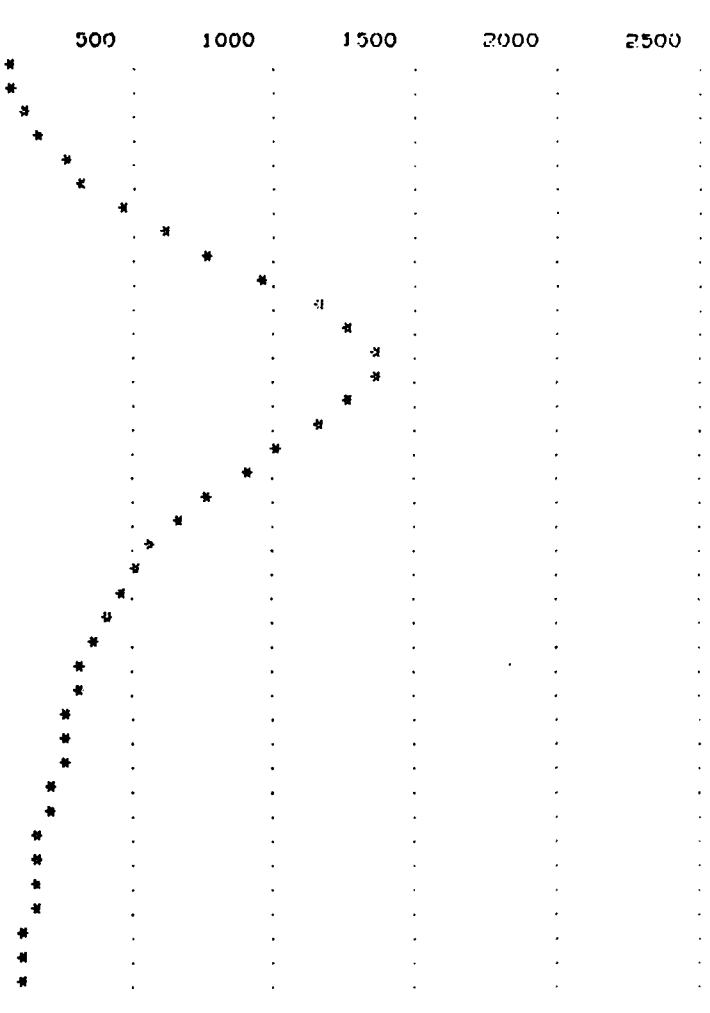
TIME HR	STAGE FEET	FLOW CFS
0	1.0	28
2	1.2	59
4	1.4	92
6	1.6	149
8	1.8	234
10	2.0	318
12	2.2	457
14	2.4	597
16	2.6	762
18	2.8	955
20	2.9	1148
22	3.0	1248
24	3.1	1347
26	3.1	1349
28	3.0	1247
30	2.9	1146
32	2.8	1011
34	2.7	875
36	2.6	756
38	2.5	654
40	2.3	552
42	2.3	495
44	2.2	439
46	2.1	393
48	2.1	357
50	2.0	321
52	1.9	295
54	1.9	269
56	1.8	246
58	1.8	226
60	1.7	206
62	1.7	187
64	1.6	169
66	1.6	155
68	1.6	145
70	1.5	135
72	1.5	121
74	1.4	107
76	1.4	96



DISCHARGE HYDROGRAPH FOR N.B. UPPER W/BALSAM ... STATION NUMBER 49
BELOW 100 YR STORM AT MILE 0.23

GAGE ZERO = 17.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 19.61 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 2.36 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1373 CFS AT TIME = 25.000 HOURS

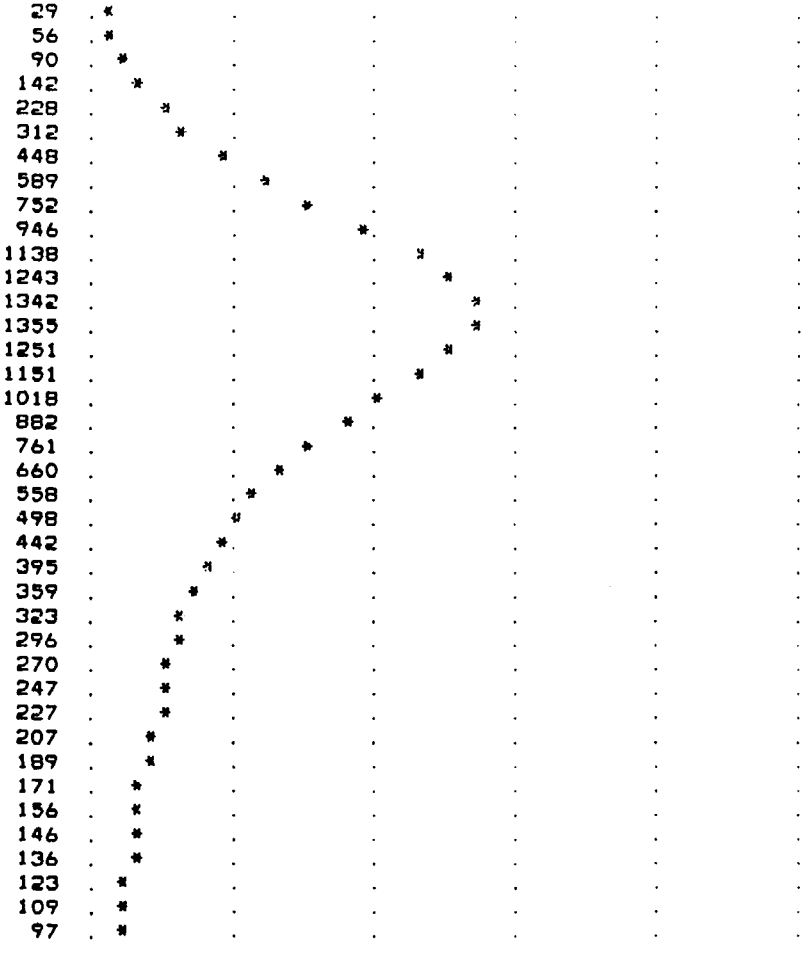
TIME HR	STAGE FEET	FLOW CFS
0	0.8	28
2	0.9	57
4	1.0	91
6	1.1	144
8	1.3	230
10	1.5	314
12	1.6	451
14	1.8	592
16	1.9	756
18	2.1	949
20	2.2	1142
22	2.3	1245
24	2.3	1344
26	2.3	1352
28	2.3	1249
30	2.2	1149
32	2.1	1015
34	2.0	880
36	1.9	759
38	1.9	658
40	1.8	556
42	1.7	497
44	1.6	441
46	1.6	394
48	1.5	358
50	1.5	322
52	1.4	296
54	1.4	270
56	1.4	246
58	1.3	227
60	1.3	207
62	1.3	188
64	1.2	170
66	1.2	156
68	1.2	146
70	1.1	135
72	1.1	122
74	1.0	108
76	1.0	97



DISCHARGE HYDROGRAPH FOR N. B. UPPER W/BALSAM ... STATION NUMBER 62
BELOW 100 YR STORM AT MILE 0.30

GAGE ZERO = 16.75 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 19.12 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 2.37 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1371 CFS AT TIME = 25.000 HOURS

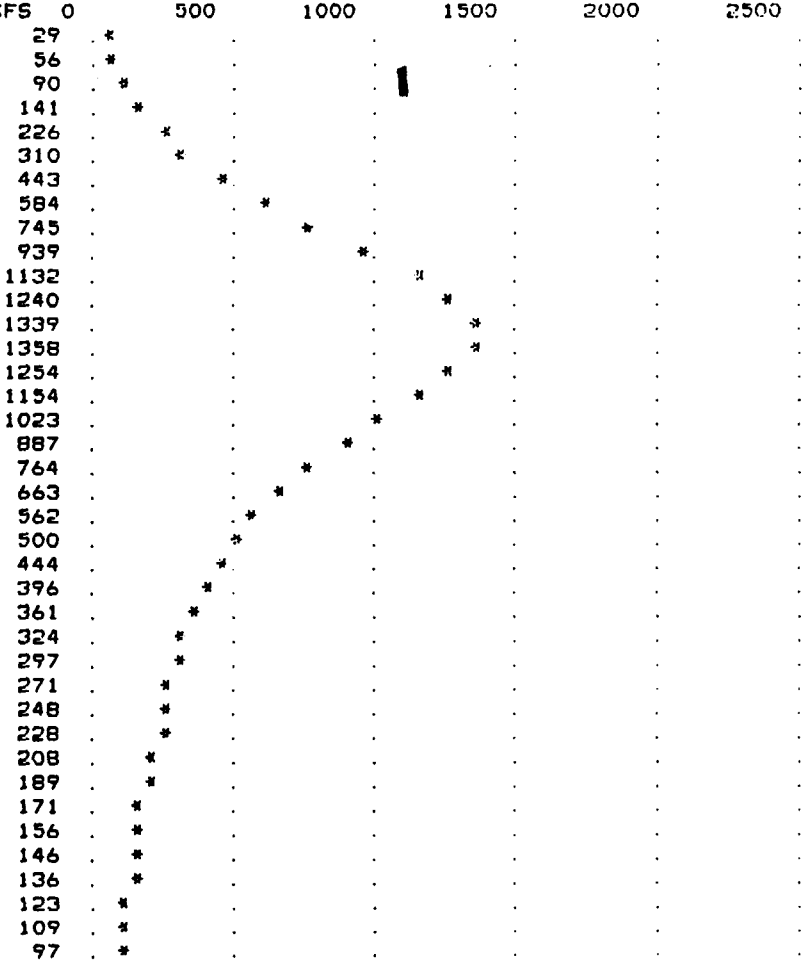
TIME HR	STAGE FEET	FLOW CFS
0	1.3	29
2	1.3	56
4	1.3	90
6	1.4	142
8	1.5	228
10	1.6	312
12	1.7	448
14	1.8	589
16	2.0	752
18	2.1	946
20	2.2	1138
22	2.3	1243
24	2.3	1342
26	2.4	1355
28	2.3	1251
30	2.2	1151
32	2.1	1018
34	2.1	882
36	2.0	761
38	1.9	660
40	1.8	558
42	1.8	498
44	1.7	442
46	1.7	395
48	1.6	359
50	1.6	323
52	1.5	296
54	1.5	270
56	1.5	247
58	1.5	227
60	1.4	207
62	1.4	189
64	1.4	171
66	1.4	156
68	1.4	146
70	1.3	136
72	1.3	123
74	1.3	109
76	1.3	97



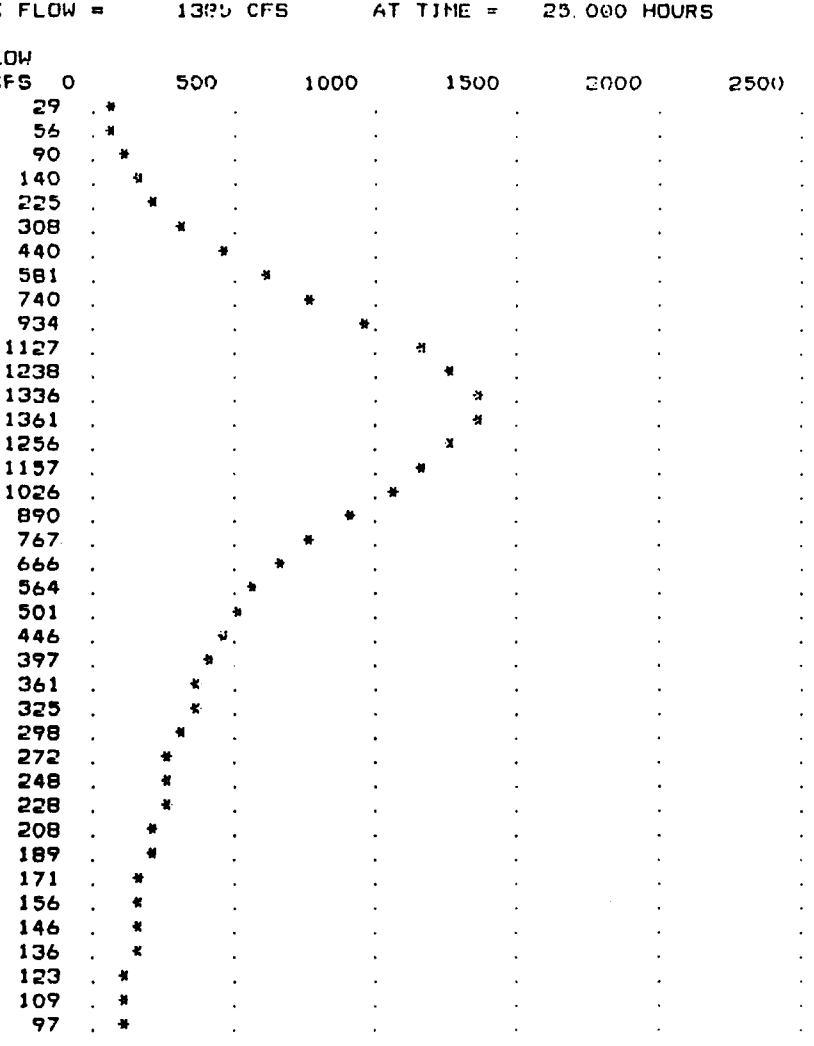
DISCHARGE HYDROGRAPH FOR N. B. UPPER W/BALSAM ... STATION NUMBER 74
BELOW 100 YR STORM AT MILE 0.40

GAGE ZERO = 16.75 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 18.75 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 2.00 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1388 CFS AT TIME = 25.000 HOURS

TIME HR	STAGE FEET	FLOW CFS
0	1.3	29
2	1.3	56
4	1.3	90
6	1.3	141
8	1.3	226
10	1.4	310
12	1.4	443
14	1.5	584
16	1.6	745
18	1.7	939
20	1.9	1132
22	1.9	1240
24	2.0	1339
26	2.0	1358
28	1.9	1254
30	1.9	1154
32	1.8	1023
34	1.7	887
36	1.6	764
38	1.6	663
40	1.5	562
42	1.5	500
44	1.4	444
46	1.4	396
48	1.4	361
50	1.4	324
52	1.3	297
54	1.3	271
56	1.3	248
58	1.3	228
60	1.3	208
62	1.3	189
64	1.3	171
66	1.3	156
68	1.3	146
70	1.3	136
72	1.3	123
74	1.3	109
76	1.3	97



DISCHARGE HYDROGRAPH FOR N. B. UPPER W/BALSAM ... STATION NUMBER 77
BELOW 100 YR STORM AT MILE 0.50

GAGE ZERO = 16.25 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 18.40 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 2.15 FEET AT TIME = 25.000 HOURS
MAX FLOW = 1385 CFS AT TIME = 25.000 HOURS

TIME HR	STAGE FEET	FLOW CFS
0	1.8	29
2	1.8	56
4	1.8	90
6	1.8	140
8	1.8	225
10	1.8	308
12	1.8	440
14	1.8	581
16	1.9	740
18	2.0	934
20	2.0	1127
22	2.1	1238
24	2.1	1336
26	2.1	1361
28	2.1	1256
30	2.1	1157
32	2.0	1026
34	2.0	890
36	1.9	767
38	1.9	666
40	1.8	564
42	1.8	501
44	1.8	446
46	1.8	397
48	1.8	361
50	1.8	325
52	1.8	298
54	1.8	272
56	1.8	248
58	1.8	228
60	1.8	208
62	1.8	189
64	1.8	171
66	1.8	156
68	1.8	146
70	1.8	136
72	1.8	123
74	1.8	109
76	1.8	97