
**TRIBUTARY FAY BROOK
WHITE RIVER WATERSHED
VERMONT**

**DAY-BRUORTON DAM
DAM-BREAK FLOOD
ANALYSIS**

AUGUST 1989



**US Army Corps
of Engineers**
New England Division

Preface

This investigation was performed under the Corps of Engineers' Flood Plain Management Services Authority at the request of the State of Vermont. The Flood Control Act of 1960 which authorizes the U.S. Army Corps of Engineers "... to compile and disseminate information on floods and flood damages ... and to provide engineering advice to local interests for their use in planning to ameliorate the flood hazard."

The Dam-Break Analysis study presented in this report was prepared under contract by Hydraulic & Water Resources Engineers, Inc. of Waltham, Massachusetts. Any questions concerning this report should be addressed to the Chief of the Hydrology Engineering Section of the Corps of Engineers, New England Division.

DAY-BRUORTON DAM
DAM-BREAK FLOOD ANALYSES

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DAY-BRUORTON DAM
DAM-BREAK FLOOD ANALYSIS

1. INTRODUCTION AND PURPOSE

This report presents the findings of two dam-break flood analyses performed for Day-Bruortton Dam, Vermont. The dam is owned by Mr. William Bruortton, Bakersfield, CA and by the Harold Day Estate c/o Mr G.S. Day, Barre, Vermont. The Day Estate is more directly responsible for the dam's operation and maintenance. Included in the report are a description of pertinent features of the dam, the procedure used in the analyses, the assumed dam-break conditions, and the resulting downstream flood depths and timing. This study was not performed because of any known likelihood of a dam-break at Day-Bruortton Dam. Its two purposes are to provide quantitative information for emergency planning use and to arrive at a dam safety hazard classification.

2. DAM DESCRIPTION

Name of Dam:	Day-Bruortton Dam
Town:	Strafford
County and State:	Orange, VT
Stream:	Unnamed tributary of Fay Brook White River Watershed.

Day-Bruortton Dam is located in Orange County in central Vermont, in the Town of Strafford, approximately 3 miles southwest of the town center and approximately 4.5 miles north-northeast of Sharon. The impoundment is currently drained.

Day-Bruortton Dam is an earthfill dam with a maximum height of 14 feet and a length of about 160 feet. The crest width is approximately 10 feet.

Outlet works consist of a 15 inch corrugated metal pipe serving as a low-level intake to a 2' X 4.5' stop log equipped concrete riser located just upstream of the dam crest. This riser, with its stop log weir, serves as a drop structure discharging to a 2' X 2' concrete conduit extending through the remainder of the dam. Emergency overflow spillways consist of an approximately 50-ft long vegetated overflow section on the right bank and a higher level remote overflow spillway with a crest level about 0.5 ft below the top of the dam. The site of the higher level overflow is indicated on the USGS quadrangle map at the reservoir's northwestern extreme, discharging westerly about 0.3 mile to Fay Brook.

3. PERTINENT DATA

Data was taken primarily from details of a 1985 dam inspection by the Vermont Dam Safety Engineer and the U.S. Soil Conservation Service and related correspondence.

(a) Drainage Area

Plate 1 shows the location of Day-Bruortton Dam on an unnamed tributary of Fay Brook. The drainage area consists of 0.31 square miles (200 acres) of well-wooded and steeply sloping hilly terrain.

(b) Elevation (N.G.V.D.)

(1) Top of Dam -	1318.6
(2) Outlet Invert -	1304.7
(3) Emergency spillway crest -	1315.9 average 1314.9 minimum
(4) Top stoplog crest level -	1314.9

(c) Reservoir

(1) Length of normal pool -	0.23 mile
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(d) Storage (Acre-Feet)

(1) Top of Dam	171
(2) Emergency Spillway Elev.	111
(3) Top of Stoplog Structure	92

(e) Reservoir Surface (Acres)

(1) Top of Dam	37
(2) Emergency Spillway Elev.	30
(3) Top of Stoplog Structure	17

(f) Dam

(1) Type	Earthfill
(2) Length	160 feet approximately
(3) Height	14 feet maximum
(4) Top Width	8 to 12 feet
(5) Downstream Slope	1 on 1.5
(6) Zoning	Unknown
(7) Impervious Core	Unknown
(8) Cutoff	Unknown

(g) Principal Outlet

(1) Type	Stoplog to box conduit
(2) Size	2 ft x 2 ft
(3) Stoplog Control	2 ft x 4.5 ft riser
(4) Stoplog elevation	1,304.7 to 1314.9 ft NGVD
(5) Capacity	20 cfs

(h) Emergency Spillway at Dam		
(1) Type		Earthcut, vegetated.
(2) Length		50 feet
(3) Crest elevation		1,315.9 feet NGVD (minimum 1,314.9 ft)
(4) Capacity		444 cfs

4. VALLEY DESCRIPTION

The stream channel below Day-Bruortton Dam drops at approximately 265 feet per mile, immediately downstream of the dam. It meets Fay Brook at approximately 0.83 miles downstream of the dam. Fay Brook flows south from this point 0.3 miles, dropping approximately 130 feet per mile, before it reaches the Orange County/Windsor County border. The brook continues in a south-southwesterly direction approximately 4.5 miles until its confluence with the White River in the Town of Sharon. Detailed analysis extended to about 2,000 feet beyond the county line, a distance of about 1.5 miles downstream of the dam.

5. MODEL DESCRIPTION

The Day-Bruortton Dam dam-break analysis was made using Boss DamBrk, a June 1988 version of the "National Weather Service Dam-Break Flood Forecasting Computer Model", developed by D.L.Fread, Research Hydrologist, Office of Hydrology, National Weather Service, NOAA, Silver Springs, Maryland 20910. Boss DamBrk is copyrighted by Boss Corporation, Madison, WI 53703. Input for the model consisted of: (a) storage characteristics of the reservoir, (b) selected geometry and duration of the breach development, (c) hydraulic roughness coefficients, and (d) downstream channel characteristics. Based on the input data, the model computes the dam-break outflow hydrograph and routes it downstream. The analysis provides output on the attenuation of the flood stages, and timing of the flood wave as it progresses downstream.

6. ASSUMED DAM BREAK CONDITIONS

General: These analyses were conducted for each of two failure scenarios. The first was the "Flood of Record Failure" case, in which inflow to the reservoir was assumed to be equal to the estimated flood of record within the watershed. This inflow resulted in the reservoir reaching a level about 8 inches above the emergency spillway crest. Since the peak reservoir elevation was 2 feet below top of dam the failure was assumed to occur by piping.

The second failure scenario was termed the "Maximum Surcharge Failure" case, in which the lake water was assumed to be at the dam crest elevation prior to a one-hour breach formation.

Reservoir inflow and resulting outflow were assumed to be equal to the estimated spillway capacity.

The magnitude of a flood resulting from the hypothetical failure of Day-Bruortton Dam is a function of many different parameters including size of breach, initial pool level and storage, rate of breach formation, channel and overbank roughness and antecedent flow conditions. Engineering assumptions used in the analyses for the two cases were as follows:

PARAMETER	FLOOD OF RECORD	MAXIMUM SURCHARGE
(1) Initial Pool Level	1,316.56 ft	1,316.56 ft NGVD
(2) Elev. at Start of Failure	1,316.56 ft	1,318.60 ft NGVD
(3) Reservoir Inflow	54 cfs	444 cfs
(4) Breach Invert	1,304.7 ft	1,304.7 ft NGVD
(5) Breach Base Width	35.0 ft	35.0 ft
(6) Time to Complete Formation of Breach : 1.0 hour		
(7) Downstream Channel Roughness: Manning n = 0.025 to 0.035		
(8) Pre-Breach River Flows:		

The Flood of Record inflow was estimated for the White River watershed at 175 cfs per square mile of drainage area which is the estimated runoff rate of the November 1927 flood. Inflow to Day-Bruortton Pond was assumed to be 54 cfs. The initial flow in Fay Brook was taken as 58 cfs.

The Maximum Surcharge Storage failure required an initial flow through the spillway and outlet works of 444 cfs. The initial flow in Fay Brook was increased by drainage area ratio to 477 cfs.

7. RESULTS

The results of the Flood of Record analysis are discussed here and these form the basis of the hazard classification rating. Appendix C presents the input and output data files, with graphical summaries, pertaining to the Maximum Surcharge Storage failure case.

The peak stage and flood flow profiles obtained for the "Flood of Record" failure case are shown on Plates 2 and 3. Flood stages are shown in feet above the stream-bed elevation as measured by the Hydraulic & Water Resources Engineers survey team. Peak water elevations can be

determined by adding these depths of flow to the bed slope profile elevations, as interpolated between surveyed sections and reported as "Gauge Zero" on pages B-13 to B-15 of Appendix B, or by adding the depth to field-established stream bed elevations at points of interest. In an attempt to determine normal flow depths, estimated average flow conditions were input to the DAMBRK model and routed downstream. Depths of flow so obtained were of the order of a few inches. Due to the extremely small depths of flow, the resulting water elevations are not presented here but they are summarised along with the data input file in Appendix D.

Peak flows resulting from the one-hour formation of a piping failure dam breach varied from 2,381 cubic feet per second at the dam cross-section to 1,944 cfs 1.29 miles downstream (2,000 feet south of the Orange County/Windsor County line). This final peak flow includes a 58 cfs inflow at the Fay Brook confluence.

Peak flows occurred at 0.9 to 1.0 hour after the start of breach formation.

Because of the steep gradient of the downstream channel, in the event of dam failure, flow velocities would be high, computed generally at 10 to 25 feet per second. Computed peak depths of flow would, therefore, be relatively low, ranging from about 6 feet just below the dam, to about 6.4 feet just downstream of the inflow from Fay Brook (river mile 0.59), and then decreasing to about 3.5 feet at the most downstream section (river mile 1.29).

Dam failure stage and discharge hydrographs at river miles 0.0, 0.49 and 1.29 (surveyed cross-sections) are presented on Plate 5. These are based on discharge hydrographs included in Appendix B.

8. DAM SAFETY HAZARD CLASSIFICATION

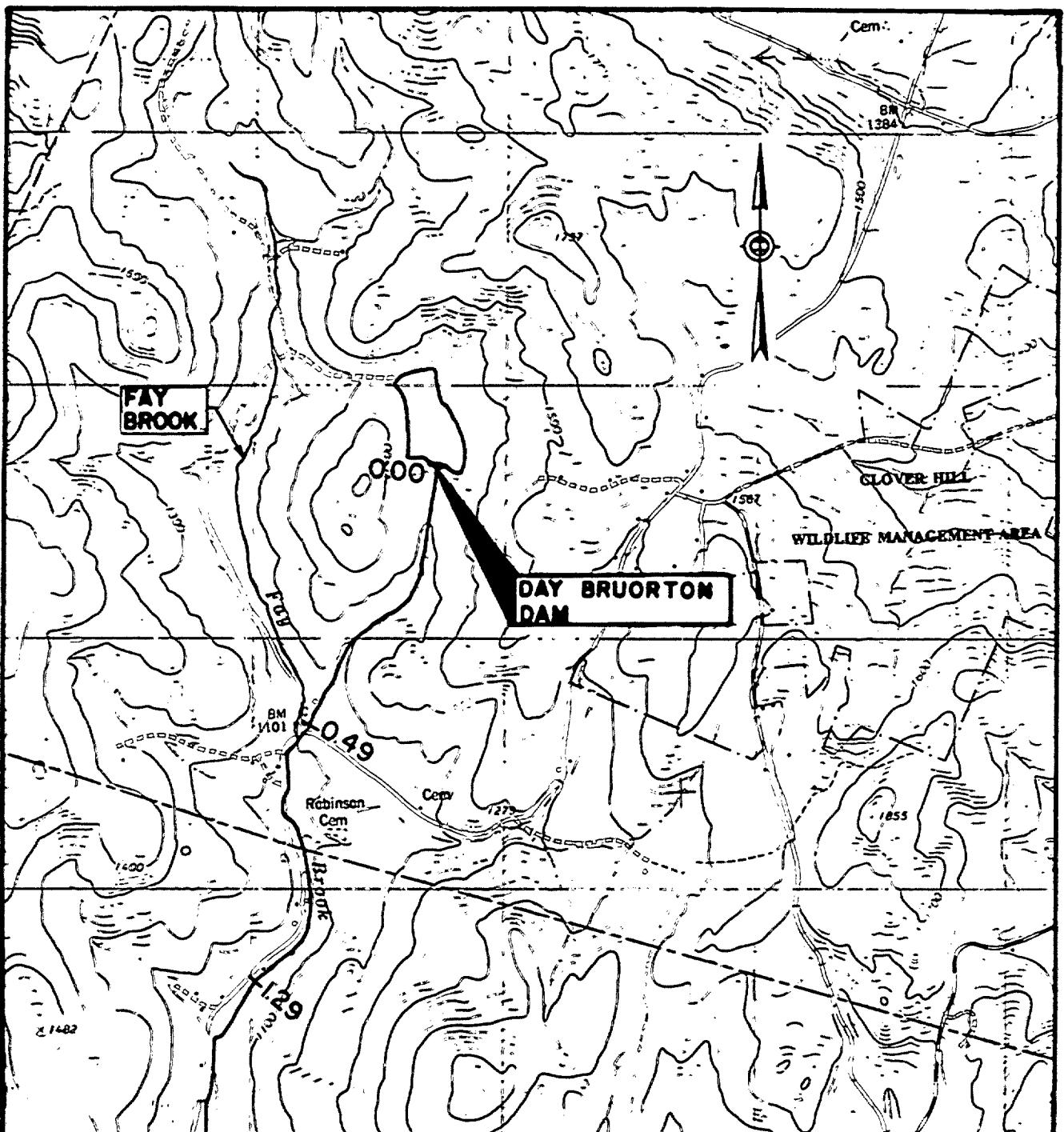
The categories and criteria for the hazard classification of dams, as reported in "Recommended Guidelines For Safety Inspection of Dams", Department of the Army, Nov. 1976, are listed in the following table. The hazard classification pertains to the potential loss of human life or property damage in the area downstream of the dam in the event of the failure of the dam.

DAM HAZARD CLASSIFICATION

<u>Category</u>	<u>Loss of Life</u> (Extent of Development)	<u>Economic Loss</u> (Extent of Development)
Low	None expected (No permanent structures for human habitation)	Minimal (Undeveloped to occasional structures or agriculture)
Significant	Few (No urban developments and no more than a small number of inhabitable structures)	Appreciable (Notable agriculture, industry or structures)
High	More than few	Excessive (Extensive community, industry or agriculture)

The inundated region consisted of an area with a width perpendicular to the direction of flow of: 38.9 feet immediately downstream of the dam; 82.2 feet just upstream of Fay Brook; and 78.1 feet at the final surveyed cross-section. These top-widths provide no more than a rough guide to the extent of the potentially inundated area. They do not take into account possible wave action or any more detailed geometrical channel information than can be interpolated from the surveyed cross-sections.

There are no structures presently located downstream of Day-Bruorton Dam for about the first one-half mile. At about river mile 0.49 there is a house and barn. The house is located nearer to the stream but on relatively high ground, at about 1106.5 ft NGVD, or about 4 feet above the computed flood elevation of 1102.4 feet NGVD. The barn is located further from the stream but at an elevation of only about one-half foot above the computed flood level. If backing up at the downstream road embankment prior to its failure does not cause more than a six-inch increase in peak flow depth then neither building is theoretically at risk. However, because of the relatively high velocities that would result, there is a real likelihood that flows would be quite turbulent with much wave action and potential for extensive erosion. There are presently no other buildings in the study reach that would be considered threatened by the modeled dam failure flood. Damage to downstream property is, therefore, considered minimal. However, with flow depths of 4 to 6 feet and velocities of 10 to 25 feet per second, there could be loss of life to any persons exposed. For that reason, a hazard classification of "significant" rather than "low" was assigned to the Day-Bruorton Dam.



MAP BASED UPON U.S.G.S.
SHARON, V.T. QUADRANGLE
1973
CHECKED 1975 EDITED 1981
CROSS SECTION LOCATION IN
MILES BELOW DAM

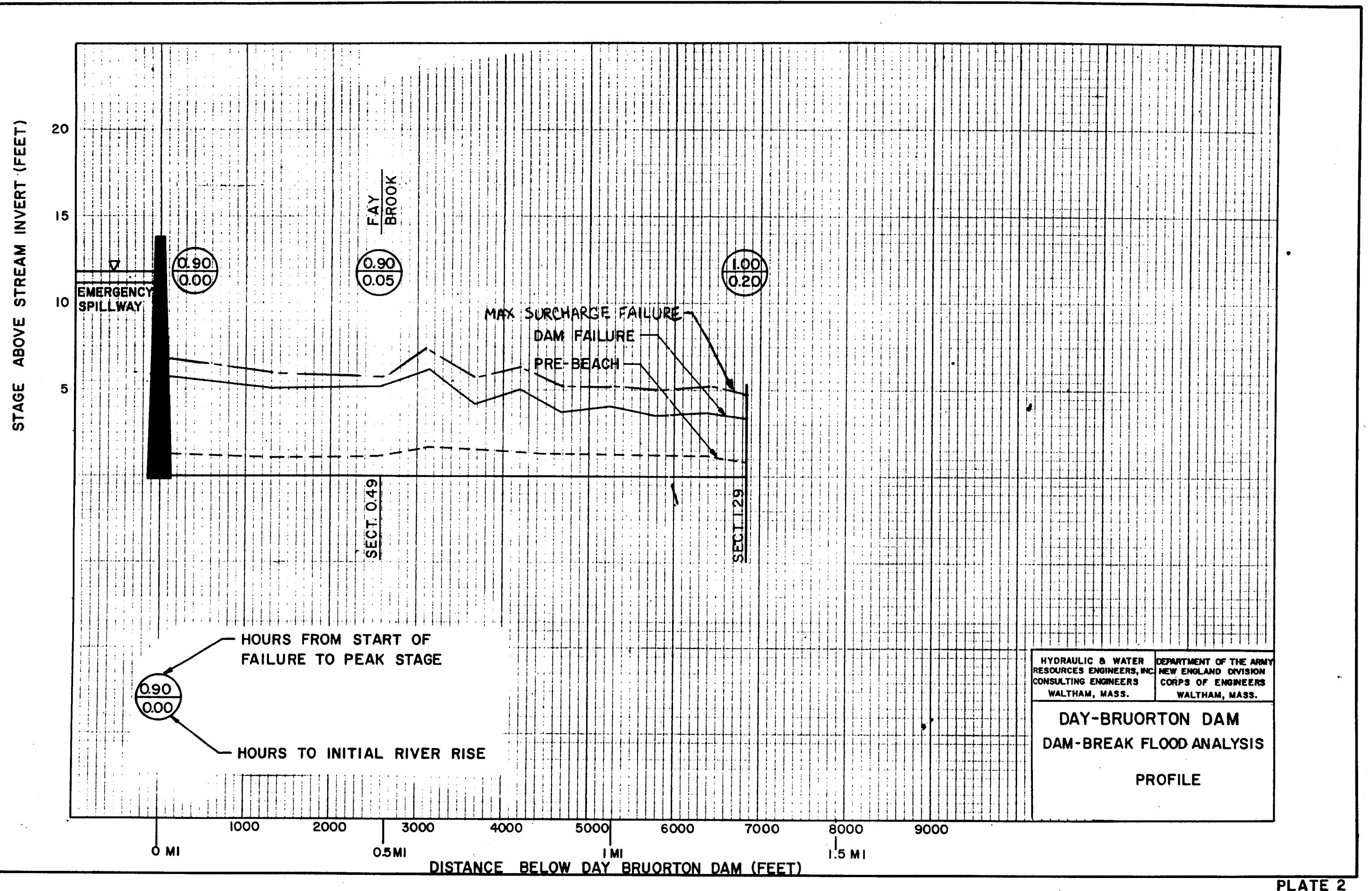
SCALE IN FEET
2,000 0 2,000

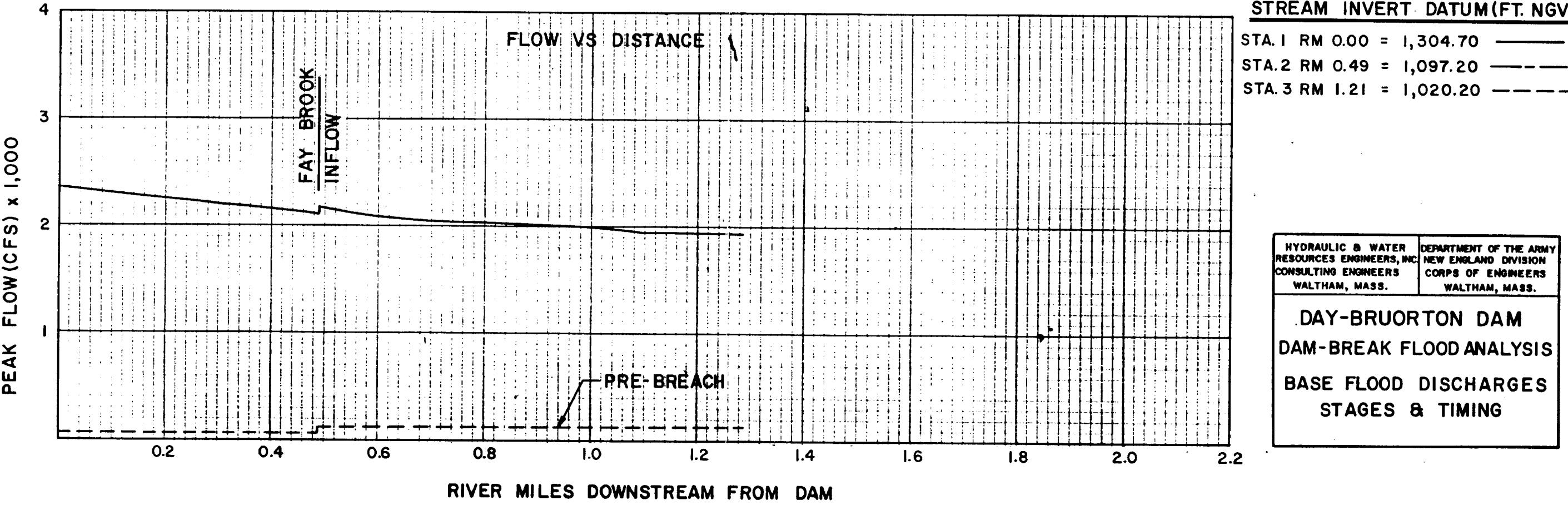
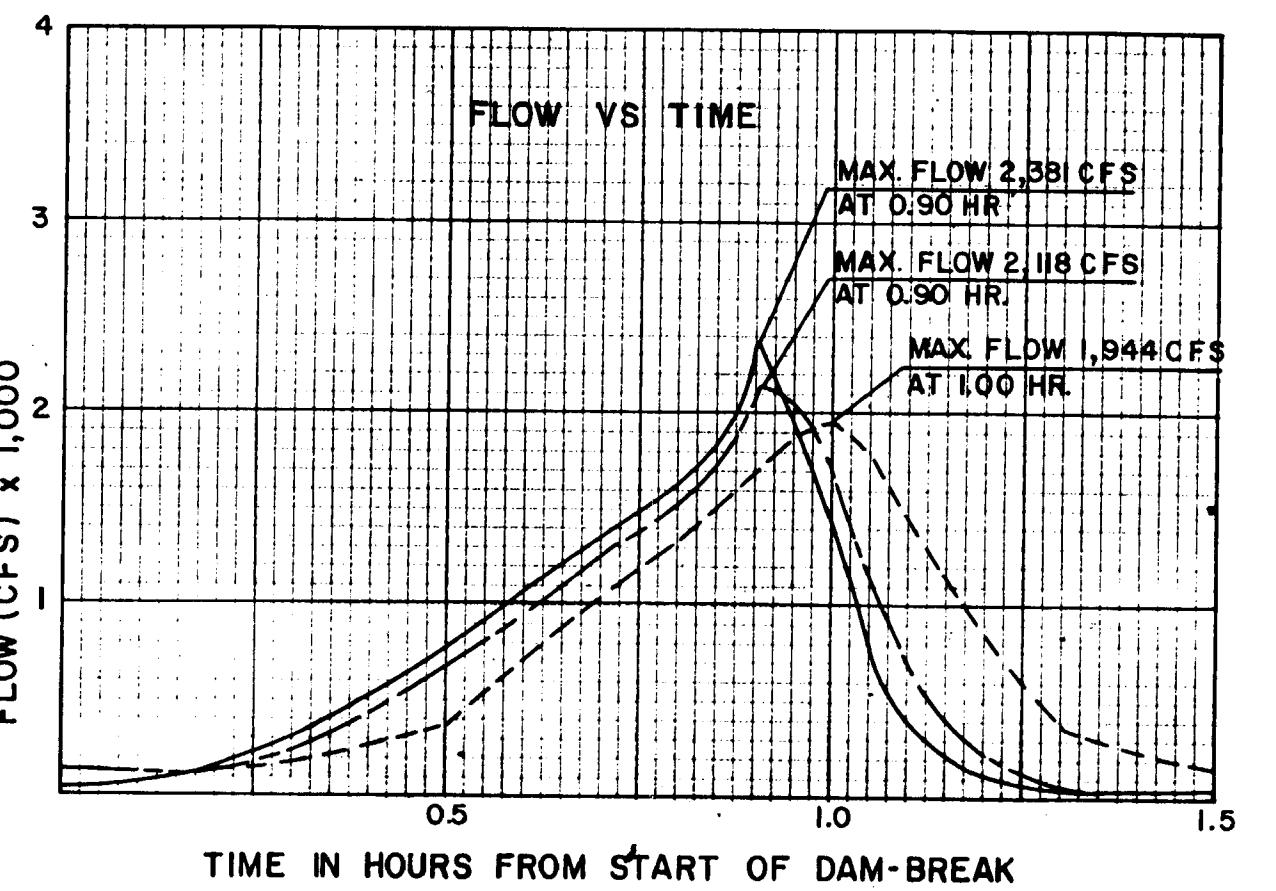
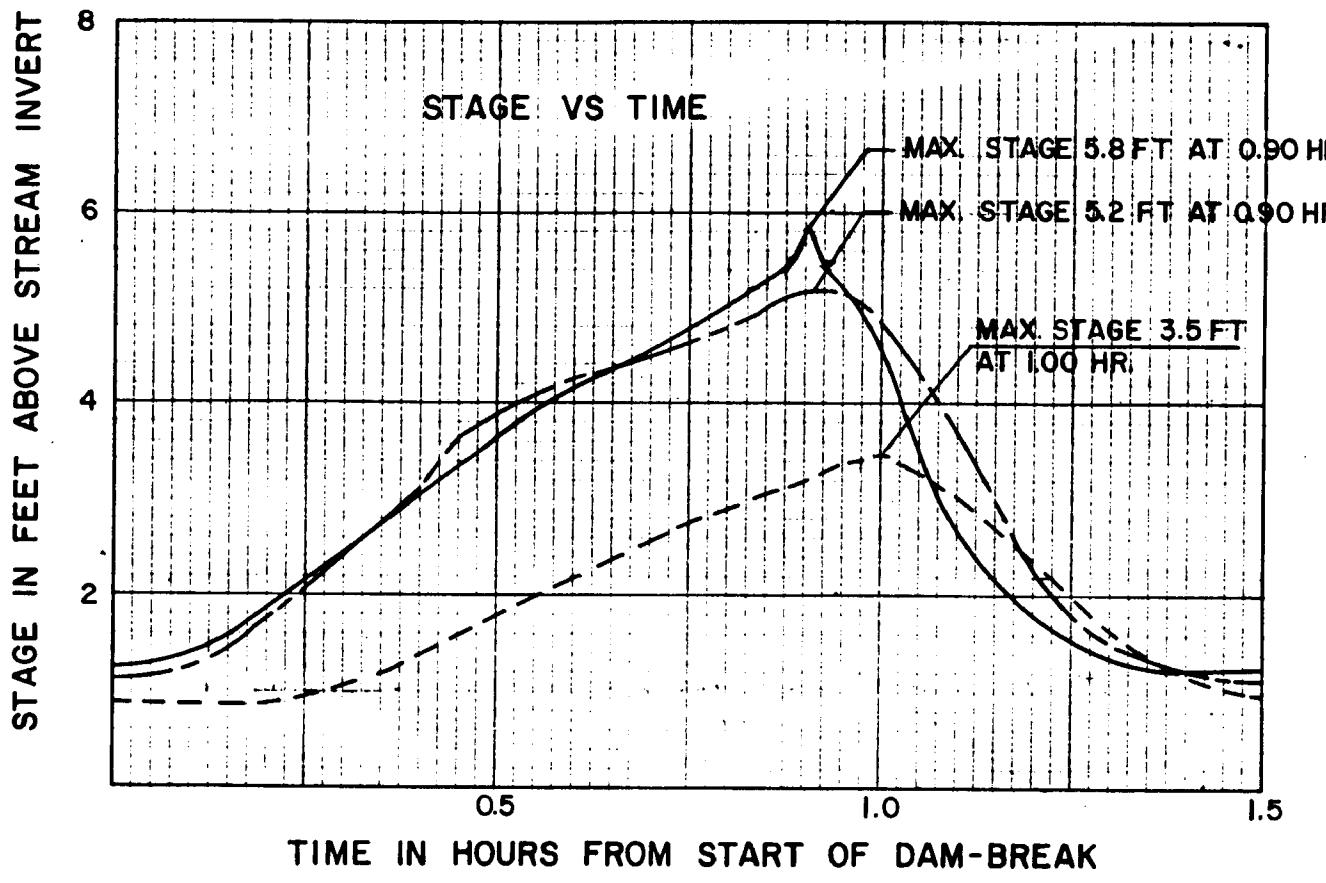
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WALTHAM, MASS.

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DAY-BRUORTON DAM
DAM BREAK FLOOD ANALYSIS

INDEX MAP





DAY-BRUORTON DAM VERMONT FLOOD OF RECORD DAM FAILURE

0111110100	1	0 2	0	0	5	3	0	0	0
115.0		1318.0	1317.0	1304.0					
1318.0		1316.563	1318.0	1304.7					
1316.563		1316.563	1318.0	1315.9	1304.0	100.0	1:0	1304.7	1:0
54.0		54.0	54.0	54.0					
0.0		0.0	1.0	2.0					
0.0		0.0	0.0	0.0	9	0	1	1	0
1304.7		1302.4	1302.4	1315.4	1317.4	0.0	0.0	0.0	0.0
1.0		2.0	2.0	9.0	14.0	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
1097.7		1097.7	1097.7	1100.0	1104.0	0.0	0.0	0.0	0.0
1.0		2.0	2.0	15.0	12.0	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
1020.2		1023.0	1023.0	1030.2	1033.0	0.0	0.0	0.0	0.0
1.0		2.0	2.0	19.0	24.0	0.0	0.0	0.0	0.0
0.025		0.030	0.030	0.035	0.035	0.0	0.0	0.0	0.0
0.025		0.025	0.025	0.035	0.035	0.0	0.0	0.0	0.0
0.0		0.0	0.0	0.05	0.0	265.0	0.5	0.01	1.0
58.0		58.0	58.0						

BOSS DAMBRK (tm)

Copyright (C) 1988 Boss Corporation
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Version 1.30
Serial Number : 0001058.130

PROGRAM ORIGIN :

Boss DamBrk (tm) is an enhanced version of Professor D. L. Fread's 1984 HWS DAMBRK program.

DISCLAIMER :

Boss DamBrk (tm) is a complex program which requires engineering expertise to use correctly. Boss Corporation assumes absolutely no responsibility for the correct use of this program. All results obtained should be carefully examined by an experienced professional engineer to determine if they are reasonable and accurate.

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PROJECT DESCRIPTION :

PROJECT TITLE : Day Brugerton Pond Dam
PROJECT NUMBER : JC-127-2(d)
DESCRIPTION : Flood of Record, Failure of Dam
ENGINEER : Patrick Blumeris
DATE OF RUN : 1/26/1989
TIME OF RUN : 9:28 am

INPUT DATA SUMMARY :

INPUT CONTROL PARAMETERS :

Number of Dynamic Routing Reaches (KKH)	1
Type of Reservoir Routing (KUI)	0 (storage routing)
Number of multiple dams/bridges (MULDAM)	0
No. of Reservoir Inflow Hydrograph Points (ITEH)	3
No. of Informational Cross-Sections (HPRT)	0
Flood-Plain Routing (KFLP)	0 (no)
Landslide Simulation (KSL)	0 (no)

RESERVOIR DESCRIPTION :

Elevation vs. Volume Table

Elevation	Volume
HSA(K) (ft HSL)	SA(K) (acre-ft)
1318.60	115.0
1317.60	90.0
1304.70	0.0
:00	:00
:00	:00
:00	:00
:00	:00
:00	:00

RESERVOIR VOLUME DESCRIPTION :

Elevation vs. Surface Area Table

Elevation	Surface
AFeaB	
HSA(K) (ft HSL)	SA(K) (acres)
1318.60	37.0
1304.70	1.0
:00	:00
:00	:00
:00	:00
:00	:00

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PROJECT TITLE : Day Brugerton Pond Dam
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RESERVOIR and BREACH DESCRIPTION :

Initial Elevation of Reservoir Surface (YO, ft MSL)	1316.56
Bottom of Dam Elevation (DATUM, ft MSL)	1304.70
Top of Dam Elevation (HD, ft MSL)	1318.60
Water Surface Elevation at Time of Breach (HF, ft MSL)	1316.56
Breach Side Slope (Z)	1: 1.00
Breach Bottom Elevation (YBMIN, ft MSL)	1304.70
Breach Base Width (BB, ft)	35.00
Time of Breach Formation (TFH, hr)	1.00
Uncontrolled Spillway Crest Elevation (HSP, ft MSL)	1315.90
Uncontrolled Spillway Discharge Coefficient (CS)	100.00
Spillway Gate Center Elevation (HGT, ft MSL)	.00
Spillway Gate Discharge Coefficient (CG)	.00
Dam Overtopping Discharge Coefficient (CDO)	450.00
Turbine Discharge (QT, cfs)	.00

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PROJECT TITLE : Day Brugerton Pond Dam
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SUMMARY OF PROGRAM CONTROL PARAMETERS :

Number of Cross-Sections Entered (NS)	3
Number of Top Widths Entered (NCS)	4
Number of Cross-Sectional Hydrographs to Plot (NTT)	3
Cross-Sectional Smoothing Parameter (KSA)	0
Downstream Supercritical Parameter (KSUPC)	1 (supercritical)
Number of Lateral Inflow Hydrographs (LO)	1
Number of Points in Gate Control Curve (KCG)	0

CROSS-SECTIONS WHERE HYDROGRAPH REQUESTED :
(maximum allowed = 6)

1 2 3

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INFLOW HYDROGRAPH DESCRIPTION :

Hydrograph Time Intervals (DHF, hr)	.00
Routing Period (TEH, hr)	2.00
Time Elapsed Upstream	
E(K) I(K)	
(hr) (cfs)	
1.00 56.0	
1.00 52.0	
2.00 54.0	

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CHANNEL-VALLEY BOUNDARY CONDITIONS :

Max Discharge at Downstream End (QMAXD, cfs)	.0
Max Lateral Outflow due to Flood Wave (QLT, cfs/ft)	.0
Initial Time-Step Size (DTMH, hr)	.05
Time at which Dam Starts to Fail (TFI, hr)	1.00
Theta Weighting Factor (FII)	.500
Stage Convergence Criterion (EPSY, ft)	.01
Initial Downstream Water Surface Elevation (YDN, ft MSL)	.00
Slope of Channel Downstream of Dam (SOM, ft/mi)	265.000

LATERAL INFLOW REACH NUMBERS (LOX) :

2

(OL(L, 1), L=1, !TEH)
58. 58. 58.

CROSS-SECTION NUMBER : 1

Cross-Section Location (XS(I), mi)	.000
Left Flood-Plain Cross-Section Location (XSL(I), mi)	.000
Right Flood-Plain Cross-Section Location (XSR(I), mi)	.000
Flooding Elevation (FSTG(I), ft MSL)	.000
Initial Water Surface Elevation (YD, ft MSL)	.000

DOWNTSTREAM REACH NUMBER : 1

Reach Contraction-Expansion Coefficient (FKC)	.000
Minimum Distance Between Interpolated Cross-Sections (DXM, mi)	.200

CROSS-SECTION and REACH DESCRIPTION :

Elevation	Channel Top Width	Channel Manning n	Storage Top Width	Left Channel Top Width	Left Manning n	Right Channel Top Width	Right Manning n
(ft ASL)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1308.70	27.0	.0250	0	0	.0000	0	.0000
1312.20	29.0	.0300	0	0	.0000	0	.0000
1317.20	142.0	.0350	0	0	.0000	0	.0000

CROSS-SECTION NUMBER : 2

Cross-Section Location (XS(I), mi)	.490
Left Flood-Plain Cross-Section Location (XSL(I), mi)	.000
Right Flood-Plain Cross-Section Location (XSR(I), mi)	.000
Flooding Elevation (FSTG(I), ft MSL)	.000
Initial Water Surface Elevation (YD, ft MSL)	.000

DOWNTSTREAM REACH NUMBER : 2

Reach Contraction-Expansion Coefficient (FKC)	.000
Minimum Distance Between Interpolated Cross-Sections (DXM, mi)	.100

CROSS-SECTION and REACH DESCRIPTION :

Elevation	Channel Top Width	Channel Manning n	Storage Top Width	Left Channel Top Width	Left Manning n	Right Channel Top Width	Right Manning n
(ft ASL)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1307.20	3.0	.0250	0	0	.0000	0	.0000
1309.00	15.0	.0350	0	0	.0000	0	.0000
1104.00	126.0	.0350	0	0	.0000	0	.0000

CROSS-SECTION NUMBER : 3

Cross-Section Location (XS(I), mi)	1.290
Left Flood-Plain Cross-Section Location (XSL(I), mi)	.000
Right Flood-Plain Cross-Section Location (XSR(I), mi)	.000
Flooding Elevation (FSTG(I), ft MSL)	.000
Initial Water Surface Elevation (YD, ft MSL)	.000

CROSS-SECTION DESCRIPTION :

Elevation Channel (ft ASL)	Storage (ft)	Left (ft)	Right (ft)
Top Width BSL(K,I) (ft)	Top Width BSL(K,I) (ft)	Top Width BSL(K,I) (ft)	Top Width BSR(K,I) (ft)
1020.20	19.0	:0	:0
1030.00	198.0	:0	:0
1033.00	240.0	:0	:0

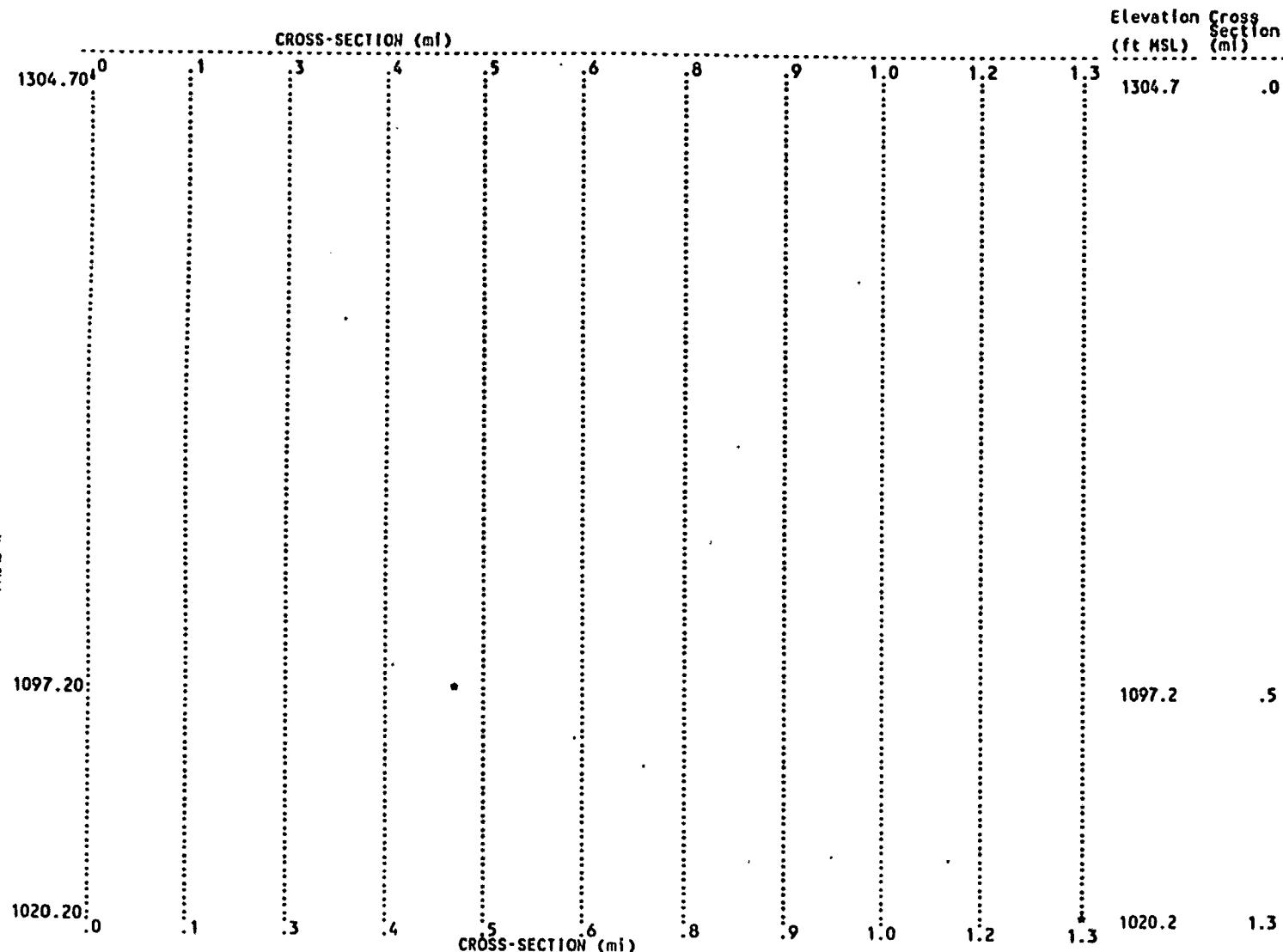
Total number of cross-sections (original+interpolated)	11
Maximum number of cross-sections allowed	200

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PROJECT TITLE : Bay Brugton Pond Dam
PROJECT NUMBER : JC-127-2(a)

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OUTPUT DATA SUMMARY :

SLOPE PROFILE PLOT :



RESERVOIR DEPLETION SUMMARY :

Total Volume in Reservoir (acre-ft)

77.1

DEFINITION OF RESERVOIR DEPLETION TABLE VARIABLES :

PARAMETER	UNITS	VARIABLE
Time step from start of analysis		K
Iterations necessary to solve flow equations	hr	TTP(1)
Elapsed time from start of analysis	cfs	Q(1)
Total outflow from dam	ft	H2
Elevation of water surface at dam	ft	YB
Elevation of breach bottom	ft	D
Estimated depth of downstream flow	ft	SUB
Submergence coefficient		VCOR
Velocity correction	ac-ft	OUTVOL
Total volume discharged from time of breach	ft	BB
Breach width	cfs	COFR
Rectangular breach discharge coefficient		Q1(1)
Inflow to reservoir	cfs	OBRECH
Breach outflow	cfs	QSPIL
Spillway outflow	cfs	

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 PROJECT TITLE : Bay Brumpton Pond Dam
 PROJECT NUMBER : JC-127-2(D)

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RESERVOIR DEPLETION TABLE :

I	K	TTP(1)	Q(1)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	Q1(1)	OBRECH	QSPIL
1	0	.000	53	1316.56	1316.56	1306.09	1.00	1.00	0	0	1.0	56	0	54
2	.020	55	1316.56	1316.54	1306.09	1.00	1.00	0	0	1.0	56	0	52	
3	.040	56	1316.56	1316.52	1306.09	1.00	1.00	0	0	1.0	56	0	50	
4	.060	57	1316.56	1316.50	1306.09	1.00	1.00	0	0	1.0	56	0	48	
5	.080	58	1316.56	1316.48	1306.09	1.00	1.00	0	0	1.0	56	0	46	
6	.100	59	1316.56	1316.46	1306.09	1.00	1.00	0	0	1.0	56	0	44	
7	.120	60	1316.56	1316.44	1306.09	1.00	1.00	0	0	1.0	56	0	42	
8	.140	61	1316.56	1316.42	1306.09	1.00	1.00	0	0	1.0	56	0	40	
9	.160	62	1316.56	1316.40	1306.09	1.00	1.00	0	0	1.0	56	0	38	
10	.180	63	1316.56	1316.38	1306.09	1.00	1.00	0	0	1.0	56	0	36	
11	.200	64	1316.56	1316.36	1306.09	1.00	1.00	0	0	1.0	56	0	34	
12	.220	65	1316.56	1316.34	1306.09	1.00	1.00	0	0	1.0	56	0	32	
13	.240	66	1316.56	1316.32	1306.09	1.00	1.00	0	0	1.0	56	0	30	
14	.260	67	1316.56	1316.30	1306.09	1.00	1.00	0	0	1.0	56	0	28	
15	.280	68	1316.56	1316.28	1306.09	1.00	1.00	0	0	1.0	56	0	26	
16	.300	69	1316.56	1316.26	1306.09	1.00	1.00	0	0	1.0	56	0	24	
17	.320	70	1316.56	1316.24	1306.09	1.00	1.00	0	0	1.0	56	0	22	
18	.340	71	1316.56	1316.22	1306.09	1.00	1.00	0	0	1.0	56	0	20	
19	.360	72	1316.56	1316.20	1306.09	1.00	1.00	0	0	1.0	56	0	18	
20	.380	73	1316.56	1316.18	1306.09	1.00	1.00	0	0	1.0	56	0	16	
21	.400	74	1316.56	1316.16	1306.09	1.00	1.00	0	0	1.0	56	0	14	
22	.420	75	1316.56	1316.14	1306.09	1.00	1.00	0	0	1.0	56	0	12	
23	.440	76	1316.56	1316.12	1306.09	1.00	1.00	0	0	1.0	56	0	10	
24	.460	77	1316.56	1316.10	1306.09	1.00	1.00	0	0	1.0	56	0	8	
25	.480	78	1316.56	1316.08	1306.09	1.00	1.00	0	0	1.0	56	0	6	
26	.500	79	1316.56	1316.06	1306.09	1.00	1.00	0	0	1.0	56	0	4	
27	.520	80	1316.56	1316.04	1306.09	1.00	1.00	0	0	1.0	56	0	2	
28	.540	81	1316.56	1316.02	1306.09	1.00	1.00	0	0	1.0	56	0	0	
29	.560	82	1316.56	1316.00	1306.09	1.00	1.00	0	0	1.0	56	0	-2	
30	.580	83	1316.56	1316.02	1306.09	1.00	1.00	0	0	1.0	56	0	-4	
31	.600	84	1316.56	1316.04	1306.09	1.00	1.00	0	0	1.0	56	0	-6	
32	.620	85	1316.56	1316.06	1306.09	1.00	1.00	0	0	1.0	56	0	-8	
33	.640	86	1316.56	1316.08	1306.09	1.00	1.00	0	0	1.0	56	0	-10	
34	.660	87	1316.56	1316.10	1306.09	1.00	1.00	0	0	1.0	56	0	-12	
35	.680	88	1316.56	1316.12	1306.09	1.00	1.00	0	0	1.0	56	0	-14	
36	.700	89	1316.56	1316.14	1306.09	1.00	1.00	0	0	1.0	56	0	-16	
37	.720	90	1316.56	1316.16	1306.09	1.00	1.00	0	0	1.0	56	0	-18	
38	.740	91	1316.56	1316.18	1306.09	1.00	1.00	0	0	1.0	56	0	-20	
39	.760	92	1316.56	1316.20	1306.09	1.00	1.00	0	0	1.0	56	0	-22	
40	.780	93	1316.56	1316.22	1306.09	1.00	1.00	0	0	1.0	56	0	-24	
41	.800	94	1316.56	1316.24	1306.09	1.00	1.00	0	0	1.0	56	0	-26	
42	.820	95	1316.56	1316.26	1306.09	1.00	1.00	0	0	1.0	56	0	-28	
43	.840	96	1316.56	1316.28	1306.09	1.00	1.00	0	0	1.0	56	0	-30	
44	.860	97	1316.56	1316.30	1306.09	1.00	1.00	0	0	1.0	56	0	-32	
45	.880	98	1316.56	1316.32	1306.09	1.00	1.00	0	0	1.0	56	0	-34	
46	.900	99	1316.56	1316.34	1306.09	1.00	1.00	0	0	1.0	56	0	-36	
47	.920	100	1316.56	1316.36	1306.09	1.00	1.00	0	0	1.0	56	0	-38	
48	.940	101	1316.56	1316.38	1306.09	1.00	1.00	0	0	1.0	56	0	-40	
49	.960	102	1316.56	1316.40	1306.09	1.00	1.00	0	0	1.0	56	0	-42	
50	.980	103	1316.56	1316.42	1306.09	1.00	1.00	0	0	1.0	56	0	-44	

RESERVOIR DEPLETION TABLE :

I	K	TIP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
51	1	1.000	1605	1308.01	1306.70	1309.91	.00	2.00	73.1	35.0	10	54	1606	0
		.020												
		.080												
		.100												
		.120												
		.180												
		.200												
		.220												
		.280												
		.300												
		.320												
		.380												
		.400												
		.420												
		.480												
		.500												
		.520												
		.580												
		.600												
		.620												
		.680												
		.700												
		.720												
		.780												
		.800												
		.820												
		.880												
		.900												
		.920												
		.980												
100		54	105.09	1304.70	1306.09	.00	.00	.00	54.0	54.0	0	54	0	0

RESERVOIR DEPLETION TABLE :

I	K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	OBRECH	OSPIL	
182	1	2.000		\$4	1305.00	1304.70	1306.00	1.00	2.00	85.5	35.0	3.18	\$4	\$4	8.
		2.020													

RESERVOIR FLOW SUMMARY :

Initial Flow (Q(1), cfs)	54.
Maximum Flow (Qmax, cfs)	2381.
Final Flow (Q(HU), cfs)	54.
Time to Maximum Flow (TP, hr)	.90
Number of Time Steps or Number of Hydrograph Ordinates (NNU)	102
Total Volume Discharged from Reservoir (DISVOL, acre-ft)	86.
Number of Intermediate Cross-Sections (HH(NS))	11
Number of Time Steps (NNU)	102

Interp. Cross Section	Water Elevation (ft MSL)	Initial Flow (cfs)		
			YD(I) (ft MSL)	OD(I) (cfs)
1	1305.96	54.0		
2	1202.09	54.0		
3	1098.36	54.0		
4	1089.20	112.0		
5	1076.28	112.0		
6	1066.99	112.0		
7	1057.31	112.0		
8	1049.65	112.0		
9	1039.98	112.0		
10	1030.31	112.0		
11	1021.14	112.0		

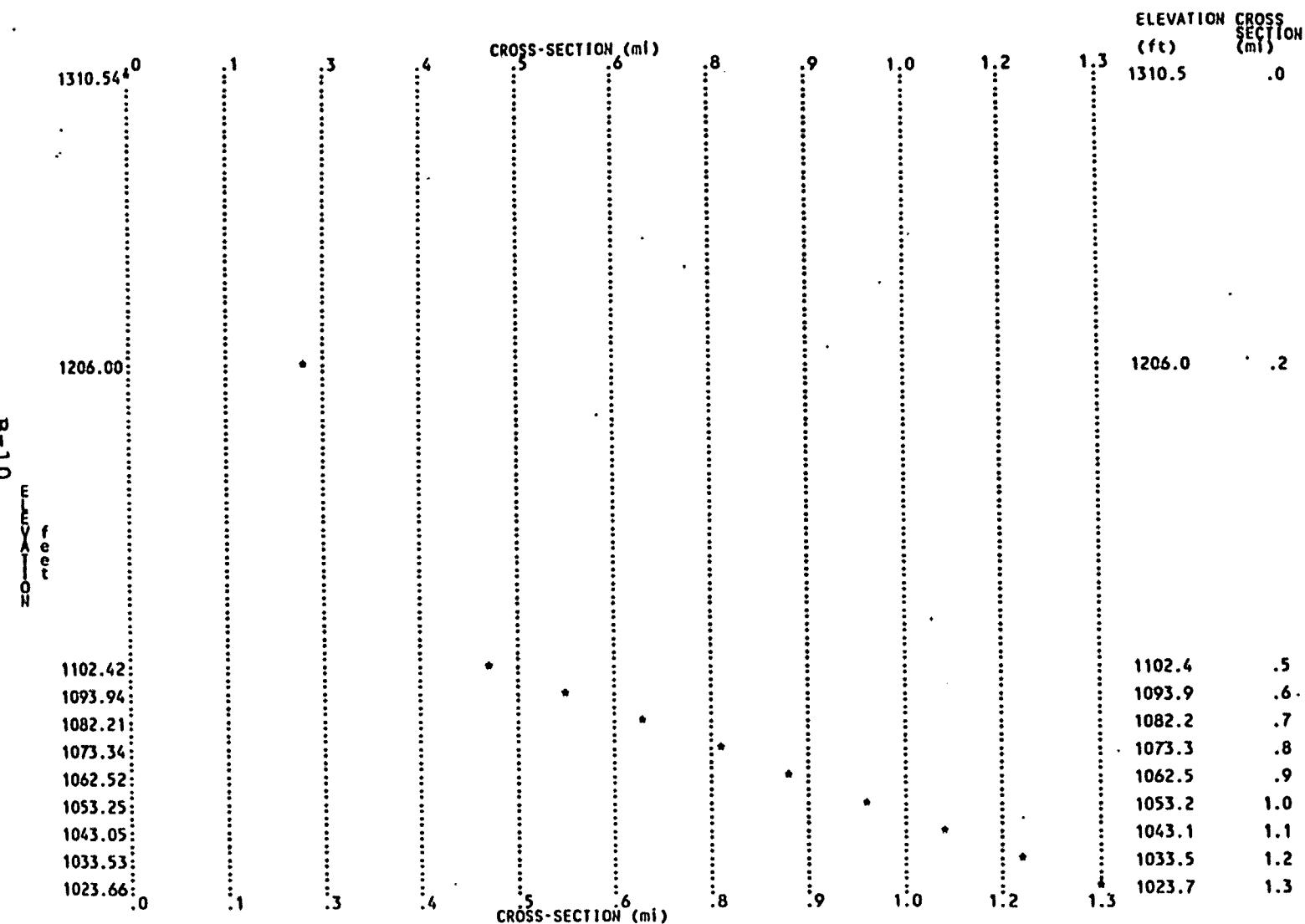
ROUTING COMPLETED :

Number of Time Steps Used (KTIME)	41
Maximum Number of Time Steps Allowed	698
Total Time of Flood Routing (TT, hr)	2.0

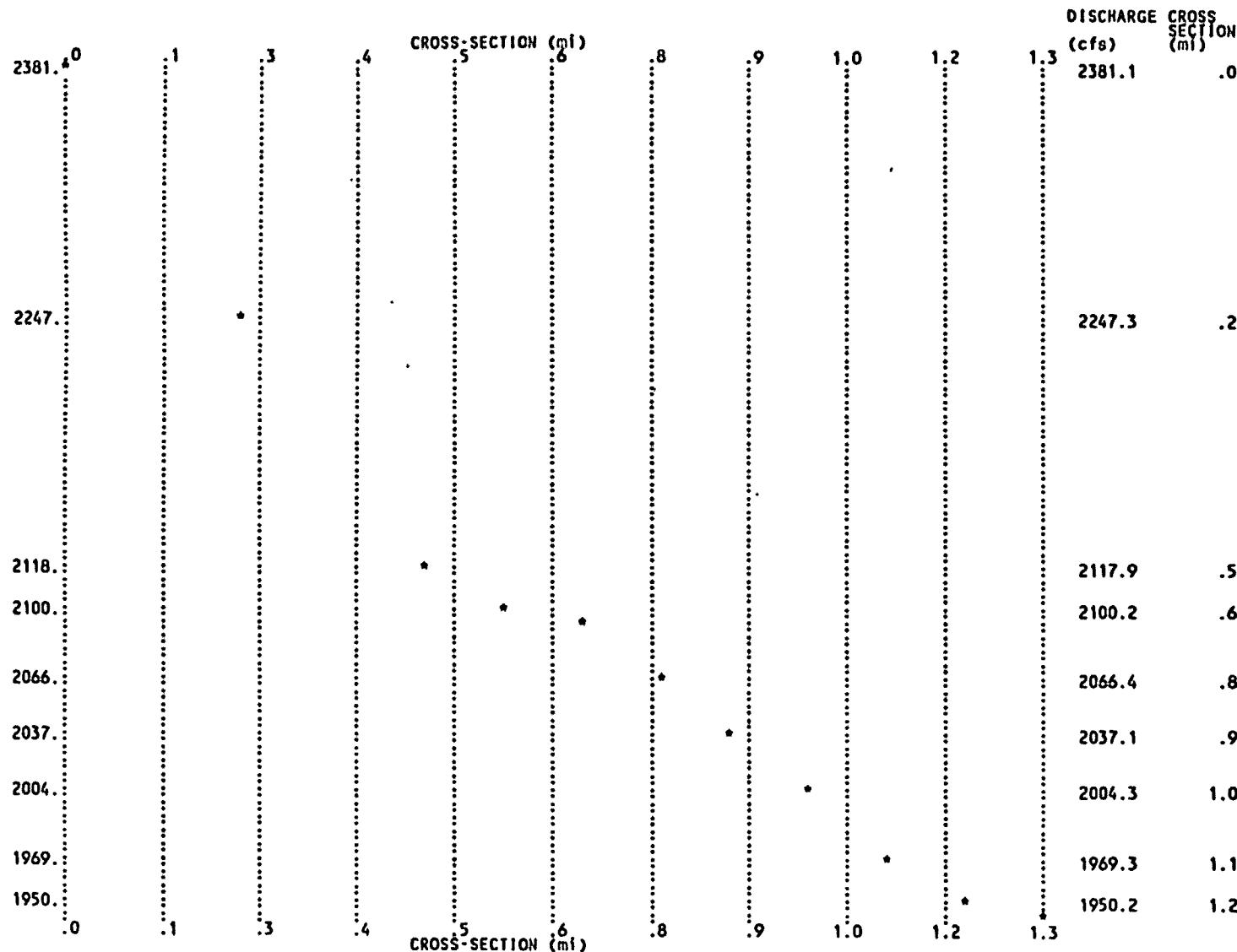
FLOOD CREST SUMMARY :

Cross Section Location (mi)	Maximum Stage Elevation (ft MSL)	Maximum Flow (cfs)	Time To Maximum Stage (hr)	Maximum Velocity (ft/sec)	Flood Elevation (ft MSL)	Time To Flood Elevation (hr)
0.00	110.54	2381	.000	23.03	.00	.00
.232	1095.08	2247	.900	25.67	.00	.00
.290	1102.32	2117	.900	14.08	.00	.00
.360	1093.92	2100	.900	16.62	.00	.00
.400	1082.51	2089	.950	16.76	.00	.00
.460	1083.31	2069	.950	16.71	.00	.00
.500	1084.32	2049	.950	16.02	.00	.00
.560	1084.32	2027	.950	14.08	.00	.00
.620	1083.92	2003	.950	10.90	.00	.00
.680	1083.53	1969	1.000	13.08	.00	.00
.720	1083.68	1942	1.000	12.60	.00	.00

FLOOD CREST SUMMARY (Peak Water Surface Elevation) :



FLOOD DISCHARGE SUMMARY (Peak Water Flow) :



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TIME TO PEAK ELEVATION PROFILE :

Peak time is constant at

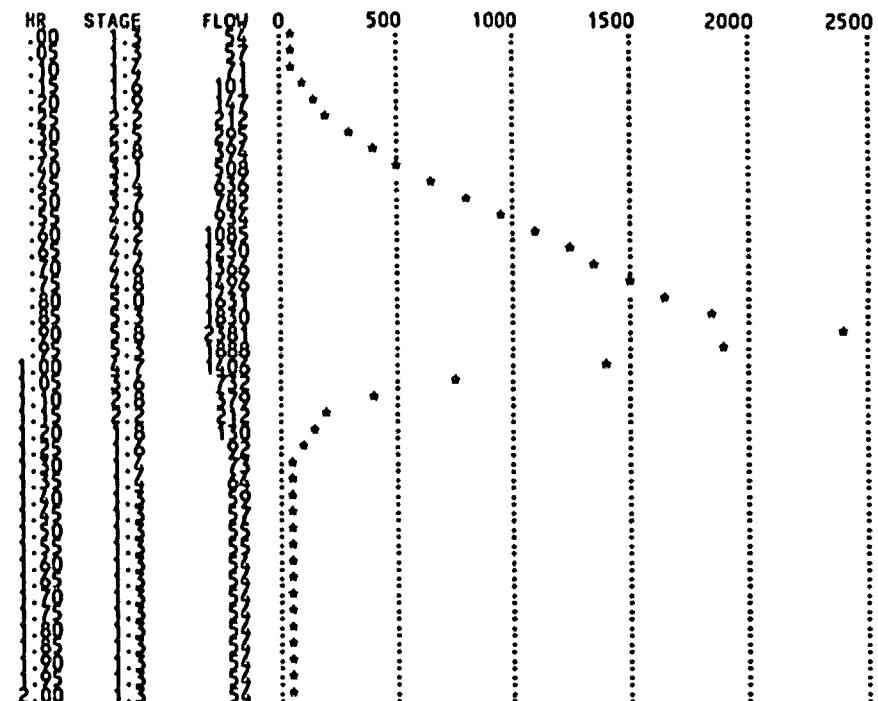
CROSS-SECTION (mi) 1.00 hour

TIME (hr)	CROSS SECTION (mi)	ELEVATION (ft MSL)
--------------	--------------------------	-----------------------

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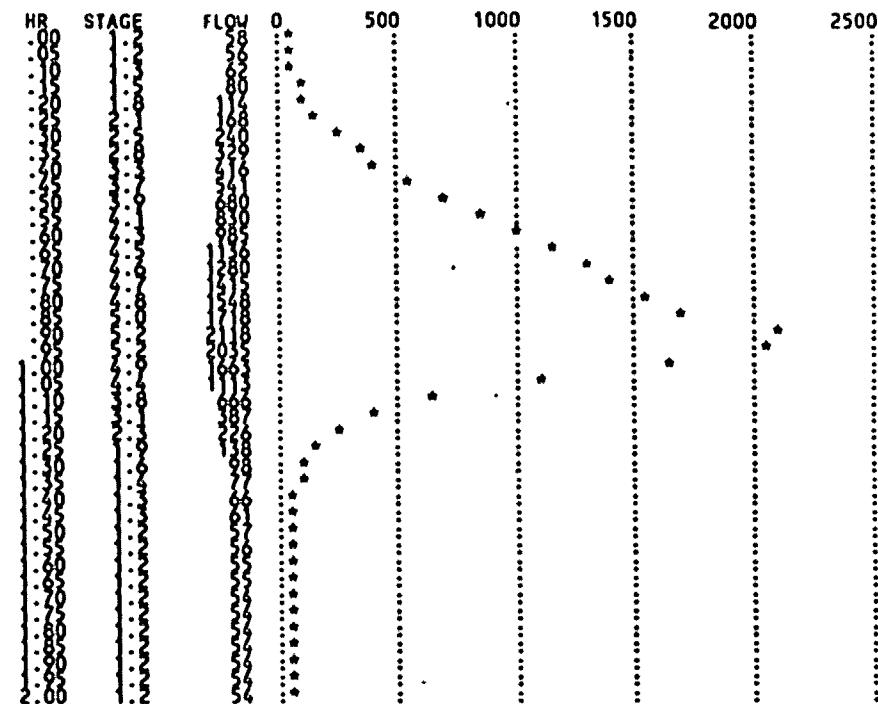
DISCHARGE HYDROGRAPH :

Cross-Section Number	1
Cross-Section Location (mi)	.000
Gage Zero (ft MSL)	1304.700
Max Elevation Reached by Flood Wave (ft MSL)	1310.537
Flood Stage (ft)	(not available)
Maximum Stage (ft)	5.837
at Time (hr)	.900
Maximum Flow (cfs)	2381
at Time (hr)	.900



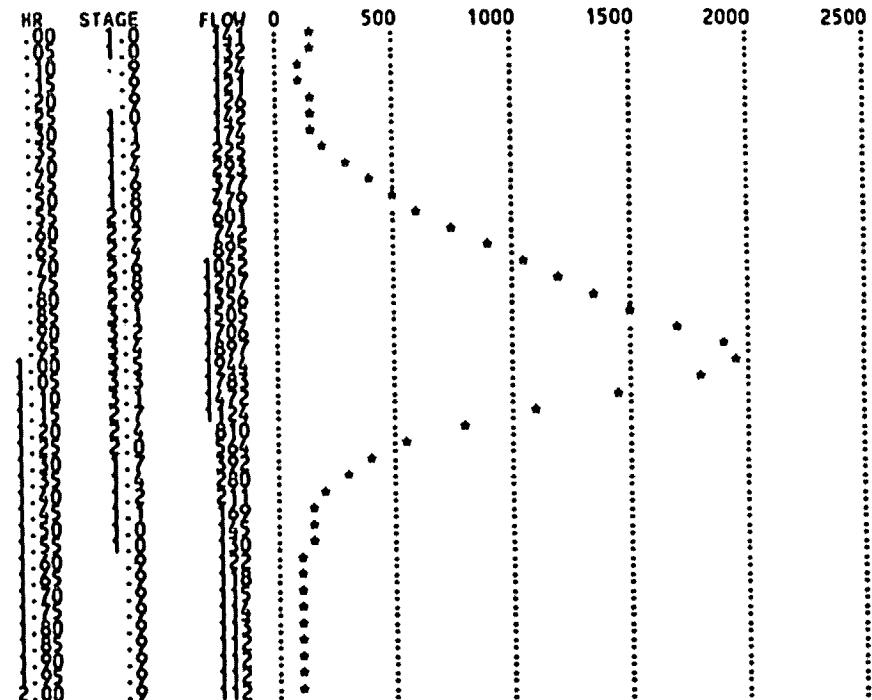
DISCHARGE HYDROGRAPH :

Cross-Section Number	3
Cross-Section Location (mi)	.490
Gage Zero (ft MSL)	1097.200
Max Elevation Reached by Flood Wave (ft MSL)	1102.423
Flood Stage (ft)	(not available)
Maximum Stage (ft)	5.223
at Time (hr)	.900
Maximum Flow (cfs)	2118
at Time (hr)	.900



DISCHARGE HYDROGRAPH :

Cross-Section Number	11
Cross-Section Location (mi)	1.290
Gage Zero (ft MSL)	1020.200
Max Elevation Reached by Flood Wave (ft MSL)	1023.658
Flood Stage (ft)	(not available)
Maximum Stage (ft)	3.458
at Time (hr)	1.000
Maximum Flow (cfs)	1944
at Time (hr)	1.000



END OF OUTPUT

DAY-BRUORTON DAM, VERMONT
 DAM FAILS WITH WATER LEVEL AT TOP OF DAM

	1	0	0	5	3	0	0	0
0111110100	0	2						
115.0	90.0	0.0						
1318.6	1317.6	1304.7						
0.0	1318.6	1.0	1304.7	35.	1.0	1304.7	1.0	
1318.6	1318.6	1315.9	0.0	100.0	0.0	450.0	0.0	
0.0		2.5						
443.6553	443.6553	443.6553						
0.0	1.0	2.5						
3	4	3	9	0	1	1	0	
1	2	3						
0.0	0.0							
1304.7	1309.4	1315.4	1317.4	0.0	0.0	0.0	0.0	
1.0	27.0	90.0	162.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.49	0.0							
1097.2	1097.7	1100.0	1104.2	0.0	0.0	0.0	0.0	
3.0	4.0	15.0	126.5	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1.29	0.0							
1020.2	1023.0	1030.2	1033.2	0.0	0.0	0.0	0.0	
10.0	66.0	198.0	240.5	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.025	0.030	0.035	0.035	0.0	0.0	0.0	0.0	
0.025	0.025	0.035	0.035	0.0	0.0	0.0	0.0	
0.2	0.1							
0.0	0.0							
0.0	0.0	0.05	0.0	265.0	0.5	0.01	1.0	
2	477.0	477.0						

B O S S D A M B R K (tm)

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Version 1.30
Serial Number : 0001058.130

PROGRAM ORIGIN :

Boss DamBrk (tm) is an enhanced version of Professor D. L. Fread's
1984 HWS DAMBRK program.

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PROJECT DESCRIPTION :

PROJECT TITLE : Day Brugerton Pond Dam
PROJECT NUMBER : JC-127-2(d)
DESCRIPTION : Reservoir at dam crest at failure
ENGINEER : Patrick Blumeris
DATE OF RUN : 2/07/1989
TIME OF RUN : 11:39 am

INPUT DATA SUMMARY :

INPUT CONTROL PARAMETERS :

Number of Dynamic Routing Reaches (KKH)	1
Type of Reservoir Routing (KUI)	0 (storage routing)
Number of multiple dams/bridges (MULDAM)	0
No. of Reservoir Inflow Hydrograph Points (ITEH)	3
No. of Informational Cross-Sections (NPRT)	0
Flood-Plain Routing (KFLP)	0 (no)
Landslide Simulation (KSL)	0 (no)

RESERVOIR DESCRIPTION :

Elevation vs. Volume Table

HSA(K) (ft NSL)	SA(K) (acre-ft)
1318.60	115.0
1317.60	90.0
1304.70	0.0
:00	:0
:00	:0
:00	:0
:00	:0
:00	:0

RESERVOIR VOLUME DESCRIPTION :

Elevation vs. Surface Area Table

HSA(K) (ft NSL)	Area (acres)
1318.60	37.0
1317.60	13.0
1304.70	1.0
:00	:0
:00	:0
:00	:0
:00	:0

RESERVOIR and BREACH DESCRIPTION :

Initial Elevation of Reservoir Surface (YO, ft MSL)	1318.60
Bottom of Dam Elevation (DATUM, ft MSL)	1304.70
Top of Dam Elevation (HD, ft MSL)	1318.60
Water Surface Elevation at Time of Breach (HF, ft MSL)	1318.60
Breach Side Slope (Z)	1: 1.00
Breach Bottom Elevation (YBMIN, ft MSL)	1304.70
Breach Base Width (BB, ft)	35.00
Time of Breach Formation (TFH, hr)	1.00
Uncontrolled Spillway Crest Elevation (HSP, ft MSL)	1315.90
Uncontrolled Spillway Discharge Coefficient (CS)	100.00
Spillway Gate Center Elevation (HGT, ft MSL)	.00
Spillway Gate Discharge Coefficient (CG)	.00
Dam Overtopping Discharge Coefficient (COO)	450.00
Turbine Discharge (QT, cfs)	.00

INFLOW HYDROGRAPH DESCRIPTION :

Hydrograph Time Intervals (DHF, hr)	.00
Routing Period (TEH, hr)	2.50
Time Elapsed (hr)	Upstream Inflow (cfs)
1.00	443.7
2.00	443.7
2.50	443.7

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PROJECT NUMBER : JC-127-2(d)

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SUMMARY OF PROGRAM CONTROL PARAMETERS :

Number of Cross-Sections Entered (NS)	3
Number of Top Widths Entered (NCS)	4
Number of Cross-Sectional Hydrographs to Plot (NTT)	3
Cross-Sectional Smoothing Parameter (KSA)	0
Downstream Supercritical Parameter (KSUPC)	1 (supercritical)
Number of Lateral Inflow Hydrographs (LQ)	1
Number of Points in Gate Control Curve (KG0)	0

CROSS-SECTIONS WHERE HYDROGRAPH REQUESTED :
(maximum allowed = 6)

1 2 3

BOSS DAMBRK version 1.30
PROJECT TITLE : Day Brugerton Pond Dam
PROJECT NUMBER : JC-127-2(d)

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CHANNEL-VALLEY BOUNDARY CONDITIONS :

Max Discharge at Downstream End (QMAXD, cfs)	.0
Max Lateral Outflow due to Flood Wave (QLL, cfs/ft)	.0
Initial Time-Step Size (DTDH, hr)	.05
Time at which Dam Starts to Fail (TFI, hr)	1.00
Theta Weighting Factor (F11)	.500
Stage Convergence Criterion (EPSY, ft)	.01
Initial Downstream Water Surface Elevation (YDH, ft MSL)	.00
Slope of Channel Downstream of Dam (SOM, ft/mi)	265.000

LATERAL INFLOW REACH NUMBERS (LQX) :

2

(QL(L, 1), L=1, ITEH)
477. 477. 477.

CROSS-SECTION NUMBER : 1

Cross-Section Location (XS(1), mi)	.000	.490
Left Flood-Plain Cross-Section Location (XSL(1), mi)	.000	.000
Right Flood-Plain Cross-Section Location (XSR(1), mi)	.000	.000
Flooding Elevation (FSTG(1), ft MSL)	.000	.000
Initial Water Surface Elevation (YD, ft MSL)	.000	.000

DOWNTSTREAM REACH NUMBER : 1

Reach Contraction-Expansion Coefficient (FKC)	.000	.000
Minimum Distance Between Interpolated Cross-Sections (DXM, mi)	.200	.100

CROSS-SECTION and REACH DESCRIPTION :

Elevation	Channel Top Width	Channel Manning n	Storage Top Width	Left Channel Top Width	Left Manning n	Right Channel Top Width	Right Manning n
(ft ASL)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1304.70	1.0	.0250	:0	:0	:0000	:0	:0000
1305.20	27.0	.0300	:0	:0	:0000	:0	:0000
1317.20	142.0	.0350	:0	:0	:0000	:0	:0000

CROSS-SECTION NUMBER : 2

Cross-Section Location (XS(1), mi)	.000	.490
Left Flood-Plain Cross-Section Location (XSL(1), mi)	.000	.000
Right Flood-Plain Cross-Section Location (XSR(1), mi)	.000	.000
Flooding Elevation (FSTG(1), ft MSL)	.000	.000
Initial Water Surface Elevation (YD, ft MSL)	.000	.000

DOWNTSTREAM REACH NUMBER : 2

Reach Contraction-Expansion Coefficient (FKC)	.000	.000
Minimum Distance Between Interpolated Cross-Sections (DXM, mi)	.100	.100

CROSS-SECTION and REACH DESCRIPTION :

Elevation	Channel Top Width	Channel Manning n	Storage Top Width	Left Channel Top Width	Left Manning n	Right Channel Top Width	Right Manning n
(ft ASL)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1082.20	3.0	.0250	:0	:0	:0000	:0	:0000
1087.70	15.0	.0300	:0	:0	:0000	:0	:0000
1100.00	128.5	.0350	:0	:0	:0000	:0	:0000
1104.20	128.5	.0350	:0	:0	:0000	:0	:0000

CROSS-SECTION NUMBER : 3

Cross-Section Location (XS(I), mi)	1.290
Left Flood-Plain Cross-Section Location (XSL(I), mi)	.000
Right Flood-Plain Cross-Section Location (XSR(I), mi)	.000
Flooding Elevation (FSTG(I), ft MSL)	.000
Initial Water Surface Elevation (YD, ft MSL)	.000

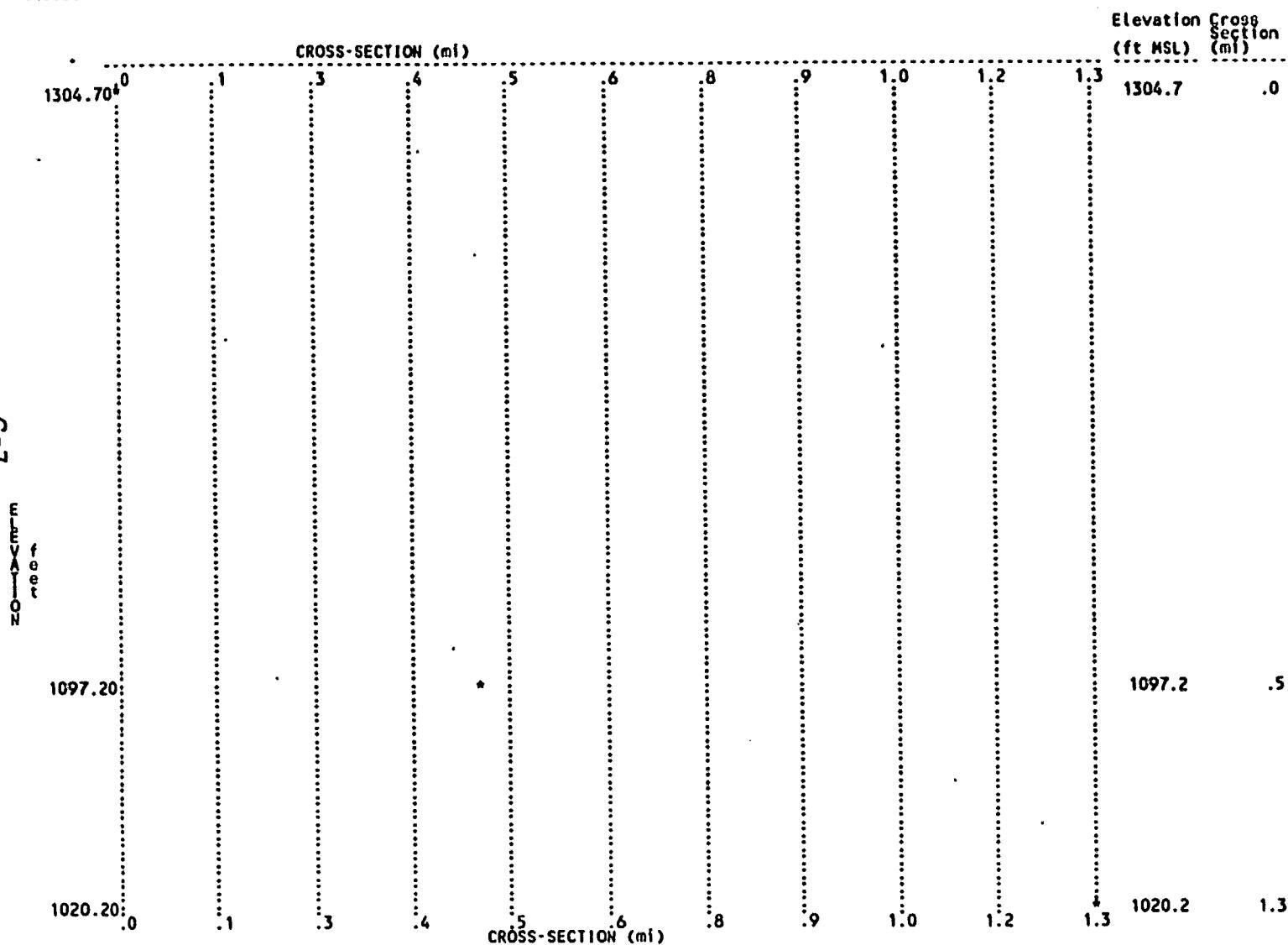
CROSS-SECTION DESCRIPTION :

Elevation	Channel	Storage	Left	Right
	Top	Top	Top	Top
	Width	Width	Width	Width
(ft ASL)	BSt(x,1)	BSt(x,1)	BSt(x,1)	BSt(x,1)
1020.00	10.0	:0	:0	:0
1023.00	66.0	:0	:0	:0
1030.00	198.0	:0	:0	:0
1033.00	240.5	:0	:0	:0

Total number of cross-sections (original+interpolated)	11
Maximum number of cross-sections allowed	200

OUTPUT DATA SUMMARY :

SLOPE PROFILE PLOT :



RESERVOIR DEPLETION SUMMARY :

Total Volume in Reservoir (acre-ft) 115.0

DEFINITION OF RESERVOIR DEPLETION TABLE VARIABLES :

PARAMETER	UNITS	VARIABLE
Time step from start of analysis		I
Iterations necessary to solve flow equations		K
Elapsed time from start of analysis	hr	TP(I)
Total outflow from dam	cfs	Q(I)
Elevation of water surface at dam	ft	H2
Elevation of breach bottom	ft	YB
Estimated depth of downstream flow	ft	D
Submergence coefficient		SUB
Velocity correction		VCOR
Total volume discharged from time of breach	ac-ft	OUTVOL
Breach width	ft	BB
Rectangular breach discharge coefficient		COFR
Inflow to reservoir	cfs	Q(I+1)
Breach outflow	cfs	QBREACH
Spillway outflow	cfs	QSPWL

RESERVOIR DEPLETION TABLE :

I	K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
1	0	.000	553	138.60	18.60	1307.96	1.00	.00	0	0	1.0	553	0	553
10		.020	554	138.60	18.60	1307.96	1.00	.01	0	1	1.0	554	0	554
20		.040	556	138.60	18.60	1307.96	1.00	.01	0	1	1.0	556	0	556
30		.060	558	138.60	18.60	1307.96	1.00	.01	0	1	1.0	558	0	558
40		.080	560	138.60	18.60	1307.96	1.00	.01	0	1	1.0	560	0	560
50		.100	562	138.60	18.60	1307.96	1.00	.01	0	1	1.0	562	0	562
60		.120	564	138.60	18.60	1307.96	1.00	.01	0	1	1.0	564	0	564
70		.140	566	138.60	18.60	1307.96	1.00	.01	0	1	1.0	566	0	566
80		.160	568	138.60	18.60	1307.96	1.00	.01	0	1	1.0	568	0	568
90		.180	570	138.60	18.60	1307.96	1.00	.01	0	1	1.0	570	0	570
100		.200	572	138.60	18.60	1307.96	1.00	.01	0	1	1.0	572	0	572
110		.220	574	138.60	18.60	1307.96	1.00	.01	0	1	1.0	574	0	574
120		.240	576	138.60	18.60	1307.96	1.00	.01	0	1	1.0	576	0	576
130		.260	578	138.60	18.60	1307.96	1.00	.01	0	1	1.0	578	0	578
140		.280	580	138.60	18.60	1307.96	1.00	.01	0	1	1.0	580	0	580
150		.300	582	138.60	18.60	1307.96	1.00	.01	0	1	1.0	582	0	582
160		.320	584	138.60	18.60	1307.96	1.00	.01	0	1	1.0	584	0	584
170		.340	586	138.60	18.60	1307.96	1.00	.01	0	1	1.0	586	0	586
180		.360	588	138.60	18.60	1307.96	1.00	.01	0	1	1.0	588	0	588
190		.380	590	138.60	18.60	1307.96	1.00	.01	0	1	1.0	590	0	590
200		.400	592	138.60	18.60	1307.96	1.00	.01	0	1	1.0	592	0	592
210		.420	594	138.60	18.60	1307.96	1.00	.01	0	1	1.0	594	0	594
220		.440	596	138.60	18.60	1307.96	1.00	.01	0	1	1.0	596	0	596
230		.460	598	138.60	18.60	1307.96	1.00	.01	0	1	1.0	598	0	598
240		.480	600	138.60	18.60	1307.96	1.00	.01	0	1	1.0	600	0	600
250		.500	602	138.60	18.60	1307.96	1.00	.01	0	1	1.0	602	0	602
260		.520	604	138.60	18.60	1307.96	1.00	.01	0	1	1.0	604	0	604
270		.540	606	138.60	18.60	1307.96	1.00	.01	0	1	1.0	606	0	606
280		.560	608	138.60	18.60	1307.96	1.00	.01	0	1	1.0	608	0	608
290		.580	610	138.60	18.60	1307.96	1.00	.01	0	1	1.0	610	0	610
300		.600	612	138.60	18.60	1307.96	1.00	.01	0	1	1.0	612	0	612
310		.620	614	138.60	18.60	1307.96	1.00	.01	0	1	1.0	614	0	614
320		.640	616	138.60	18.60	1307.96	1.00	.01	0	1	1.0	616	0	616
330		.660	618	138.60	18.60	1307.96	1.00	.01	0	1	1.0	618	0	618
340		.680	620	138.60	18.60	1307.96	1.00	.01	0	1	1.0	620	0	620
350		.700	622	138.60	18.60	1307.96	1.00	.01	0	1	1.0	622	0	622
360		.720	624	138.60	18.60	1307.96	1.00	.01	0	1	1.0	624	0	624
370		.740	626	138.60	18.60	1307.96	1.00	.01	0	1	1.0	626	0	626
380		.760	628	138.60	18.60	1307.96	1.00	.01	0	1	1.0	628	0	628
390		.780	630	138.60	18.60	1307.96	1.00	.01	0	1	1.0	630	0	630
400		.800	632	138.60	18.60	1307.96	1.00	.01	0	1	1.0	632	0	632
410		.820	634	138.60	18.60	1307.96	1.00	.01	0	1	1.0	634	0	634
420		.840	636	138.60	18.60	1307.96	1.00	.01	0	1	1.0	636	0	636
430		.860	638	138.60	18.60	1307.96	1.00	.01	0	1	1.0	638	0	638
440		.880	640	138.60	18.60	1307.96	1.00	.01	0	1	1.0	640	0	640
450		.900	642	138.60	18.60	1307.96	1.00	.01	0	1	1.0	642	0	642
460		.920	644	138.60	18.60	1307.96	1.00	.01	0	1	1.0	644	0	644
470		.940	646	138.60	18.60	1307.96	1.00	.01	0	1	1.0	646	0	646
480		.960	648	138.60	18.60	1307.96	1.00	.01	0	1	1.0	648	0	648
490		.980	650	138.60	18.60	1307.96	1.00	.01	0	1	1.0	650	0	650

DSS DAMBRK Version 1.30
PROJECT TITLE : Bay Bruxton Pond Dam
PROJECT NUMBER : JC-127-2(d)

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RESERVOIR DEPLETION TABLE :

K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
51	2	1.000	3080	1310.13	1304.70	1311.67	1.00	2.00	12.7	35.0	10	3081	
		.020	2488	1308.92	1302.70	1310.58	.000	.000	12.0	35.0	10	3280	
		.040	2020	1308.92	1302.70	1310.53	.000	.000	12.0	35.0	10	3290	
		.060	1926	1308.92	1302.70	1310.48	.000	.000	12.0	35.0	10	3069	
		.080	1144	1308.92	1302.70	1310.42	.000	.000	12.0	35.0	10	1100	
		.100	924	1308.92	1302.70	1310.36	.000	.000	12.0	35.0	10	2029	
		.120	623	1308.92	1302.70	1310.30	.000	.000	12.0	35.0	10	623	
		.140	570	1308.92	1302.70	1310.24	.000	.000	12.0	35.0	10	480	
		.160	512	1308.92	1302.70	1310.18	.000	.000	12.0	35.0	10	429	
		.180	480	1308.92	1302.70	1310.12	.000	.000	12.0	35.0	10	450	
		.200	443	1308.92	1302.70	1310.06	.000	.000	12.0	35.0	10	424	
		.220	405	1308.92	1302.70	1310.00	.000	.000	12.0	35.0	10	405	
		.240	369	1308.92	1302.70	1309.94	.000	.000	12.0	35.0	10	369	
		.260	335	1308.92	1302.70	1309.88	.000	.000	12.0	35.0	10	335	
		.280	303	1308.92	1302.70	1309.82	.000	.000	12.0	35.0	10	303	
		.300	273	1308.92	1302.70	1309.76	.000	.000	12.0	35.0	10	273	
		.320	245	1308.92	1302.70	1309.70	.000	.000	12.0	35.0	10	245	
		.340	220	1308.92	1302.70	1309.64	.000	.000	12.0	35.0	10	220	
		.360	196	1308.92	1302.70	1309.58	.000	.000	12.0	35.0	10	196	
		.380	175	1308.92	1302.70	1309.52	.000	.000	12.0	35.0	10	175	
		.400	156	1308.92	1302.70	1309.46	.000	.000	12.0	35.0	10	156	
		.420	139	1308.92	1302.70	1309.40	.000	.000	12.0	35.0	10	139	
		.440	124	1308.92	1302.70	1309.34	.000	.000	12.0	35.0	10	124	
		.460	110	1308.92	1302.70	1309.28	.000	.000	12.0	35.0	10	110	
		.480	97	1308.92	1302.70	1309.22	.000	.000	12.0	35.0	10	97	
		.500	85	1308.92	1302.70	1309.16	.000	.000	12.0	35.0	10	85	
		.520	74	1308.92	1302.70	1309.10	.000	.000	12.0	35.0	10	74	
		.540	64	1308.92	1302.70	1309.04	.000	.000	12.0	35.0	10	64	
		.560	54	1308.92	1302.70	1308.98	.000	.000	12.0	35.0	10	54	
		.580	45	1308.92	1302.70	1308.92	.000	.000	12.0	35.0	10	45	
		.600	37	1308.92	1302.70	1308.86	.000	.000	12.0	35.0	10	37	
		.620	30	1308.92	1302.70	1308.80	.000	.000	12.0	35.0	10	30	
		.640	24	1308.92	1302.70	1308.74	.000	.000	12.0	35.0	10	24	
		.660	19	1308.92	1302.70	1308.68	.000	.000	12.0	35.0	10	19	
		.680	14	1308.92	1302.70	1308.62	.000	.000	12.0	35.0	10	14	
		.700	10	1308.92	1302.70	1308.56	.000	.000	12.0	35.0	10	10	
		.720	6	1308.92	1302.70	1308.50	.000	.000	12.0	35.0	10	6	
		.740	3	1308.92	1302.70	1308.44	.000	.000	12.0	35.0	10	3	
		.760	1	1308.92	1302.70	1308.38	.000	.000	12.0	35.0	10	1	
		.780	0	1308.92	1302.70	1308.32	.000	.000	12.0	35.0	10	0	
		.800	443	1308.27	1304.70	1307.95	1.00	2.00	12.0	35.0	10	443	

BOSS DAMBRK version 1.30
PROJECT TITLE : Day Brugiton Pond Dam
PROJECT NUMBER : JC-127-2(d)

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RESERVOIR DEPLETION TABLE :

I	K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	OBRECH	QSPIL
01		2.000	443	1306.27	1304.70	1307.95	1.00	2.00	185.7	35.0	4.10	444	444	0.
02		2.002	443	1306.27	1304.70	1307.92	1.00	2.00	182.3	35.0	4.10	444	444	0.
03		2.004	443	1306.27	1304.70	1307.92	1.00	2.00	180.1	35.0	4.10	444	444	0.
04	1	2.006	443	1306.27	1304.70	1307.92	1.00	2.00	178.0	35.0	4.10	444	444	0.
05		2.008	443	1306.27	1304.70	1307.92	1.00	2.00	176.1	35.0	4.10	444	444	0.
06		2.010	443	1306.27	1304.70	1307.92	1.00	2.00	174.3	35.0	4.10	444	444	0.
07		2.012	443	1306.27	1304.70	1307.92	1.00	2.00	172.6	35.0	4.10	444	444	0.
08		2.014	443	1306.27	1304.70	1307.92	1.00	2.00	171.0	35.0	4.10	444	444	0.
09		2.016	443	1306.27	1304.70	1307.92	1.00	2.00	169.4	35.0	4.10	444	444	0.
10		2.018	443	1306.27	1304.70	1307.92	1.00	2.00	167.9	35.0	4.10	444	444	0.
11		2.020	443	1306.27	1304.70	1307.92	1.00	2.00	166.4	35.0	4.10	444	444	0.
12		2.022	443	1306.27	1304.70	1307.92	1.00	2.00	164.9	35.0	4.10	444	444	0.
13		2.024	443	1306.27	1304.70	1307.92	1.00	2.00	163.5	35.0	4.10	444	444	0.
14		2.026	443	1306.27	1304.70	1307.92	1.00	2.00	162.1	35.0	4.10	444	444	0.
15		2.028	443	1306.27	1304.70	1307.92	1.00	2.00	160.7	35.0	4.10	444	444	0.
		2.559	443	1306.27	1304.70	1307.95	1.00	2.00	206.2	35.0	3.10	444	444	0.

RESERVOIR FLOW SUMMARY :

Initial Flow (Q(1), cfs)	444.
Maximum Flow (Qmax, cfs)	3833.
Final Flow (Q(NU), cfs)	444.
Time to Maximum Flow (TP, hr)	.96
Number of Time Steps or Number of Hydrograph Ordinates (NNU)	115
Total Volume Discharged from Reservoir (DISVOL, acre-ft)	206.
Number of Intermediate Cross-Sections (NN(HS))	11
Number of Time Steps (NNU)	115

Interp. Cross- Section	Water Elevation	Initial Flow
	YD(i) (ft MSL)	QD(i) (cfs)
1	1307.67	443.6
2	1203.85	723.0
3	1081.31	620.0
4	1081.71	620.0
5	1071.45	920.0
6	1062.07	920.0
7	1052.01	920.0
8	1045.91	920.0
9	1036.91	920.0
10	1025.00	920.0

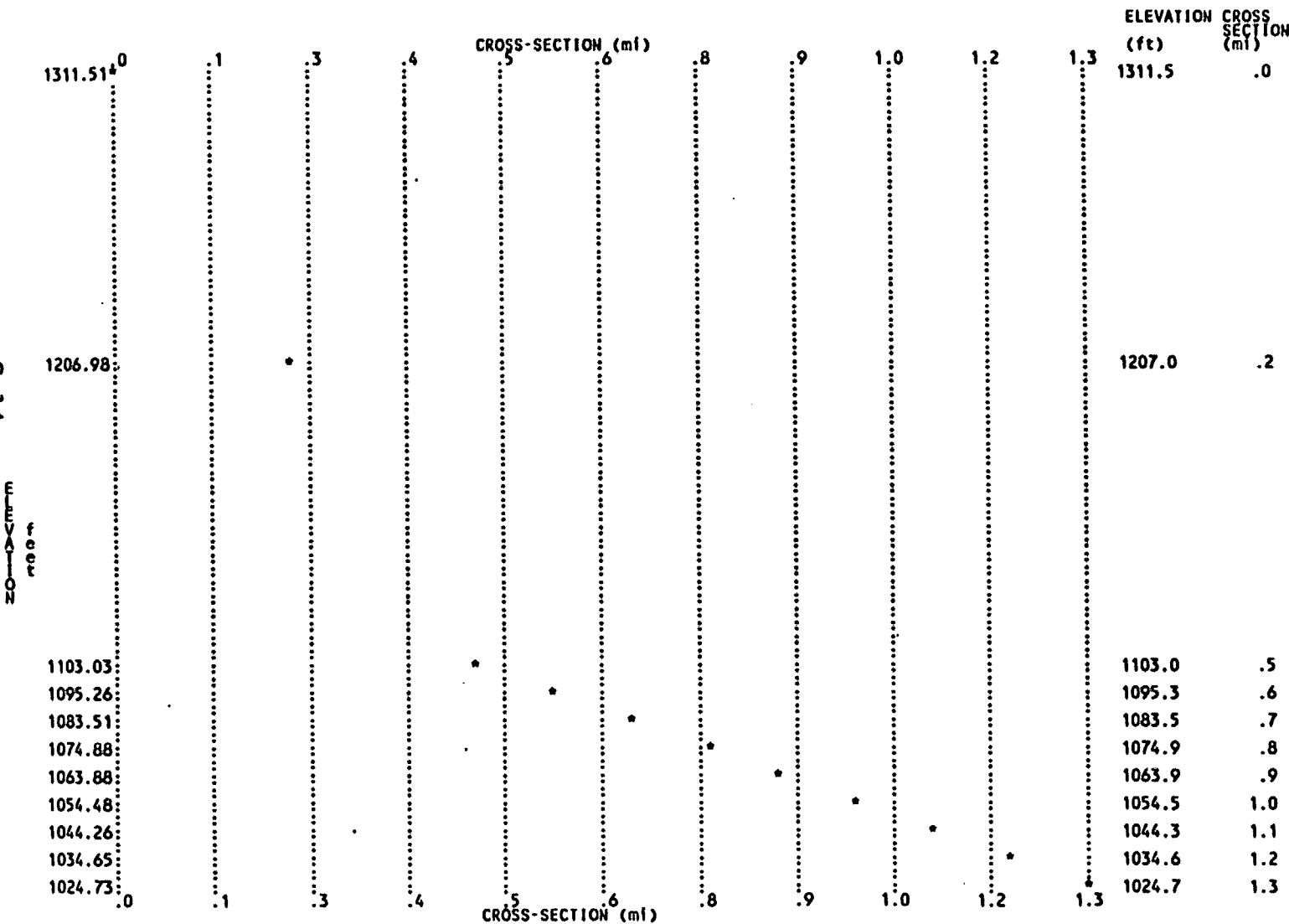
ROUTING COMPLETED :

Number of Time Steps Used (KTIME)	51
Maximum Number of Time Steps Allowed	698
Total Time of Flood Routing (TT, hr)	2.5

FLOOD CREST SUMMARY :

Cross Section	Maximum Stage	Maximum Flow	Time To Maximum Stage	Maximum Flow	Flood Velocity	Elevation	Time To Flood
Location (mi)	(ft MSL)	(cfs)	(hr)	(ft/sec)	(ft MSL)	(hr)	
:000	1311.51	3630	:250	24.86	:00	:00	
:245	1206.98	3470	:250	27.07	:00	:00	
:260	1053.05	3150	:250	12.10	:00	:00	
:265	1053.50	3702	:250	10.18	:00	:00	
:270	1074.00	3620	1.000	10.12	:00	:00	
:280	1063.88	3622	1.000	19.64	:00	:00	
:290	1054.28	3601	1.000	12.10	:00	:00	
:300	1047.26	3270	1.000	12.10	:00	:00	
:290	1024.73	3674	1.000	13.69	:00	:00	

FLOOD CREST SUMMARY (Peak Water Surface Elevation) :



FLOOD DISCHARGE SUMMARY (Peak Water Flow) :

	CROSS-SECTION (mi)	DISCHARGE (cfs)	CROSS SECTION (mi)
3715.0	.0	3715.2	.9
3704.1	.1	3704.3	.9
3678.3	.3	3678.3	.8
3642.4	.4		.9
3630.5	.5	3630.3	.0
3602.6	.6	3601.7	1.0
3561.7	.7	3560.8	1.1
3518.8	.8	3517.6	1.2
3477.9	.9	3477.0	.2
3331.0	.0	3330.6	.5

ROSS DAMBRK version 1.30
PROJECT TITLE : Day Brookton Pond Dam
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TIME TO PEAK ELEVATION PROFILE :

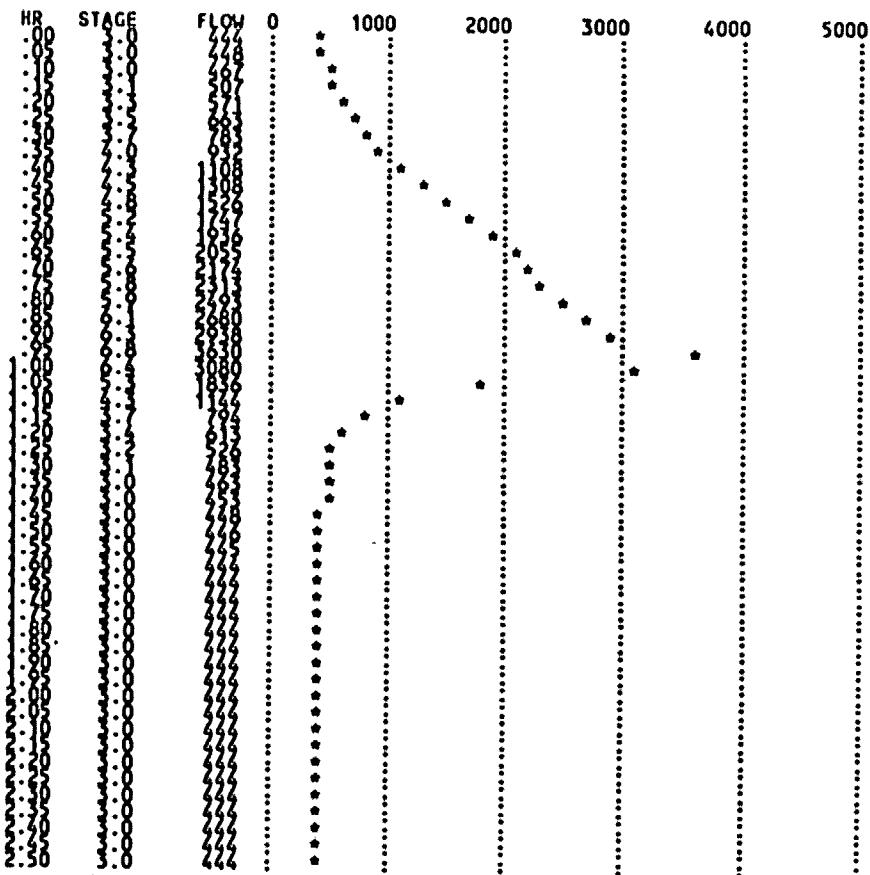
Peak time is constant at
Peak time is constant at

CROSS-SECTION (mi) 1.00 hour
.008

TIME (hr)	CROSS SECTION (mi)	ELEVATION (ft MSL)
--------------	--------------------------	-----------------------

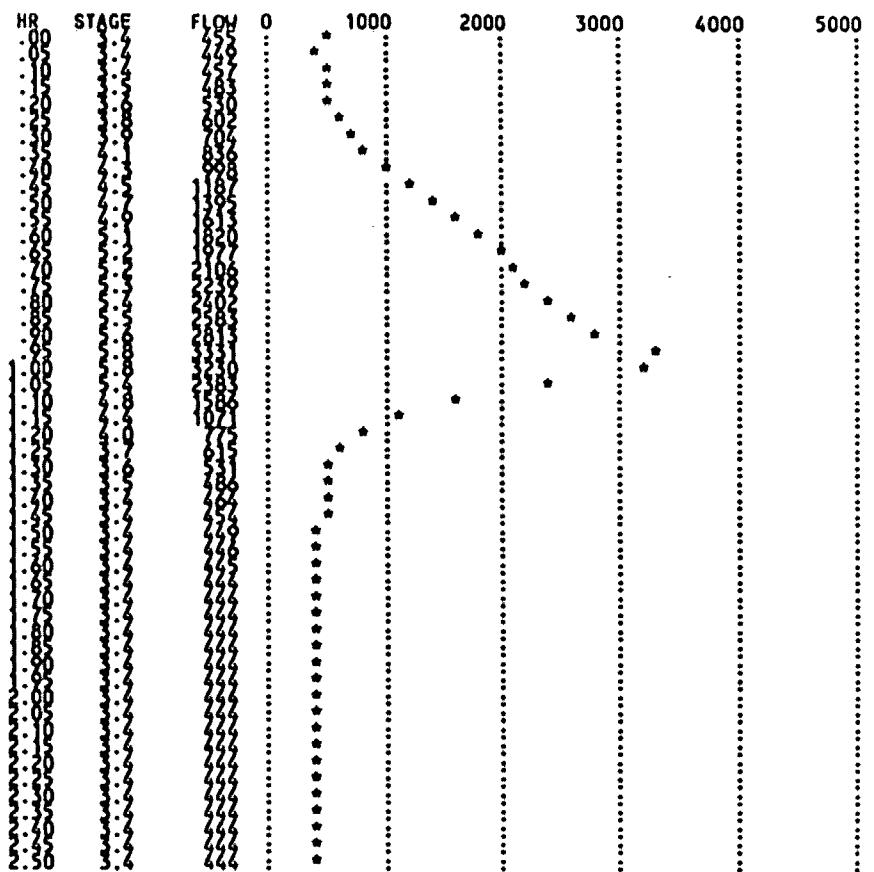
DISCHARGE HYDROGRAPH :

Cross-Section Number	1
Cross-Section Location (mi)	.000
Gage Zero (ft MSL)	1304.700
Max Elevation Reached by Flood Wave (ft MSL)	1311.507
Flood Stage (ft)	(not available)
Maximum Stage (ft)	6.807
at Time (hr)	.950
Maximum Flow (cfs)	3630
at Time (hr)	.950



DISCHARGE HYDROGRAPH :

Cross-Section Number	3
Cross-Section Location (mi)	.490
Gage Zero (ft MSL)	1097.200
Max Elevation Reached by Flood Wave (ft MSL)	1103.030
Flood Stage (ft)	(not available)
Maximum Stage (ft)	5.830
at Time (hr)	.950
Maximum Flow (cfs)	3331
at Time (hr)	.950



BOSS DAMBRK version 1.30
PROJECT TITLE : Day Brumpton Pond Dam
PROJECT NUMBER : JC-127-2(d)

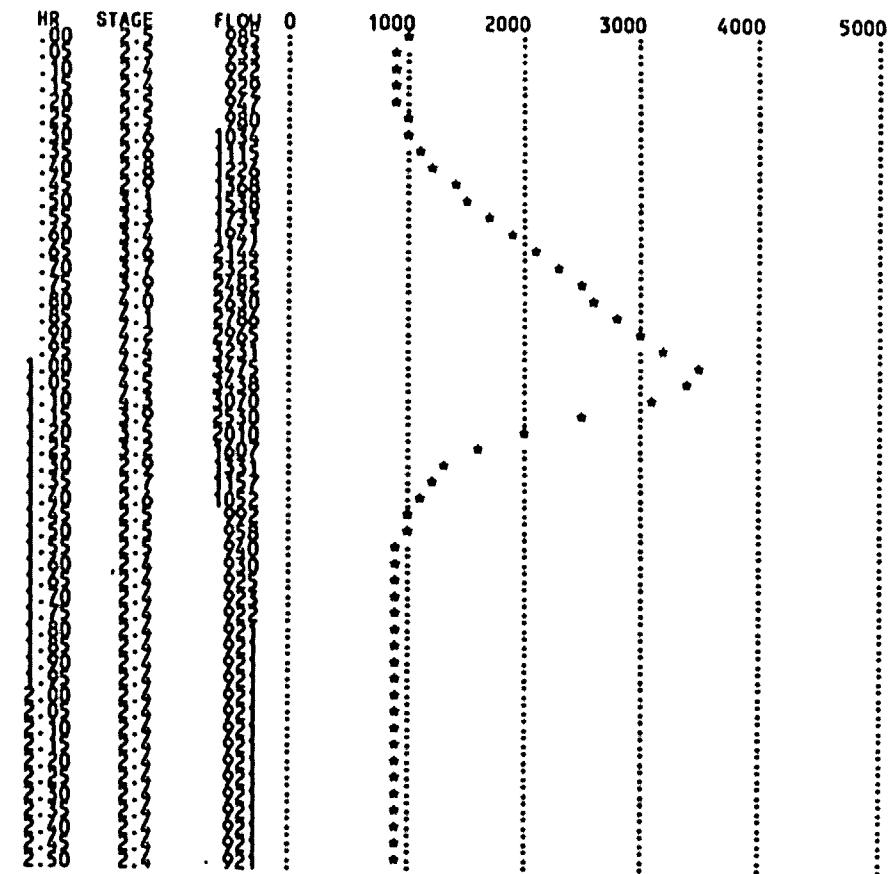
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DISCHARGE HYDROGRAPH :

Cross-Section Number	11
Cross-Section Location (mi)	1.290
Gage Zero (ft MSL)	1020.200
Max Elevation Reached by Flood Wave (ft MSL)	1024.734
Flood Stage (ft)	(not available)
Maximum Stage (ft)	4.534
at Time (hr)	1.000
Maximum Flow (cfs)	3475
at Time (hr)	1.000

BOSS DAMBRK version 1.30
PROJECT TITLE : Day Brumpton Pond Dam
PROJECT NUMBER : JC-127-2(d)

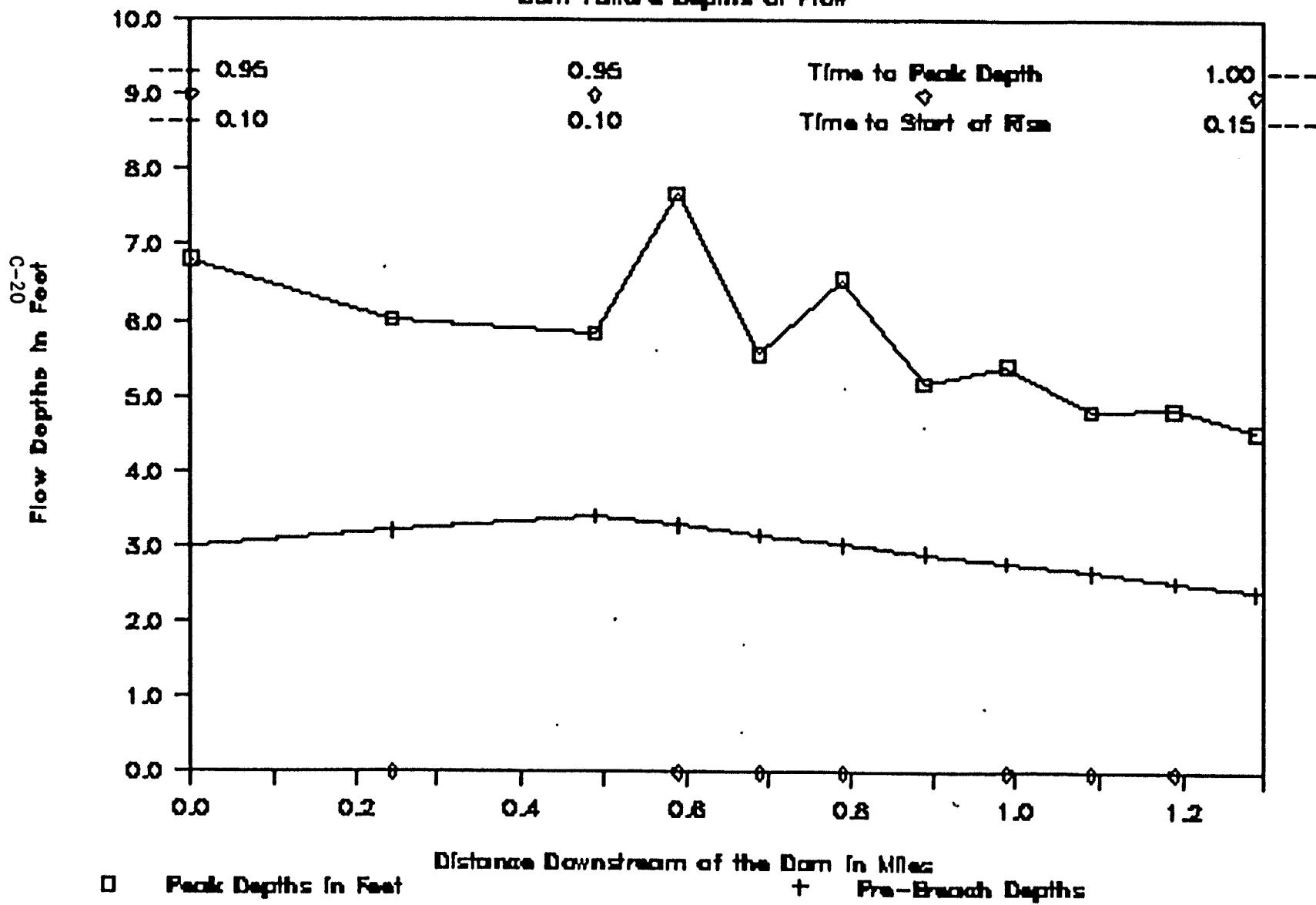
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END OF OUTPUT

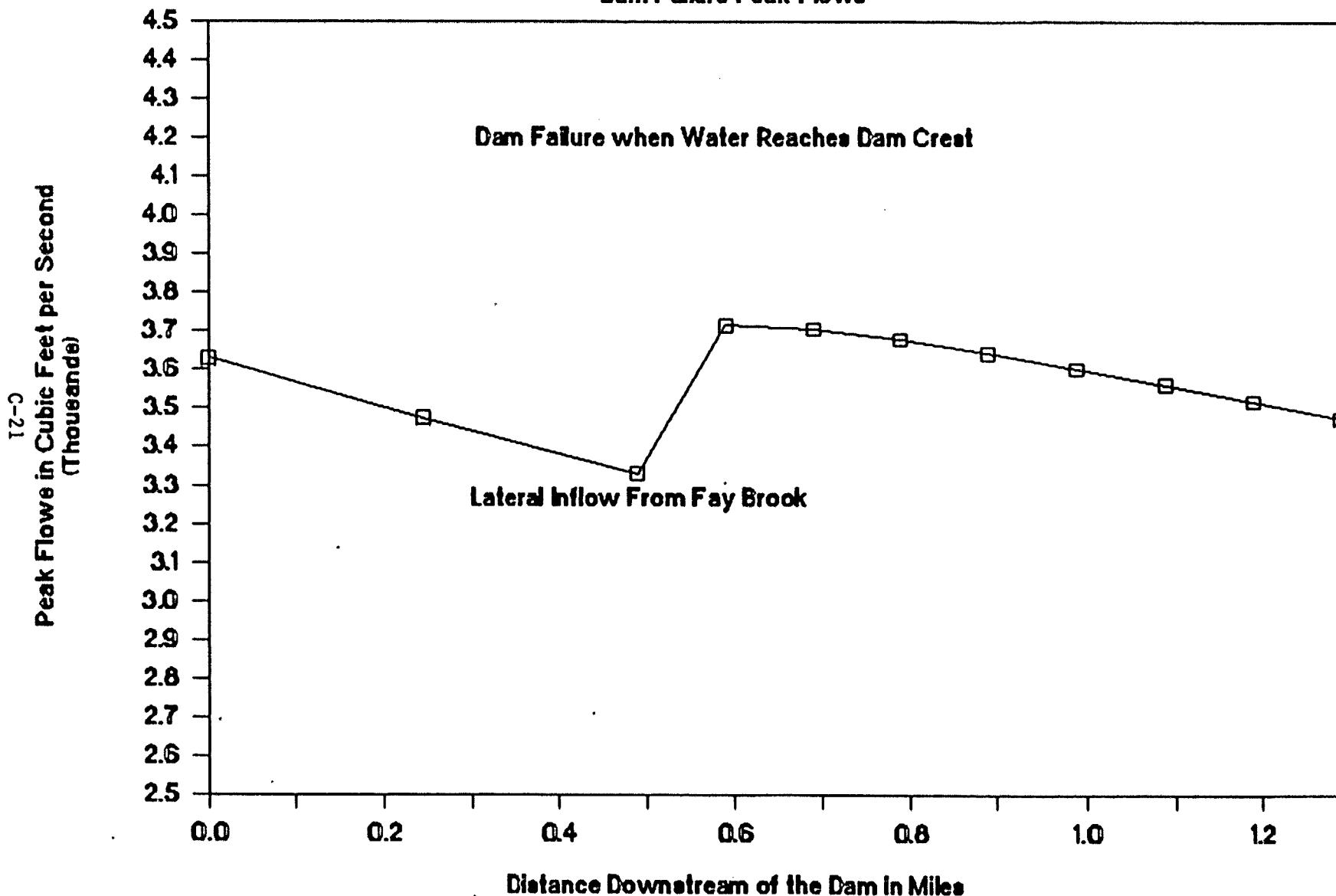
Day-Bruerton Dam

Dam Failure Depths of Flow



Day-Bruorton Dam

Dam Failure Peak Flows



DAY-BRUORTON DAM, VERMONT
MEAN ANNUAL RUNOFF SIMULATION - WITHOUT FAILURE

1	0	0	5	4	0	0	0
0111110100	0' 2						
115.0	90.0	0.0					
1318.6	1317.6	1304.7					
0.0	1315.943	1.0	1304.7	35.	1.0	1304.7	1.0
2315.943	1318.6	1315.9	0.0	100.0	0.0	450.0	0.0
0.0	3.0						
0.9	0.9	0.9	0.9				
0.0	1.0	2.0	3.0				
3	5	3	9	0	1	1	0
1	2	3					
0.0	0.0						
1304.7	1309.4	1315.4	1317.4	1318.3	0.0	0.0	0.0
0.0	27.0	90.0	142.0	170.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.49	1178.5						
1097.2	1097.7	1100.0	1104.0	1104.01	0.0	0.0	0.0
0.0	4.0	15.0	126.0	126.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.29	1022.5						
1020.1	1020.2	1022.9	1028.9	1033.3	0.0	0.0	0.0
0.0	10.0	35.0	114.0	247.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.025	0.030	0.035	0.035	0.035	0.0	0.0	0.0
0.025	0.025	0.035	0.035	0.035	0.0	0.0	0.0
0.2	0.1						
0.0	0.0						
0.0	0.0	0.05	0.0	265.0	0.5	0.01	1.0
2							
1.0	1.0	1.0	1.0				

BOSS DAMBRK version 1.30
PROJECT TITLE : Day Brumpton Pond Dam
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FLOOD CREST SUMMARY :

Cross Section Location (mi)	Maximum Stage Elevation (ft MSL)	Maximum Flow (cfs)	Time To Maximum Stage (hr)	Maximum Velocity (ft/sec)	Flood Elevation (ft MSL)	Time To Flood Elevation (hr)
.000	1305.00	0	2.500	3.41	.00	.00
.245	1201.25	1	.000	5.98	589.25	.00
.490	1097.49	1	.000	3.49	1178.50	.00
.590	1088.02	2	.000	2.34	1159.00	.00
.690	1078.27	2	.000	3.08	1139.50	.00
.790	1068.66	2	.000	2.19	1120.00	.00
.890	1058.96	2	.000	2.67	1100.50	.00
.990	1049.31	2	.000	2.02	1081.00	.00
1.090	1039.60	2	.000	2.38	1061.50	.00
1.190	1029.97	2	.000	1.87	1042.00	.00
1.290	1020.27	2	.000	2.17	1022.50	.00