SUNCOOK RIVER

NEW HAMPSHIRE

PITTSFIELD MILL DAM-BREAK FLOOD ANALYSIS

SEPTEMBER 1984

US Army Corps
of Engineers
New England Division

PITTSFIELD MILL DAM

DAM-BREAK FLOOD

ANALYSIS

SUBMITTED TO:

DEPARTMENT OF THE ARMY

NEW ENGLAND DIVISION

WALTHAM, MASSACHUSETTS

SUBMITTED BY:

CLEVERDON, VARNEY & PIKE, INC.

268 SUMMER STREET

BOSTON, MASSACHUSETTS 02210

CONTRACT NUMBER:

DACW33-83-D-0002

SEPTEMBER 1984

PITTSFIELD MILL DAM

DAM-BREAK FLOOD ANALYSIS

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PITTSFIELD MILL DAM

DAM-BREAK FLOOD ANALYSIS

1. INTRODUCTION AND PURPOSE

This report presents the finding of a dam-break flood analysis performed for the Pittsfield Mill Dam. The dam is owned, operated, and maintained by the Water Resources Board of New Hampshire. Included in this report is a description of the pertinent features of the dam, the procedure used for the analysis, the assumed dam-break conditions and resulting effects on downstream flooded areas. This study was not performed because of any known likelihood of a dam-break at Pittsfield Mill Dam. Its purpose is to provide quantitative information for emergency planning use.

2. DAM DESCRIPTION

Identification No.:	NH00120
NHWRB No.:	195.11
Name of Dam:	PITTSFIELD MILL
Town:	Pittsfield
County and State:	Merrimack County, NH
Stream:	Suncook River

The Pittsfield Mill Dam is located on the Suncook River in the center of Pittsfield and is a well-founded 21 foot high, 280 foot long concrete and stone gravity dam, including a 181 foot concrete ogee spillway. The dam is 1967 reconstruction of a dam built in 1920, itself built on the remains of an even earlier structure. The east abutment is integrated with low level 2-bay gates operated by worm and gear handwheels, and 2-bay high level stop-log sluices. The drainage area is 131 square miles, and the dam normally impounds 1800 acre-feet.

3. PERTINENT DATA

Data is taken from "Phase I Inspection Report" for Pittsfield Mill Dam dated August 1978.

(a) Drainage Areas - 131 sq. mi., rolling, forested and agricultural.

(1) Maximum known flood at damsite 10,800 cfs. (1936 flood)

(b) Elevation (ft. NGVD)

(1) Top Dam: 478.6

(2) Recreation pool: About 475.0

(3) Spillway crest: 474.6

(4) Streambed at centerline of dam: 457.6

(c) Storage (acre-feet)

(1) Recreation pool: 1800 acre-feet (estimated)

(2) Top of dam: 2100 acre-feet

(d) Reservoir Surface

(1) Recreation Pool: 76.8 Ac (Approx.)

(2) Spillway crest: 76.8 Ac (Approx.)

(3) Flood Storage: 364 Ac

(e) Dam

(1) Type: Gravity concrete and stone on ledge and stone foundation

(2) Length: 421.7 ft (Includes 185 ft. of abutment, dike and embankment)

(3) Height: 21 ft

(4) Top Width: West Abut. - 10 ft 8 in,
East Abut. - 12 ft

(5) Side Slopes: Vary

(f) Spillway

(1) Type: Concrete

(2) Length of weir: 181 ft (1961 drawings show 156.7 ft)

(3) Crest elevation: 474.6 ft

(g) Regulating Outlets

	Gates	Weirs
(1) Invert	461.7	469.7
(2) Size	6.25 ft wide (each)	4.6 ft long (each)
(3) Description	Sluice Gates (2)	Removable stop-log weirs (2)
(4) Control Mechanism	Manual Gear Operation	Manual removal of stop-logs

4. VALLEY DESCRIPTION

The river valley below Pittsfield Mill Dam is fairly steep and narrow the first 3 1/2 miles downstream from the dam. The river is generally 75 feet wide with narrow flood plains in this reach, of the river. From the 3 1/2 mile point to the end of the study reach, at 10.0 mile below the dam, the river has a moderate slope with a wide flood plain, generally 1500 ft wide. No major river obstruction occur downstream of the dam, except for 4 highway bridges. Plate 1 shows a plan of the downstream valley.

5. MODEL DESCRIPTION

The Pittsfield Mill Dam dam-break analysis was made using the HEC 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 Spring, Maryland 20910. Input for the model consisted of: (a) Storage characteristics of the reservoir, (b) selected geometry and duration of the breach development, (c) hydraulic inflows, (d) hydraulic roughness coefficients, and (e) active and inactive flow regions. Based on the input data, the model computes the dam-break outflow hydrograph and routes it downstream. Dynamic unsteady flow routing is performed by a "honing" iterative process governed by the requirements of both the principles of conservation of mass and momentum. The analysius provides output on the attentuation of the flood hydrograph, resulting flood stages, and timing of the flood wave as it progresses downstream.

6. ASSUMED DAM-BREAK CONDITIONS

The magnitude of a flood resulting from the hypothetical failure of Pittsfield Mill 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 of conditions which could be reasonable expected to exist prior to a failure of Pittsfield Mill Dam were used in the base flood analysis as presented below:

(1) Initial Pool Level : Water surface @ flood of record elevation 481.5 feet NGVD.

(2) Breach Invert: 455 feet NGVD.

(3) Breach Base Width: 60 feet, trapezodial side slopes 1V: 0.5H.

(4) Time to Complete Formation of Breach: 1/2 hour.

(5) Downstream Channel Roughness: Mannings's "n" = .030 to .090.

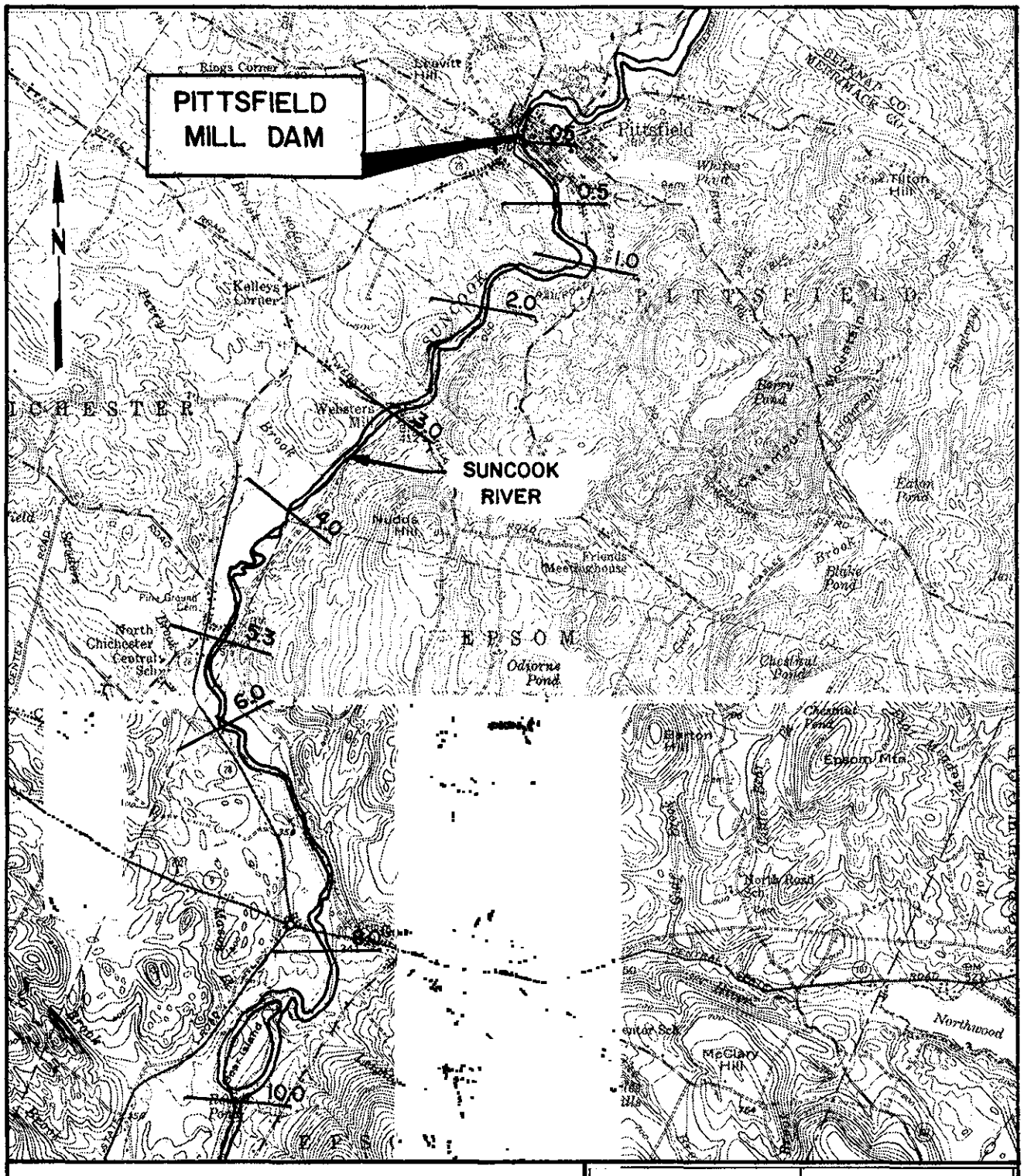
(6) Pre-Breach Flow- Suncook River. A constant discharge of 10,800 cfs. equal to the 1936 Flood of Record Flow.

7. RESULTS

The resulting peak stage flood profile for the dam-break flood are shown on plates 2 through 4. Timing of the peak stage and leading edge of the flood wave are also indicated on the profile. Because of the scarcity of good topographic mapping in the area, profiles are shown in feet above normal summertime (July-August) low water (NLW). Users of the information can establish depth of flooding at particular properties by establishing its relative elevation with respect to the adjacent stream level. Variations in depth above NLW progressing downstream, is attributable to changes in natural stream hydraulic capacity as well as changes in peak discharge. Peak discharge throughout the study reach associated with the development of the peak stage profile along with discharge and stage hydrographs for three stations downstream from Pittsfield Mill Dam are shown on plate 5. The three stations are located .05, 2.0, 10.0 miles downstream of the dam.

The peak dam-break discharge from Pittsfield Mill Dam is 34,050 cfs producing a rise of 14 feet above the NLW stage at a point .05 mile miles downstream from the dam. The peak discharge decreases to 32,160 cfs with an attendant rise of stage of 14.5 feet at a mile 2.0 below dam. At mile 10.0 below the dam the discharge is 16,930 cfs producing a rise of 7 foot over NLW stage.

Most of the attenuation of the dam-break flood occurs between miles 3 and 5 where the river valley is quite wide.



MAP BASED UPON U.S.G.S
GILMANTON & SUNCOOK, N.H.
QUADRANGLES 1957

CROSS-SECTION LOCATION IN
MILES BELOW DAM

SCALE IN MILES

1 0 1

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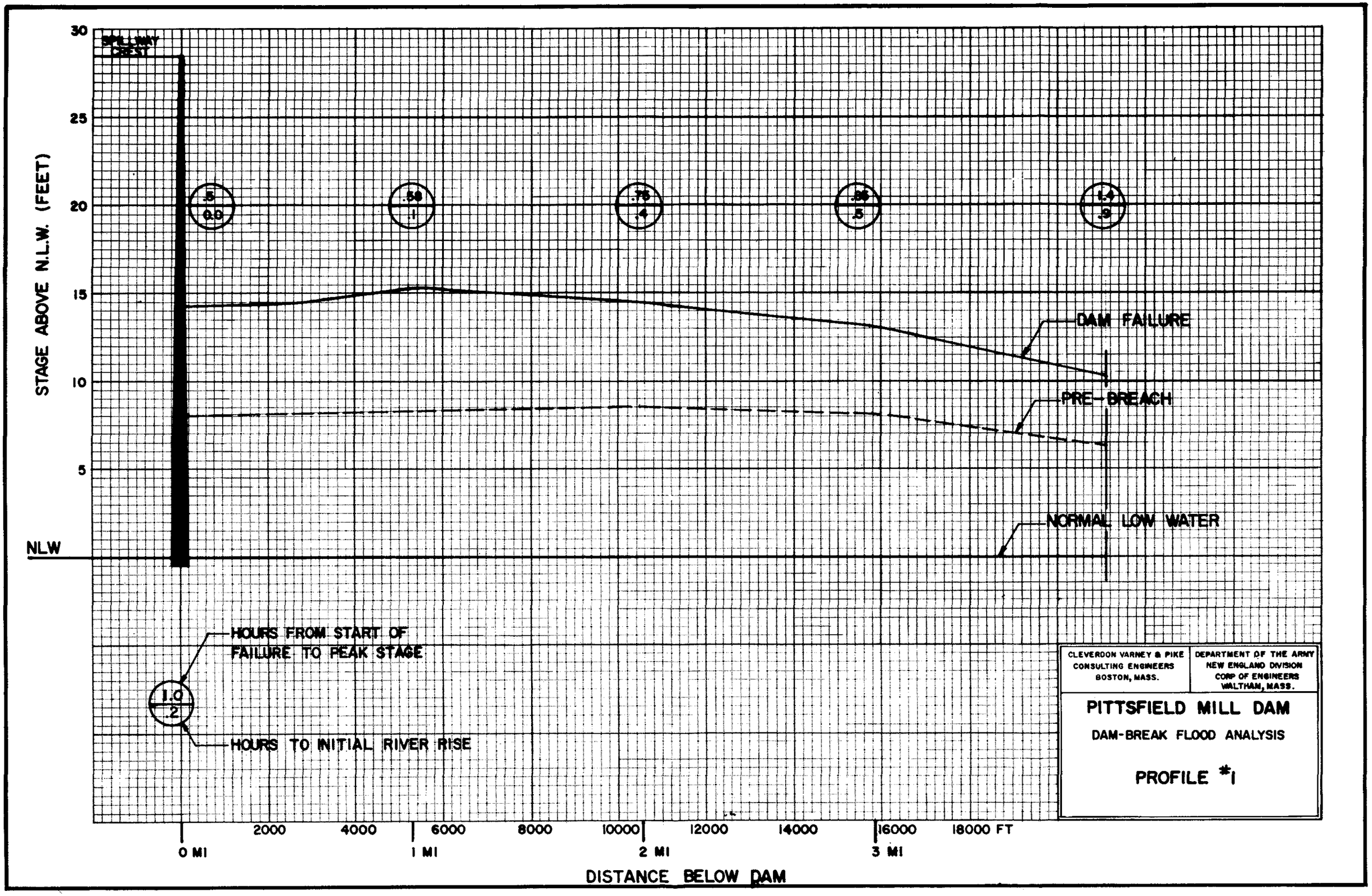
PITTSFIELD MILL DAM

DAM-BREAK FLOOD ANALYSIS

INDEX MAP

PLATE 1


SPILLWAY CREST
STAGE ABOVE N.L.W. (FEET)
30
25
20
15
10
5
NLW
.5
0.0
.58
.1
.75
.4
.95
.5
1.4
.9
DAM FAILURE
PRE-BREACH
NORMAL LOW WATER
HOURS FROM START OF FAILURE TO PEAK STAGE
1.0
.2
HOURS TO INITIAL RIVER RISE
2000
4000
6000
8000
10000
12000
14000
16000
18000 FT
0 MI
1 MI
2 MI
3 MI
DISTANCE BELOW DAM
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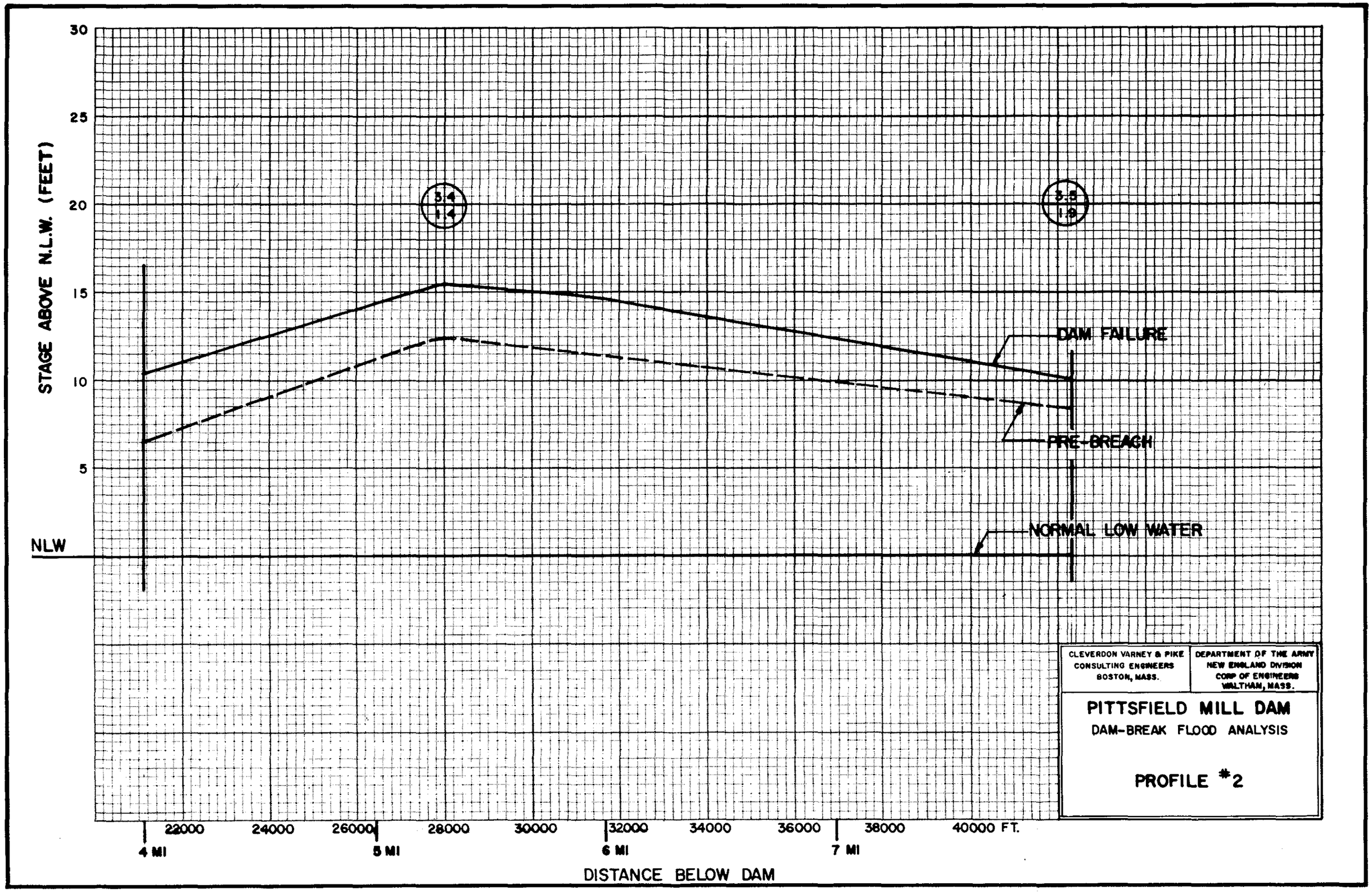
CONSULTING ENGINEERS
BOSTON, MASS.
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORP OF ENGINEERS
WALTHAM, MASS.
PITTSFIELD MILL DAM
DAM-BREAK FLOOD ANALYSIS
PROFILE #1

PLATE 2


STAGE ABOVE N.L.W. (FEET)
30
25
20
15
10
5
NLW
3.4
1.4
3.5
1.9
DAM FAILURE
PRE-BREACH
NORMAL LOW WATER
22000
24000
26000
28000
30000
32000
34000
36000
38000
40000 FT.
4 MI
5 MI
6 MI
7 MI
DISTANCE BELOW DAM
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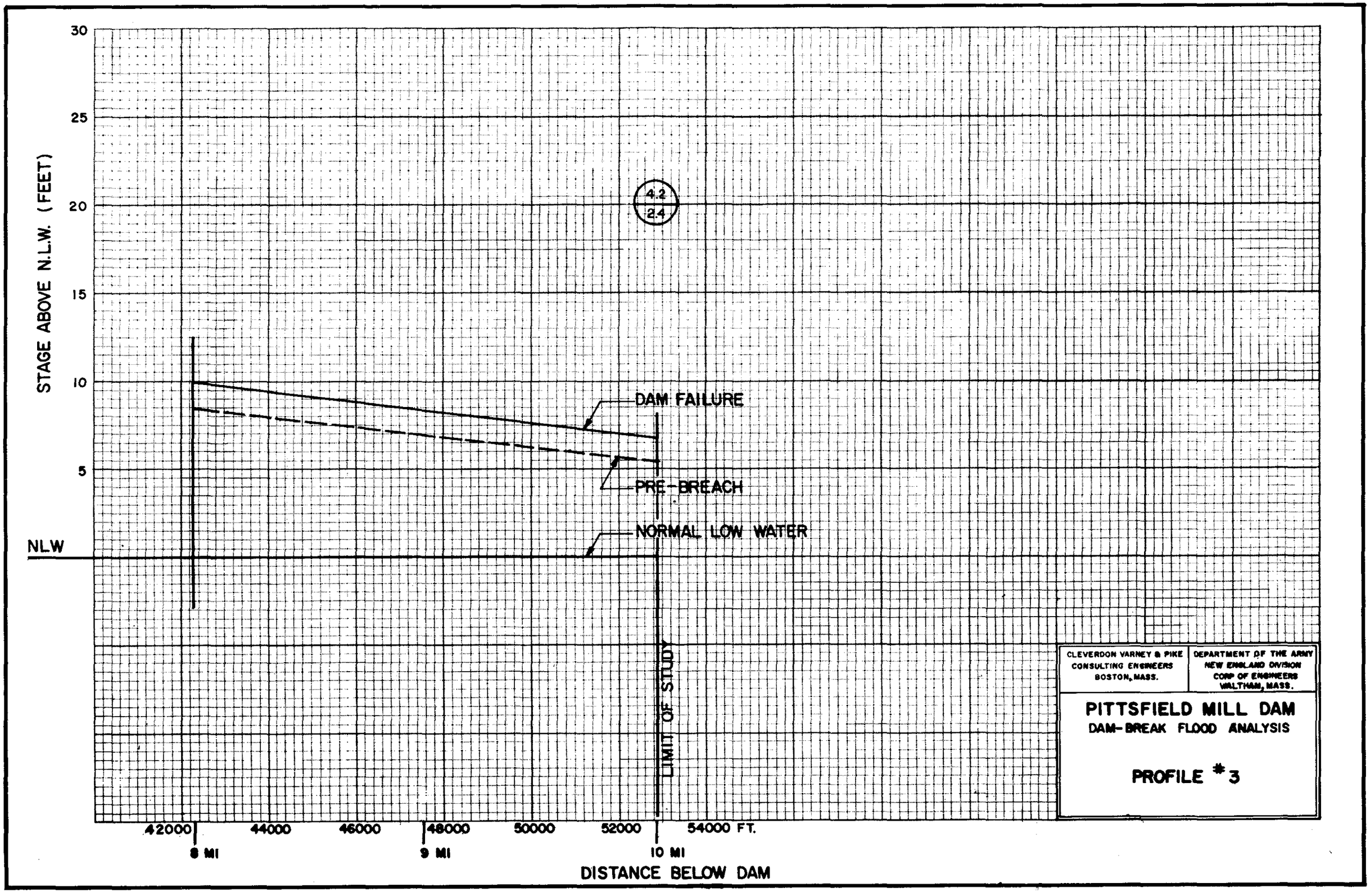
DAM-BREAK FLOOD ANALYSIS
PROFILE #2

PLATE 3


STAGE ABOVE N.L.W. (FEET)
30
25
20
15
10
5
NLW
4.2
2.4
DAM FAILURE
PRE-BREACH
NORMAL LOW WATER
LIMIT OF STUDY
42000
44000
46000
48000
50000
52000
54000 FT.
8 MI
9 MI
10 MI
DISTANCE BELOW DAM
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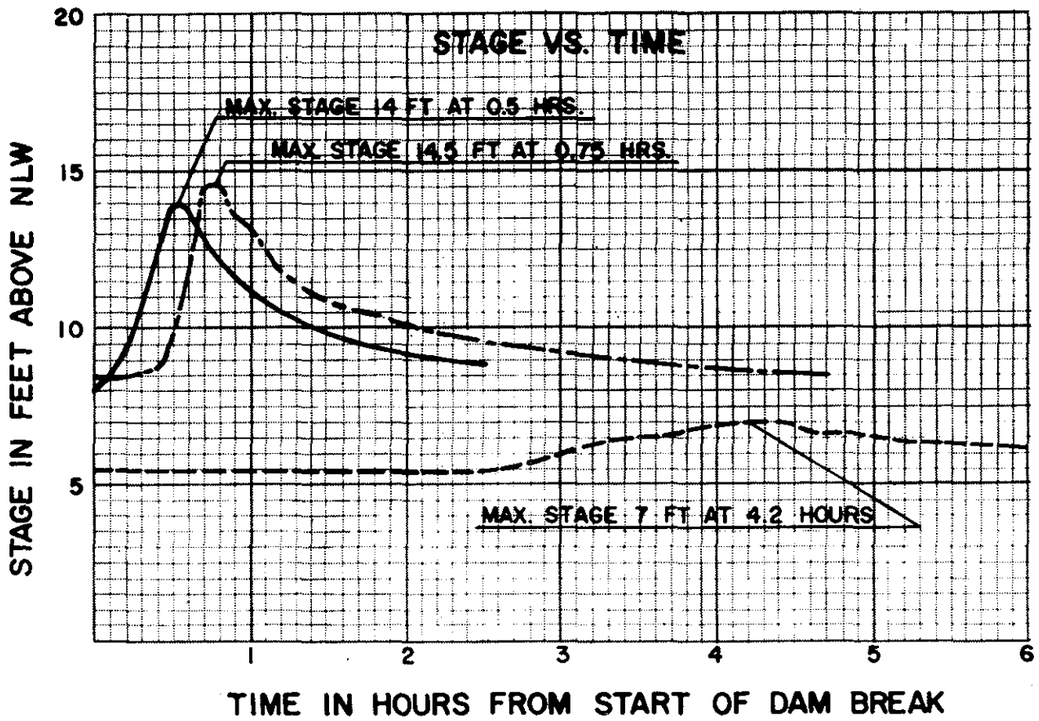
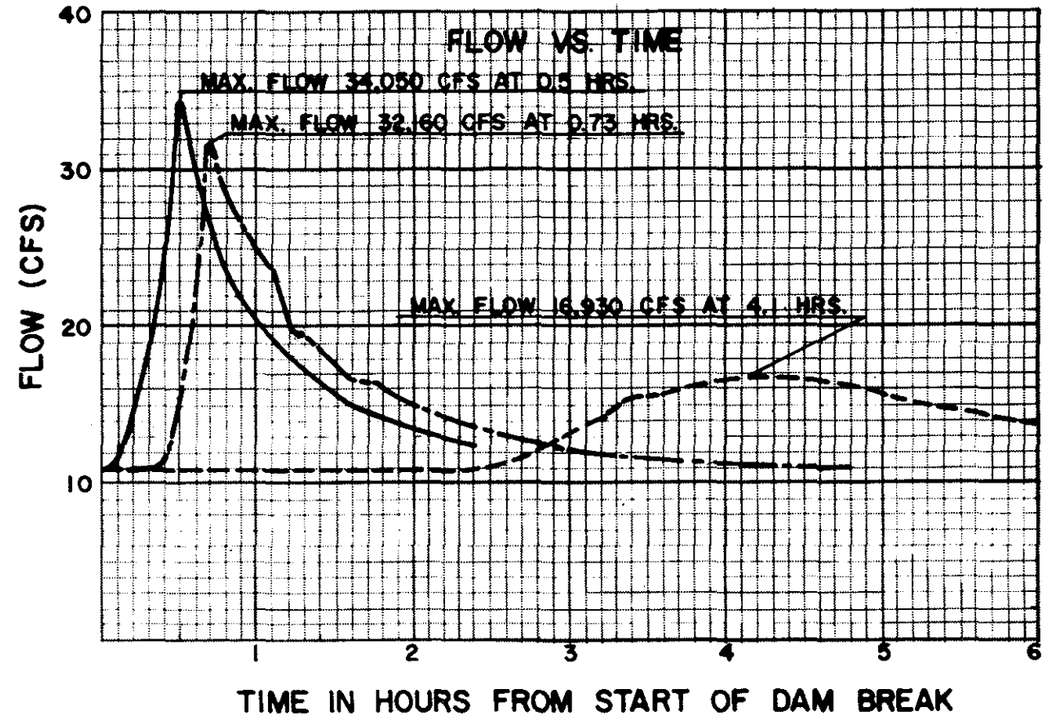
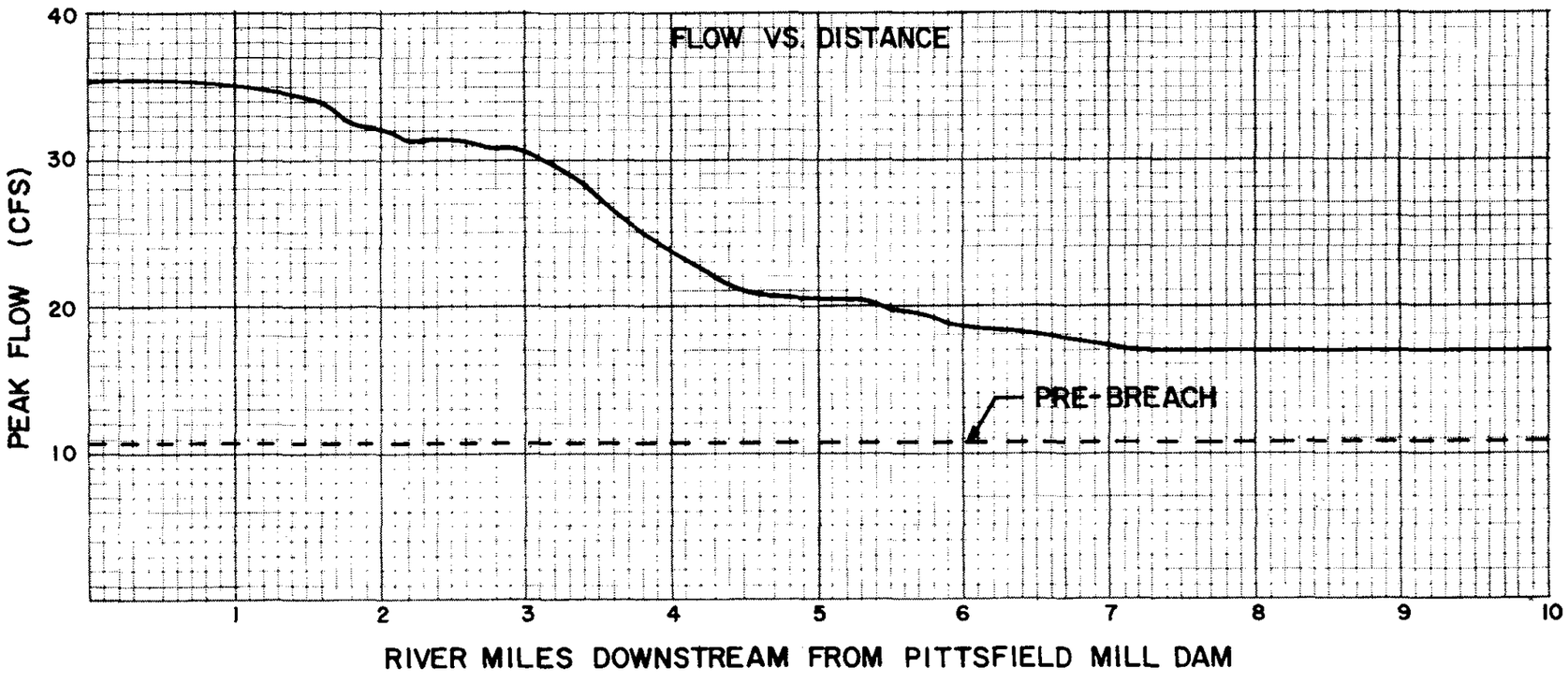
PITTSFIELD MILL DAM
DAM-BREAK FLOOD ANALYSIS
PROFILE #3

PLATE 4







NLW DATUM (FT. NGVD)

STA. 1 RM. 0.05 = 450.0 ———
STA. 2 RM. 2.0 = 402.0 – – –
STA. 3 RM. 10.0 = 296.0 – · – ·

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PITTSFIELD MILL DAM

DAM-BREAK FLOOD ANALYSIS

BASE FLOOD DISCHARGES STAGES & TIMING

```
*HECFORMAT
*ECHO
*FORMATTED
*10FIELDS
*COMPOSITE
ID PITTSFIELD MILL DAM
ID SUNCOOK RIVER
ID G. MERCER
ID C.V&P ENGS.
ID BOSTON,MA.
IO      1       10       10
IP      3        0
QI 10800
SN PITTSFIELD MILL
SE 478.6      475      460
SA   160      110       60
DN PITTSFIELD MILL DAM
DD 478.6      475        0    481.5       20      .05      455
DB    .5    481.5       60      455       .5
DO     0      650        0       10
RN REACH 1
RG     1        4        7       10
RC   0.0        0      0.0      0.0
XI   .05                                                  .20
XE   450      455      461      466      472      477      483      489
XC    75      151      302      396      545      624      689      735
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   0.5                                                  .20
XE   437      443      449      455      462      468      474      480
XC    50      200      395      452      538      654      769      885
XO     0      138        0        0        0        0        0        0
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   1.0                                                  .20
XE   426      434      441      449      458      465      472      480
XC    50      200      532      792     1085     1317     1552     1820
XO     0      107        0        0        0        0        0        0
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   2.0                                                  .20
XE   402      410      419      427      435      443      452      460
XC    50      212      394      633      883     1118     1352     1560
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   3.0                                                  .20
XE   379      385      390      396      402      408      413      419
XC    51      200      404      538      978     1076     1155     1258
XO     0      133        0        0        0        0        0        0
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   4.0                                                  .20
XE   357      363      369      375      382      388      394      400
XC    50      300      600     1100     1700     2100     2800     3385
XO     0     1773     1659     1345      978      814      349        0
NC  .030     .040     .045     .050     .060     .070     .080     .090
XI   5.3                                                  .10
XE 329.5      333      338      342      346      351      355      360
XC    50      100      230      600      630      656      719      850
NC  .030     .040     .045     .050     .060     .070     .080     .090
```

INPUT DATA FILE

APPENDIX A

XI	6.0						.10	
XE	326	334	341	349	357	365	372	380
XC	50	300	600	1100	1300	1500	1800	2500
XO	0	315	591	1299	2307	2690	2572	2080
NC	.030	.040	.045	.050	.060	.070	.080	.090
XI	8.0						.15	
XE	320	329	337	346	354	363	371	380
XC	50	378	671	1326	2054	2960	3920	5000
NC	.030	.040	.045	.050	.060	.070	.080	.090
XI	10.0							
XE	296	302	309	315	321	327	334	340
XC	50	700	1200	2425	2922	3234	3598	3910
XO	0	568	691	0	0	0	0	0
NC	.030	.040	.045	.050	.060	.070	.080	.090
ZZ								

BSS	...								
CM	...	.030	.040	.045	.050	.060	.070	.080	.090

SECT NO.	XS(I)	RIVRMI	FSTG(I)	XSL(I)	XSR(I)	YD(I)	DXM(I)	FKC(I)
10	10.0						1000000	
HS	...	296	302	309	315	321	327	334	340
BS	...	50	700	1200	2425	2922	3234	3598	3910
BSS	...	0	568	691	0	0	0	0	0

PROGRAM DAMBRK---VERSION-A-01/30/82

ANALYSIS OF THE DOWNSTREAM FLOOD HYDROGRAPH

PRODUCED BY THE DAM BREAK OF

PITTSFIELD MILL DAM

ON

SUNCOOK RIVER

ANALYSIS BY

G. MERCER
C.V&P ENGS.
BOSTON,MA.

BASED ON PROCEDURE DEVELOPED BY

DANNY L. FREAD, PH.D., RESEARCH HYDROLOGIST
HYDROLOGIC RESEARCH LABORATORY
W23, OFFICE OF HYDROLOGY
NOAA, NATIONAL WEATHER SERVICE
SILVER SPRING, MARYLAND 20910

OUTPUT DATA FILE

APPENDIX B

NOAA, NATIONAL WEATHER SERVICE
SILVER SPRING, MARYLAND 20910

```
*****************************
*****************************
***                       ***
***  SUMMARY OF INPUT DATA  ***
***                       ***
*****************************
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```

INPUT CONTROL PARAMETERS FOR PITTSFIELD MILL DAM

PARAMETER	VARIABLE	VALUE
NUMBER OF DYNAMIC ROUTING REACHES	KKN	1
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	1
INTERVAL OF CROSS-SECTION INFO PRINTED OUT WHEN JNK=9	NPRT	0
FLOOD-PLAIN MODEL PARAMETER	KFLP	0
LANDSLIDE PARAMETER	KSL	0

PITTSFIELD MILL DAM RESERVOIR

TABLE OF ELEVATION VS SURFACE AREA

SURFACE AREA (ACRES) SA(K),	ELEVATION (FT) HSA(K)
160.0	478.60
110.0	475.00
60.0	460.00
0.0	0.00
0.0	0.00
0.0	0.00
0.0	0.00
0.0	0.00

PITTSFIELD MILL DAM RESERVOIR AND BREACH PARAMETERS

PARAMETER	UNITS	VARIABLE	VALUE

LENGTH OF RESERVOIR	MI	RLM	0.00
ELEVATION OF WATER SURFACE	FT	YO	481.50
SIDE SLOPE OF BREACH		Z	.50
ELEVATION OF BOTTOM OF BREACH	FT	YBMIN	455.00
WIDTH OF BASE OF BREACH	FT	BB	60.00
TIME TO MAXIMUM BREACH SIZE	HR	TFH	.50
ELEVATION (MSL) OF BOTTOM OF DAM	FT	DATUM	455.00
VOLUME-SURFACE AREA PARAMETER		VOL	0.00
ELEVATION OF WATER WHEN BREACHED	FT	HF	481.50
ELEVATION OF TOP OF DAM	FT	HD	478.60
ELEVATION OF UNCONTROLLED SPILLWAY CREST	FT	HSP	475.00
ELEVATION OF CENTER OF GATE OPENINGS	FT	HGT	0.00
DISCHARGE COEF. FOR UNCONTROLLED SPILLWAY		CS	650.00
DISCHARGE COEF. FOR GATE FLOW		CG	0.00
DISCHARGE COEF. FOR UNCONTROLLED WEIR FLOW		CDO	10.00
DISCHARGE THRU TURBINES	CFS	QT	0.00

DHF(INTERVAL BETWEEN INPUT HYDROGRAPH ORDINATES) = 10.00 HRS.

TEH(TIME AT WHICH COMPUTATIONS TERMINATE) = 10.0000 HRS.

INFLOW HYDROGRAPH TO PITTSFIELD MILL DAM
****

10800.00

TIME OF INFLOW HYDROGRAPH ORDINATES

0.0000

CROSS-SECTIONAL PARAMETERS FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

PARAMETER VARIABLE VALUE

PARAMETER	VARIABLE	VALUE
NUMBER OF CROSS-SECTIONS	NS	10
MAXIMUM NUMBER OF TOP WIDTHS	NCS	8
NUMBER OF CROSS-SECTIONAL HYDROGRAPHS TO PLOT	NTT	4
TYPE OF OUTPUT OTHER THAN HYDROGRAPH PLOTS	JNK	0
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 4 7 10

CROSS-SECTIONAL VARIABLES FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

PARAMETER	UNITS	VARIABLE
LOCATION OF CROSS-SECTION	MI	XS(I)
ELEVATION (MSL) OF FLOODING AT CROSS-SECTION	FT	FSTG(I)
ELEV CORRESPONDING TO EACH TOP WIDTH	FT	HS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (ACTIVE FLOW PORTION)	FT	BS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (OFF-CHANNEL PORTION)	FT	BSS(K,I)
SURFACE AREA CORRESPONDING TO EACH ELEV (ACTIVE FLOW PORTION)	ACRES	DSA(K,I)
SURFACE AREA CORRESPONDING TO EACH ELEV (OFF-CHANNEL PORTION)	ACRES	SSA(K,I)
NUMBER OF CROSS-SECTION		I
NUMBER OF ELEVATION LEVEL		K

CROSS-SECTION NUMBER 1

XS(I) = .050 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

BS ...	75.0	151.0	302.0	396.0	545.0	624.0	689.0	735.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 2
****

XS(I) = .500 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	437.0	443.0	449.0	455.0	462.0	468.0	474.0	480.0
BS ...	50.0	200.0	395.0	452.0	538.0	654.0	769.0	885.0
BSS ...	0.0	138.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 3
****

XS(I) = 1.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	426.0	434.0	441.0	449.0	458.0	465.0	472.0	480.0
BS ...	50.0	200.0	532.0	792.0	1085.0	1317.0	1552.0	1820.0
BSS ...	0.0	107.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 4
****

XS(I) = 2.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	402.0	410.0	419.0	427.0	435.0	443.0	452.0	460.0
BS ...	50.0	212.0	394.0	633.0	883.0	1118.0	1352.0	1560.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 5
****

XS(I) = 3.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	379.0	385.0	390.0	396.0	402.0	408.0	413.0	419.0
BS ...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BS ...	51.0	200.0	404.0	538.0	978.0	1076.0	1155.0	1258.0
BSS ...	0.0	133.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 6
****

XS(I) = 4.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	357.0	363.0	369.0	375.0	382.0	388.0	394.0	400.0
BS ...	50.0	300.0	600.0	1100.0	1700.0	2100.0	2800.0	3385.0
BSS ...	0.0	1773.0	1659.0	1345.0	978.0	814.0	349.0	0.0

CROSS-SECTION NUMBER 7
****

XS(I) = 5.300 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	329.5	333.0	338.0	342.0	346.0	351.0	355.0	360.0
BS ...	50.0	100.0	230.0	600.0	630.0	656.0	719.0	850.0
BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 8
****

XS(I) = 6.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	326.0	334.0	341.0	349.0	357.0	365.0	372.0	380.0
BS ...	50.0	300.0	600.0	1100.0	1300.0	1500.0	1800.0	2500.0
BSS ...	0.0	315.0	591.0	1299.0	2307.0	2690.0	2572.0	2080.0

CROSS-SECTION NUMBER 9
****

XS(I) = 8.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	320.0	329.0	337.0	346.0	354.0	363.0	371.0	380.0

BSS ...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION NUMBER 10
****

XS(I) = 10.000 FSTG(I) = 0.00 XSL(I) = 0.0 XSR(I) = 0.0

HS ...	296.0	302.0	309.0	315.0	321.0	327.0	334.0	340.0
BS ...	50.0	700.0	1200.0	2425.0	2922.0	3234.0	3598.0	3910.0
BSS ...	0.0	568.0	691.0	0.0	0.0	0.0	0.0	0.0

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

REACH 1 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 2 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 3 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 4 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 5 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 6 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 7 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 8 ...	.030	.040	.045	.050	.060	.070	.080	.090
REACH 9 ...	.030	.040	.045	.050	.060	.070	.080	.090

CROSS-SECTIONAL VARIABLES FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

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

REACH NUMBER	DXM(I)	FKC(I)
1	.200	0.000
2	.200	0.000
3	.200	0.000
4	.200	0.000
5	.200	0.000
6	.200	0.000
7	.100	0.000
8	.100	0.000
9	.150	0.000

DOWNSTREAM FLOW PARAMETERS FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

PARAMETER	UNITS	VARIABLE	VALUE
MAX DISCHARGE AT DOWNSTREAM EXTREMITY	CFS	QMAXD	0.0
MAX LATERAL OUTFLOW PRODUCING LOSSES	CFS/FT	QLL	0.000
INITIAL SIZE OF TIME STEP	HR	DTHM	0.0000
INITIAL WATER SURFACE ELEVATION DOWNSTREAM	FT	YDN	0.00
SLOPE OF CHANNEL DOWNSTREAM OF DAM	FT/MI	SOM	20.00
THETA WEIGHTING FACTOR		THETA	0.00
CONVERGENCE CRITERION FOR STAGE	FT	EPSY	0.000
TIME AT WHICH DAM STARTS TO FAIL	HR	TFI	0.00
TOTAL VOLUME IN RESERVOIR BEHIND			

PITTSFIELD MILL DAM = 1911.0 ACRE-FEET

DEFINITION OF VARIABLES IN RESERVOIR DEPLETION TABLE

PARAMETER	UNITS	VARIABLE
TIME STEP FROM START OF ANALYSIS		I
ITERATIONS NECESSARY TO SOLVE FLOW EQUATIONS		K
ELAPSED TIME FROM START OF ANALYSIS	HRS	TTP(I)
TOTAL OUTFLOW FROM DAM	CFS	Q(I)
ELEVATION OF WATER SURFACE AT DAM	FT	H2
ELEVATION OF BOTTOM OF BREACH	FT	YB
EST DEPTH OF FLOW IMMEDIATELY DOWNSTREAM	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	QI(I)
BREACH OUTFLOW	CFS	QBRECH
SPILLWAY OUTFLOW	CFS	QSPIL

RESERVOIR DEPLETION TABLE

I	K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
1	0	0.000	10821	481.50	478.60	460.19	1.00	1.00	0.0	0.0	3.10	10800.	0.	10821.
2	1	.010	10844	481.50	478.13	460.19	1.00	1.01	9.0	1.2	3.10	10800.	49.	10796.
3	1	.020	10863	481.50	477.66	460.20	1.00	1.01	17.9	2.4	3.10	10800.	92.	10771.
4	1	.030	10918	481.50	477.18	460.22	1.00	1.01	26.9	3.6	3.10	10800.	149.	10770.
5	1	.040	10987	481.50	476.71	460.25	1.00	1.01	36.0	4.8	3.10	10800.	219.	10768.
6	1	.050	11069	481.50	476.24	460.29	1.00	1.01	45.1	6.0	3.10	10800.	304.	10766.
7	1	.060	11167	481.50	475.77	460.34	1.00	1.01	54.3	7.2	3.10	10800.	405.	10763.
8	1	.070	11280	481.49	475.30	460.39	1.00	1.01	63.6	8.4	3.10	10800.	522.	10758.
9	1	.080	11409	481.49	474.82	460.45	1.00	1.01	72.9	9.6	3.10	10800.	657.	10753.
10	1	.090	11555	481.49	474.35	460.51	1.00	1.01	82.4	10.8	3.10	10800.	810.	10746.
11	1	.100	11718	481.49	473.88	460.58	1.00	1.01	92.0	12.0	3.10	10800.	981.	10737.
12	1	.110	11898	481.48	473.41	460.66	1.00	1.00	101.8	13.2	3.10	10800.	1172.	10727.
13	1	.120	12096	481.48	472.94	460.75	1.00	1.00	111.7	14.4	3.10	10800.	1382.	10715.
14	1	.130	12313	481.47	472.46	460.85	1.00	1.00	121.8	15.6	3.10	10800.	1613.	10700.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	1	.130	12313	481.47	472.46	460.85	1.00	1.00	121.8	15.6	3.10	10800.	1613.	10700.
15	1	.140	12548	481.46	471.99	460.95	1.00	1.00	132.1	16.8	3.10	10800.	1865.	10683.
16	1	.150	12803	481.46	471.52	461.05	1.00	1.00	142.5	18.0	3.10	10800.	2139.	10664.
17	1	.160	13076	481.45	471.05	461.16	1.00	1.00	153.2	19.2	3.10	10800.	2435.	10642.
18	1	.170	13370	481.44	470.58	461.27	1.00	1.00	164.2	20.4	3.10	10800.	2753.	10617.
19	1	.180	13683	481.43	470.10	461.39	1.00	1.00	175.4	21.6	3.10	10800.	3094.	10589.
20	1	.190	14016	481.41	469.63	461.52	1.00	1.00	186.8	22.8	3.10	10800.	3458.	10558.
21	1	.200	14369	481.40	469.16	461.65	1.00	1.00	198.5	24.0	3.10	10800.	3846.	10523.
22	1	.210	14742	481.38	468.69	461.79	1.00	1.00	210.6	25.2	3.10	10800.	4258.	10485.
23	1	.220	15136	481.37	468.22	461.93	1.00	1.00	222.9	26.4	3.10	10800.	4694.	10442.
24	1	.230	15550	481.35	467.74	462.08	1.00	1.01	235.6	27.6	3.10	10800.	5154.	10396.
25	1	.240	15985	481.33	467.27	462.24	1.00	1.01	248.6	28.8	3.10	10800.	5640.	10345.
26	1	.250	16440	481.30	466.80	462.40	1.00	1.01	262.0	30.0	3.10	10800.	6150.	10290.
27	1	.260	16915	481.28	466.33	462.56	1.00	1.01	275.8	31.2	3.10	10800.	6686.	10229.
28	1	.270	17411	481.25	465.86	462.73	1.00	1.01	290.0	32.4	3.10	10800.	7247.	10164.
29	1	.280	17928	481.22	465.38	462.91	1.00	1.01	304.6	33.6	3.10	10800.	7834.	10094.
30	1	.290	18464	481.19	464.91	463.09	1.00	1.01	319.6	34.8	3.10	10800.	8447.	10018.
31	1	.300	19021	481.16	464.44	463.27	1.00	1.01	335.1	36.0	3.10	10800.	9085.	9937.
32	1	.310	19598	481.12	463.97	463.47	1.00	1.01	351.1	37.2	3.10	10800.	9749.	9850.
33	1	.320	20195	481.09	463.50	463.68	1.00	1.01	367.5	38.4	3.10	10800.	10439.	9757.
34	1	.330	20812	481.04	463.02	463.90	1.00	1.01	384.5	39.6	3.10	10800.	11154.	9658.
35	1	.340	21448	481.00	462.55	464.11	1.00	1.01	401.9	40.8	3.10	10800.	11896.	9552.
36	1	.350	22103	480.95	462.08	464.33	1.00	1.01	419.9	42.0	3.10	10800.	12664.	9440.
37	1	.360	22778	480.90	461.61	464.56	1.00	1.01	438.5	43.2	3.10	10800.	13457.	9322.
38	1	.370	23471	480.85	461.14	464.79	1.00	1.01	457.6	44.4	3.10	10800.	14276.	9196.
39	1	.380	24183	480.79	460.66	465.02	1.00	1.01	477.3	45.6	3.10	10800.	15120.	9063.
40	1	.390	24913	480.73	460.19	465.25	1.00	1.01	497.6	46.8	3.10	10800.	15990.	8923.
41	1	.400	25661	480.67	459.72	465.49	1.00	1.01	518.5	48.0	3.10	10800.	16885.	8776.
42	1	.410	26426	480.60	459.25	465.73	1.00	1.01	540.0	49.2	3.10	10800.	17806.	8621.
43	1	.420	27209	480.53	458.78	465.98	1.00	1.01	562.1	50.4	3.10	10800.	18751.	8459.
44	1	.430	28008	480.46	458.30	466.24	1.00	1.01	585.0	51.6	3.10	10800.	19720.	8288.
45	1	.440	28823	480.38	457.83	466.51	1.00	1.01	608.4	52.8	3.10	10800.	20714.	8110.
46	1	.450	29654	480.30	457.36	466.78	1.00	1.01	632.6	54.0	3.10	10800.	21732.	7923.
47	1	.460	30501	480.21	456.89	467.05	1.00	1.01	657.5	55.2	3.10	10800.	22773.	7729.
48	1	.470	31363	480.12	456.42	467.32	1.00	1.01	683.0	56.4	3.10	10800.	23837.	7526.
49	1	.480	32239	480.02	455.94	467.59	1.00	1.01	709.3	57.6	3.10	10800.	24924.	7315.
50	1	.490	33129	479.92	455.47	467.86	1.00	1.02	736.3	58.8	3.10	10800.	26034.	7095.

RESERVOIR DEPLETION TABLE

I	K	TTP(I)	Q(I)	H2	YB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
***	**	******	********	*******	*******	*******	****	****	*********	****	****	*****	******	*****
51	1	.500	34032	479.81	455.00	468.13	1.00	1.02	764.1	60.0	3.10	10800.	27165.	6867.
52	1	.510	33631	479.71	455.00	468.00	1.00	1.02	792.0	60.0	3.10	10800.	26995.	6637.
53	1	.520	33213	479.60	455.00	467.88	1.00	1.02	819.7	60.0	3.10	10800.	26802.	6412.
54	1	.530	32802	479.49	455.00	467.75	1.00	1.02	846.9	60.0	3.10	10800.	26610.	6192.
55	1	.540	32397	479.39	455.00	467.63	1.00	1.02	873.9	60.0	3.10	10800.	26422.	5976.
56	1	.550	32000	479.28	455.00	467.51	1.00	1.02	900.5	60.0	3.10	10800.	26236.	5765.
57	1	.560	31610	479.18	455.00	467.39	1.00	1.02	926.8	60.0	3.10	10800.	26052.	5559.
58	1	.570	31227	479.08	455.00	467.27	1.00	1.02	952.7	60.0	3.10	10800.	25870.	5357.
59	1	.580	30851	478.98	455.00	467.15	1.00	1.02	978.4	60.0	3.10	10800.	25692.	5160.
60	1	.590	30481	478.88	455.00	467.03	1.00	1.02	1003.7	60.0	3.10	10800.	25515.	4967.
61	1	.600	30119	478.78	455.00	466.92	1.00	1.02	1028.8	60.0	3.10	10800.	25341.	4779.
62	1	.610	29763	478.68	455.00	466.81	1.00	1.02	1053.5	60.0	3.10	10800.	25169.	4594.
63	1	.620	29413	478.59	455.00	466.69	1.00	1.02	1078.0	60.0	3.10	10800.	24999.	4415.
64	1	.630	29070	478.49	455.00	466.58	1.00	1.02	1102.1	60.0	3.10	10800.	24832.	4239.
65	1	.640	28733	478.40	455.00	466.47	1.00	1.02	1126.0	60.0	3.10	10800.	24667.	4067.
66	1	.650	28403	478.30	455.00	466.37	1.00	1.02	1149.6	60.0	3.10	10800.	24503.	3900.
67	1	.660	28079	478.21	455.00	466.26	1.00	1.02	1173.0	60.0	3.10	10800.	24343.	3737.
68	1	.670	27761	478.12	455.00	466.15	1.00	1.02	1196.1	60.0	3.10	10800.	24184.	3577.
69	1	.680	27448	478.03	455.00	466.05	1.00	1.02	1218.9	60.0	3.10	10800.	24027.	3422.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

71	1	.700	26842	477.85	455.00	465.86	1.00	1.01	1263.7	60.0	3.10	10800.	23720.	3122.
72	1	.710	26547	477.76	455.00	465.76	1.00	1.01	1285.8	60.0	3.10	10800.	23569.	2978.
73	1	.720	26259	477.67	455.00	465.67	1.00	1.01	1307.6	60.0	3.10	10800.	23421.	2838.
74	1	.730	25975	477.59	455.00	465.59	1.00	1.01	1329.2	60.0	3.10	10800.	23274.	2702.
75	1	.740	25698	477.50	455.00	465.50	1.00	1.01	1350.6	60.0	3.10	10800.	23129.	2569.
76	1	.750	25425	477.41	455.00	465.41	1.00	1.01	1371.7	60.0	3.10	10800.	22987.	2439.
77	1	.760	25159	477.33	455.00	465.33	1.00	1.01	1392.6	60.0	3.10	10800.	22846.	2313.
78	1	.770	24897	477.25	455.00	465.24	1.00	1.01	1413.3	60.0	3.10	10800.	22707.	2191.
79	1	.780	24641	477.17	455.00	465.16	1.00	1.01	1433.7	60.0	3.10	10800.	22569.	2072.
80	1	.790	24390	477.08	455.00	465.08	1.00	1.01	1454.0	60.0	3.10	10800.	22434.	1957.
81	1	.800	24144	477.00	455.00	465.00	1.00	1.01	1474.1	60.0	3.10	10800.	22300.	1845.
82	1	.810	23903	476.92	455.00	464.92	1.00	1.01	1493.9	60.0	3.10	10800.	22168.	1736.
83	1	.820	23667	476.85	455.00	464.85	1.00	1.01	1513.6	60.0	3.10	10800.	22038.	1630.
84	1	.830	23436	476.77	455.00	464.77	1.00	1.01	1533.0	60.0	3.10	10800.	21909.	1528.
85	1	.840	23210	476.69	455.00	464.70	1.00	1.01	1552.3	60.0	3.10	10800.	21782.	1429.
86	1	.850	22989	476.61	455.00	464.62	1.00	1.01	1571.4	60.0	3.10	10800.	21656.	1333.
87	1	.860	22773	476.54	455.00	464.55	1.00	1.01	1590.3	60.0	3.10	10800.	21532.	1241.
88	1	.870	22561	476.46	455.00	464.48	1.00	1.01	1609.1	60.0	3.10	10800.	21410.	1151.
89	1	.880	22353	476.39	455.00	464.41	1.00	1.01	1627.6	60.0	3.10	10800.	21289.	1065.
90	1	.890	22151	476.32	455.00	464.35	1.00	1.01	1646.0	60.0	3.10	10800.	21170.	981.
91	1	.900	21953	476.24	455.00	464.28	1.00	1.01	1664.2	60.0	3.10	10800.	21052.	901.
92	1	.910	21759	476.17	455.00	464.21	1.00	1.01	1682.3	60.0	3.10	10800.	20936.	824.
93	1	.920	21570	476.10	455.00	464.15	1.00	1.01	1700.2	60.0	3.10	10800.	20821.	750.
94	1	.930	21385	476.03	455.00	464.09	1.00	1.01	1717.9	60.0	3.10	10800.	20707.	678.
95	1	.940	21205	475.96	455.00	464.03	1.00	1.01	1735.5	60.0	3.10	10800.	20595.	610.
96	1	.950	21029	475.89	455.00	463.97	1.00	1.01	1753.0	60.0	3.10	10800.	20484.	545.
97	1	.960	20858	475.82	455.00	463.91	1.00	1.01	1770.3	60.0	3.10	10800.	20375.	483.
98	1	.970	20690	475.75	455.00	463.85	1.00	1.01	1787.5	60.0	3.10	10800.	20267.	424.
99	1	.980	20528	475.68	455.00	463.79	1.00	1.01	1804.5	60.0	3.10	10800.	20160.	369.
100	1	.990	20369	475.62	455.00	463.74	1.00	1.01	1821.4	60.0	3.10	10800.	20054.	316.

RESERVOIR DEPLETION TABLE

I	K	TTP(I)	Q(I)	H2	VB	D	SUB	VCOR	OUTVOL	BB	COFR	QI(I)	QBRECH	QSPIL
***	**	******	********	*******	*******	*******	****	****	*********	****	****	*****	******	*****
101	1	1.000	20215	475.55	455.00	463.69	1.00	1.01	1838.2	60.0	3.10	10800.	19949.	266.
102	1	1.010	20065	475.49	455.00	463.63	1.00	1.01	1854.8	60.0	3.10	10800.	19846.	220.
103	1	1.021	19906	475.41	455.00	463.58	1.00	1.01	1873.0	60.0	3.10	10800.	19733.	173.
104	1	1.033	19737	475.34	455.00	463.52	1.00	1.01	1892.8	60.0	3.10	10800.	19611.	126.
105	1	1.046	19559	475.25	455.00	463.46	1.00	1.01	1914.4	60.0	3.10	10800.	19478.	81.
106	1	1.061	19374	475.16	455.00	463.40	1.00	1.01	1938.0	60.0	3.10	10800.	19334.	41.
107	1	1.077	19186	475.06	455.00	463.33	1.00	1.01	1963.6	60.0	3.10	10800.	19178.	9.
108	1	1.095	19009	474.95	455.00	463.27	1.00	1.01	1991.6	60.0	3.10	10800.	19009.	0.
109	1	1.114	18827	474.83	455.00	463.21	1.00	1.01	2022.1	60.0	3.10	10800.	18828.	0.
110	1	1.136	18632	474.70	455.00	463.14	1.00	1.01	2055.3	60.0	3.10	10800.	18633.	0.
111	1	1.159	18424	474.56	455.00	463.07	1.00	1.01	2091.4	60.0	3.10	10800.	18424.	0.
112	2	1.185	18201	474.41	455.00	463.00	1.00	1.01	2130.6	60.0	3.10	10800.	18201.	0.
113	2	1.214	17963	474.25	455.00	462.92	1.00	1.01	2173.3	60.0	3.10	10800.	17964.	0.
114	2	1.245	17711	474.08	455.00	462.83	1.00	1.02	2219.5	60.0	3.10	10800.	17711.	0.
115	2	1.280	17444	473.90	455.00	462.74	1.00	1.02	2269.7	60.0	3.10	10800.	17444.	0.
116	2	1.318	17162	473.71	455.00	462.64	1.00	1.02	2324.0	60.0	3.10	10800.	17163.	0.
117	2	1.359	16866	473.50	455.00	462.54	1.00	1.02	2382.7	60.0	3.10	10800.	16867.	0.
118	2	1.405	16557	473.29	455.00	462.43	1.00	1.02	2446.2	60.0	3.10	10800.	16557.	0.
119	2	1.456	16235	473.06	455.00	462.32	1.00	1.02	2514.7	60.0	3.10	10800.	16235.	0.
120	1	1.512	15902	472.83	455.00	462.21	1.00	1.02	2588.5	60.0	3.10	10800.	15902.	0.
121	1	1.573	15559	472.59	455.00	462.09	1.00	1.02	2668.0	60.0	3.10	10800.	15560.	0.
122	1	1.640	15210	472.34	455.00	461.96	1.00	1.02	2753.6	60.0	3.10	10800.	15210.	0.
123	1	1.714	14855	472.08	455.00	461.83	1.00	1.02	2845.5	60.0	3.10	10800.	14855.	0.
124	1	1.795	14498	471.82	455.00	461.70	1.00	1.02	2944.2	60.0	3.10	10800.	14498.	0.
125	1	1.885	14142	471.55	455.00	461.56	1.00	1.02	3050.2	60.0	3.10	10800.	14142.	0.
126	1	1.983	13790	471.29	455.00	461.43	1.00	1.02	3163.9	60.0	3.10	10800.	13790.	0.
127	1	2.092	13446	471.03	455.00	461.30	1.00	1.02	3285.3	60.0	3.10	10800.	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
126	1	1.983	13790	471.29	455.00	461.43	1.00	1.02	3163.9	60.0	3.10	10800.	13790.	0.
127	1	2.092	13446	471.03	455.00	461.30	1.00	1.02	3285.8	60.0	3.10	10800.	13446.	0.
128	1	2.211	13113	470.78	455.00	461.17	1.00	1.02	3416.6	60.0	3.10	10800.	13114.	0.
129	1	2.342	12796	470.53	455.00	461.04	1.00	1.02	3557.0	60.0	3.10	10800.	12797.	0.
130	2	2.486	12498	470.30	455.00	460.92	1.00	1.02	3707.7	60.0	3.10	10800.	12498.	0.
131	2	2.645	12221	470.08	455.00	460.80	1.00	1.02	3869.8	60.0	3.10	10800.	12221.	0.
132	2	2.819	11968	469.88	455.00	460.69	1.00	1.02	4044.2	60.0	3.10	10800.	11969.	0.
133	2	3.011	11743	469.70	455.00	460.60	1.00	1.02	4232.3	60.0	3.10	10800.	11743.	0.
134	2	3.223	11544	469.54	455.00	460.51	1.00	1.02	4435.5	60.0	3.10	10800.	11545.	0.
135	2	3.455	11374	469.40	455.00	460.43	1.00	1.02	4655.4	60.0	3.10	10800.	11375.	0.
136	2	3.710	11231	469.29	455.00	460.37	1.00	1.02	4894.1	60.0	3.10	10800.	11232.	0.
137	2	3.991	11115	469.19	455.00	460.31	1.00	1.02	5153.6	60.0	3.10	10800.	11116.	0.
138	2	4.300	11023	469.12	455.00	460.27	1.00	1.02	5436.4	60.0	3.10	10800.	11023.	0.
139	2	4.640	10952	469.06	455.00	460.24	1.00	1.02	5745.2	60.0	3.10	10800.	10953.	0.
140	2	5.014	10900	469.01	455.00	460.21	1.00	1.02	6083.0	60.0	3.10	10800.	10901.	0.
141	2	5.426	10863	468.98	455.00	460.20	1.00	1.02	6453.0	60.0	3.10	10800.	10863.	0.
142	1	5.879	10838	468.96	455.00	460.18	1.00	1.02	6858.9	60.0	3.10	10800.	10838.	0.
143	1	6.376	10821	468.95	455.00	460.17	1.00	1.02	7304.5	60.0	3.10	10800.	10822.	0.
144	1	6.924	10811	468.94	455.00	460.17	1.00	1.02	7794.0	60.0	3.10	10800.	10812.	0.
145	1	7.526	10805	468.93	455.00	460.17	1.00	1.02	8332.1	60.0	3.10	10800.	10806.	0.
146	1	8.189	10802	468.93	455.00	460.17	1.00	1.02	8923.8	60.0	3.10	10800.	10803.	0.
147	1	8.918	10801	468.93	455.00	460.17	1.00	1.02	9574.5	60.0	3.10	10800.	10801.	0.
148	1	9.720	10800	468.93	455.00	460.17	1.00	1.02	10290.2	60.0	3.10	10800.	10800.	0.
149	1	10.602	10800	468.93	455.00	460.17	1.00	1.02	11077.5	60.0	3.10	10800.	10800.	0.

PARAMETER	UNITS	VARIABLE	VALUE
INITIAL FLOW	CFS	Q(1)	10821.
MAX FLOW	CFS	QM	34032.
FINAL FLOW	CFS	Q(NU)	10800.
TIME TO MAX FLOW	HRS	TP	.50
NUMBER OF TIME STEPS		NNU	149
TOTAL VOLUME DISCHARGED FROM RESERVOIR	AC-FT	DISVOL	11077.
NUMBER OF INTERMEDIATE STATIONS		NN(NS)	66
NUMBER OF TIME STEPS		NNU	149

TIME PARAMETERS OF OUTFLOW HYDROGRAPH IMMEDIATELY DOWNSTREAM OF DAM

PARAMETER	UNITS	VARIABLE	VALUE
TIME TO FAILURE	HR	TFH	.500
TIME TO START OF RISING LIMB OF HYDROGRAPH	HR	TFO	0.000
TIME TO PEAK	HR	TP	.500

TIME STEP SIZE HR DTHI .025

ROUTING COMPLETED.

KTIME=403 ALLOWABLE KTIME= 698 TT= 10.0

PROFILE OF CRESTS AND TIMES FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

RVR MILE FROM DAM	MAX ELEV (FT)	MAX FLOW (CFS)	TIME MAX ELEV(HR)	MAX VEL (FT/SEC)	MAX VEL (MI/HR)	FLOOD ELEV (FT)	TIME FLOOD ELEV (HR)
.050	465.15	34032	.500	10.20	6.95	0.00	0.00
.275	457.55	33258	.525	10.53	7.18	0.00	0.00
.500	452.06	32599	.600	8.63	5.89	0.00	0.00
.750	447.28	31853	.575	7.78	5.31	0.00	0.00
1.000	442.07	32334	.575	7.86	5.36	0.00	0.00
1.200	437.56	33975	.600	8.24	5.62	0.00	0.00
1.400	432.85	34581	.625	8.66	5.91	0.00	0.00
1.600	427.54	34136	.650	9.87	6.73	0.00	0.00
1.800	422.66	32746	.725	10.00	6.82	0.00	0.00
2.000	417.55	32165	.750	10.08	6.88	0.00	0.00
2.200	412.97	31368	.750	9.28	6.33	0.00	0.00
2.400	408.25	31642	.725	9.25	6.30	0.00	0.00
2.600	403.14	31418	.800	9.04	6.16	0.00	0.00
2.800	398.13	30924	.825	8.69	5.93	0.00	0.00
3.000	393.15	30611	.850	8.44	5.75	0.00	0.00
3.200	388.15	29788	.900	8.15	5.56	0.00	0.00
3.400	383.03	28335	.975	8.07	5.50	0.00	0.00
3.600	378.03	26420	1.150	7.77	5.30	0.00	0.00
3.800	372.94	25326	1.275	7.82	5.33	0.00	0.00
4.000	368.42	23989	1.425	7.18	4.89	0.00	0.00
4.217	364.00	22725	1.625	7.06	4.81	0.00	0.00
4.433	359.39	21476	1.800	6.46	4.40	0.00	0.00
4.650	355.88	20939	1.925	6.00	4.09	0.00	0.00
4.867	351.80	20754	2.000	5.75	3.92	0.00	0.00
5.083	348.16	20559	2.175	5.16	3.52	0.00	0.00
5.300	346.03	20314	2.350	3.94	2.69	0.00	0.00
5.400	345.32	20164	2.425	3.94	2.69	0.00	0.00
5.500	344.62	19955	2.525	4.02	2.74	0.00	0.00
5.600	343.93	19704	2.600	4.14	2.82	0.00	0.00
5.700	343.29	19437	2.700	4.17	2.84	0.00	0.00
5.800	342.73	19168	2.775	4.09	2.79	0.00	0.00
5.900	342.24	18902	2.850	3.97	2.71	0.00	0.00
6.000	341.81	18647	2.875	[illegible]	[illegible]	0.00	0.00

5.900	342.24	18902	2.850	3.97	2.71	0.00	0.00
6.000	341.82	18647	2.925	3.81	2.60	0.00	0.00
6.100	341.42	18413	2.975	3.78	2.58	0.00	0.00
6.200	341.02	18208	3.025	3.77	2.57	0.00	0.00
6.300	340.62	18026	3.075	3.77	2.57	0.00	0.00
6.400	340.22	17866	3.125	3.76	2.56	0.00	0.00
6.500	339.82	17726	3.150	3.75	2.56	0.00	0.00
6.600	339.41	17604	3.200	3.76	2.56	0.00	0.00
6.700	339.00	17500	3.225	3.76	2.57	0.00	0.00
6.800	338.58	17412	3.275	3.78	2.58	0.00	0.00
6.900	338.15	17337	3.300	3.80	2.59	0.00	0.00
7.000	337.72	17276	3.325	3.84	2.62	0.00	0.00
7.100	337.26	17227	3.350	3.89	2.65	0.00	0.00
7.200	336.80	17188	3.375	3.95	2.69	0.00	0.00
7.300	336.31	17157	3.400	4.02	2.74	0.00	0.00
7.400	335.79	17133	3.400	4.11	2.80	0.00	0.00
7.500	335.24	17115	3.425	4.23	2.89	0.00	0.00

PROFILE OF CRESTS AND TIMES FOR SUNCOOK RIVER
BELOW PITTSFIELD MILL DAM

RVR MILE FROM DAM	MAX ELEV (FT)	MAX FLOW (CFS)	TIME MAX ELEV(HR)	MAX VEL (FT/SEC)	MAX VEL (MI/HR)	FLOOD ELEV (FT)	TIME FLOOD ELEV (HR)
7.600	334.64	17101	3.450	4.38	2.99	0.00	0.00
7.700	333.98	17092	3.450	4.59	3.13	0.00	0.00
7.800	333.21	17085	3.475	4.88	3.33	0.00	0.00
7.900	332.27	17080	3.475	5.34	3.64	0.00	0.00
8.000	330.94	17077	3.500	6.26	4.27	0.00	0.00
8.154	328.77	17071	3.550	6.11	4.17	0.00	0.00
8.308	326.62	17064	3.575	5.97	4.07	0.00	0.00
8.462	324.48	17056	3.625	5.83	3.98	0.00	0.00
8.615	322.36	17047	3.650	5.70	3.89	0.00	0.00
8.769	320.25	17037	3.700	5.59	3.81	0.00	0.00
8.923	318.15	17027	3.750	5.47	3.73	0.00	0.00
9.077	316.06	17015	3.800	5.36	3.66	0.00	0.00
9.231	313.98	17002	3.850	5.26	3.59	0.00	0.00
9.385	311.91	16989	3.925	5.16	3.52	0.00	0.00
9.538	309.84	16975	3.975	5.07	3.45	0.00	0.00
9.692	307.78	16961	4.025	4.98	3.39	0.00	0.00
9.846	305.73	16945	4.100	4.88	3.33	0.00	0.00
10.000	303.70	16932	4.150	4.78	3.26	0.00	0.00

PEAK ELEVATION PROFILE

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                                   MILES                                                                  ELEV
                                                                                                          FEET   MILE
        .1        1.0       2.0       3.0       4.0       5.0       6.0       7.0       8.0       9.0       10.0
465.15*           I         I         I         I         I         I         I         I         I         I  465.1   .1
      I           I         I         I         I         I         I         I         I         I         I
      I           I         I         I         I         I         I         I         I         I         I
      I           I         I         I         I         I         I         I         I         I         I
      I  *        I         I         I         I         I         I         I         I         I         I
      I           I         I         I         I         I         I         I         I         I         I  457.5   .3
      I           I         I         I         I         I         I         I         I         I         I
      I           I         I         I         I         I         I         I         I         I         I
      I     *     I         I         I         I         I         I         I         I         I         I  452.1   .5
      I           I         I         I         I         I         I         I         I         I         I
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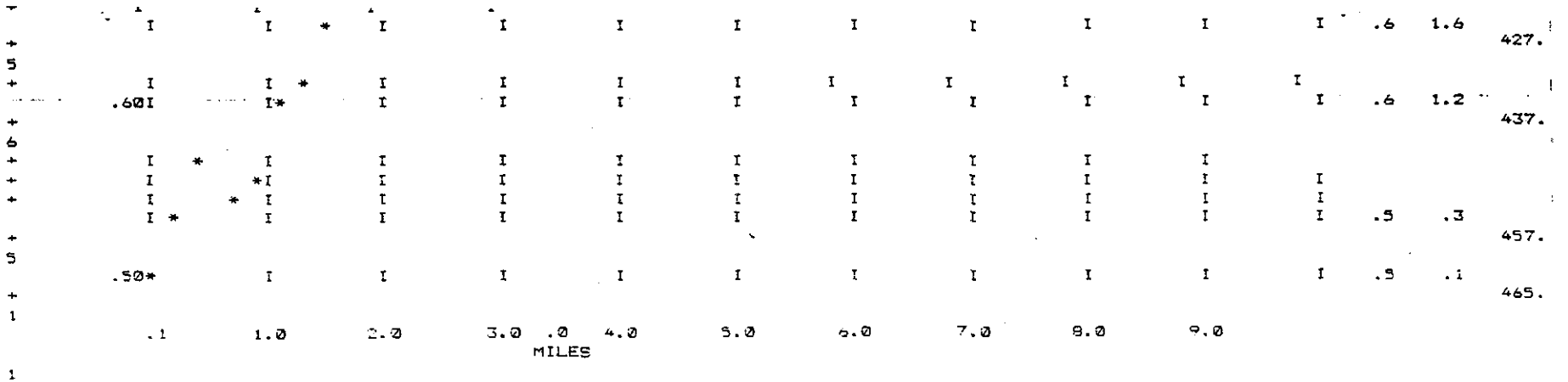

DISCHARGE HYDROGRAPH FOR SUNCOOK RIVER ... STATION NUMBER 1
BELOW PITTSFIELD MILL DAM AT MILE .05

GAGE ZERO = 450.00 MAX ELEVATION REACHED BY FLOOD WAVE = 465.15
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 15.15 AT TIME = .500 HOURS
MAX FLOW = 34032 AT TIME = .5000 2

HR	STAGE	FLOW
0.00	9.1	10821
.05	9.2	11070
.10	9.4	11718
.15	9.8	12803
.20	10.3	14369
.25	10.9	16440
.30	11.7	19022
.35	12.5	22104
.40	13.6	25661
.45	14.2	29655
.50	15.1	34032
.55	15.0	32001
.60	14.7	30119
.65	14.2	28403
.70	13.8	26842
.75	13.5	25426
.80	13.1	24145
.85	12.9	22990
.90	12.7	21953
.95	12.4	21030
1.00	12.2	20215
1.05	11.9	19514
1.10	11.9	18961
1.15	11.8	18507
1.20	11.5	18079
1.25	11.5	17675
1.30	11.6	17294
1.40	11.2	16594

1.40	11.2	16594	I
1.45	11.1	16273	I
1.50	11.0	15972	I
1.55	10.9	15687	I
1.60	10.8	15418	I
1.65	10.7	15162	I
1.70	10.6	14922	I
1.75	10.5	14697	I
1.80	10.5	14480	I
1.85	10.4	14281	I
1.90	10.3	14088	I
1.95	10.3	13910	I
2.00	10.2	13738	I
2.05	10.2	13579	I
2.10	10.1	13424	I
2.15	10.0	13284	I
2.20	10.0	13145	I
2.25	10.0	13020	I
2.30	9.9	12899	I
2.35	9.9	12780	I
2.40	9.8	12677	I
2.45	9.8	12573	I
2.50	9.8	12474	I

DISCHARGE HYDROGRAPH FOR SUNCOOK RIVER ... STATION NUMBER 10
BELOW PITTSFIELD MILL DAM AT MILE 2.00

GAGE ZERO = 401.00 MAX ELEVATION REACHED BY FLOOD WAVE = 417.55
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 15.55 AT TIME = .750 HOURS
MAX FLOW = 32166 AT TIME = .725 HOURS

HR	STAGE	FLOW	0	10000	20000	30000	40000	50000
0.0	9.5	10821	I	I*	I	I	I	I
.1	9.5	10821	I	I*	I	I	I	I
.2	9.5	10821	I	I*	I	I	I	I
.3	9.6	10912	I	I*	I	I	I	I
.4	9.8	11599	I	I *	I	I	I	I
.5	11.1	15748	I	I *	I	I	I	I
.6	13.2	23091	I	I	I *	I	I	I
.7	15.5	31605	I	I	I	I *	I	I
.8	15.1	28532	I	I	I	*I	I	I
.9	14.5	26187	I	I	I *	I	I	I
1.0	14.2	25230	I	I	I *	I	I	I
1.1	13.7	23455	I	I	I *	I	I	I
1.2	12.7	19200	I	I	*I	I	I	I
1.3	12.5	19341	I	I	*I	I	I	I
1.4	12.4	18679	I	I	*I	I	I	I
1.5	11.9	17110	I	I *	I	I	I	I
1.6	11.7	16695	I	I *	I	I	I	I
1.7	11.6	16450	I	I *	I	I	I	I
1.8	11.5	16073	I	I *	I	I	I	I
1.9	11.3	15619	I	I *	I	I	I	I
2.0	11.2	15156	I	I *	I	I	I	I
2.1	11.0	14731	I	I *	I	I	I	I
2.2	10.9	14321	I	I *	I	I	I	I
2.3	10.8	13960	I	I *	I	I	I	I

2.4	10.5	13635	I	I *	I	I	I	I
2.5	10.5	13343	I	I *	I	I	I	I
2.6	10.4	13081	I	I *	I	I	I	I
2.7	10.3	12845	I	I *	I	I	I	I
2.8	10.3	12634	I	I *	I	I	I	I
2.9	10.2	12444	I	I *	I	I	I	I
3.0	10.1	12274	I	I *	I	I	I	I
3.1	10.1	12122	I	I *	I	I	I	I
3.2	10.0	11985	I	I *	I	I	I	I
3.3	10.0	11862	I	I *	I	I	I	I
3.4	9.9	11752	I	I *	I	I	I	I
3.5	9.9	11653	I	I *	I	I	I	I
3.6	9.8	11564	I	I *	I	I	I	I
3.7	9.8	11484	I	I*	I	I	I	I
3.8	9.8	11413	I	I*	I	I	I	I
3.9	9.7	11349	I	I*	I	I	I	I
4.0	9.7	11292	I	I*	I	I	I	I
4.1	9.7	11241	I	I*	I	I	I	I
4.2	9.7	11195	I	I*	I	I	I	I
4.3	9.7	11153	I	I*	I	I	I	I
4.4	9.6	11117	I	I*	I	I	I	I
4.5	9.6	11084	I	I*	I	I	I	I
4.6	9.6	11054	I	I*	I	I	I	I
4.7	9.6	11027	I	I*	I	I	I	I
4.8	9.6	11004	I	I*	I	I	I	I
4.9	9.6	10982	I	I*	I	I	I	I
5.0	9.6	10963	I	I*	I	I	I	I

DISCHARGE HYDROGRAPH FOR SUNCOOK RIVER ... STATION NUMBER 26
BELOW PITTSFIELD MILL DAM AT MILE 5.30

GAGE ZERO = 329.50 MAX ELEVATION REACHED BY FLOOD WAVE = 346.03
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 16.53 AT TIME = 2.350 HOURS
MAX FLOW = 20314 AT TIME = 2.125 HOURS

HR	STAGE	FLOW	0	5000	10000	15000	20000	25000
0.0	13.5	10821	I	I	I *	I	I	I
.1	13.5	10821	I	I	I *	I	I	I
.2	13.5	10821	I	I	I *	I	I	I
.3	13.5	10821	I	I	I *	I	I	I
.4	13.5	10821	I	I	I *	I	I	I
.5	13.5	10821	I	I	I *	I	I	I
.6	13.5	10821	I	I	I *	I	I	I
.7	13.5	10821	I	I	I *	I	I	I
.8	13.5	10821	I	I	I *	I	I	I
.9	13.5	10821	I	I	I *	I	I	I
1.0	13.5	10821	I	I	I *	I	I	I
1.1	13.5	10825	I	I	I *	I	I	I
1.2	13.5	10826	I	I	I *	I	I	I
1.3	13.5	11065	I	I	I *	I	I	I
1.4	13.7	11858	I	I	I *	I	I	I
1.5	14.0	13228	I	I	I *	I	I	I
1.6	14.5	14939	I	I	I	*	I	I
1.7	15.0	16775	I	I	I	I *	I	I
1.8	15.5	18303	I	I	I	I *	I	I
1.9	15.9	19470	I	I	I	I	*I	I
2.0	16.2	20083	I	I	I	I	*	I

```
 1.9  15.9  19470  I         I         I         I        *I         I
 2.0  16.2  20083  I         I         I         I         *         I
 2.1  16.4  20307  I         I         I         I         I*        I
 2.2  16.5  20252  I         I         I         I         I*        I
 2.3  16.5  20017  I         I         I         I         *         I
 2.4  16.5  19677  I         I         I         I        *I         I
 2.5  16.5  19263  I         I         I         I        *I         I
 2.6  16.4  18807  I         I         I         I       * I         I
 2.7  16.4  18340  I         I         I         I      *  I         I
 2.8  16.3  17885  I         I         I         I     *   I         I
 2.9  16.2  17438  I         I         I         I    *    I         I
 3.0  16.1  17028  I         I         I         I   *     I         I
 3.1  16.0  16642  I         I         I         I  *      I         I
 3.2  15.9  16265  I         I         I         I  *      I         I
 3.3  15.8  15906  I         I         I         I *       I         I
 3.4  15.7  15564  I         I         I         I*        I         I
 3.5  15.6  15243  I         I         I         *         I         I
 3.6  15.5  14941  I         I         I         *         I         I
 3.7  15.4  14653  I         I         I        *I         I         I
 3.8  15.3  14382  I         I         I        *I         I         I
 3.9  15.2  14126  I         I         I       * I         I         I
 4.0  15.1  13885  I         I         I       * I         I         I
 4.1  15.0  13643  I         I         I      *  I         I         I
 4.2  14.9  13409  I         I         I      *  I         I         I
 4.3  14.8  13189  I         I         I     *   I         I         I
 4.4  14.8  12985  I         I         I     *   I         I         I
 4.5  14.7  12797  I         I         I     *   I         I         I
 4.6  14.6  12625  I         I         I    *    I         I         I
 4.7  14.5  12467  I         I         I    *    I         I         I
 4.8  14.4  12322  I         I         I    *    I         I         I
 4.9  14.4  12184  I         I         I   *     I         I         I
 5.0  14.3  12058  I         I         I   *     I         I         I
```

```
DISCHARGE HYDROGRAPH FOR  SUNCOOK RIVER        ... STATION NUMBER  66
             BELOW  PITTSFIELD MILL DAM AT MILE     10.00

GAGE ZERO =  296.00      MAX ELEVATION REACHED BY FLOOD WAVE =  303.70
                      FLOOD STAGE NOT AVAILABLE
             MAX STAGE =      7.70      AT TIME =     4.150 HOURS
             MAX FLOW =     16933     AT TIME =     4.100 HOURS
```

```
  HR  STAGE   FLOW  0        5000     10000     15000     20000     25000
  .2   6.5  10951  I         I         I *       I         I         I
  .4   6.5  10951  I         I         I *       I         I         I
  .6   6.5  10951  I         I         I *       I         I         I
  .8   6.5  10951  I         I         I *       I         I         I
 1.0   6.5  10951  I         I         I *       I         I         I
 1.2   6.5  10951  I         I         I *       I         I         I
 1.4   6.5  10951  I         I         I *       I         I         I
 1.6   6.5  10951  I         I         I *       I         I         I
 1.8   6.5  10951  I         I         I *       I         I         I
 2.0   6.5  10952  I         I         I *       I         I         I
 2.2   6.5  10972  I         I         I *       I         I         I
 2.4   6.5  11081  I         I         I *       I         I         I
 2.6   6.6  11398  I         I         I  *      I         I         I
 2.8   6.7  12123  I         I         I   *     I         I         I
 3.0   6.9  13205  I         I         I     *   I         I         I
 3.2   7.2  14398  I         I         I        *I         I         I
```

```
 3.4    7.4    15451  I         I         I         I         I         I
 3.6    7.5    16225  I         I         I         I *       I         I
 3.8    7.6    16698  I         I         I         I  *      I         I
 4.0    7.7    16908  I         I         I         I   *     I         I
 4.2    7.7    16913  I         I         I         I   *     I         I
 4.4    7.7    16768  I         I         I         I   *     I         I
 4.6    7.6    16519  I         I         I         I  *      I         I
 4.8    7.6    16200  I         I         I         I *       I         I
 5.0    7.5    15837  I         I         I         I *       I         I
 5.2    7.4    1 I         I         I         I*        I         I
 5.4    7.4    15050  I         I         I         *         I         I
 5.6    7.3    14654  I         I         I        *I         I         I
 5.8    7.2    14268  I         I         I        *I         I         I
 6.0    7.1    13899  I         I         I       * I         I         I
 6.2    7.1    13553  I         I         I      *  I         I         I
 6.4    7.0    13231  I         I         I     *   I         I         I
 6.6    6.9    12937  I         I         I     *   I         I         I
 6.8    6.9    12669  I         I         I    *    I         I         I
 7.0    6.9    12428  I         I         I    *    I         I         I
 7.2    6.8    12212  I         I         I   *     I         I         I
 7.4    6.7    12020  I         I         I   *     I         I         I
 7.6    6.7    11850  I         I         I   *     I         I         I
 7.8    6.6    11700  I         I         I  *      I         I         I
 8.0    6.6    11569  I         I         I  *      I         I         I
 8.2    6.6    11455  I         I         I  *      I         I         I
 8.4    6.6    11356  I         I         I  *      I         I         I
 8.6    6.5    11271  I         I         I  *      I         I         I
 8.8    6.5    11211  I         I         I *       I         I         I
 9.0    6.5    11167  I         I         I *       I         I         I
 9.2    6.5    11131  I         I         I *       I         I         I
 9.4    6.5    11100  I         I         I *       I         I         I
 9.6    6.5    11074  I         I         I *       I         I         I
 9.8    6.5    11053  I         I         I *       I         I         I
10.0    6.5    11035  I         I         I *       I         I         I
1
END OF FILE
?? FF  13.21.45.
SBU = .     4.852
TIO =    54445

IAF      CONNECT TIME 00.11.48.
LOGGED OUT.
(S
```