AD-A143 220 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS PRITCHARDS POND DAM (.. (U) CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV DEC 80 1/1

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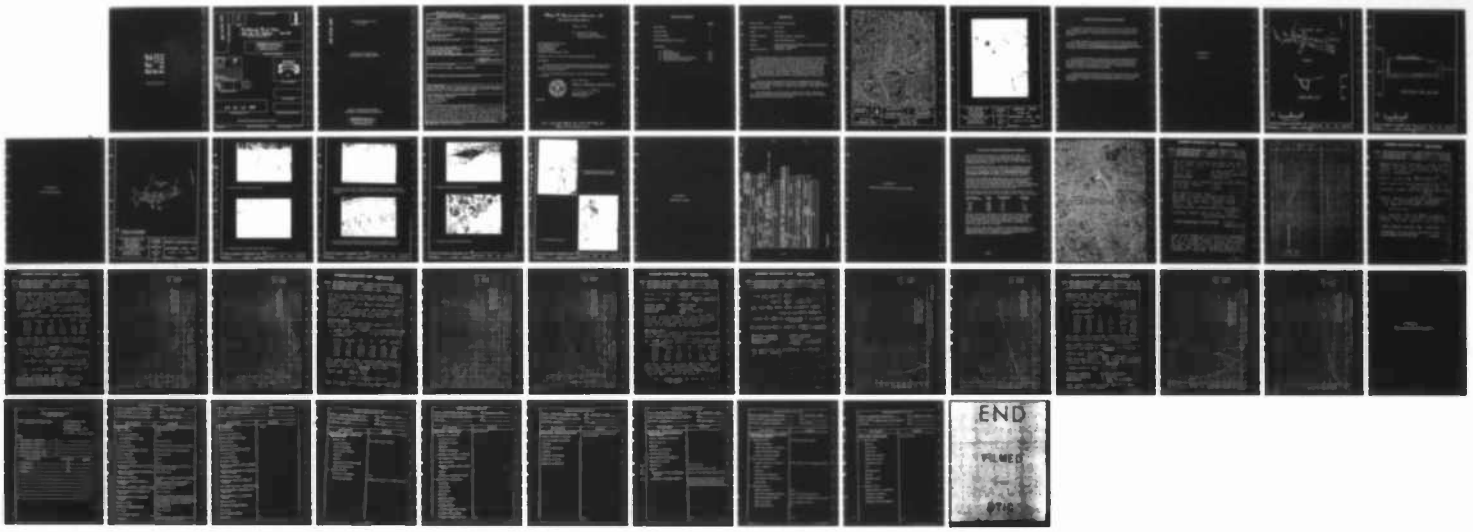

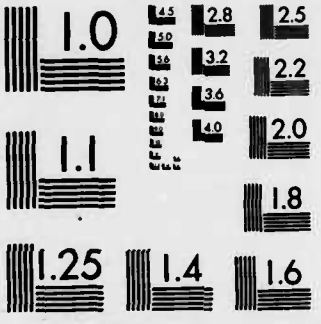

PHOTOGRAPH THIS SHEET

AD-A143 220

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1

INVENTORY

Pritchards Pond Dam
Rpt. No. CT 00033 Dec'80

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PRITCHARDS POND DAM
CT 00033

NAUGATUCK RIVER BASIN
WATERBURY, CONNECTICUT

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION REPORT

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CT 00033	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Pritchards Pond Dam Naugatuck River Basin, Waterbury, Conn. NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254		12. REPORT DATE December 1980 13. NUMBER OF PAGES 47
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,
Pritchards Pond Dam
Naugatuck River Basin
Waterbury Conn.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Pritchards Pond Dam is an embankment formed by Pearl Lake Road. It has a total length of 249 ft. and a maximum height of 8.7 ft. The exact age of the dam is not known but it is believed to be at least 100 yrs. old. There is a no longer functioning outlet box located on the right side of the dam that presumably controlled a 6-inch cast iron outlet pipe on the downstream side of the dam. There is a bar screen and 4 ft. wide overflow spillway located in the center of the dam. This spillway drops down to a 15-inch pipe whcih outlets at the downstream side of the dam. The downstream side has a stone masonry wall along approx. 90 ft. of the dam's length, with varying heights.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Philip W. Genovese and Associates, Inc.

Consulting and Design Engineers

January 6, 1981

Re: Pritchards Pond Dam
Waterbury, Connecticut
Contract #DACW-33-81-C0017

The Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Attention: Mr. E. P. Gould, Project Management Division

Gentlemen:

We have inspected Pritchards Pond Dam and conducted a field survey. Our dam failure analysis concludes that the dam should be reclassified as having a low hazard potential.

We are including with this letter a short report substantiating our conclusions.

Very truly yours,

PHILIP W. GENOVESE & ASSOCIATES, INC.

Pratap Z. Patel

Pratap Z. Patel, P.E.
Project Manager

PZP/LH

295 Bradwell Street, Hamden, Conn. 06514 P. O. Box 4330

Telephone 288-5678 (203) Cable GENOPHIL

TABLE OF CONTENTS

DESCRIPTION

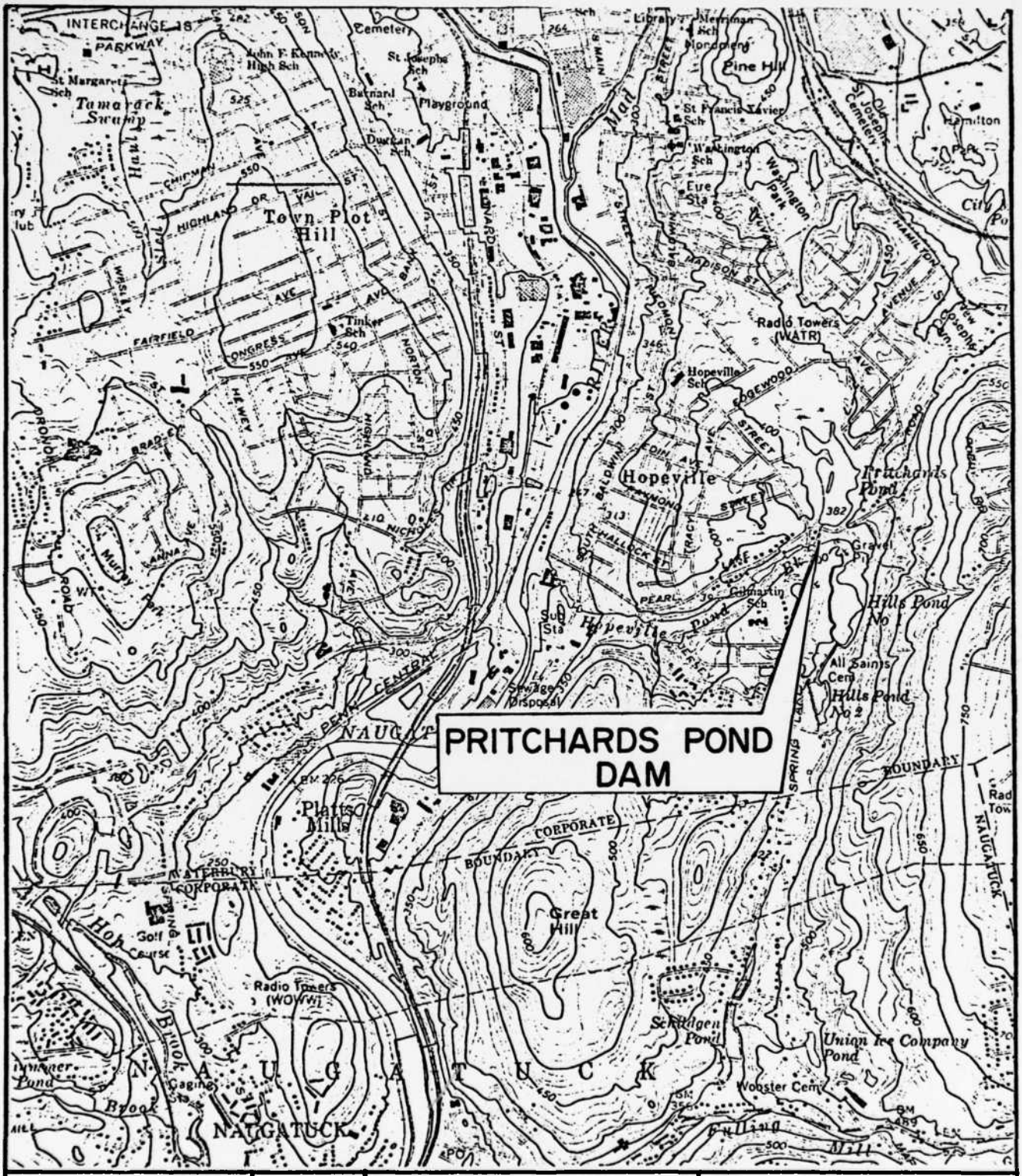
Name of Dam	:	Pritchards Pond Dam
Identification Number	:	CT 00033
Town	:	Waterbury
County and State	:	New Haven County, Connecticut
Stream	:	Hopeville Pond Brook
Owner	:	Risdon Manufacturing Company, 2100 South Main Street, Waterbury, Connecticut
Date of Inspection	:	December 3, 1980

Pritchards Pond Dam is an embankment dam formed by Pearl Lake Road. It has a total length of 249 feet and a maximum height of 8.7 feet. The exact age of the dam is not known but it is believed to be at least 100 years old. There is a no longer functioning outlet box located on the right side of the dam that presumably controlled a 6-inch cast iron outlet pipe on the downstream side of the dam. There is a bar screen and 4 foot wide overflow spillway located in the center of the dam. This spillway drops down to a 15-inch pipe which outlets at the downstream side of the dam. The downstream side has a stone masonry wall along approximately 90 feet of the dam's length, with varying heights.

The dam is owned and operated by the Risdon Manufacturing Company, 2100 South Main Street, Waterbury, Connecticut. Although it once augmented the plant's water supply, it no longer is used for that purpose. Any present uses are strictly recreational.

The dam appears in good shape but requires some work. Specifically, this would include developing a functioning outlet works, spillway maintenance and removal of trees on or close to the dam.

[To p. 4]



USGS QUAD WATERBURY, CT.	N	PHILIP W. GENOVESE AND ASSOCIATES, INC. ENGINEERS - HAMDEN, CT.	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.
SCALE IN FEET 0 1000 2000 3000 4000		NATIONAL PROGRAM OF INSPECTION OF NON - FED DAMS LOCATION MAP	

U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	NATIONAL PROGRAM OF INSPECTION OF ON-FED DAMS	OVERVIEW PHOTO DECEMBER, 1980 PRITCHARDS POND DAM HOPEVILLE POND BROOK WATERBURY, CONNECTICUT
PHILIP W. GENOVESE AND ASSOCIATES, INC. ENGINEERS - HAMDEN, CT.		

[from p. 1]

HYDROLOGIC/HYDRAULIC EVALUATION

Pritchards Pond Dam has a tributary watershed of 0.25 square miles. At the spillway crest it has a water surface area of 11 acres and a storage capacity of 14 acre-feet. The storage capacity at the top of the dam is 115 acre-feet.

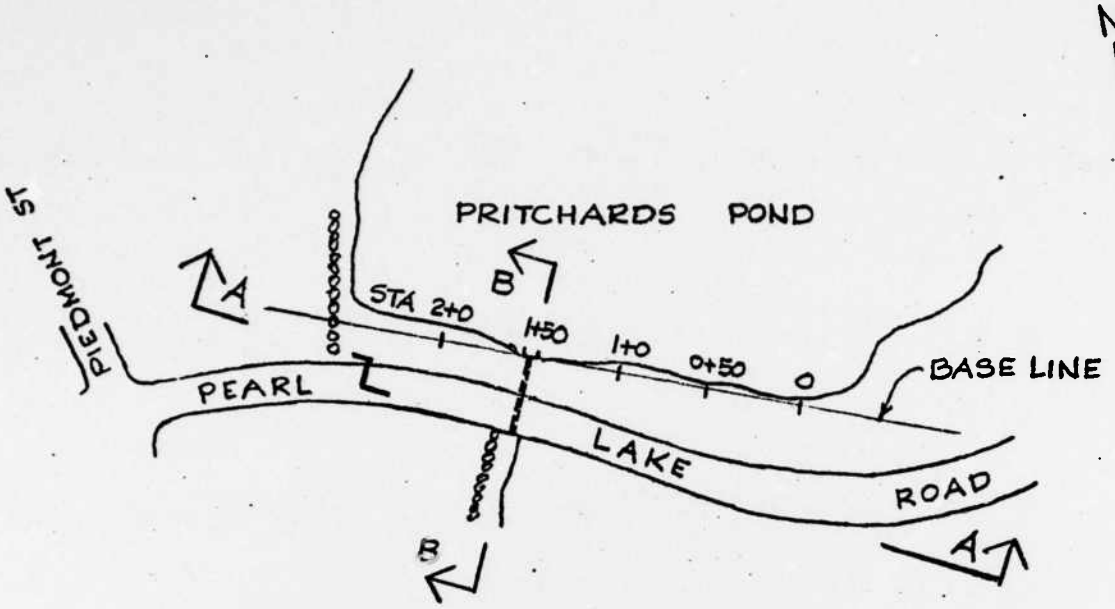
The pipe spillway has a capacity of 16 cfs with the water at the top of the dam. The maximum height of the dam is 8.7 feet. In accordance with the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, Pritchards Pond Dam is a small dam based on storage capacity.

A dam breach analysis was made using the Corps of Engineers' "Rule of Thumb" guidance for estimating downstream dam failure hydrographs. The peak discharge from a dam breach, with the water level at the top of dam (elev. 386.7), was calculated to be 1200 cfs. The flood waters were routed for a distance of 3270 feet downstream.

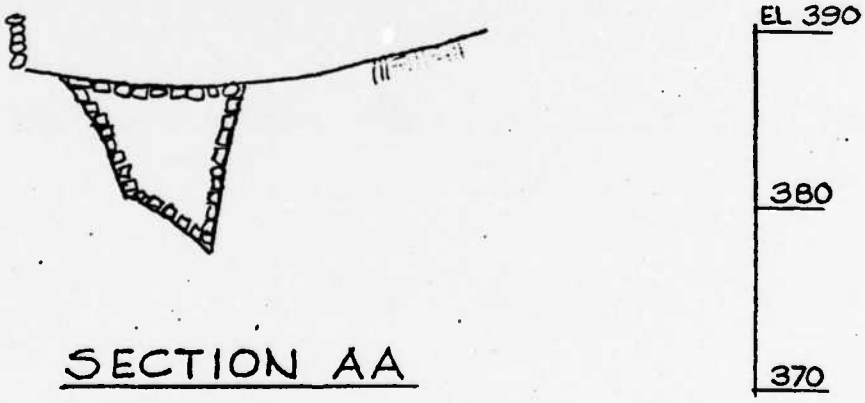
The results of this analysis indicated that the loss of life from a failure of Pritchards Pond Dam is unlikely and therefore warrants a "low" hazard classification. Appendix D provides the detailed analysis to justify this conclusion.

APPENDIX A

SITE PLAN



PLAN

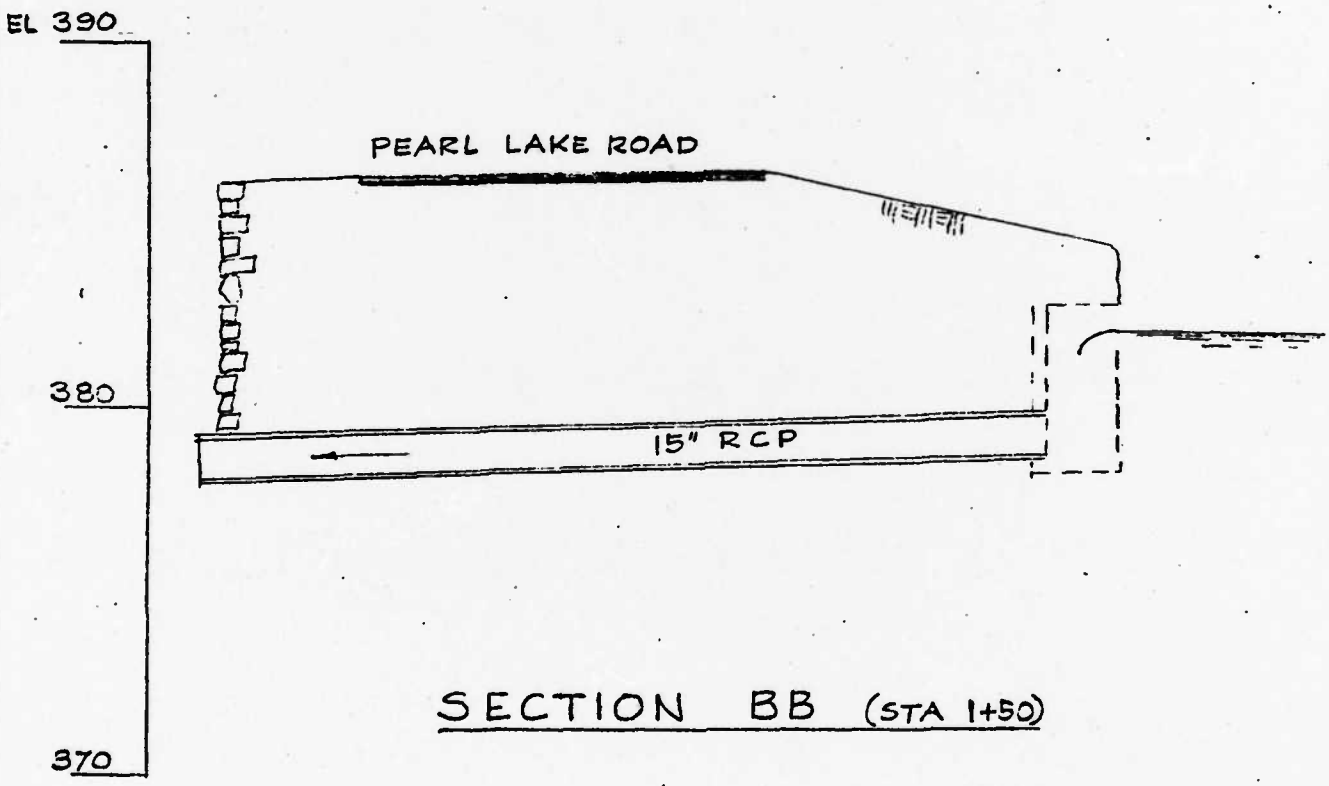


SECTION AA

VER 0 10' 20'
HOR 0 100' 200'

SCALE IN FEET

PHILIP W. GENOVESE & ASSOCIATES, INC. ENGINEERS HAMDEN, CONNECTICUT	PRITCHARDS POND DAM (CT00033)



SECTION BB (STA 1+50)

VER 0 5' 10'
HOR 0 10' 20'

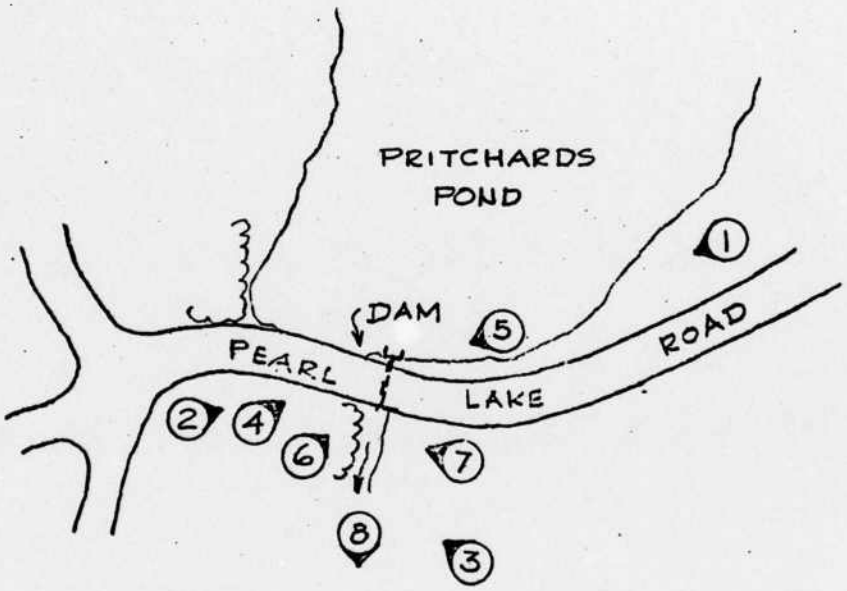
SCALE IN FEET

PHILIP W. GENOVESE ASSOCIATES, INC.
ENGINEERS HAMDEN, CONNECTICUT

PRITCHARDS POND DAM (CT00033)

APPENDIX B

SITE PHOTOGRAPHS



(3) REFERS TO PHOTO NUMBER, LOCATION AND DIRECTION

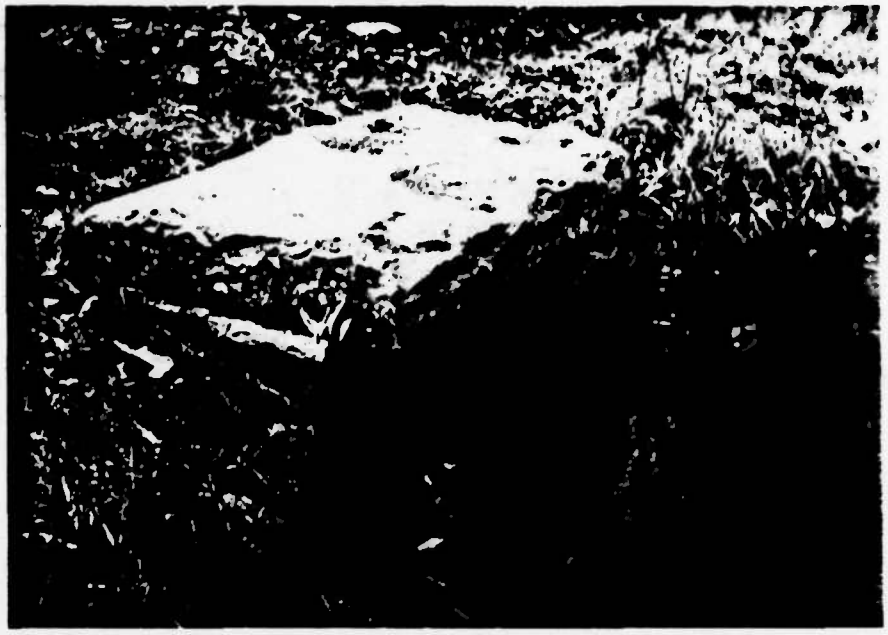
U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS	PHOTO LOCATION PLAN
PHILIP W. GENOVESE AND ASSOCIATES, INC. ENGINEERS - HAMDEN, CT.		PRITCHARDS POND DAM HOPEVILLE POND BROOK WATERBURY, CONNECTICUT

1. Left abutment, looking along crest.

2. Right abutment, looking along downstream face.

3. Downstream face of dam, looking towards right side of spillway channel. Note 14" diameter tree in right side of photo and clump of 5 trees in center of photo.

4. Sta 2+10 looking at downstream face of dam, blue flagging at Sta 2+00, tree stump on left, 8" diameter, tree on right of photo 11" diameter.



5. Spillway intake structure with trash rack.

6. Spillway and outlet discharge pipes.

7. Downstream face of dam looking towards right downstream bank.

8. Downstream channel.

APPENDIX C

INVENTORY FORM

STATE	IDENTITY NUMBER	DIVISION	STATE	COUNTY	CONGR DIST.	STATE	COUNTY	CONGR DIST.	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REPORT DATE DAY MO YR
CT	33	NED	CT	009	05				PRITCHARDS POND DAM	4131.8	7301.6	14 JAN 81

POPULAR NAME	NAME OF IMPOUNDMENT
	PRITCHARDS POND

REGION	BASIN	RIVER OR STREAM	NEAREST DOWNSTREAM CITY-TOWN-VILLAGE	DIST FROM DAM (MI.)	POPULATION
01	07	TR NAUGATUCK RIVER	NAUGATUCK	2	236000

TYPE OF DAM	YEAR COMPLETED	PURPOSES	STRUCTURAL HEIGHT (FT.)	HYDRAULIC HEIGHT (FT.)	IMPOUNDING CAPACITIES MAXIMUM (ACRE-FT.)	IMPOUNDING CAPACITIES NORMAL (ACRE-FT.)	DIST	OWN	FED R	PRV/FED	SCS A	VER/DATE
RECH	1890	R	4.7	3.8	115	14	NED					

REMARKS

D/S HAS	SPILLWAY CREST LENGTH	SPILLWAY TYPE	SPILLWAY WIDTH (FT.)	MAXIMUM DISCHARGE (FT.)	VOLUME OF DAM (CY)	POWER CAPACITY INSTALLED (MW)	POWER CAPACITY PROPOSED (MW)	NAVIGATION LOCKS NO	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)
	4		3				0									

OWNER	ENGINEERING BY	CONSTRUCTION BY
RISDON MFG CO		

REGULATORY AGENCY DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE

INSPECTION BY	INSPECTION DATE DAY MO YR	AUTHORITY FOR INSPECTION
A.W. CENOVESE & ASSOCIATES, INC.	3 DEC 80	PA 571 SECT 25-11 ST OF CT

REMARKS

REPORTS CONTROL SYMBOL
DAEN-CWE-17

1-

APPENDIX D

HYDROLOGIC/HYDRAULIC CALCULATIONS

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

The Pritchards Pond Dam has a tributary watershed of 0.25 sq.mi and a water surface area and storage capacity at spillway level of 11 Acres and 14 Ac.Ft respectively. The maximum impoundment to the top of dam (El. 386.7 NGVD) is estimated to be 115 Ac.Ft.

The pipe spillway with drop inlet has an estimated capacity of 16 CFS with pool at top of the dam. In accordance with Table 1 of the Corps of Engineers Recommended Guidelines for Safety Inspection of Dams, the Pritchards Pond Dam is classified as "Small" in size based on storage capacity.

Utilizing the Corps of Engineers April 1978 "Rule of Thumb Guidance for Estimating Downstream Failure Hydrographs", the peak failure outflow due to dam breach is estimated to be 1200 cfs with an estimated flood depth of 3.8 Ft. immediately downstream of the dam. The flood routing was performed for peak failure outflow with pool at top of dam.

The estimated peak flow rates and peak flood depths at four sections downstream of the dam resulting from a dam failure are:

D/S Section (Ft. from Dam)	Flow (CFS)	Flood Depth (FT)	Velocity (fps)
At Dam	1200	3.8	-
170	1185	3.4	3.5
720	1148	6.2	4.1
2320	1032	4.1	4.25
3270	1021	3.2	3.9

Based on relative elevations of the houses in the vicinity of the Brook, none of them are likely to be flooded during dam failure except one house on Spring Lake Rd, located 3'4" above Brook bed which may have minor flooding. In addition, the culvert on Spring Lake Rd is inadequate to pass the peak flow of 1185 cfs.

Thus, loss of life from a failure of Pritchards Pond Dam is considered unlikely. Therefore, the dam is classified as "Low" hazard potential. This conclusion is based upon hydraulic/ hydrologic analysis included in Appendix D.

Waterbury State Technical Institute
Waterbury Medical Bldg
INTERCHANGE 18
INTERCHANGE 19
INTERCHANGE
PARKWAY
John F Kennedy High Sch
Riverside Cemetery
St Josephs Sch
St Margarets Sch
Tamarack Swamp
Waterbury Country Club
Town Plot Hill
FAIRFIELD
CONGRESS AVE
HEWEY
Ecole St Anne Sch
Pine Hill
St Francis Xavier Sch
Washington Park
Radio Towers (WATR)
Hopeville Sch
EDGEWOOD
Hopeville
HALLOCK
Pritchards Pond
Hills Pond No 1
All Saints Cem
Hills Pond No 2
Sewage Disposal
Sub Sta
PENN CENTRAL
NAUGATUCK
Platts Mills
BM 226
WATERBURY CORPORATE
BOUNDARY
CORPORATE BOUNDARY
Great Hill
Schildgen Pond
Union Ice Company Pond
SPRING LAKE RD
Water Tank
Radio Tower
PIPELINES
CLARK HILL ROAD
PEACH ORCHARD
Golf Course
East Mtn Res
East Mountain
MOUNTAIN
Gravel Pit
Hamilton Park
Anderson Sch
Lithuanian Cemetery
Calvary Cemetery
City Mills Ponds
Beaver Pond
Old St Josephs Cemetery
New St Joseph Cem
Army Reserve Center
SS Peter and Paul Sch
Hendricken Sch
NAUGATUCK
WHITTEMORE GLEN STATE PARK
Barbers Pond
Golf Course
Radio Towers (WOWW)
Hop Brook
Brook Lake
Welton
PROSPECT

DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 1 OF 16
NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/80
PRITCHARDS POND DAM CHECKED BY EL DATE 12/17/80

FOR THE PURPOSE OF DETERMINING PROJECT SIZE, THE MAXIMUM STORAGE ELEV^{N} IS CONSIDERED AT TOP OF THE DAM.

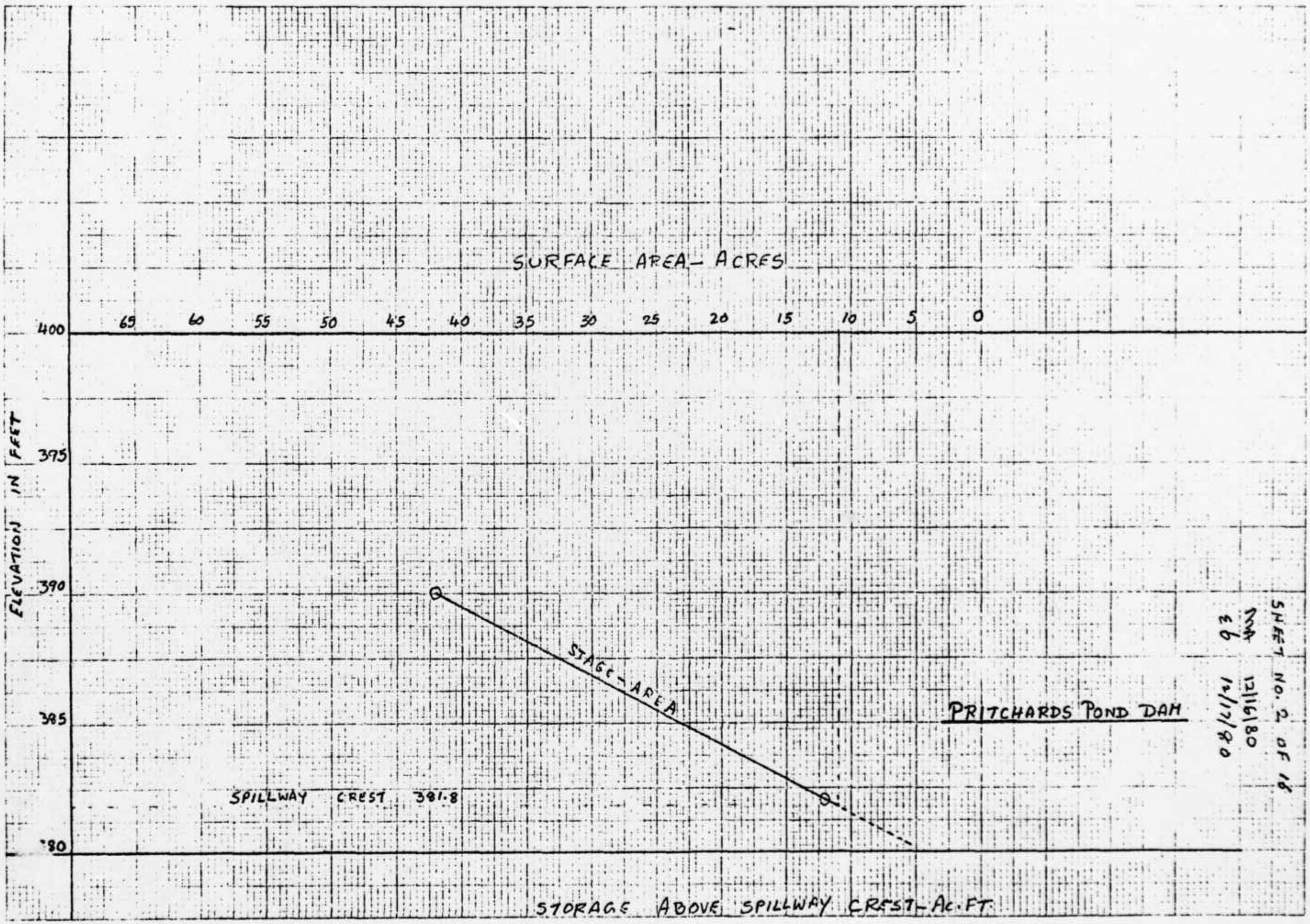
TOP OF DAM = EL. 386.7 NGVD*
TOE OF DAM = EL. 378 (15" RCP OUTLET INVERT)
HEIGHT OF DAM = 8.7 FT. (+)

PLANIMETERING FROM USGS MAP FOR POND SURFACE AREAS —
AT EL. 382 (NORMAL) = 12 Ac.
AT EL. 390 = 42 Ac.

FROM STAGE-POND AREA CURVE:
POND AREA AT SPILLWAY CREST (EL. 381.8) = 11 Ac.
POND AREA AT TOP OF DAM (EL. 386.7) = 30 Ac
AVERAGE POND AREA BETWEEN SPILLWAY CREST & TOP OF DAM = 20.5 Ac.
STORAGE BETWEEN SP. CREST & TOP OF DAM = 4.9 × 20.5
$\cong$ 101 Ac. FT.
ESTIMATED STORAGE BELOW SP. CREST = $\frac{1}{3}$ b.h.
$\frac{1}{3} \times 11 (381.8 - 378) =$ 14 Ac. FT.

∴ MAX^{M}. IMPOUNDMENT TO TOP OF DAM = 101 + 14
= 115 Ac. FT (S)

* THE WATER SURFACE ELV^{N} OF 382 MSL FOR PRITCHARDS POND ON THE WATERBURY QUAD SHEET (1972) IS ASSUMED TO BE ON NATIONAL GEODETIC VERTICAL DATUM (NGVD). ALL OTHER ELEVATIONS ARE REFERENCED TO THIS ASSUMED ELV^{N} AND ARE OBTAINED BASED UPON INFORMATION FURNISHED BY P.W. GENOVESE & ASSOC. INC.


SURFACE AREA- ACRES
65
60
55
50
45
40
35
30
25
20
15
10
5
0
400
375
390
385
380
ELEVATION IN FEET
STAGE-AREA
SPILLWAY CREST 381.8
PRITCHARDS POND DAM
STORAGE ABOVE SPILLWAY CREST- Ac.FT.
SHEET NO. 2 OF 16
12/16/80
12/17/80

D-2

BREACH ANALYSIS — DOWNSTREAM FAILURE HAZARD. BASED UPON CORPS OF ENGINEERS "RULE OF THUMB" GUIDANCE FOR ESTIMATING D/S DAM FAILURE HYDROGRAPHS

BREACH OUTFLOW $Q_b = \frac{8}{27} \times W_b \times \sqrt{g} \times Y_o^{3/2}$

WATER DEPTH AT TIME OF FAILURE $Y_o = 8.7$ FT WITH POOL AT TOP OF DAM

ESTIMATED BREACH WIDTH W_b = 40% OF MID-HT LENGTH OF DAM
$= 0.4 \times 67'$

(MID-HT LENGTH IS BASED UPON P.W. GENOVESE & ASSOC, INC'S DEC. 9, 1980 FIELD INFORMATION)

$\therefore Q_b = \frac{8}{27} \times (0.4 \times 67) \times \sqrt{32.2} \times (8.7)^{3/2}$

$\cong$ 1200 CFS

IT IS PRESUMED THAT THE BREACH OCCURS IN DEEPEST SECTION OF THE DAM. THIS SECTION INCLUDES THE PIPE SPILLWAY WITH DROP INLET.

$\therefore$ PEAK FAILURE OUTFLOW $Q_{P_1} =$ 1200 CFS

ESTIMATED FAILURE FLOOD DEPTH IMMEDIATELY D/S FROM DAM $\cong 0.44\, Y_o \cong$ 3.8 FT.

PERFORM D/S ROUTING OF PEAK FAILURE OUTFLOW

SECTION AA IS SELECTED 170' D/S OF THE DAM TO EVALUATE THE FLOOD HAZARD TO THE TWO HOUSES LOCATED IN BETWEEN THE BROOK AND SPRING LAKE TRL. USING MANNING'S EQUATION.

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ WHERE $n = 0.06$ ASSUMED AND $S = 0.012$ EST. FROM USGS MAP.

$= 2.724 A R^{2/3}$

A AND R ARE ESTIMATED BASED ON USGS MAP INFORMATION.

ELV N	A SQ.FT.	P	R	$R^{2/3}$	Q CFS
376	0	—	—	—	—
378	105	105.1	1.0	1.0	286
379	230	154.1	1.49	1.30	817
380	415	205.2	2.02	1.60	1808

FROM STAGE-AREA AND STAGE-DISCHARGE CURVES, FOR SECTION AA, FOR $QP_1 = 1200$ CFS. ELVN = 379.45 AND AREA = 348 SQ.FT.

VOLUME OF REACH $V_1 = \frac{170 \times 348}{43,560} \cong 1.4$ AC.FT.

TRIAL $QP_2 = QP_1 \left(1 - \frac{V_1}{S}\right)$ WHERE S = STORAGE TO TOP OF DAM

$= 1200 \left(1 - \frac{1.4}{115}\right) = 1185$ CFS

FOR THIS QP_2 THE STAGE-DISCHARGE CURVE GIVES ELVN = 379.4 AND AREA = 342 SQ.FT.

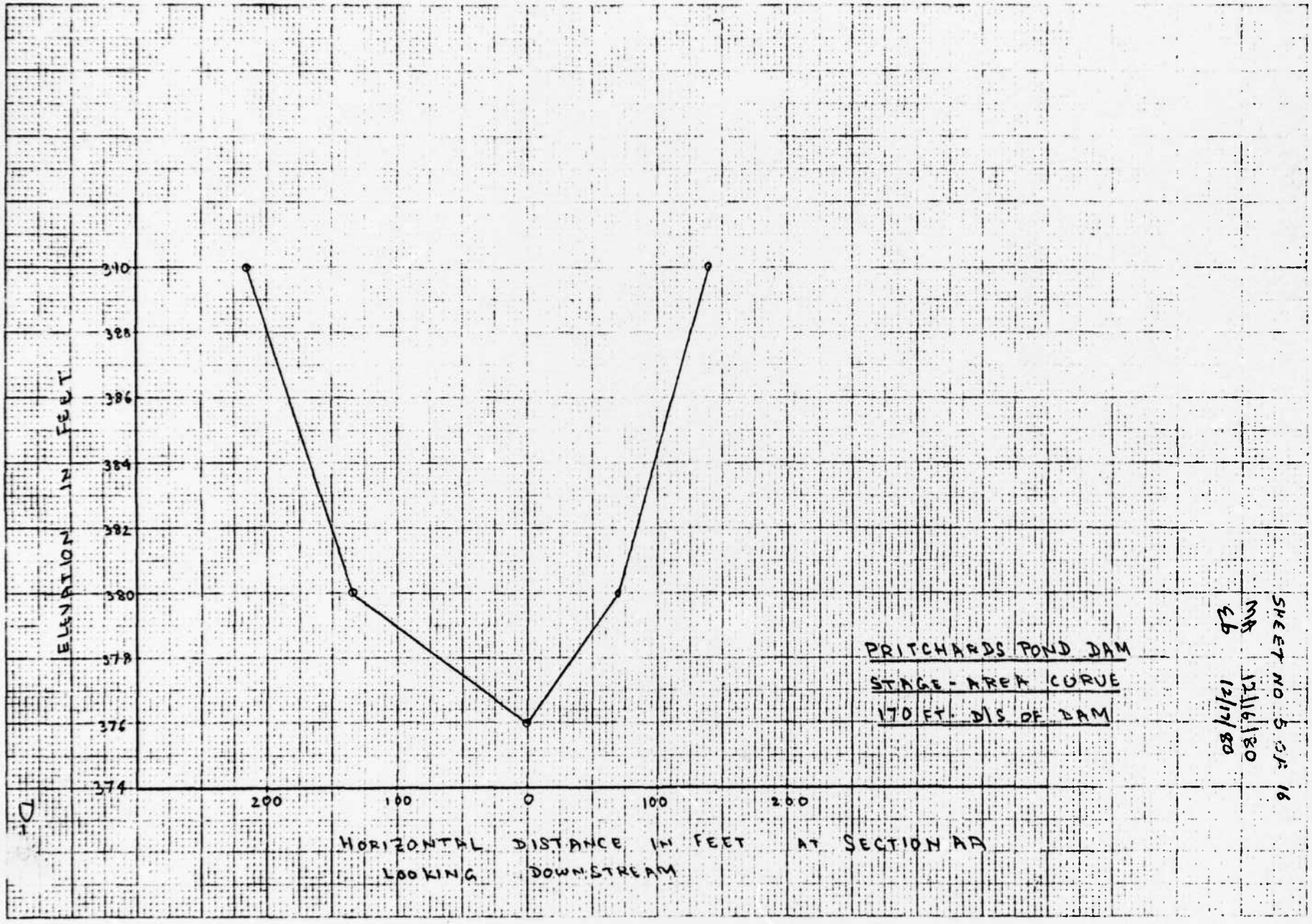
VOLUME OF REACH $V_2 = \frac{170 \times 342}{43,560} \cong 1.4$ AC.FT.

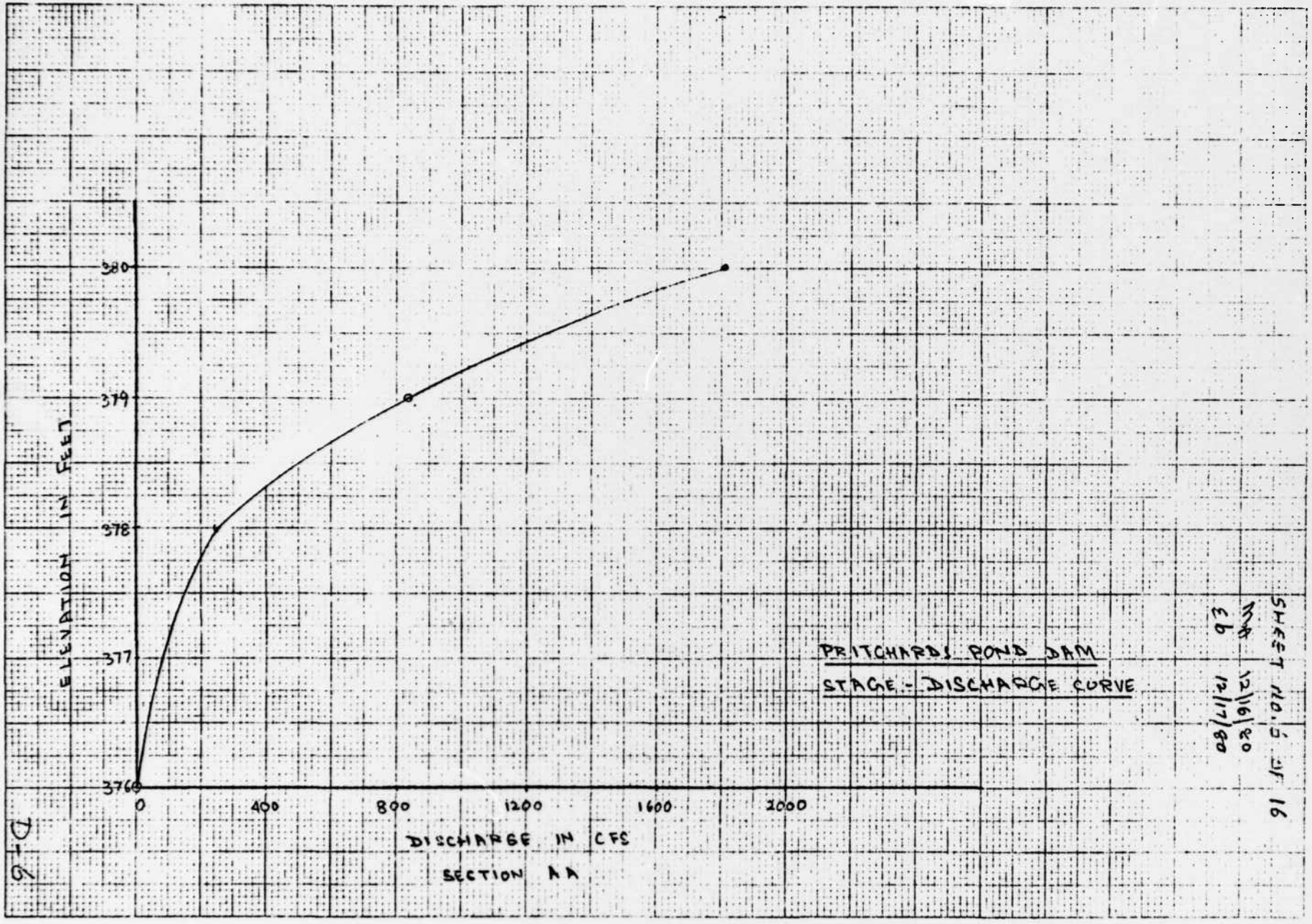
∴ PEAK OUTFLOW $QP_2 = 1185$ CFS

FLOOD DEPTH AT SECTION AA = 379.4 − 376 = 3.4 FT

FLOOD STAGE AT SECTION AA = 379.4 NGVD

AND VELOCITY AT SECTION AA = $\frac{1185}{342} = 3.5$ FPS


ELEVATION IN FEET
390
388
386
384
382
380
378
376
374
200
100
0
100
200
HORIZONTAL DISTANCE IN FEET AT SECTION AA
LOOKING DOWNSTREAM
PRITCHARDS POND DAM
STAGE - AREA CURVE
170 FT. D/S OF DAM
SHEET NO. 5 OF 16
MA
12/19/80
EB
12/19/80



PRITCHARDS POND DAM

STAGE - DISCHARGE CURVE

SHEET NO. 3 OF 16

MM 12/16/80

EB 12/17/80

D-6

Squares to the Inch

OF THE TWO HOUSES, THE HOUSE AT LOWER ELEVATION IS ESTIMATED TO BE 3'4" ABOVE THE BED OF THE BROOK.

THUS, AT SECTION AA, NO SERIOUS FLOOD HAZARD IS LIKELY TO OCCUR.

IT IS HOWEVER, NOTED THAT THE CULVERT ON SPRING LAKE RD. IS INADEQUATE TO ACCOMODATE THE ENTIRE PEAK OUTFLOW AT DAM FAILURE.

SECTION BB

THIS SECTION IS 550' BELOW SECTION AA.

USING MANNING'S EQUATION

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$= 1.948\, A R^{2/3}$$

WHERE $n = 0.08$ ASSUMED (SLOW MOVING)
$S = 0.011$ EST. FROM USGS MAP

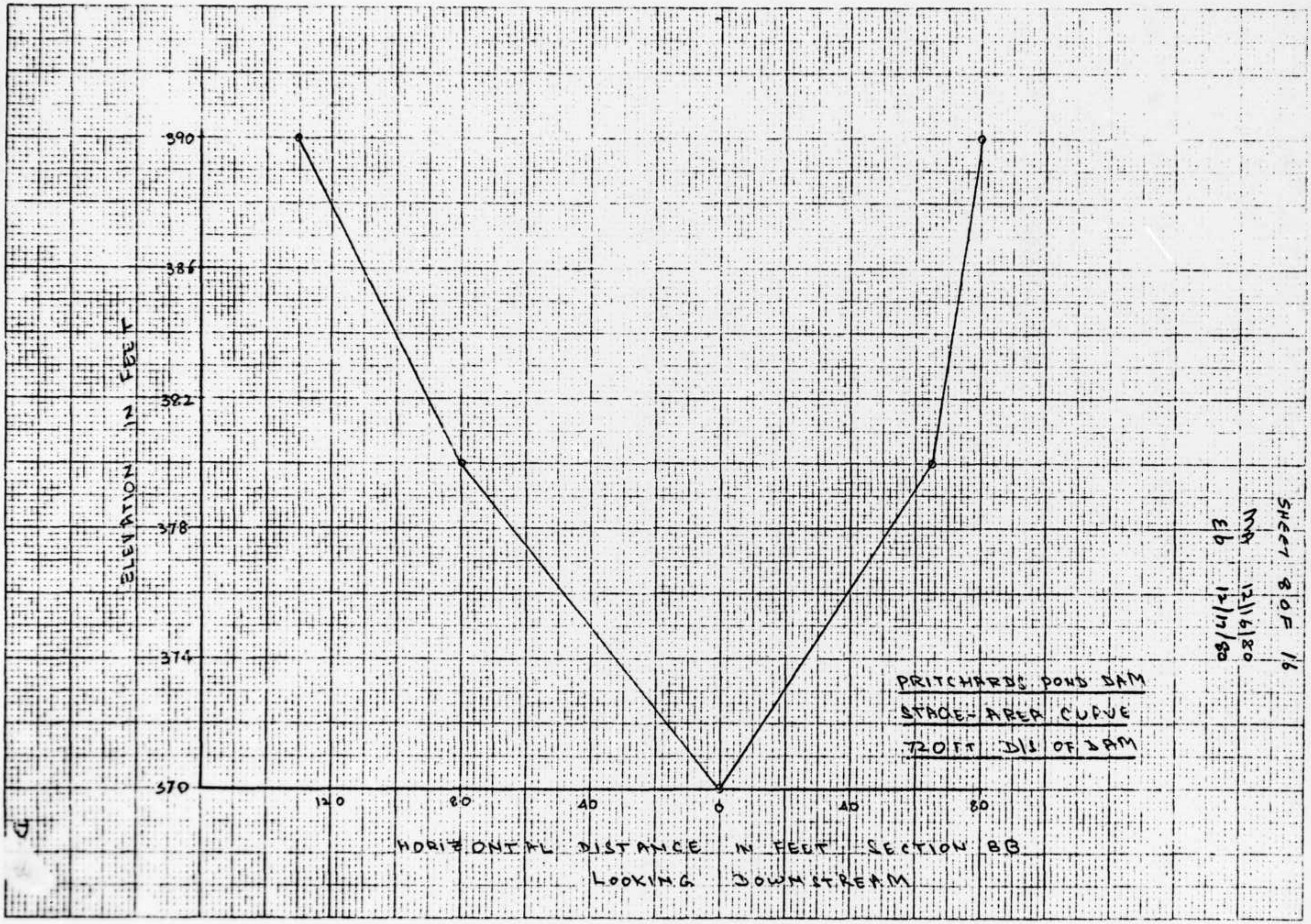
ELVN	A Sq.Ft	P	R	$R^{2/3}$	Q CFS
370	0	—	—	—	—
372	29	29.3	0.99	0.99	56
374	116	58.6	1.98	1.58	356
376	261	87.9	2.97	2.07	1051
378	464	117.1	3.96	2.50	2263

FROM STAGE-AREA AND STAGE-DISCHARGE CURVES,
FOR Q_{P_1} = 1185 CFS, ELVN = 376.3 AND AREA = 290 Sq.Ft
VOLUME OF REACH $V_1 = \frac{550 \times 290}{43,560} \cong 3.7$ AC.FT.

TRIAL $Q_{P_2} = Q_{P_1}\left(1 - \frac{V_1}{S}\right)$

$= 1185\left(1 - \frac{3.7}{115}\right) = 1147$ CFS

FOR THIS Q_{P_2}, ELVN = 376.2 AND AREA = 280 Sq.Ft



) Squares to the Inch

CHK 12/16/80
EB 12/17/80

PRITCHARDS POND DAM

STAGE - DISCHARGE CURVE

Squares to the Inch

VOLUME OF REACH $V_2 = \frac{550 \times 280}{43,560} = 3.5$ Ac.Ft.

RECOMPUTING $QP_2 = 1185\left(1 - \frac{\frac{3.7+3.5}{2}}{115}\right) = 1148$ CFS

FLOOD STAGE = 376.2 NGVD

FLOOD DEPTH = 6.2 FT.

VELOCITY = $\frac{1148}{280} = 4.1$ FPS

THE TWO HOUSES ADJACENT TO THE SMALL POND LOCATED AT SECTION BB ARE HIGHER THAN THE ESTIMATED FLOOD STAGE; THEREFORE ARE NOT LIKELY TO BE IMPACTED BY DAM FAILURE:

SECTION CC

THIS SECTION IS SELECTED 1600' DIS FROM SECTION BB USING MANNING'S EQUATION

$Q = \frac{1.486}{n} A R^{2/3} A^{\frac{1}{2}}$ WHERE n = 0.08 ASSUMED AND A = 0.02 EST. FROM USGS MAP

$= 2.63 A R^{2/3}$

ELVN	A SQ.FT.	P	R	$R^{2/3}$	Q CFS
334	0	—	—	—	—
336	60	60	1	1	160
338	240	120	2	1.6	1010
340	525	175	3	2.08	2870

FOR PEAK FAILURE OUTFLOW QP_1 = 1148 CFS
ELVN FROM STAGE-DISCHARGE CURVE = 338.2
AND STAGE AREA CURVE GIVES AREA = 262 SQ.FT.
FOR A REACH LENGTH OF 2000 FT,

$V_1 = \frac{2000 \times 262}{43,560} \cong 12$ Ac. FT.

TRIAL $QP_2 = QP_1 \left(1 - \frac{V_1}{S}\right)$

$= 1148 \left(1 - \frac{12.}{115}\right) = 1028$ CFS

FOR THIS QP_2 ELVN FROM DISCHARGE CURVE

$= 338.05$ AND AREA $= 243$ SQ. FT.

VOLUME OF REACH $V_2 = \frac{2000 \times 243}{43.560} \cong 11.2$ AC. FT.

RECOMPUTING $QP_2 = 1148 \left(1 - \frac{12 \times 11.2}{115}\right) = 1032$ CFS

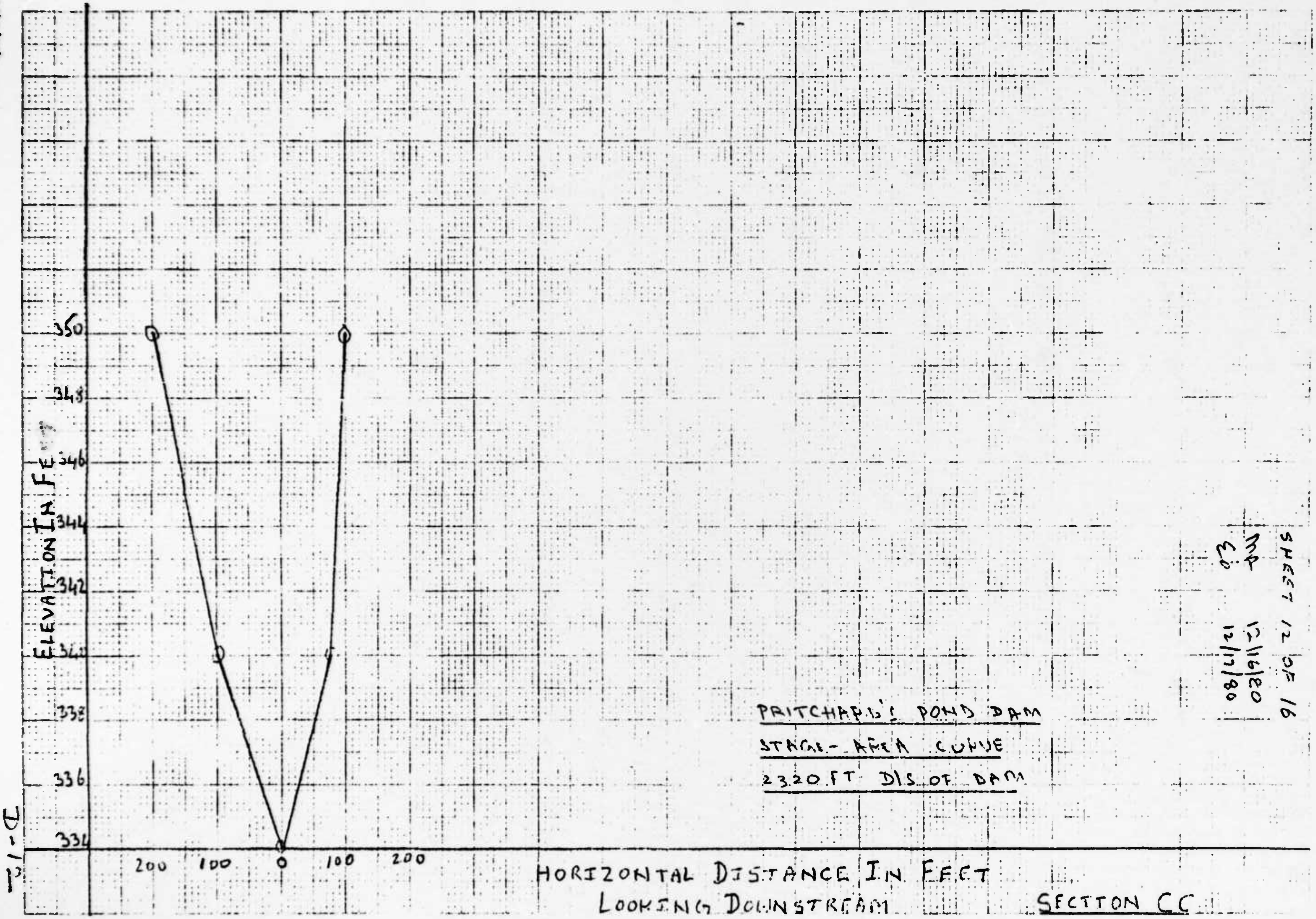
FLOOD STAGE $= 338.1$ NGVD

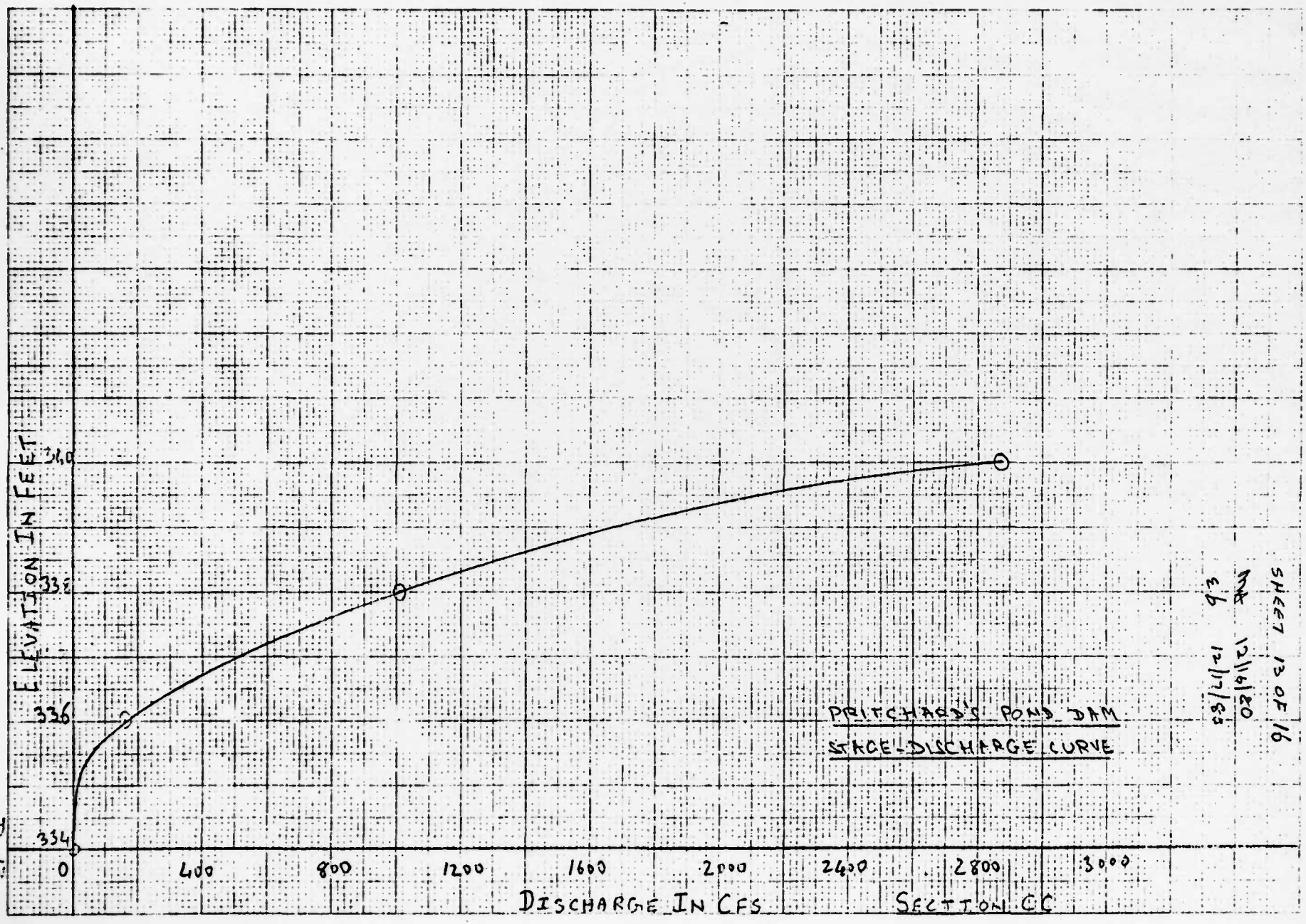
FLOOD DEPTH $= 4.1$ FT.

VELOCITY $= \frac{1032}{243} = 4.25$ FPS

NO DAMAGE IS EXPECTED TO OCCUR IN THIS REACH.

MA 12/16/80
EO 12/17/80




ELEVATION IN FEET
340
336
334
0
400
800
1200
1600
2000
2400
2800
3000
DISCHARGE IN CFS
PRITCHARD'S POND DAM
STAGE-DISCHARGE CURVE
SECTION CC
SHEET 13 OF 16
12/16/80
12/17/80

SECTION DD IS SELECTED 950' D/S OF CC ADJACENT TO MERRITT STREET.

USING MANNING'S EQUATION

$$Q = \frac{1.486}{n} \times A \times R^{2/3} \times S^{1/2}$$

WHERE $n = 0.06$ ASSUMED
$S = 0.014$ EST. FROM USGS MAP

$$= 2.93 \times A \times R^{2/3}$$

ELVN	A Sq.FT	P	R	$R^{2/3}$	Q CFS
323	0	—	—	—	—
324	26	52	0.5	0.63	48
325	100	100	1	1	293
326	231	154	1.5	1.31	886
327	400	200	2	1.6	1,875

FOR PEAK FAILURE OUTFLOW $QP_1 = 1032$ CFS, THE STAGE DISCHARGE CURVE GIVES ELVN = 326.18 AND AREA = 270 SQ.FT.

FOR A REACH LENGTH OF 200FT,
VOLUME OF REACH $V_1 = \frac{200 \times 270}{43,560} \cong 1.2$ AC.FT.

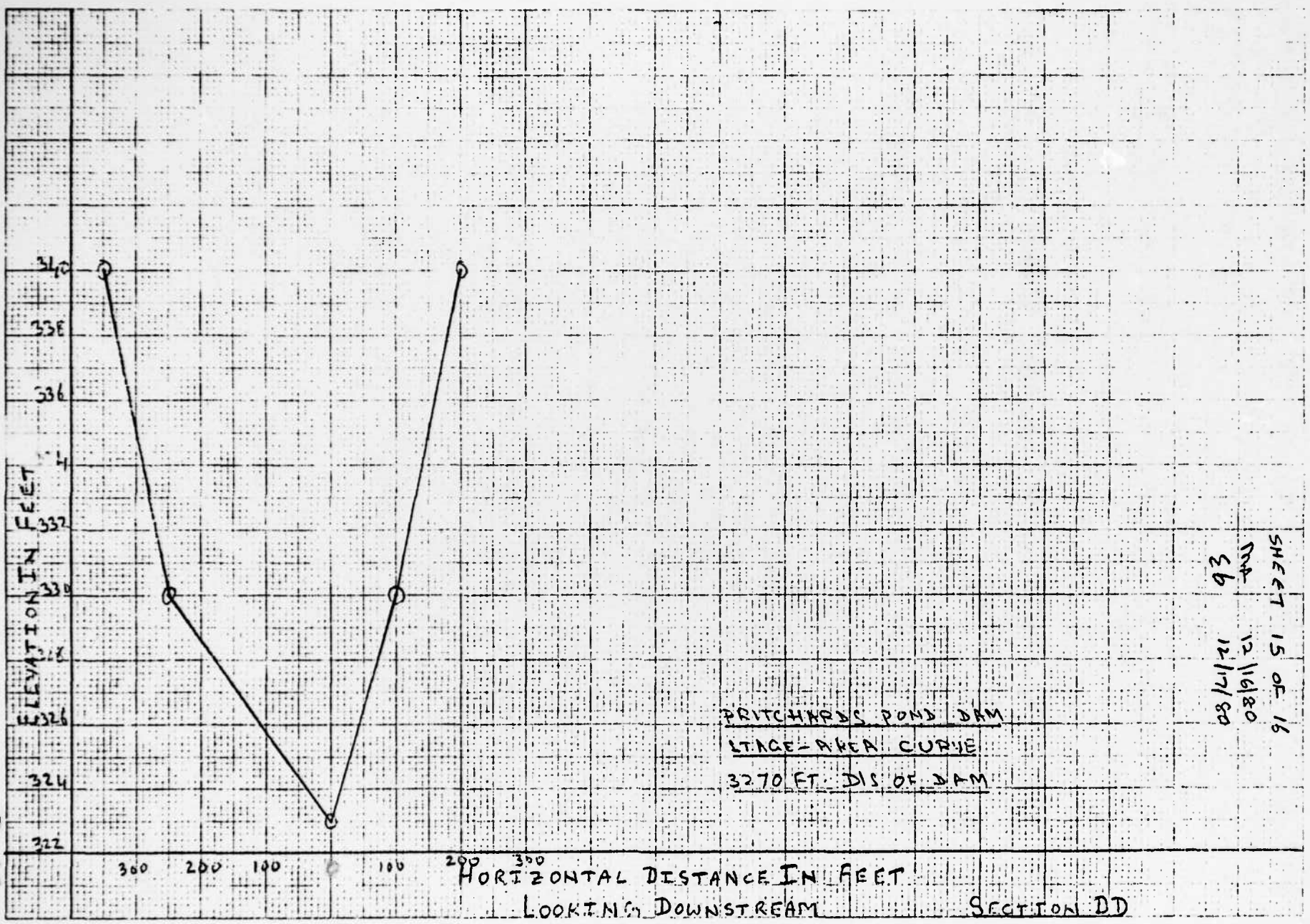
TRIAL $QP_2 = QP_1 \left(1 - \frac{V_1}{S}\right)$
$= 1032 \left(1 - \frac{1.2}{115}\right) = 1021$ CFS

FOR THIS QP_2 ELVN = 326.16 AND AREA = 264 SQ.FT.
VOLUME OF REACH $V_2 = \frac{200 \times 264}{43,560} \cong 1.2$ AC.FT.

∴ PEAK OUTFLOW $QP_2 = 1021$ CFS.

FLOOD STAGE $\cong$ 326.2 NGVD
FLOOD DEPTH $\cong$ 3.2 FT.
VELOCITY $= \frac{1021}{264} \cong$ 3.9 FPS

THE HOUSES IN THIS VICINITY ARE 5+ FT ABOVE THE BED OF THE BROOK.



PRITCHARDS POND DAM
STAGE-AREA CURVE
3270 FT. DIS OF DAM

12/16/80
12/17/80

SHEET 15 OF 16

D-15

Squares to the inch

SHEET 16 OF 16

PMA 12/16/80

EB 12/17/80

PRITCHARDS POND DAM

STAGE DISCHARGE CURVE

SECTION DD

DISCHARGES IN CFS

0 400 800 1200 1600 2000 2400

ELEVATION IN FEET

323 324 325 326 327

D-16

20 Squares to the Inch

APPENDIX E

VISUAL CHECK LIST WITH COMMENTS

VISUAL INSPECTION CHECK LIST
PARTY ORGANIZATION

PROJECT PRITCHARD's POND DAM

DATE December 3, 1980

TIME 8-10:30 a.m.

WEATHER Overcast, 33°F.

W.S. ELEV. _____ U.S. _____ DN.S

PARTY:

1. Walt Gancarz - Genovese
2. Mark Ballou - Genovese
3. Murali Atluru - DTC
4. Richard F. Murdock - GEI
5. Richard W. Turnbull - GEI
6. _____
7. _____
8. _____
9. _____
10. _____

	PROJECT FEATURE	INSPECTED BY	REMARKS
1.	Embankment	All	
2.	Outlet works	All	
3.	Spillway	All	
4.			
5.			
6.			
7.			
8.			
9.			
10.			

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Dam Embankment NAME

DISCIPLINE Geotechnical, Civil/Str. NAME WG, RFM, RWT

	AREA EVALUATED	CONDITIONS
	DAM EMBANKMENT	Earth embankment with downstream cut stone masonry wall.
	Crest Elevation	386.7
	Current Pool Elevation	382.5
	Maximum Impoundment to Date	
EI	Surface Cracks	None observed.
EI	Pavement Condition	Asphalt pavement moderately cracked.
EI	Movement or Settlement of Crest	Minor undulations of crest surface.
EI	Lateral Movement	None observed.
EI	Vertical Alignment	Good.
EI	Horizontal Alignment	Good.
EI	Condition at Abutment and at Concrete Structures	Two trees near right abutment (12 in. and 36 in. diameter).
EI	Indications of Movement of Structural Items on Slopes	None observed.
EI	Trespassing on Slopes	Footpath and scattered trash on upstream slope.
EI	Sloughing or Erosion of Slopes or Abutments	Minor sloughs and erosion gullies on upstream slope of embankment.
EI	Rock Slope Protection - Riprap Failures	No slope protection.
EI	Unusual Movement or Cracking at or near Toes	None observed.
EI	Unusual Embankment or Downstream Seepage	Wet area and minor seepage observed on left floodplain about 50 ft. downstream of embankment. Minor seepage from stone masonry wall, adjacent to outlet pipe.
EI	Piping or Boils	None observed.
EI	Foundation Drainage Features	None observed.
EI	Toe Drains	None observed.
EI	Instrumentation System	None.
EI	Vegetation	Scattered trees, light brush and grass on crest and upstream slope.

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Dike Embankment NAME

DISCIPLINE NAME

AREA EVALUATED	CONDITION
DIKE EMBANKMENT	None.
Crest Elevation	
Current Pool Elevation	
Maximum Impoundment to Date	
Surface Cracks	
Pavement Condition	
Movement or Settlement of Crest	
Lateral Movement	
Vertical Alignment	
Horizontal Alignment	
Condition at Abutment and at Concrete Structures	
Indications of Movement of Structural Items on Slopes	
Trespassing on Slopes	
Sloughing or Erosion of Slopes or Abutments	
Rock Slope Protection - Riprap Failures	
Unusual Movement or Cracking at or near Toes	
Unusual Embankment or Downstream Seepage	
Piping or Boils	
Foundation Drainage Features	
Toe Drains	
Instrumentation System	
Vegetation	

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet Works- Intake NAME

DISCIPLINE Civil/Str. NAME WG

AREA EVALUATED	CONDITION
OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE	
a. Approach Channel	Not visible (under water).
Slope Conditions	
Bottom Conditions	
Rock Slides or Falls	
Log Boom	
Debris	
Condition of Concrete Lining	
Drains or Weep Holes	
b. Intake Structure	
Condition of Concrete	Poor.
Stop Logs and Slots	Clogged with debris - no longer working

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet Works - Control Tower NAME

DISCIPLINE NAME

AREA EVALUATED	CONDITION
OUTLET WORKS - CONTROL TOWER	None observed.
a. Concrete and Structural	
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System	

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet Works - Conduit NAME

DISCIPLINE Civil/Str. NAME WG

AREA EVALUATED	CONDITION
OUTLET WORKS - TRANSITION AND CONDUIT	6" Cast Iron Pipe protruding from d/s face of dam.
General Condition of Concrete	
Rust or Staining on Concrete	
Spalling	
Erosion or Cavitation	
Cracking	
Alignment of Monoliths	
Alignment of Joints	
Numbering of Monoliths	

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet Works - Str./Channel NAME

DISCIPLINE Geotechnical NAME REM, RWT

	AREA EVALUATED	CONDITION
	OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	
	General Condition of Concrete	
	Rust or Staining	
	Spalling	
	Erosion or Cavitation	
	Visible Reinforcing	
	Any Seepage or Efflorescence	
	Condition at Joints	
GEI	Drain holes	None observed.
GEI	Channel	Banks lined with stone wall.
GEI	Loose Rock or Trees Overhanging Channel	Parts of stone wall bank liner are loose
GEI	Condition of Discharge Channel	Partially blocked with cluster of 5 trees joined at base (6"-8" diameter), and by several boulders which have fallen off left bank wall into discharge channel

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet Works- Weir NAME

DISCIPLINE Civil/Str, Hydraulic NAME WG, MA

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	Not Visible (under water)
General Condition	
Loose Rock Overhanging Channel	
Trees Overhanging Channel	
Floor of Approach Channel	
b. Weir and Training Walls	
General Condition of Concrete	Good. trash rack is clogged with debri
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	Parts of stone wall are loose
Trees Overhanging Channel	Yes - 5 trees immediately d/s of outlet.
Floor of Channel	Clear (except for trees)
Other Obstructions	No

PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980

PROJECT FEATURE Outlet works - Service Bridge NAME

DISCIPLINE NAME

AREA EVALUATED	CONDITION
OUTLET WORKS - SERVICE BRIDGE	None observed.
a. Super Structure	
Bearings	
Anchor Bolts	
Bridge Seat	
Longitudinal Members	
Under Side of Deck	
Secondary Bracing	
Deck	
Drainage System	
Railings	
Expansion Joints	
Paint	
l. Abutment & Piers	
General Condition of Concrete	
Alignment of Abutment	
Approach to Bridge	
Condition of Seat & Backwall	

END

FILMED

9-84

DTIC