

AD-A144 086

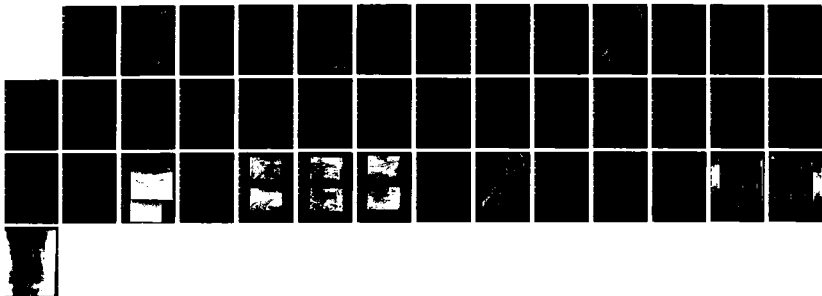
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
LAKE MAWNEEHOO DAM (C... (U) CORPS OF ENGINEERS WALTHAM
MA NEW ENGLAND DIV JUN 81

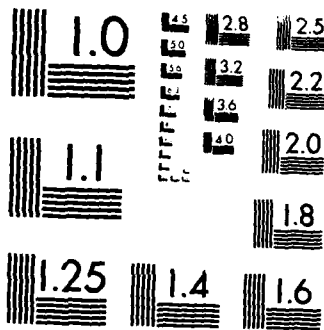
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

AD-A144 086



HOUSATONIC RIVER BASIN
SHERMAN, CONNECTICUT

LAKE MAUWEEHOO DAM
CT 00321

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CT 00321	2. GOVT ACCESSION NO. AD-A144 086	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Lake Mauweehoo Dam 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 June 1981	
	13. NUMBER OF PAGES 30	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) UNCLASSIFIED	
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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, Housatonic River Basin Sherman, Connecticut		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Lake Nauweehoo Dam is a combination earth embankment and stone masonry/concrete dam approximately 225 feet long and 22 feet high. In general, the overall condition of the dam is FAIR. Therefore, with a height of 22 feet and a maximum storage capacity of 290 acre-feet, Lake Mauweehoo Dam is classified as SMALL in accordance with the Corps of Engineers' <u>Recommended Guidelines for Safety Inspection of Dams</u> . The test flood for this dam ranges from the 50 year flood to the 100 year flood.		

STORCH ENGINEERS

161 MAIN STREET, WETHERSFIELD, CONNECTICUT 06109

(203) 529-7727

June 4, 1981

Mr. E. P. Gould
Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Subject: Dam Inspection Program
Lake Mauweehoo Dam
Sherman, Connecticut

Dear Mr. Gould:

Following the field inspection and hydraulic/hydrologic analysis of the subject dam, we conclude that the dam should be reclassified as having a LOW hazard potential.

Please find attached a brief report substantiating our findings.

Very truly yours,

STORCH ENGINEERS

Gary J. Giroux
Gary J. Giroux, P.E.

GJG:11
Wecr 4463
Attachment

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LAKE MAUWEEHOO DAM
CT 00321

HOUSATONIC RIVER BASIN
SHERMAN, CONNECTICUT

PHASE 1 INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

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- APPENDIX E - INVENTORY FORM

NATIONAL DAM INSPECTION PROGRAM

PHASE I INSPECTION REPORT

Identification Number:	CT 00321
Name:	Lake Mauweehoo Dam
Town:	Sherman
County and State:	Fairfield County, Connecticut
Stream:	Tributary of Glen Brook
Date of Inspection:	May 20, 1981
Owner/Operator:	Charles E. Rejcha Lake Mauweehoo Club Sherman, Connecticut 06784

DESCRIPTION

Lake Mauweehoo Dam is a combination earth embankment and stone masonry/concrete dam approximately 225 feet long and 22 feet high. A stone masonry wall averaging approximately 8.5 feet wide and a 24 inch thick concrete facia on the upstream side of the masonry wall runs the full length of the dam. Earth fill lying on a 2:1 slope is on the upstream side of the above-mentioned wall and stone rubble and miscellaneous debris on a 1:1.5 slope lies on the downstream side of the wall. There is a 13.7 foot wide principal spillway and 10 foot wide emergency spillway. Both spillways are at the eastern end of the dam. There is a 12 inch low-level discharge pipe that passes through the base of the dam. Control of this pipe is with a valve on the upstream side of the dam. Plan, section and elevation views of the dam are contained in Appendix B.

The dam was constructed in 1907. Design and Construction information are referenced in Appendix B. Presently, the pond is used for recreational purposes. There is neither a formal warning system for this dam nor a specific maintenance program. The dam is maintained as the need arises.

In general, the overall condition of the dam is FAIR. A copy of the visual inspection checklist is contained in Appendix A and selected photos are contained in Appendix C. The structural stability of the dam is good as evidenced by its

vertical, horizontal and lateral alignment and in accordance with the computations referenced in Appendix B. Trees are standing along the toe of the dam and its abutments. The downstream end of the emergency spillway channel is washing out. The gate valve and low-level discharge pipe are inoperable. There is seepage through the base of the dam in the vicinity of the outlet to the low-level discharge pipe. It is believed that this seepage is coming through the valve on the discharge pipe. Seepage through the dam has been monitored over the past two years (from just before dam reconstruction to January 1980, see Appendix B for tabulated results) and estimated flows at the time of inspection (approximately 7.5-10 g.p.m.) show no increase since the last recording.

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

The watershed of Lake Mauweehoo is 5 percent developed and encompasses 0.7 square miles (448 acres) of hilly terrain. At the spillway elevation, the water surface area and storage capacity is 30.5 acres and 193 acre-feet respectively. The storage capacity when the water level is at the top of the dam is 290 acre-feet. Therefore, with a height of 22 feet and a maximum storage capacity of 290 acre-feet, Lake Mauweehoo Dam is classified as SMALL in accordance with the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams.

A dam failure analysis was performed using the Rule of Thumb method in accordance with guidelines established by the Corps of Engineers. Failure was assumed to occur when the water level in the pond was at the top of the dam. The calculated dam failure discharge is 12,780 cfs. The flood waters were routed through the downstream reaches. Nowhere along the river reach will the failure floodwave endanger human life or cause appreciable property damage. Therefore, the dam is classified as having a LOW hazard potential in accordance

with the guidelines mentioned above. Hydraulic computations and a map showing the limits of flooding are contained in Appendix D.

The test flood for this dam ranges from the 50 year flood to the 100 year flood. The 100 year flood is required by the Department of Environmental Protection (ConnDEP) and therefore is the test flood. The test flood outflow according to ConnDEP's records is 283 cfs. The combined spillway capacity of the principal and emergency spillway when the water in the pond is at the top of the dam is approximately 223 cfs. The test flood would overtop the dam by approximately 0.2 feet. Hydraulic computations and design data are referenced in Appendix B.

APPENDIX A
INSPECTION CHECK LIST

INSPECTION CHECK LIST

PARTY ORGANIZATION

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

TIDE 1:00 p.m.

WEATHER Sunny 70's

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

PARTY:

- | | |
|-------------------------------------|-----------|
| 1. <u>Gary Giroux, Hyd./Struct.</u> | 6. _____ |
| 2. <u>Benjamin Cohen, Civil</u> | 7. _____ |
| 3. <u>Kenneth Pudeler, Civil</u> | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Dam Embankment</u>	<u>Gary Giroux, Benjamin Cohen, Kenneth Pudeler</u>	<u>Good</u>
2. <u>Spillway</u>	<u>Gary Giroux, Benjamin Cohen, Kenneth Pudeler</u>	<u>Good</u>
3. <u>Discharge Channel</u>	<u>Gary Giroux, Benjamin Cohen, Kenneth Pudeler</u>	<u>Fair-som</u>
4. _____	_____	<u>Erosion</u>
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

INSPECTION CHECK LIST

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITIONS
<u>DAM EMBANKMENT</u>	
Crest Elevation	714 (NGVD)
Current Pool Elevation	711 (NGVD)
Maximum Impoundment to Date	Good
Surface Cracks	N/A
Pavement Condition	N/A
Movement or Settlement of Crest	None
Lateral Movement	None
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good
Indications of Movement of Structural Items on Slopes	None
Trespassing on Slopes	Some
Vegetation on Slopes	grass and brush
Sloughing or Erosion of Slopes or Abutments	None
Rock Slope Protection - Riprap Failures	None
Unusual Movement or Cracking at or near Toes	None
Unusual Embankment or Downstream Seepage	None
Piping or Boils	None
Foundation Drainage Features	None
Toe Drains	None
Instrumentation System	None

INSPECTION CHECK LIST

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED

CONDITION

**CULET WORKS - INTAKE CHANNEL AND
INTAKE STRUCTURE**

N/A

a. Approach Channel

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

Stop Logs and Slots

INSPECTION CHECK LISTPROJECT Lake Mauweehoo DamDATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<p><u>OUTLET WORKS - CONTROL TOWER</u></p> <p>a. Concrete and Structural</p> <ul style="list-style-type: none">General ConditionCondition of JointsSpallingVisible ReinforcingRusting or Staining of ConcreteAny Seepage or EfflorescenceJoint AlignmentUnusual Seepage or Leaks in Gate ChamberCracksRusting or Corrosion of Steel <p>b. Mechanical and Electrical</p> <ul style="list-style-type: none">Air VentsFloat WellsCrane HoistElevatorHydraulic SystemService GatesEmergency GatesLightning Protection SystemEmergency Power SystemWiring and Lighting System in Gate Chamber	<p>N/A</p> <p>A-4</p>

INSPECTION CHECK LIST

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<p><u>OUTLET WORKS - TRANSITION AND CONDUIT</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining on Concrete</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Cracking</p> <p>Alignment of Monoliths</p> <p>Alignment of Joints</p> <p>Numbering of Monoliths</p>	<p>N/A</p>

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<p><u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Visible Reinforcing</p> <p>Any Seepage or Efflorescence</p> <p>Condition at Joints</p> <p>Drain holes</p> <p>Channel</p> <p>Loose Rock or Trees Overhanging Channel</p> <p>Condition of Discharge Channel</p>	<p>N/A</p>

INSPECTION CHECK LIST

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION	
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>		
a. Approach Channel		
General Condition	Good	
Loose Rock Overhanging Channel	None	
Trees Overhanging Channel	None	
Floor of Approach Channel	Good	
b. Weir and Training Walls		
General Condition of Concrete	Good	
Rust or Staining	None	
Spalling	None	
Any Visible Reinforcing	None	
Any Seepage or Efflorescence	None	
Drain Holes	None	
c. Discharge Channel		
General Condition	Principal	Emergency
Loose Rock Overhanging Channel	Good	Fair - some erosion at downstream end
Trees Overhanging Channel	None	None
Floor of Channel	Some	None
Other Obstructions	Natural	Grass and Earth
	None	None

INSPECTION CHECK LIST

PROJECT Lake Mauweehoo Dam

DATE 5/20/81

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<p><u>OUTLET WORKS - SERVICE BRIDGE</u></p> <p>a. Super Structure</p> <ul style="list-style-type: none">BearingsAnchor BoltsBridge SeatLongitudinal MembersUnder Side of DeckSecondary BracingDeckDrainage SystemRailingsExpansion JointsPaint <p>b. Abutment & Piers</p> <ul style="list-style-type: none">General Condition of ConcreteAlignment of AbutmentApproach to BridgeCondition of Seat & Backwall	<p>N/A</p>

APPENDIX B
ENGINEERING DATA

LIST OF REFERENCES

References are located at the Department of Environmental Protection,
Office of the Superintendent of Dams, State Office Building, Hartford,
Connecticut, 06115.

1. Miscellaneous correspondence on dam.
2. Engineering Report - Computations and Drawings - for the reconstruction of Lake Mauweehoo Dam, Sherman, Connecticut, by Charles E. Rejcha, P.E., (December 11, 1978).

CHARLES E. REJCHA

RR1 BOX 334A

SHERMAN, CT. 06784

WATER RESOURCE
UNIT
RECEIVED

FEB 5 1980

State of Connecticut
Dept. of Environmental Protection
Water Resources Unit
State Office Bldg.
Hartford, Ct. 06115

ANSWERED _____
FORWARDED _____
FILED _____

January 29, 1980.

Re: Lake Mauweehoo Dam, Sherman, Ct.
Your permit of June 5, 1979. (COPY ENCLOSED)

Gentlemen:

Please be notified that the spillway repair is completed and ready for inspection.

To the best of my knowledge all work is done in accordance with plans, specifications and as described in the enclosures. At present the lake is full and the new spillway is performing satisfactorily.

As noted in subchapter 1-2 of "Engineering Report" dated December 11, 1979, prepared by the undersigned, my responsibilities are limited to items which can be inspected visually.

The following enclosures are attached:

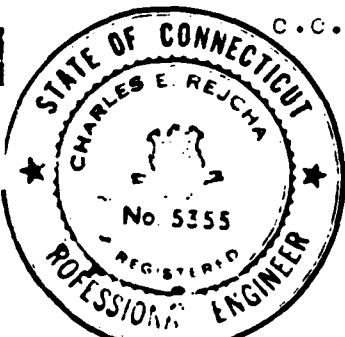
- E1 - Inspection report
- E2 - Underwater valve inspection
- E3 - Flow measurements at center of dam
- E4 - Photographs taken Jan. 12, 1980.

Yours truly,

Charles Rejcha

Charles Rejcha P.E.

c.c.: Sherman Town Clerk
Sherman Wetland Commission
Mrs. B. Scholze, president of Mauweehoo Lake Club.



INDIAN CHIEF TRAIL, MAUWEHOO HILL

INSPECTION REPORT

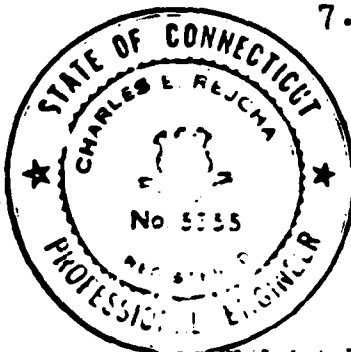
E1

Re: Mauweehoo Lake Dam, Sherman, Ct.
Date : Jan. 20, 1980.

This report pertains to the replacement of spillway and flow observations. Work this inspection report with "Engineering Report" date Dec. 11, 1978, prepared by C. Rejcha P.E.

The following are the details :

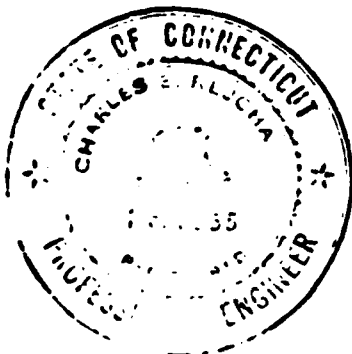
1. In August 79, the undersigned had a telephone conversation with Mr. Victor Galgowski of the Department of Environmental Protection. He was notified about the start of construction.
2. Construction was performed by Mr. Warren Pitcher, contractor residing in Sherman, Ct. Work was done during months September through November 1979.
3. During the construction, periodic inspections were made by K. Rogers P.E. and the undersigned.
4. During construction, we found that the old spillway was not a substantial structure. It did not have any foundations. There was no dry stone wall nor curtain wall underneath.
5. The reinforcing of the spillway was slightly altered as shown on the enclosed drawing (803) SK-1.
6. The "flow measurement at center of dam" is tabulated in enclosure E3. The flow does not include water going over the spillway. This flow seems to be due to the following:
 - 6.1 Valve leakage
(Reportedly existing for 60 years).
 - 6.2 Seepage through concrete curtain wall through fine crack (Water traveling through the dry stone wall acting like a collecting drain).
 - 6.3 Seepage under the old spillway. The water passing underneath the old spillway is believed to have found its way to the nearby dry stone wall, which was acting as a collecting drain.
7. Relating to flow measurements listed in point 6, the following is to be noted :
 - 7.1 Flow reportedly has existed for past 60 years.



- 7.2 Prior to the construction of the new spillway, the flow has been reported to have increased significantly through the last years.
- 7.3 Prior to the construction of the new spillway, the flow intensity was related to the lake elevation.
- 7.4 After the new spillway was constructed and the lake filled, the flow decreased to roughly one quarter and does not seem to fluctuate.
8. Relating to the flow listed in points 6 & 7, the following conclusions can be made :
- 8.1 Flow due to valve leakage and seepage (6.1 & 6.2) does not appear to be detrimental to the stability of the dam, due to its small intensity.
- 8.2 Seepage under the old spillway seems to have been the major cause of flow. It appears that the construction of the new spillway has eliminated this flow.
9. The underwater valve inspection is described in enclosure E2. The repair of this valve is not possible without siphoning the lake dry, and is not required at present (see 8.1).

Charles Rejcha

Charles Rejcha P.E.

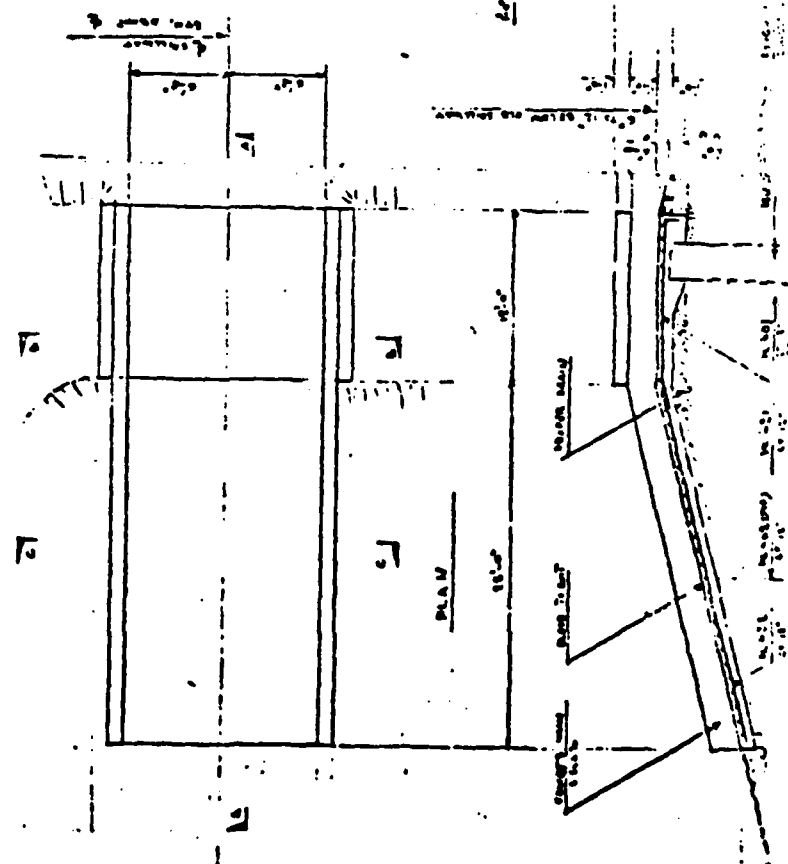


BAR SCHEDULE

1. ALL BAR ARE TO BE PLACED WITH 60° BENDS.
 2. ALL BAR ARE TO BE PLACED WITH 60° BENDS.
 3. ALL BAR ARE TO BE PLACED WITH 60° BENDS.

BAR NO.	DESCRIPTION	QUANTITY	UNIT
BC 101	10#	15.55	LB
BC 102	10#	15.55	LB
BC 103	10#	15.55	LB
BC 104	10#	15.55	LB
BC 105	10#	15.55	LB
BC 106	10#	15.55	LB
BC 107	10#	15.55	LB
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BC 109	10#	15.55	LB
BC 110	10#	15.55	LB
BC 111	10#	15.55	LB
BC 112	10#	15.55	LB
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BC 196	10#	15.55	LB
BC 197	10#	15.55	LB
BC 198	10#	15.55	LB
BC 199	10#	15.55	LB
BC 200	10#	15.55	LB

Total Bar Weight: 57, 000 LB
 100% OF 1000 LB



REDUCED PRINT
 HYDRA-MECHANICAL WORKS
 RECONSTRUCTED BRIDGEWAY

NOTES:
 1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

SECTION C-C

SECTION B-B

SECTION A-A

M-3

UNDERWATER VALVE INSPECTION

E2

Re: Mauweehoo Lake Dam, Sherman, Ct.
Date : Jan. 20, 1980.

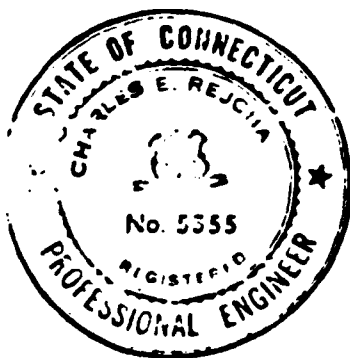
This underwater scuba diving inspection was performed July 29 1979 by Roland Rizzi, Sherman, Ct.

The following is his report :

1. The fill slope is about 2 to 1 as shown on drawings, however it is steeper at the lower part.
2. The depth of water is about 10 ft. Bottom is covered with silt and weeds.
3. At a depth of about 8 ft. boulders are projecting from fill. They appear to be the remains of the original dry stone U shaped wall built around the valve (gate). A metal rod is projecting from the rubble on an angle of about 45 degrees. This is probably the original valve operation rod.
4. For schematic lay out see the enclosed sketch.

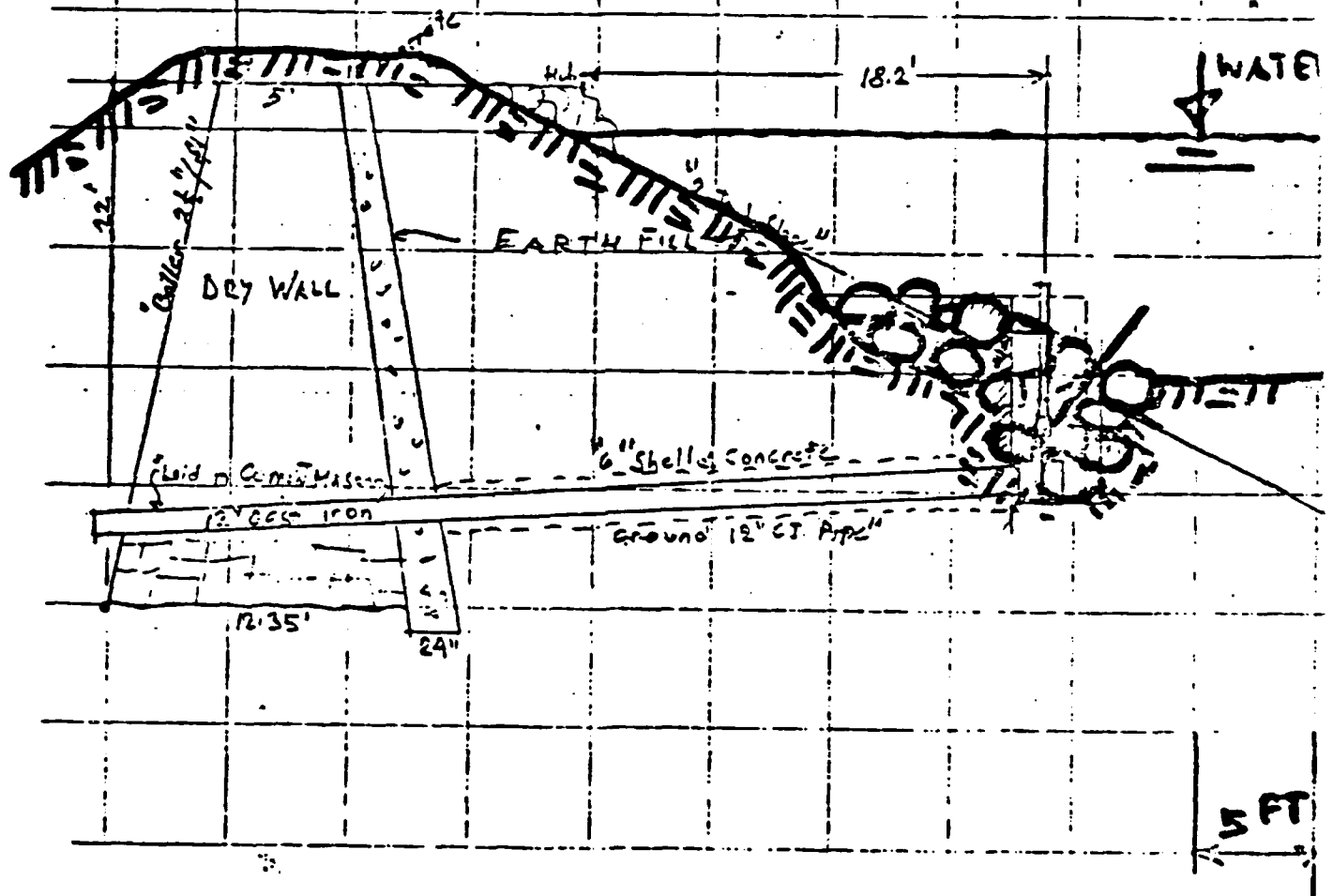
Charles Rejcha P.E.

Charles Rejcha



MUNWEHOO DAM

TIC INS.
Elev Gate = 21.55
WCD " = 19.30



FLOW MEASUREMENTS

E3

AT CENTER OF DAM

Re: Mauweehoo Lake Dam, Sherman, Ct.
Date : Jan. 20, 1980.

This report is related to the measured flow, at the down stream face of dam at the valley stream. This point is located roughly at the center of dam and aligns with the 12" drain pipe. This flow does not include the water going over the spillway, which joins the stream about 300 ft. downstream.

The stream is funneled through a 4" pipe. The flow is measured recording the time needed to fill a bucket of 0.330 cu. ft.

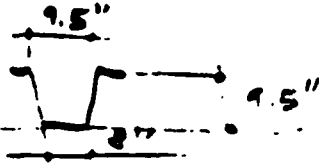
For details see enclosed sheet.

Charles Rajda



MAWES+00 DAM

FLOW MEASUREMENTS AT CENTER OF DAM



BUCKET

571 IN³

0.330 FT³

TIME NEEDED TO FILL THE BUCKET: T

FLOWS: $Q_F = \frac{.33}{T}$

FT³/SEC

$Q_G = Q_F \times 60 \times 7.48 = Q_F \times 448.8$

GAL/MIN

LAKE ELEVATIONS:

ORIGINAL SPILLWAY ± 0.00 FT

FT

NEW SPILLWAY (ASSUMED) = 0.50 FT

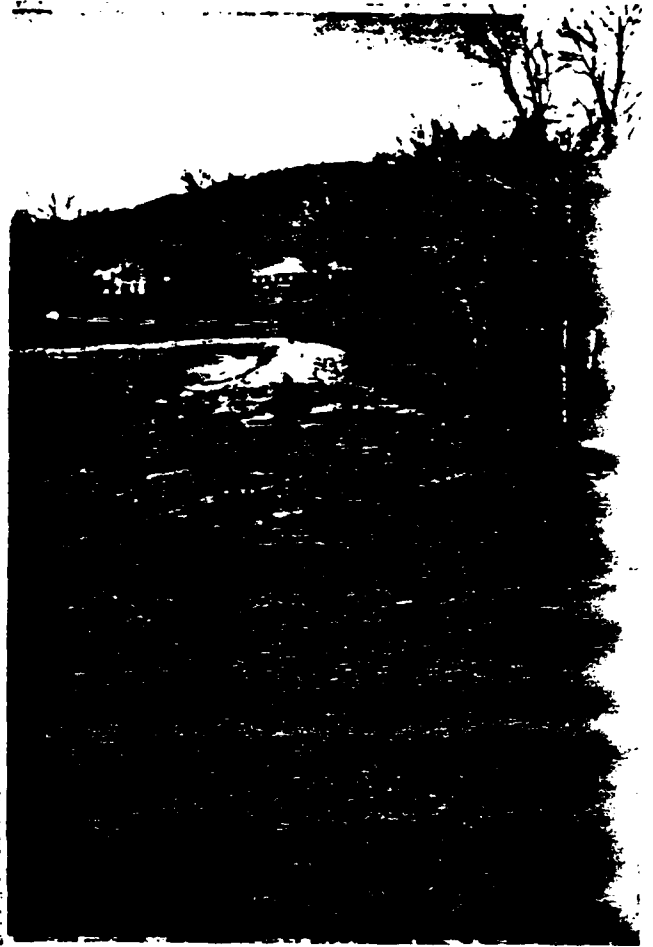
FT

DATE	T SEC	FLOW		LAKE ELEVATION FT	REMARKS	SPILLWAY
		Q _F FT ³ /SEC	Q _G GAL/MIN			
SPRING 79			120	+0.25	AFTER HEAVY RAIN FLOW WAS ESTIMATED	OLD SPILLWAY LAKE FULL
8.5.79	5	.066	30	0.00	RAINY	OLD SPILLWAY LAKE FULL
8.19.79	5	.066	30	0.00	—	OLD SPILLWAY LAKE FULL
9.15.79	18	.018	8	-2.50	SUNNY	DURING CONSTRUCTION LAKE LOWEDED
9.23.79	32	.009	4	-3.00	—	DURING CONSTRUCTION LAKE LOWEDED
11.31.79	48	.007	3	-3.50	CLOUDY	DURING CONSTRUCTION LAKE LOWEDED
12.25.79	18	.018	8	-0.50	RAINY	NEW SPILLWAY LAKE FULL
1.1.80	18	.018	8	-0.50	SUNNY	NEW SPILLWAY LAKE FULL
1.11.80	19	.017	8	-0.33	AFTER HEAVY RAIN SPILLWAY FLOW: 2" x 13'-4" AT 4 SEC PER 12 FT $Q = 13.22 \times \frac{2}{12} \times 13 = 6.67$ FT ³ /SEC	NEW SPILLWAY LAKE FULL

PHOTOGRAPHS

E4

Re: Neuveehoo Lake Dam, Sherman, Ct.
Date: Photos taken Jan. 12, 1980.



APPENDIX C
PHOTOGRAPHS



LAKE MAUWEEHOO DAM - DOWNSTREAM FACE



UPSTREAM FACE



CREST OF DAM

EMERGENCY SPILLWAY - PRINCIPAL SPILLWAY



PRINCIPAL SPILLWAY



DOWNSTREAM CHANNEL - PRINCIPAL SPILLWAY
RUTTING - EMERGENCY SPILLWAY



DOWNSTREAM FACE - AREA OF LEAKAGE

APPENDIX D
HYDRAULIC/HYDROLOGIC COMPUTATIONS

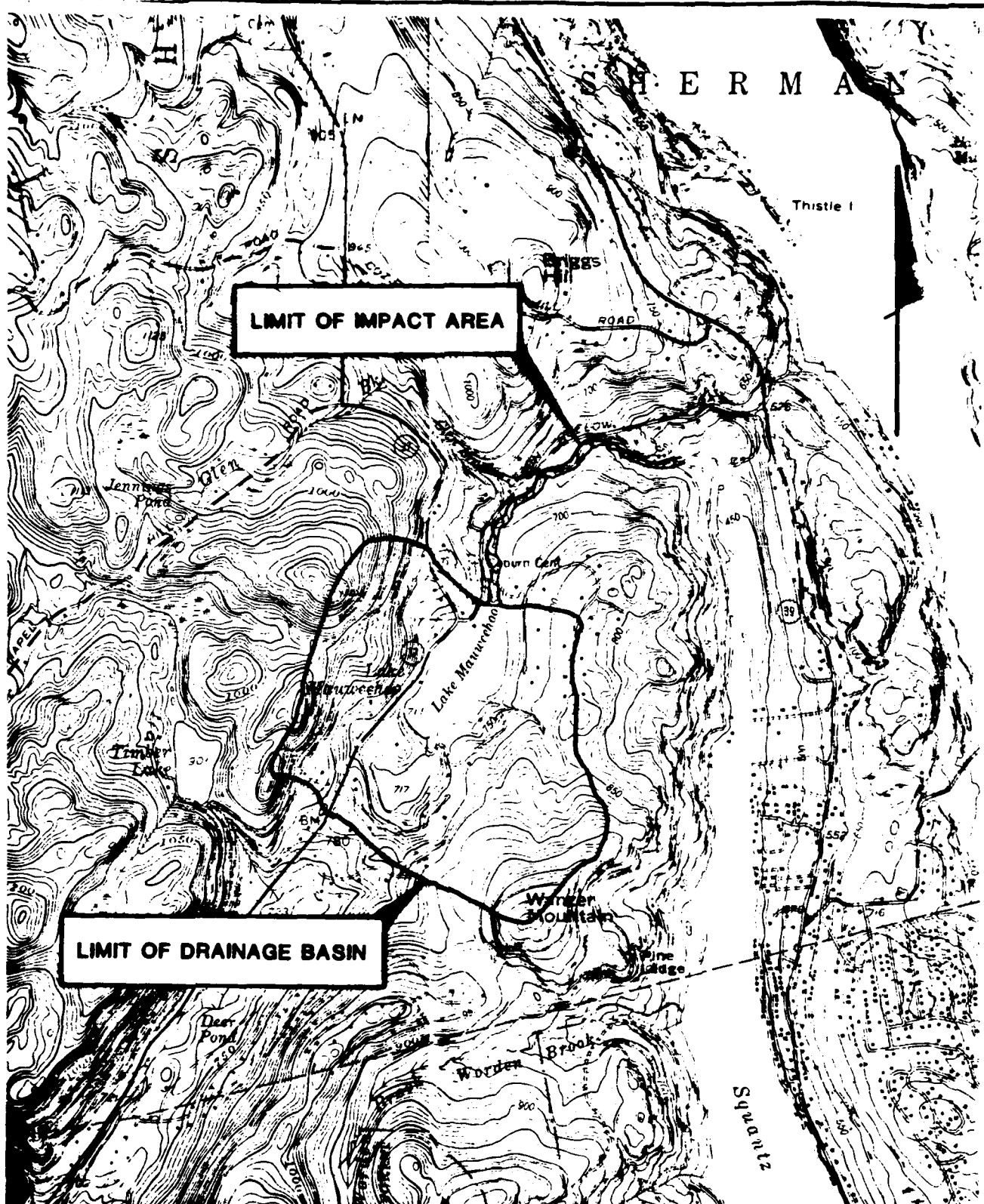


PLATE 3

<p>STORCH ENGINEERS WETHERSFIELD, CONNECTICUT</p>	<p>US ARMY ENGINEER DIV NEW ENGLAND CORPS OF ENGINEERS WALTHAM MASS</p>
<p>NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS LAKE MAUWEEHOO DAM</p>	
<p>1:24000</p>	<p>SCALE AS SHOWN DATE</p>

Downstream Hydrographs

"Rule of Thumb" Guidance for Estimating Downstream Failure Hydrographs

NAME OF DAM Lake Mauwechoo Dam

Section I at Dam

1. $S = \frac{290}{\text{Acft}}$
2. $Q_{p1} = 8/27 W_b \sqrt{g} Y^{3/2} = \frac{8}{27} \cdot 79 \cdot 3.2 (21)^{1.5} = 12,780 \text{ cfs}$
3. See Sections

Section II at

- 4a. $H_2 = \frac{14.6}{\text{Acft}}$ $A_2 = \frac{1200}{\text{Acft}}$ $L_2 = \frac{1000}{\text{Acft}}$ $V_2 = \frac{27.5}{\text{Acft}}$
- b. $Q_{p2} = Q_{p1} (1 - V_2/S) = \frac{11570}{\text{cfs}}$
- c. $H_2 = \frac{13.5}{\text{Acft}}$ $A_2 = \frac{1000}{\text{Acft}}$
 $A_A = \frac{1100}{\text{Acft}}$ $V_2 = \frac{25.3}{\text{Acft}}$
 $Q_{p2} = 11570 (1 - 25.3/290) = 10560 \text{ cfs}$ $H_2 = 13.5'$

Section III at

- 4a. $H_3 = \frac{13.5}{\text{Acft}}$ $A_3 = \frac{1000}{\text{Acft}}$ $L_3 = \frac{1000}{\text{Acft}}$ $V_3 = \frac{23.0}{\text{Acft}}$
- b. $Q_{p3} = Q_{p2} (1 - V_3/S) = \frac{9720}{\text{cfs}}$
- c. $H_3 = \frac{12.4}{\text{Acft}}$ $A_3 = \frac{930}{\text{Acft}}$
 $A_A = \frac{970}{\text{Acft}}$ $V_3 = \frac{22.2}{\text{Acft}}$
 $Q_{p3} = 10560 (1 - 22.2/290) = 9750$ $H_3 = 12.4$

Section IV at

- 4a. $H_4 = \frac{12.4}{\text{Acft}}$ $A_4 = \frac{930}{\text{Acft}}$ $L_4 = \frac{1000}{\text{Acft}}$ $V_4 = \frac{21.3}{\text{Acft}}$
- b. $Q_{p4} = Q_{p3} (1 - V_4/S) = \frac{9030}{\text{cfs}}$
- c. $H_4 = \frac{12.2}{\text{Acft}}$ $A_4 = \frac{750}{\text{Acft}}$
 $A_A = \frac{900}{\text{Acft}}$ $V_4 = \frac{20.5}{\text{Acft}}$
 $Q_{p4} = 9750 (1 - 20.5/290) = 9060$ $H_4 = 12.0$

STORCH ENGINEERS
 Engineers - Landscape Architects
 Planners - Environmental Consultants

SHEET NO _____ OF _____

CALCULATED BY RDC DATE 5/22/81

CHECKED BY GJG DATE 5/26/81

Downstream Hydrographs (Continued)

Section V at

4a. $H_5 = \underline{12.0}$ $A_5 = \underline{860}$ $L_5 = \underline{1000}$ $V_5 = \underline{19.7}$ Acft

b. $Q_{p5} = Q_{p4} (1 - V_5/S) = \underline{8445}$ cfs

c. $H_5 = \underline{11.6}$ $A_5 = \underline{810}$ $V_5 = \underline{19.2}$ Acft
 $A_A = \underline{840}$

$Q_{p5} = 9060(1 - 19.2/290) = \underline{8770}$ $H_5 = \underline{12.1}$

Section VI at

4a. $H_6 = \underline{\hspace{2cm}}$ $A_6 = \underline{\hspace{2cm}}$ $L_6 = \underline{\hspace{2cm}}$ $V_6 = \underline{\hspace{2cm}}$ Acft

b. $Q_{p6} = Q_{p5} (1 - V_6/S) = \underline{\hspace{2cm}}$ cfs

c. $H_6 = \underline{\hspace{2cm}}$ $A_6 = \underline{\hspace{2cm}}$ $V_6 = \underline{\hspace{2cm}}$ Acft
 $A_A = \underline{\hspace{2cm}}$

Section VII at

4a. $H_7 = \underline{\hspace{2cm}}$ $A_7 = \underline{\hspace{2cm}}$ $L_7 = \underline{\hspace{2cm}}$ $V_7 = \underline{\hspace{2cm}}$ Acft

b. $Q_{p7} = Q_{p6} (1 - V_7/S) = \underline{\hspace{2cm}}$ cfs

c. $H_7 = \underline{\hspace{2cm}}$ $A_7 = \underline{\hspace{2cm}}$ $V_7 = \underline{\hspace{2cm}}$ Acft
 $A_A = \underline{\hspace{2cm}}$

$Q_{p7} = \underline{\hspace{2cm}}$

STORCH ENGINEERS - STORCH ASSOCIATES
 Engineers - Landscape architects
 Planners - Environmental Consultants

JOB Phase I Dam Inspection - #4763 (Lake Mead)

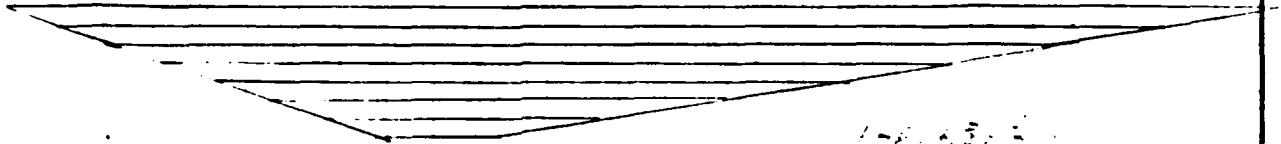
SHEET NO _____ OF _____

CALCULATED BY SMC DATE 5/21/81

CHECKED BY GJG DATE 5/26/81

SCALE Section II - V

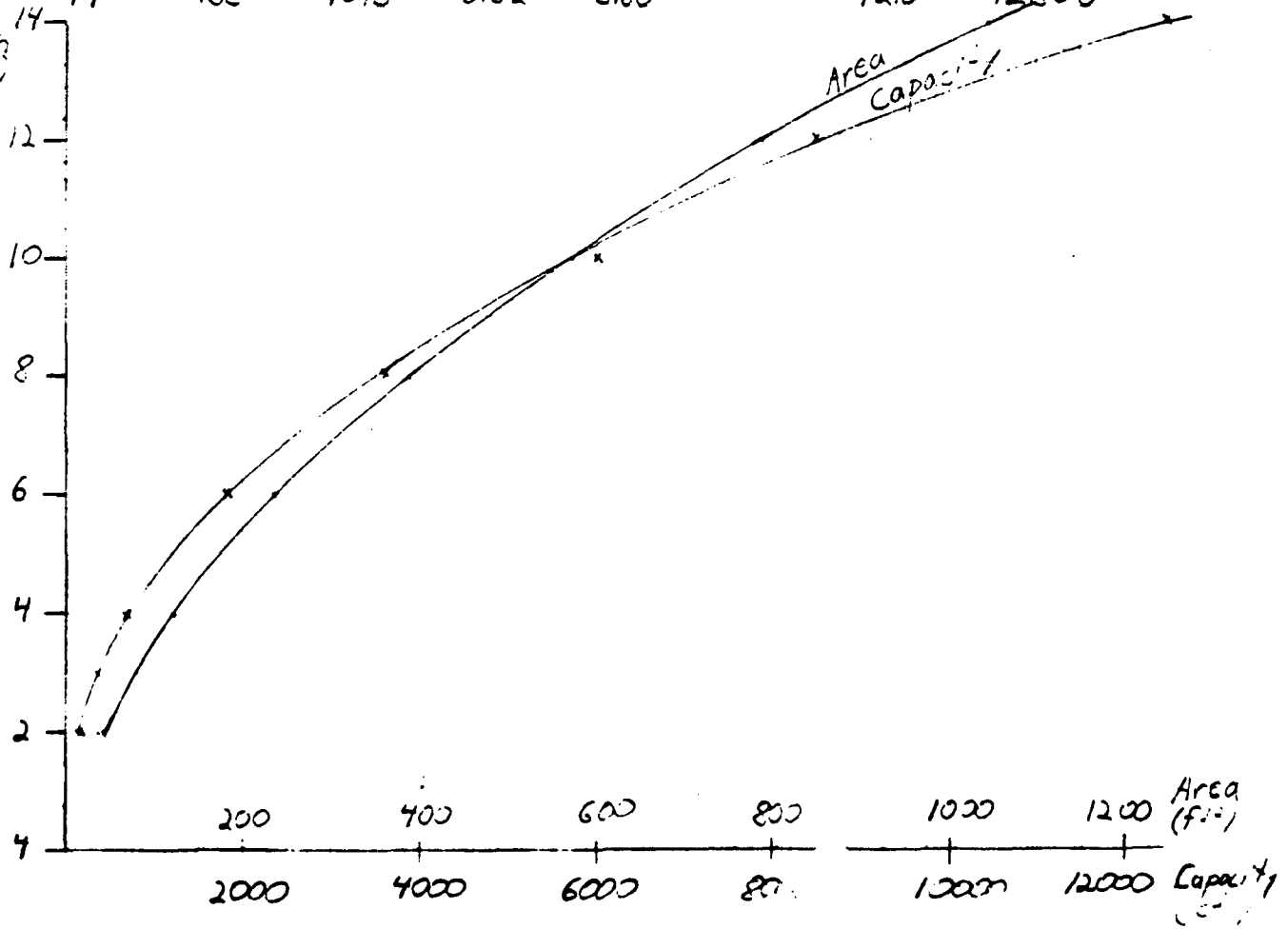
S = 0.10'
 V = 0.10'



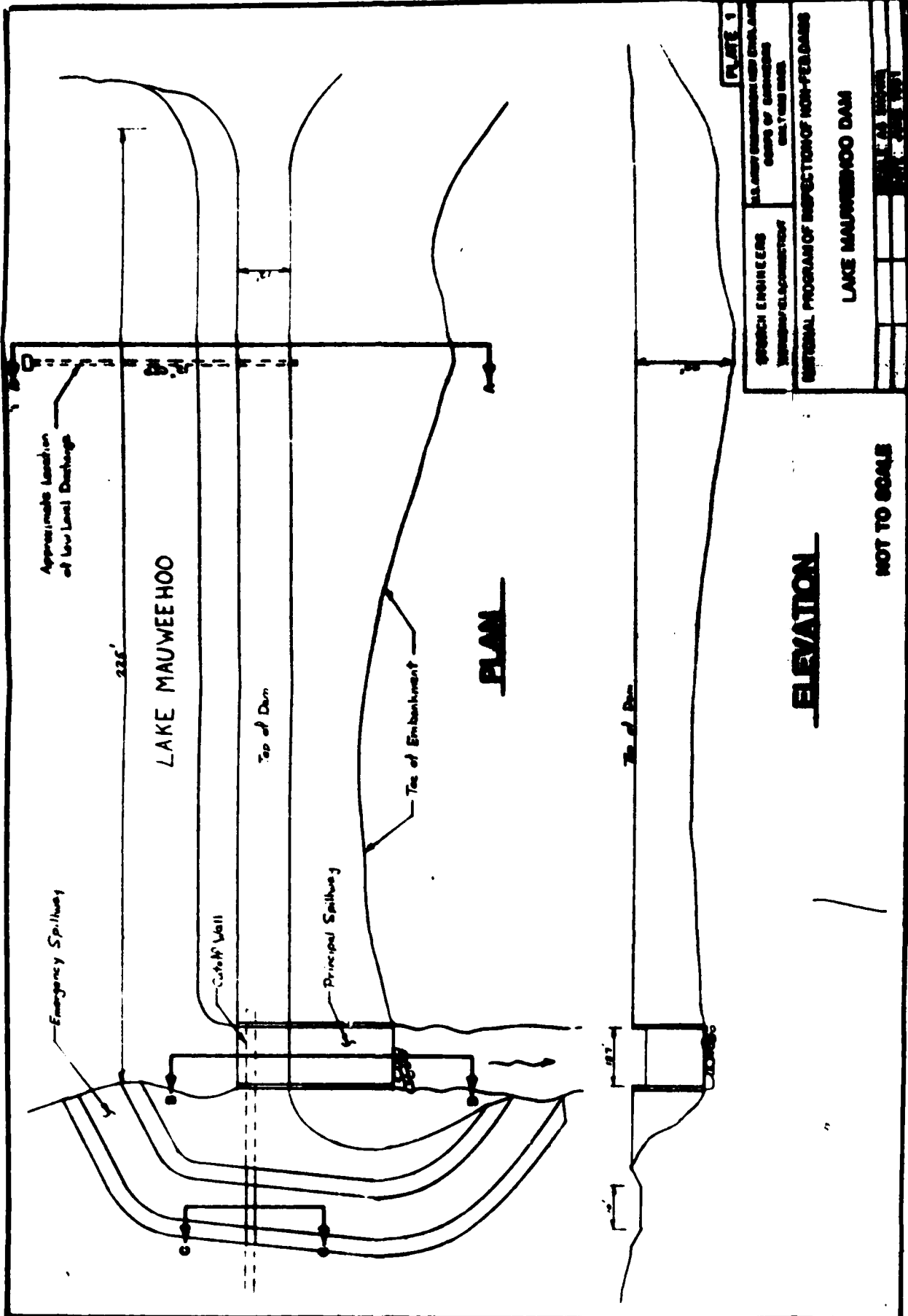
V = 1-800000
 n

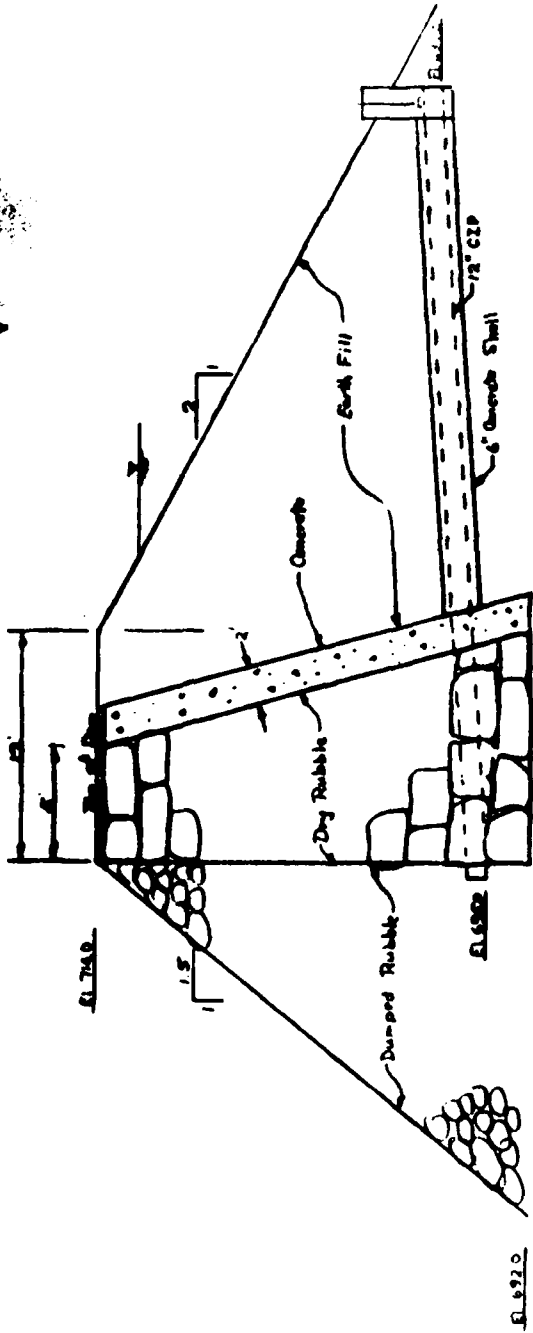
D	W	A	R	R ²	S ²	V	Q
2	29	41	1.41	1.06	0.224	4.2	170
4	49	100	2.45	1.82	"	6.1	700
6	68	237	3.78	2.81	"	7.7	1800
8	85	382	4.56	2.75	"	9.2	3600
10	102	570	5.59	3.15	"	10.5	6000
12	135	786	5.82	3.24	"	10.8	8500
14	153	1043	6.82	3.60	"	12.0	12500

Depth
 (Ft)

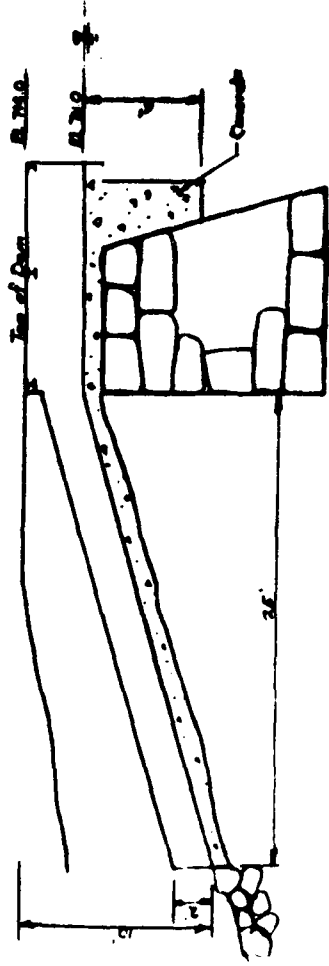


200 400 600 800 1000 1200 Area (Ft²)
 2000 4000 6000 8000 10000 12000 Capacity (CFS)

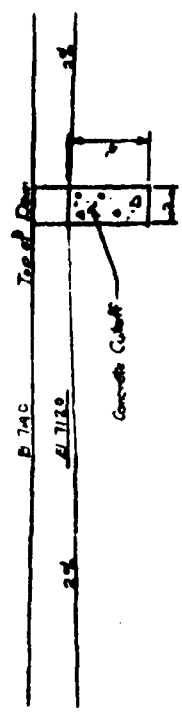




SECTION A-A



SECTION B-B



SECTION C-C

PLATE 2	
STORCH ENGINEERS ENGINEERS/ARCHITECTS	U.S. ARMY ENGINEER REGIMENT AND CORPS OF ENGINEERS WALT HALL BARRACKS
MATERIAL PROGRAM OF INSPECTION OF NON-FED. DAMS	
LAKE MAJUMBEHO DAM	
SCALE	DATE

NOT TO SCALE

REPRODUCED

FILMED

DTIC