AD-A142 876 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS 1/1
WEPAWAUG RESERVOIR DA. (U) CORPS OF ENGINEERS WALTHAM
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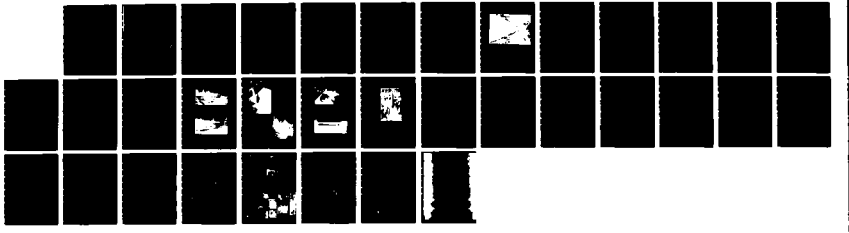

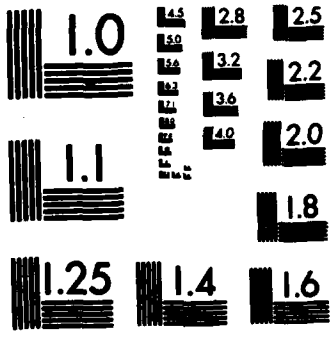

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(1)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CT 00086	2. GOVT ACCESSION NO. AD-A142 876	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Wepawaug Reservoir Dam Wepawaug River Basin, Orange, 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 January 1980 13. NUMBER OF PAGES 45
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

DTIC ELECTE JUL 12 1984 S D A

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,

Wepawaug Reservoir
Orange, Conn.
Wepawaug River Basin

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

The Wepawaug Reservoir Dam is an earth embankment dam with a 90 ft. long concrete ogee spillway. The length of the dam, including the spillway, is approx. 375 ft. The earth embankment has a top width of 15 ft., upstream and downstream slopes of 2 horizontal to 1 vertical, and a maximum height of 16 ft. above the stream bed. A concrete core wall with upstream and downstream batters of 1 horizontal to 24 vertical and a top width of 2 ft. extends down to rock. Upstream slope protection consists of riprap placed to within 6 inches of the crest of the dam. Downstream slopw protection consists of heavy growth of grass

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AD-A142 876

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WEPAWAUG RESERVOIR DAM
CT 00086

WEPAWAUG RIVER BASIN
ORANGE, CONNECTICUT

A-1

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

049-02

January 1980

ROALD HAESTAD, INC.
CONSULTING ENGINEERS

37 Brookside Road • Waterbury, Conn. 06708 • Tel. 203 753-9800

January 4, 1980

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

Attention: E. P. Gould
Project Management Division

Re: Wepawaug Reservoir Dam
Orange, Connecticut

Gentlemen:

On November 27, 1979, the Wepawaug Reservoir Dam was inspected by Donald Smith, P.E., and Ronald Litke, P.E., of this office, and Dr. Gonzalo Castro, P.E., of Geotechnical Engineers, Inc.

Following the inspection and subsequent investigation we concluded that the dam should be reclassified as having a low hazard potential.

We are enclosing a brief letter report substantiating our findings.

Very truly yours,

ROALD HAESTAD, INC.

By Roald Haestad
Roald Haestad

RH/sdc
encl.
cc: Geotechnical Engineers, Inc.
Gonzalo Castro, Principal

TABLE OF CONTENTS

DESCRIPTION

WEPAWAUG RESERVOIR DAM
CT 00086
TOWN OF ORANGE, COUNTY OF NEW HAVEN, STATE OF CONNECTICUT
ON THE WEPAWAUG RIVER
OWNED AND OPERATED BY THE NEW HAVEN WATER COMPANY
FOR WATER SUPPLY

The Wepawaug Reservoir Dam is an earth embankment dam with a 90 foot long concrete ogee spillway. The length of the dam, including the spillway, is approximately 375 feet. The earth embankment has a top width of 15 feet, upstream and downstream slopes of 2 horizontal to 1 vertical, and a maximum height of 16 feet above stream bed. A concrete core wall with upstream and downstream batters of 1 horizontal to 24 vertical and a top width of 2 feet extends down to rock. Upstream slope protection consists of riprap placed to within 6 inches of the crest of the dam. Downstream slope protection consists of a heavy growth of grass.

The outlets consist of a 30-inch diameter blowoff, and a 4-inch diameter outlet utilized to maintain downstream flow. Both outlets are controlled by manually operated gates located in the gate house at the left end of the spillway.

Water is diverted from this reservoir to Maltby No. 3 Reservoir via a diversion tunnel. Flow through the tunnel is regulated by a manually operated gate at the intake structure located at the east side of the reservoir.

The general condition of the dam appears to be good.

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

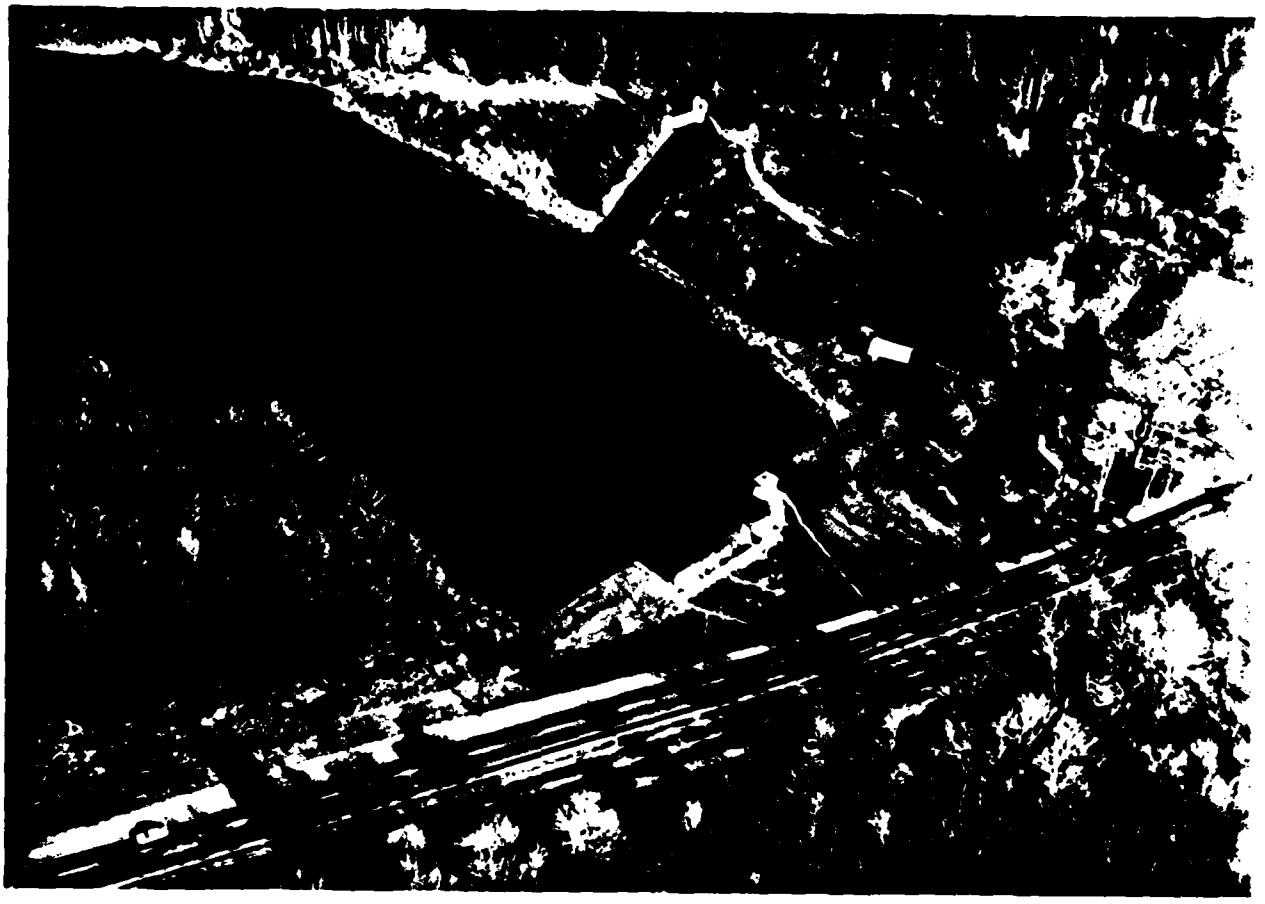
The Wepawaug Reservoir Dam has a tributary watershed of 7.7 square miles, a spillway capacity of 1800 cfs, and a storage capacity of 117 Acre-Feet with the reservoir level at the top of the dam. Approximately 100 feet downstream from the dam the Wepawaug River flows under a Connecticut Route 34 highway bridge.

A dam breach analysis was made and routed through the downstream reaches. The peak discharge of 6200 cfs cannot be passed through the bridge opening. The roadway is 4 lanes wide and is 2 feet above spillway level. It is unlikely that the road embankment would fail if overtopped.

The flood routing downstream, without taking the highway embankment into consideration, showed that no houses would be affected in the event of dam failure. This is a conservative assumption, as the highway embankment would hold back much of the flow.

The house to the left of the dam shown in the overview photo is owned by the New Haven Water Company.

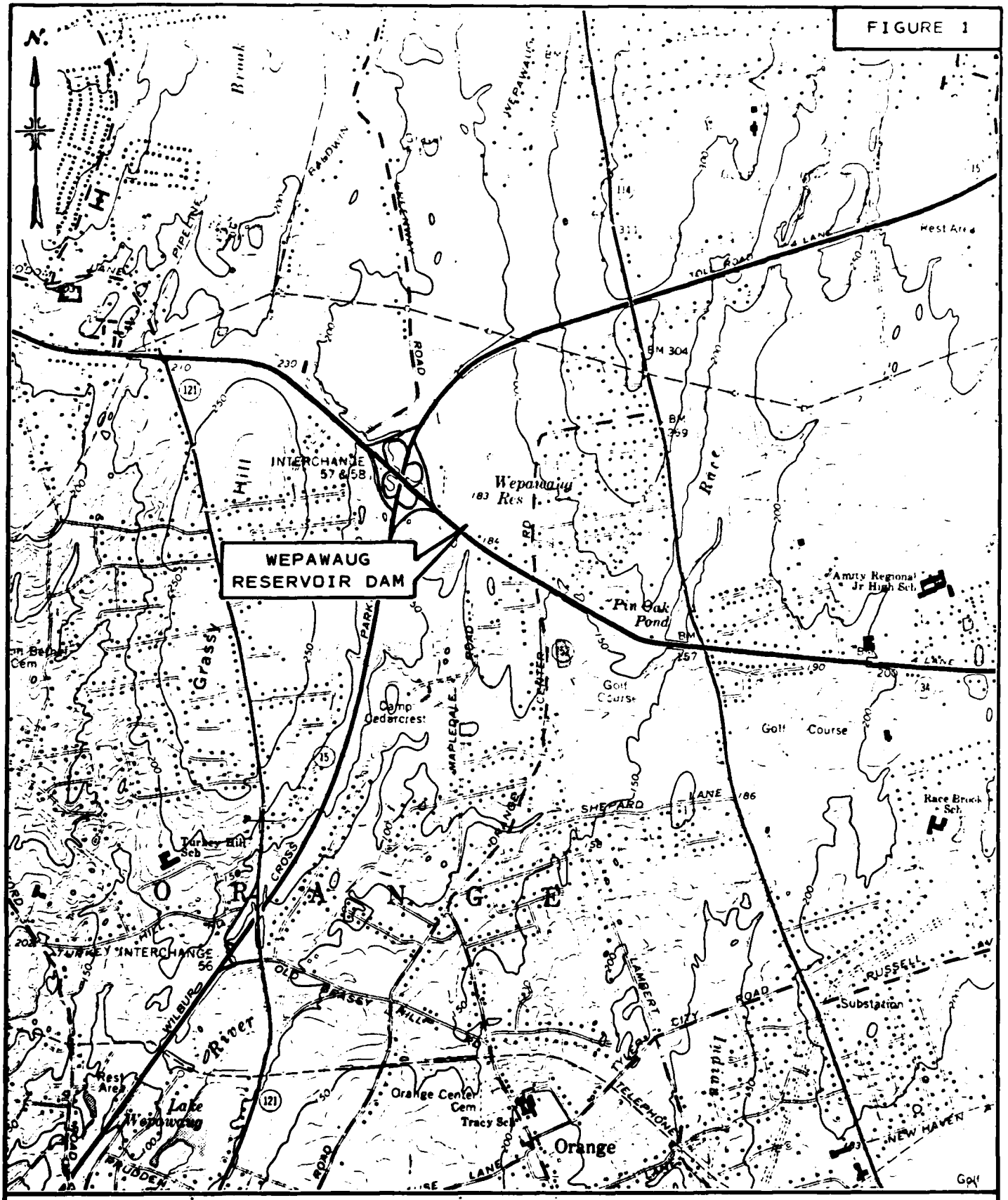
Based on the height and storage capacity, this dam is classified as "Small" in size. The flood routing shows the dam to be of "Low Potential Hazard".



OVERVIEW PHOTO

U.S.ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS	NATIONAL PROGRAM OF INSPECTION OF NON-FED. D/ ·'S	WEPAWAUG RESERVOIR DAM WEPAWAUG RIVER ORANGE, CONNECTICUT CT 00086 27 NOV '79
ROALD HAESTAD, INC. CONSULTING ENGINEERS WATERBURY, CONNECTICUT		

FIGURE 1



LOCATION PLAN

WEPAWAUG RESERVOIR DAM
ORANGE, CONNECTICUT

SCALE: 1" = 2000'

ROALD HAESTAD, INC.

ANSONIA QUADRANGLE 1972

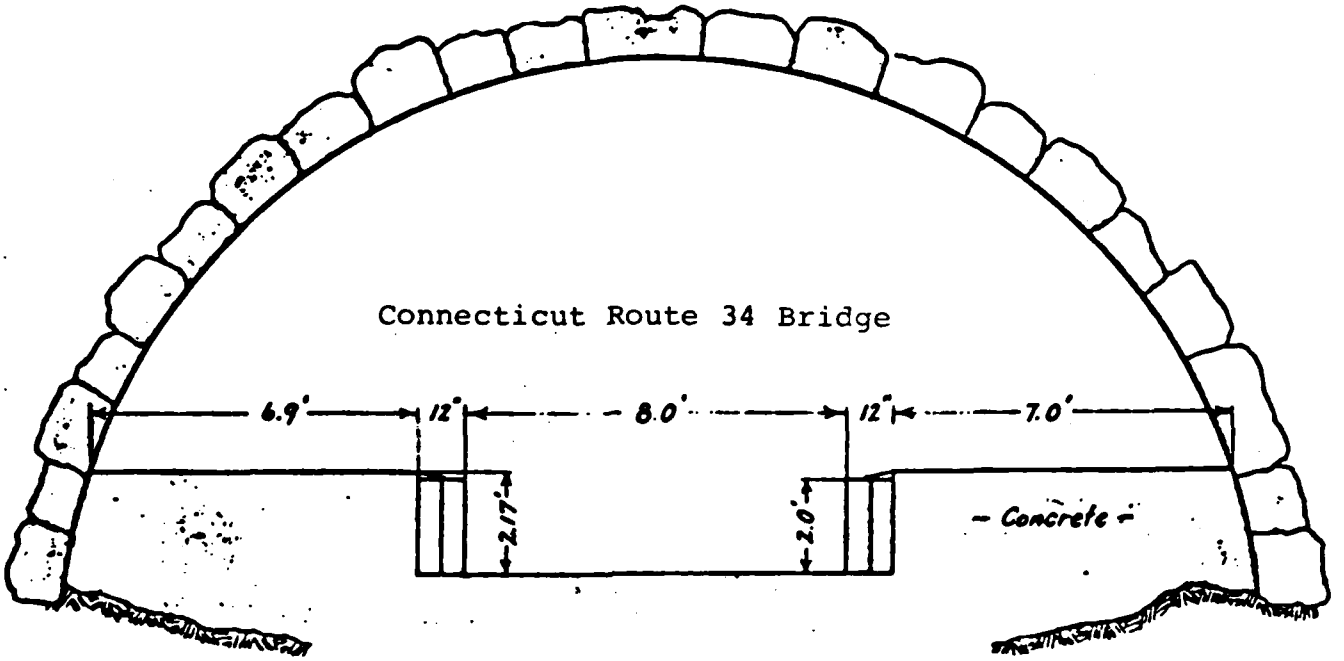
APPENDIX A

ENGINEERING DATA

NEW HAVEN WATER CO.

WEPAWAUG DIVERSION – WEPAWAUG RIVER AND RACE BROOK

ELEVATIONS OF WEIRS AND FORMULAS FOR DISCHARGES



WEPAWAUG WEIR – ELEVATION LOOKING DOWNSTREAM

FORMULAS FOR WEPAWAUG WEIR:

For heads up to 26"(2.17'), $Q = 3.33(L - 0.2H)H^{\frac{3}{2}}$

For heads above 26"(2.17'), $Q_1 = 3.33(L_1 - 0.2H_1)H_1^{\frac{3}{2}}$

$Q_2 = 2.64\ L_2 H_2^{\frac{3}{2}}$

Total $Q = Q_1 + Q_2$

$L = 8'$ H = head on weir, in feet

$L_1 = 8$ H_1 = total head on weir, in feet

L_2 = see table H_2 = head on concrete $(= H_1 - 2.17)$

Total head H_1 in inches	26	30	34	38	42	46	50	54	58	60
Depth over concrete H_2 (in.)	0	4	8	12	16	20	24	28	32	34
Length L_2 in feet	15.9	15.8	15.7	15.6	15.4	15.3	15.1	14.9	14.7	14.6

Using spillway of Wepawaug Dam as weir, Q (in m.g.d.) $= 2.0\ LH^{\frac{3}{2}}$ $L = 90'$ H = head in feet

INTERDEPARTMENT MESSAGE

STO-201 12-69

SAVE TIME: *Handwritten messages are acceptable. Use carbon if you really need a copy. If typewritten, ignore faint lines.*

TO	AGENCY	DATE
File	Water & Related Resources	Dec. 20, 1971
FROM	AGENCY	TELEPHONE
William H. O'Brien, III Civil Engineer	Water & Related Resources	

SUBJECT Wepawaug Reservoir Dam, Orange

On December 16, 1971 the undersigned inspected the subject dam which is on the Wepawaug River immediately north of Route 34 just east of Route 15.

This is an earth dam about 200 feet in length with a concrete ogee spillway about 80 to 100 feet in length with a gatehouse and outlet pipe 24 inches in diameter at the east end of the spillway. The dam is about 100 feet north of Route 34 and the normal pond surface is about 4 or 5 feet below the Route 34 pavement. There is a quite adequate culvert beneath Route 34. This dam would undoubtedly cause some damage in the event of failure and is therefore under the jurisdiction of the department. The spillway and the embankments appear to be in an excellent state of maintenance. No leaks were observed and there appeared to be no cause for concern at this time. The top of the embankment is approximately 2 to 2½ feet above the normal pond level. This dam is owned by the New Haven Water Company.

W. H. O'Brien

Civil Engineer

WHO:ljg

SAVE TIME: *If convenient, handwrite reply to sender on this same sheet.*

NEW HAVEN WATER COMPANY

STATISTICS ON DAMS*

NAME Wepawaug

SUPPLY SYSTEM Maltby

LOCATION Orange

DATES: ORIGINAL CONSTRUCTION

ADDITIONS, ALTERATIONS

	MEAN HIGH WATER ELEVATION	LENGTH
CREST**	183.0	374 Ft.
TOP OF CORE WALL	180.5	
SPILLWAY	180.0	90 Ft.
B. O. AXIS	167.75	$23^{\pm}$ Ft.
BED OF RIVER	167	
DEEPEST FOUNDATION	164	

FREEBOARD: CREST TO SPILLWAY 3.0 Ft.

CREST TO TOP OF CORE WALL 2.5 Ft.

HEIGHT: CREST TO BED OF BROOK 16 Ft.

CREST TO DEEPEST FOUNDATION 19 Ft.

TYPE Earth Embankment, Concrete Corewall

TOP WIDTH--MAX. BOTTOM WIDTH (Ft.) 15 -- 70

UPSTREAM SLOPE H/V 2/1

DOWNSTREAM SLOPE H/V 2/1

TRIBUTARY WATERSHED (Square Miles) 7.8

RESERVOIR AREA (Acres) 10.9

RESERVOIR TOTAL STORAGE (MG)

RESERVOIR USABLE STORAGE (MG) 15

*See individual sheets for more details
**Crest Length includes spillway

Date 8/12/74

NEW HAVEN WATER COMPANY

NAME OF DAM Wepawaug

TYPE Earth embankment with concrete corewall and stone rip-rap paving on upstream slope to a point 2.5 feet higher than the spillway elevation. Concrete Ogee type spillway with concrete gatehouse on east end of spillway.

LOCATION In the town of Orange on the Wepawaug River approximately 100 feet upstream from, and north of, Derby Avenue, State Highway No. 34.

SUPPLY SYSTEM Maltby

DATE OF CONSTRUCTION

ORIGINAL 1910-1911

OTHER -

ENGINEER

1910-11 Albert B. Hill

CONTRACTOR

The Stobaug Contracting Company
New York City

	Elevation	Length (Ft.)	Miscellaneous
CREST	183 MHW	374	Includes spillway
SPILLWAY	180 MHW	90	Concrete, Ogee section
AXIS OF B. O.	167.75MHW	±23	30" cast iron
BED OF RIVER	167 MHW	-	
DEEPEST FOUNDATION	164 MHW	-	Rock

DATE August 1974

NEW HAVEN WATER COMPANY

Name of Dam Wepawaug

HEIGHT FROM BED OF BROOK		16 Feet
HEIGHT FROM DEEPEST FOUNDATION		19 Feet
TOP WIDTH		15 Feet
MAXIMUM WIDTH AT BOTTOM		70 Feet
UPSTREAM SLOPE	Embankment-2 Hor on 1 Ver	Corewall ½H on 12V
DOWNSTREAM SLOPE	" -2 Hor on 1 Ver	" ½H on 12V
FREE BOARD - SPILLWAY TO CREST		3 Feet
- SPILLWAY TO TOP OF COREWALL		2.5 Feet
MISCELLANEOUS DATA	Corewall 2 feet thick on top. Corewall and spillway down to ledge rock.	

WATERSHED TRIBUTARY TO:	
UPSTREAM DAMS	-
THIS DAM	7.8 Sq. Mi.
TOTAL WATERSHED TRIBUTARY TO THIS DAM	7.8 Sq. Mi.
RESERVOIR AREA AT FLOW LINE	10.9 Acres
RESERVOIR CAPACITY AT FLOW LINE	-
RESERVOIR USABLE CAPACITY (To Lowest Outlet)	15 Mil. Gal.

UPSTREAM DAMS

DOWNSTREAM DAMS Lake Wepawaug (an excavated large pond in a residential development approximately 10,000 feet downstream from the Wepawaug Dam & Reservoir); Clarktown Pond Dam; Camp Clark Pond; Town's dam and pond formerly the Fowler Mill dam and pond -- near business center and south of Town Hall.

APPENDIX B

PHOTOGRAPHS

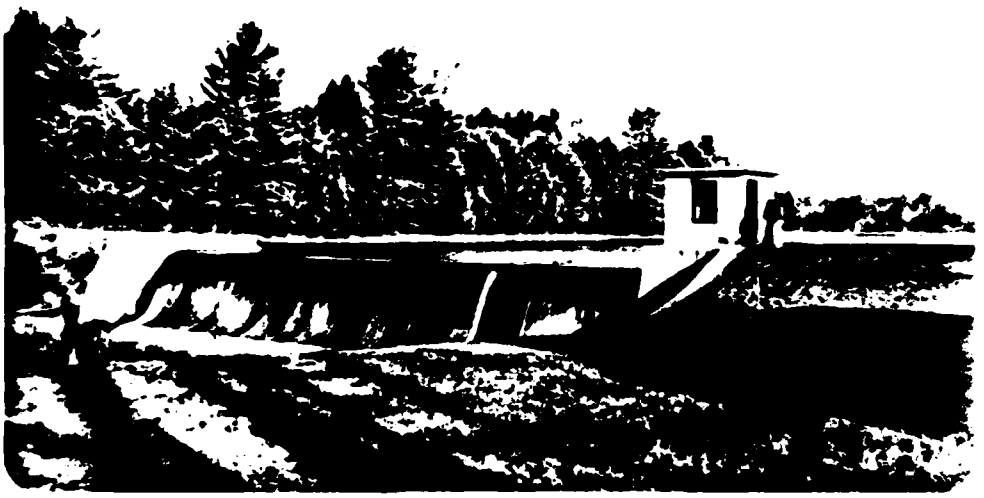


PHOTO NO. 1

SPILLWAY SECTION AND GATEHOUSE

PHOTO NO. 2

RIGHT EMBANKMENT AND TRAINING WALL
ROUTE 34 DOWNSTREAM OF DAM

U.S.ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS	NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS	WEPAWAUG RESERVOIR DAM WEPAWAUG RIVER ORANGE, CONNECTICUT CT 00086 27 NOV '79
ROALD HAESTAD, INC. CONSULTING ENGINEERS WATERBURY, CONNECTICUT		

PHOTO NO. 3

EFFLORESCENCE AND CRACKING
OF GUNITE SURFACE AT OUTLET PIPES

PHOTO NO. 4

OUTLET AT LEFT END OF SPILLWAY
EROSION HAS TAKEN PLACE
BELOW GUNITE

U.S.ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS	NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS	WEPAWAUG RESERVOIR DAM WEPAWAUG RIVER ORANGE, CONNECTICUT CT 00086 27 NOV '79
ROALD HAESTAD, INC. CONSULTING ENGINEERS WATERBURY, CONNECTICUT		

PHOTO NO. 5

ROUTE 34 BRIDGE
DOWNSTREAM OF DAM

PHOTO NO. 6

DAM AS SEEN FROM ROUTE 34

U.S.ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS	NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS	WEPAWAUG RESERVOIR DAM WEPAWAUG RIVER ORANGE, CONNECTICUT CT 00086 27 NOV '79
ROALD HAESTAD, INC. CONSULTING ENGINEERS WATERBURY, CONNECTICUT		

PHOTO NO. 7

10-INCH DIAMETER DRAIN
DISCHARGING THROUGH RIGHT SPILLWAY WALL

U.S.ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS	NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS	WEPAWAUG RESERVOIR DAM WEPAWAUG RIVER ORANGE, CONNECTICUT CT 00086 27 NOV '79
ROALD HAESTAD, INC. CONSULTING ENGINEERS WATERBURY, CONNECTICUT		

APPENDIX C

HYDRAULIC/HYDROLOGIC COMPUTATIONS

BY DAS DATE 12/18/79 **ROALD HAESTAD, INC.** SHEET NO 1 OF 9

CONSULTING ENGINEERS

CKD BY WSF DATE 12/18/79 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 79-02

SUBJECT WEPAWAUG RES. DAM

SPILLWAY LENGTH = 90'

CONCRETE OGEE $C = 3.8$

SPILLWAY CREST TO TOP OF DAM = 3.0'

SPILLWAY CAPACITY $= CLH^{3/2}$

$= 3.8(90)(3)^{3/2} = 1777$ CFS

STREAMBED TO SPILLWAY CREST 13'

HYDRAULIC HEIGHT OF DAM = 16'

WATERSHED AREA = 7.7 Sq. mi.

RESERVOIR SURFACE AREA AT SPILLWAY = 10.7 ACRES

RESERVOIR SURFACE AREA AT TOP OF DAM = 26.5 ACRES

STORAGE CAPACITY AT SPILLWAY = 61 AC-FT.

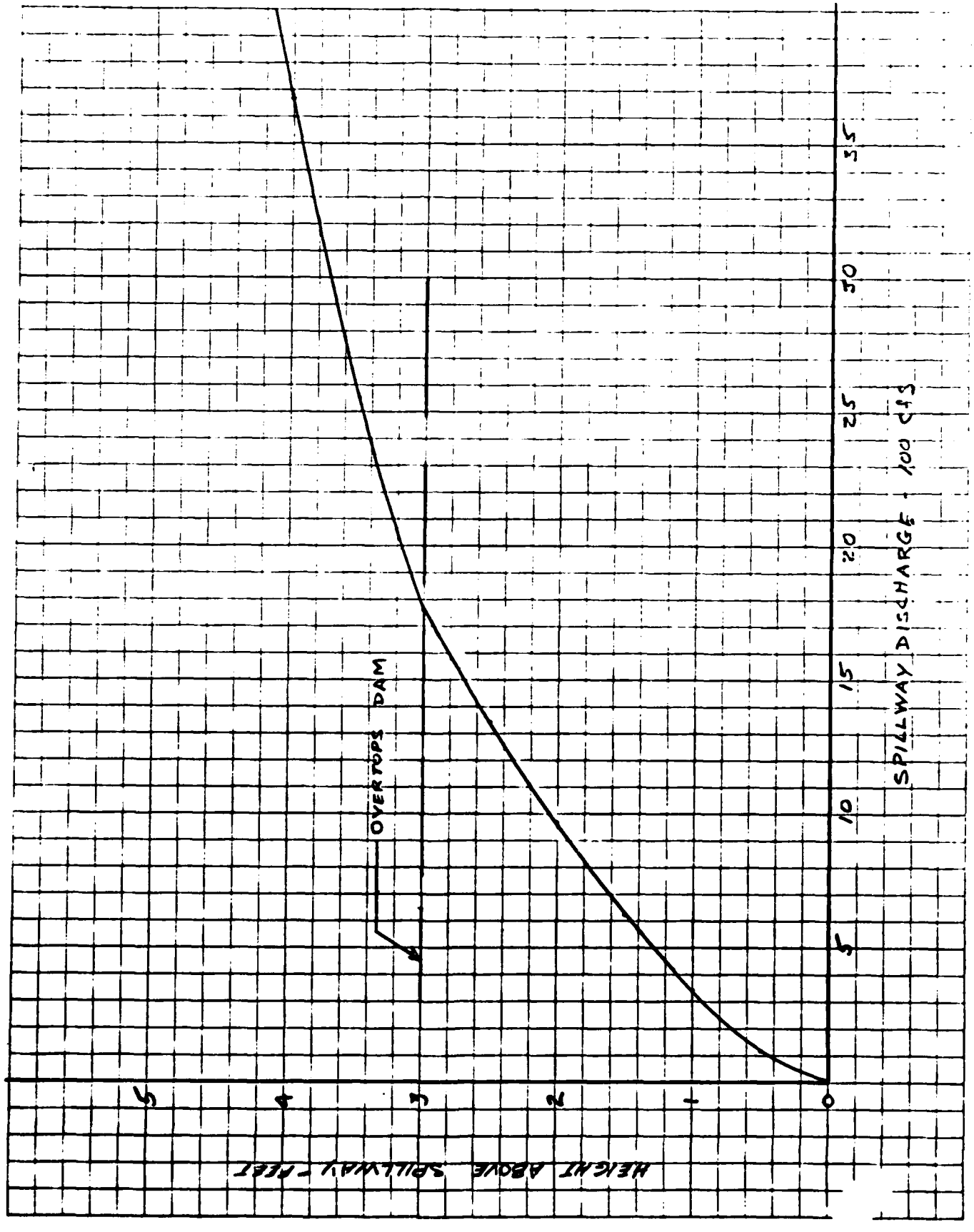
STORAGE CAPACITY AT TOP OF DAM = 117 AC-FT.

BY ..... DATE ..... **ROALD HAESTAD, INC.** SHEET NO ..... OF .....

CONSULTING ENGINEERS

CKD BY WSA DATE 12/18/79. 37 Brookside Road - Waterbury, Conn. 06708 JOB NO .....

SUBJECT ..... - SPILLWAY CAPACITY

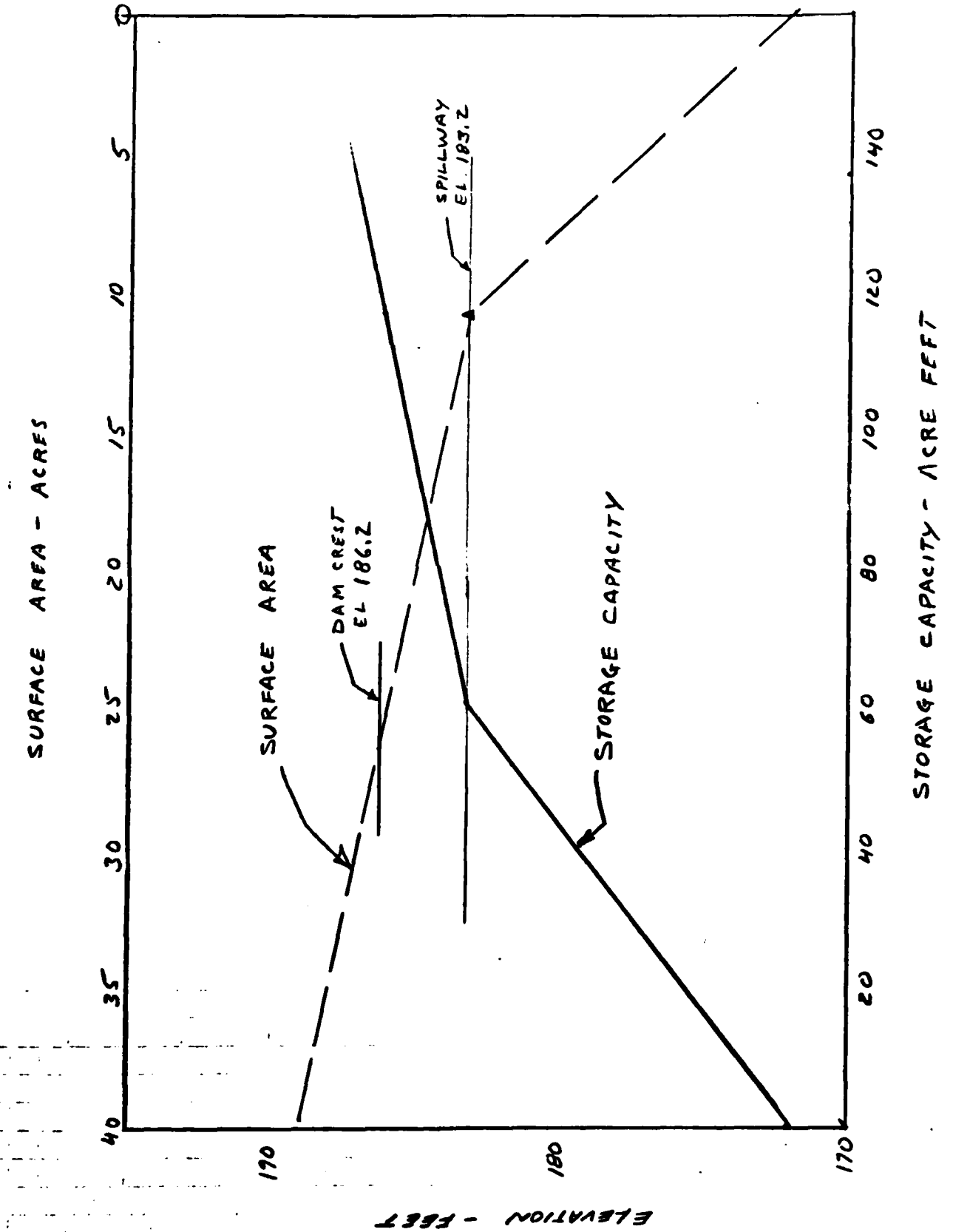


BY DLS DATE 12-1-79 **ROALD HAESTAD, INC.** SHEET NO 3 OF 9

CONSULTING ENGINEERS

CKD BY WSH DATE 12/18/79 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 79-27

SUBJECT WEPAWAUG DAM - AREA - CAPACITY CURVE



STORAGE CAPACITY AT TOP OF DAM = 117 Ac-Ft.

$$Q_{p1} = 8/27\, W_b \sqrt{g}\, y_o^{3/2}$$

Y_o = Hydraulic Height of Dam = 16 feet

W_b = Breach Width = 40% of Mid Height of Dam

$= 0.40\,(145') = 58$ feet

$$Q_{p1} = 8/27\,(58)\left(\sqrt{32.2}\right)(16)^{1.5} = 6241 \text{ CFS}$$

SECTION 1 (SEE FIGURE 4) $H_1 = 8'$ $A_1 = 420$ sq. ft. REACH LENGTH = 2500 ft.

$V_1 = 420 \times 2500/43560 = 25$ Ac-Ft.

$$Q_{p2\ TRIAL} = Q_{p1}\left(1 - \frac{V}{S}\right) = 6241\left(1 - \frac{25}{117}\right) = 4907 \text{ CFS}$$

$H_{2\ TRIAL} = 7.5'$ $A_{2\ TRIAL} = 380$ ft^2

$V_2 = 380 \times 2500/43560 = 22$ Ac-Ft.

$$V_{AVE} = \frac{25+22}{2} = 23.5 \text{ Ac-Ft.}$$

$$Q_{p2} = 6241\left(1 - \frac{23.5}{117}\right) = 4987 \text{ CFS}$$

$H_2 = 7.5$ ft. $A_2 = 380$ ft.^{2}

SECTION 2 $H = 8.5'$ $A = 600$ ft.^{2} REACH LENGTH = 2700'

$$V = \frac{380+600}{2}(2700)/43560 = 30 \text{ Ac-Ft.}$$

$$Q_{p3\ TRIAL} = 4987\left(1 - \frac{30}{117}\right) = 3708 \text{ CFS}$$

$H_{3\ TRIAL} = 7.5'$ $A_{3\ TRIAL} = 480$ ft^2

$$V_{3\ TRIAL} = \frac{380+480}{2}(2700)/43560 = 27 \text{ Ac-Ft.}$$

$$V_{AVE} = \frac{30+27}{2} = 28.5 \text{ Ac-Ft.}$$

$$Q_{p3} = 4987\left(1 - \frac{28.5}{117}\right) = 3772 \text{ CFS}$$

$H_3 = 7.7'$ $A_3 = 501$ ft.^{2}

BY ... DATE ... **ROALD HAESTAD, INC.** SHEET NO. 5 OF 9

CONSULTING ENGINEERS

CKD BY WSR DATE 12/18/79. 37 Brookside Road - Waterbury, Conn 06708 JOB NO. 79-12-02

SUBJECT WEHMANS DAM - FLOOD ROUTING

SECTION 3 REACH LENGTH = 2800 FT.

$Q_{P3} = 3772$ CFS

$H = 5.4'$ $A = 900$ sq. ft.

$V = 900 \times 2800 / 43560 = 58$ Ac-Ft.

$Q_{P4\ TRIAL} = 3772 \left(1 - \frac{58}{117}\right) = 1902$ CFS

$H_T = 4.0'$ $A_T = 600$ sq. ft.

$V_T = 600 \times 2800 / 43560 = 39$ Ac-Ft.

$V_{AVE} = \frac{58+39}{2} = 48.5$ Ac-Ft.

$Q_{P4} = 3772 \left(1 - \frac{48.5}{117}\right) = 2208$ CFS

$H = 4.3'$ $A = 650$ ft.^{2}

SECTION 4

$Q_{P4} = 2208$ CFS

$H = 1.7'$ $A = 700$ ft.^{2}

$V = 700 \times 3000 / 43560 = 48$ Ac-Ft.

$Q_{P5\ TRIAL} = 2208 \left(1 - \frac{48}{117}\right) = 1302$ CFS

$H_T = 1.0$ $A_T = 450$ Ft.^{2}

$V = 450 \times 3000 / 43560 = 31$ Ac-Ft.

$V_{AVE} = \frac{48+31}{2} = 39.5$ Ac-Ft.

$Q_{P5} = 2208 \left(1 - \frac{39.5}{117}\right) = 1463$ CFS

1463 < SPILLWAY CAPACITY 1777 CFS

BY D.A.S. DATE 12-1-79 **ROALD HAESTAD, INC.** SHEET NO 6 OF 9

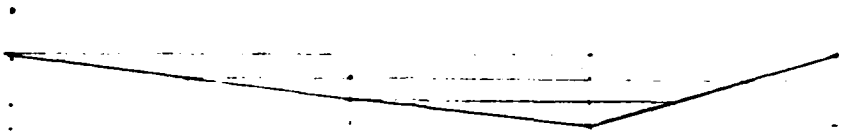
CONSULTING ENGINEERS

CKD BY W.S.H. DATE 12/18/79 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 094-02

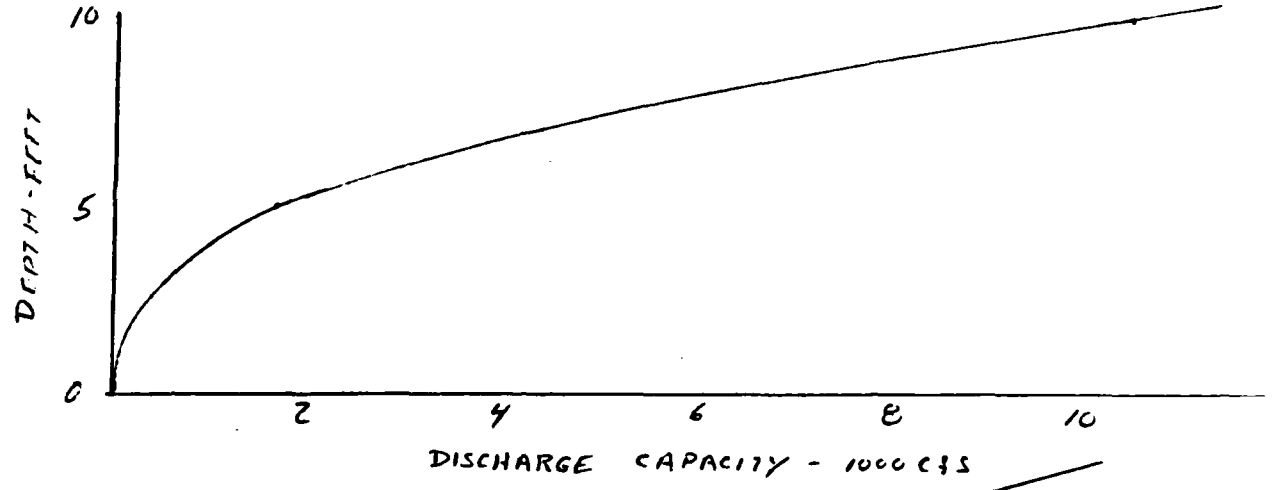
SUBJECT WEPAWAUG DAM - FLOOD ROUTING

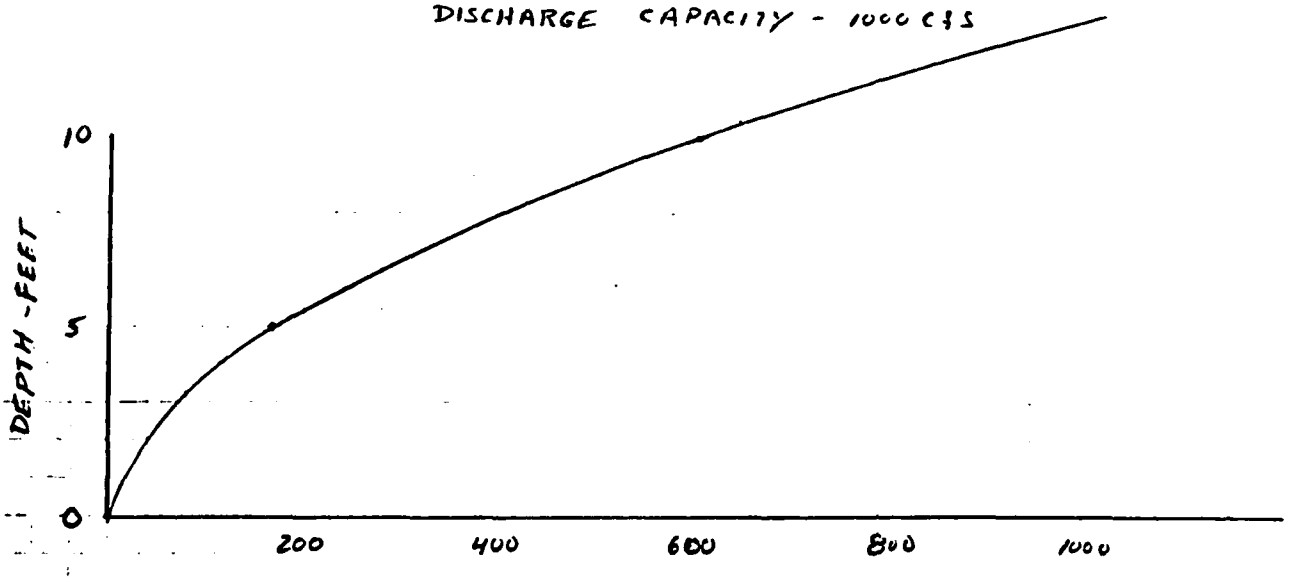
SECTION 1
NORTH OF CAMP CEDARCREST
(SEE FIGURE 4)

SCALE 1"=4'
n = 0.04
S = 0.021
L = 2500'



D	WP	A	R	S	V	Q
5	70	170	2.43	0.021	9.7	1649
10	120	635	5.29	0.021	16.4	10,414
15	175	1385	7.91	0.021	21.4	29,639





BY ..... DATE 12-1-79 **ROALD HAESTAD, INC.** SHEET NO 7 OF 9

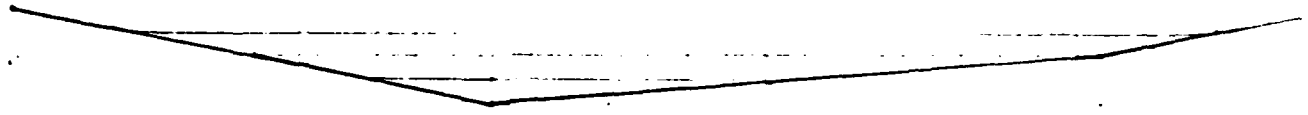
CONSULTING ENGINEERS

CKD BY WSH DATE 12/18/79 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 049-02

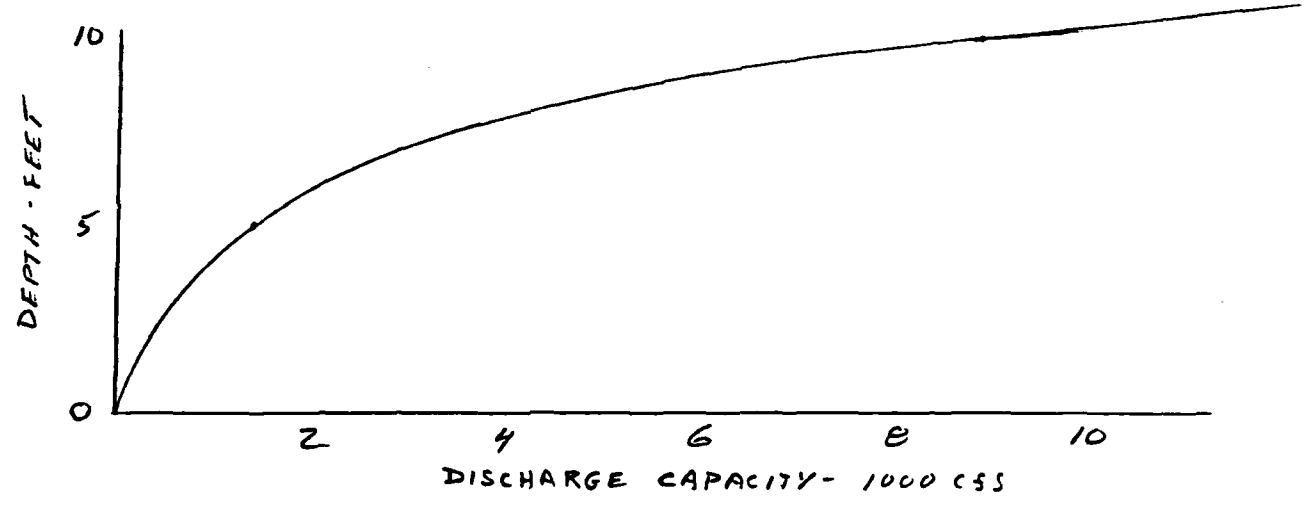
SUBJECT WEPAWAUG DAM - FLOOD ROUTING

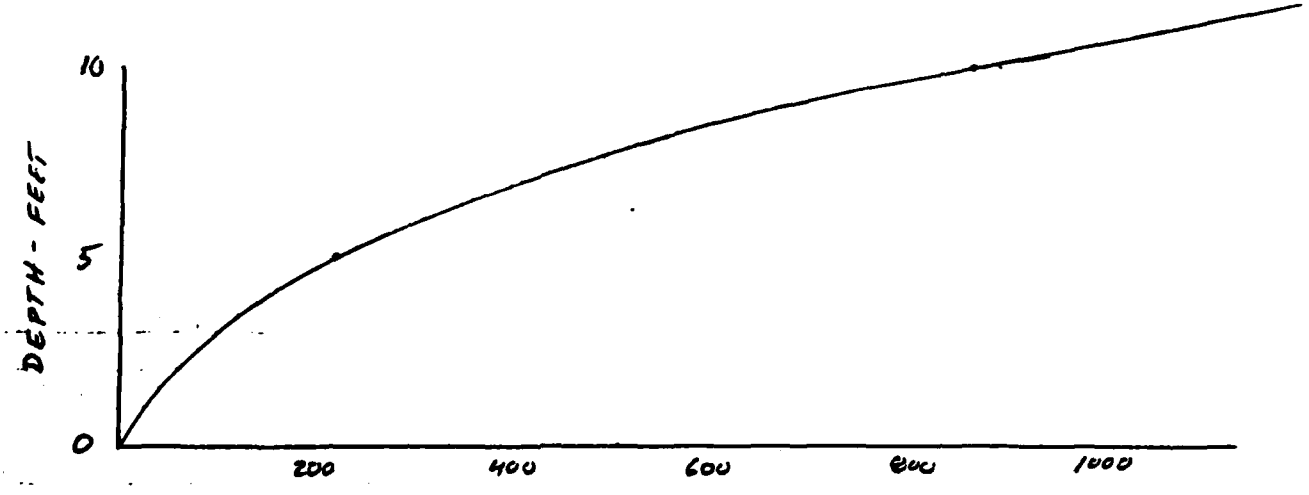
SECTION 2

REACH LENGTH 2700'
n = 0.04
S = 0.009
Scale: 1" = 40'



D	Wp	A	R	S	V	Q
5	90	220	2.44	0.009	6.4	1408
10	180	875	4.86	0.009	10.1	8838
15	230	1875	8.15	0.009	14.3	26,813





BY DLS DATE 11-12-79 **ROALD HAESTAD, INC.** SHEET NO 6 OF 7

CONSULTING ENGINEERS

CKD BY WSA DATE 12/18/79 37 Brookside Road - Waterbury, Conn. 06708 JOB NO 049-02

SUBJECT WEPAWAUG DAM - FLOOD ROUTING

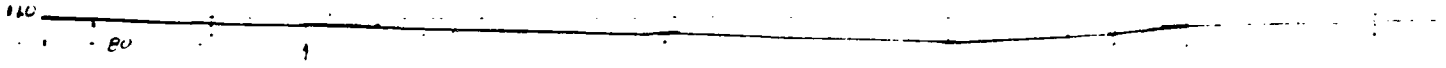
Section No. 3, North of Old Grassy Hill Road

REACH LENGTH = 2650'

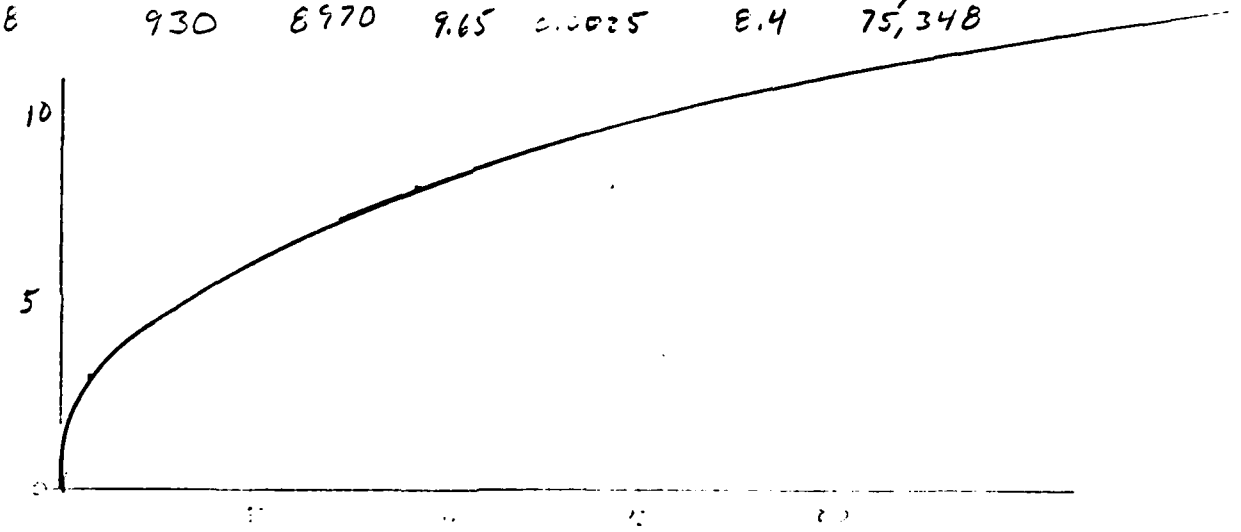
n = 0.04

S = 0.0025

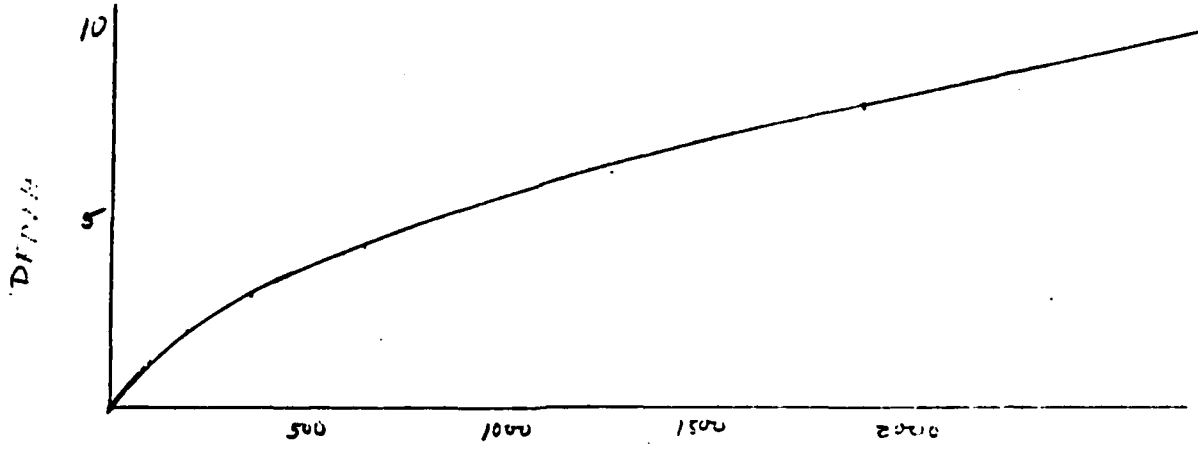
Scale 1" = 200'



D	Wp	A	R	S	V	Q
3	235	360	1.53	0.0025	2.5	900
8	470	1920	4.09	0.0025	4.8	9216
13	700	4880	6.97	0.0025	6.8	33,184
18	930	8970	9.65	0.0025	8.4	75,348



DISCHARGE CAPACITY - [illegible] CFS



AREA - Sq. Ft.

BY DLS DATE [illegible]

ROALD HAESTAD, INC.
CONSULTING ENGINEERS
37 Brookside Road - Waterbury, Conn. 06708

SHEET NO ..... OF .....

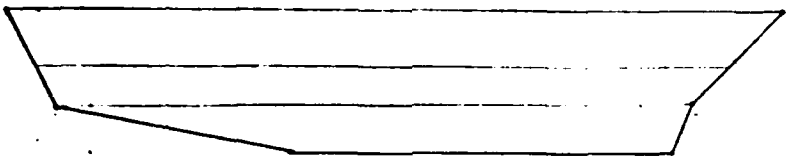
CKD BY WSA DATE 12/18/79

JOB NO [illegible]

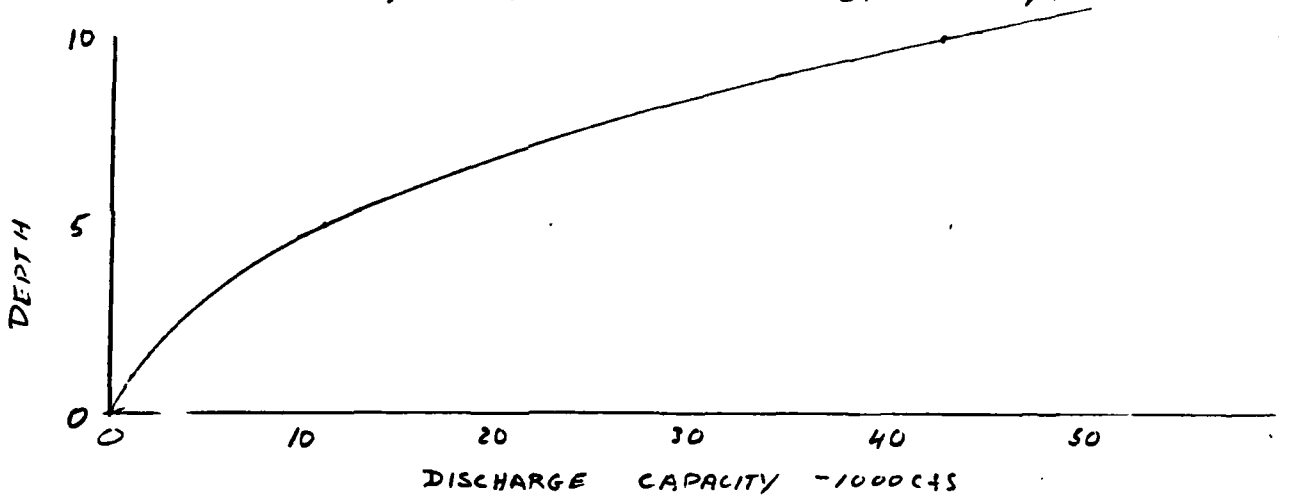
SUBJECT WEPAWAUG R.S.M. FLOOD ROUTING

SCALE 1" = 20' VERT
1" = 200' HORZ
L = 3000'
n = 0.04
S = 0.002

SECTION 4 LAKE WEPAWAUG



D	Wp	A	R	S	V	Q
5	700	2675	3.82	0.002	4.1	10,968
10	730	6175	8.46	0.002	6.9	42,608
15	830	10,125	12.20	0.002	8.8	89,100



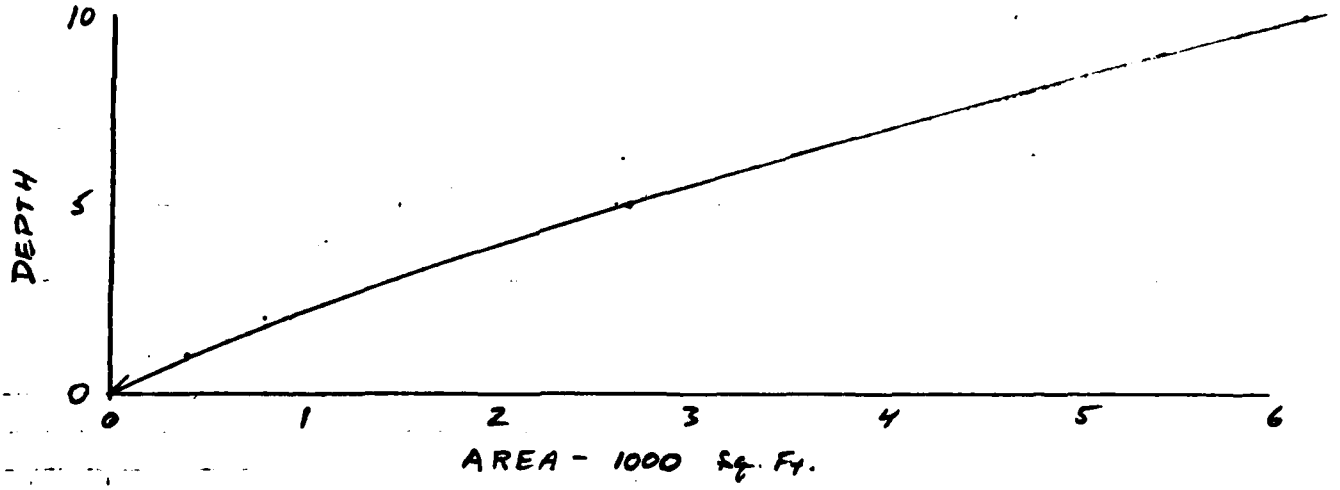
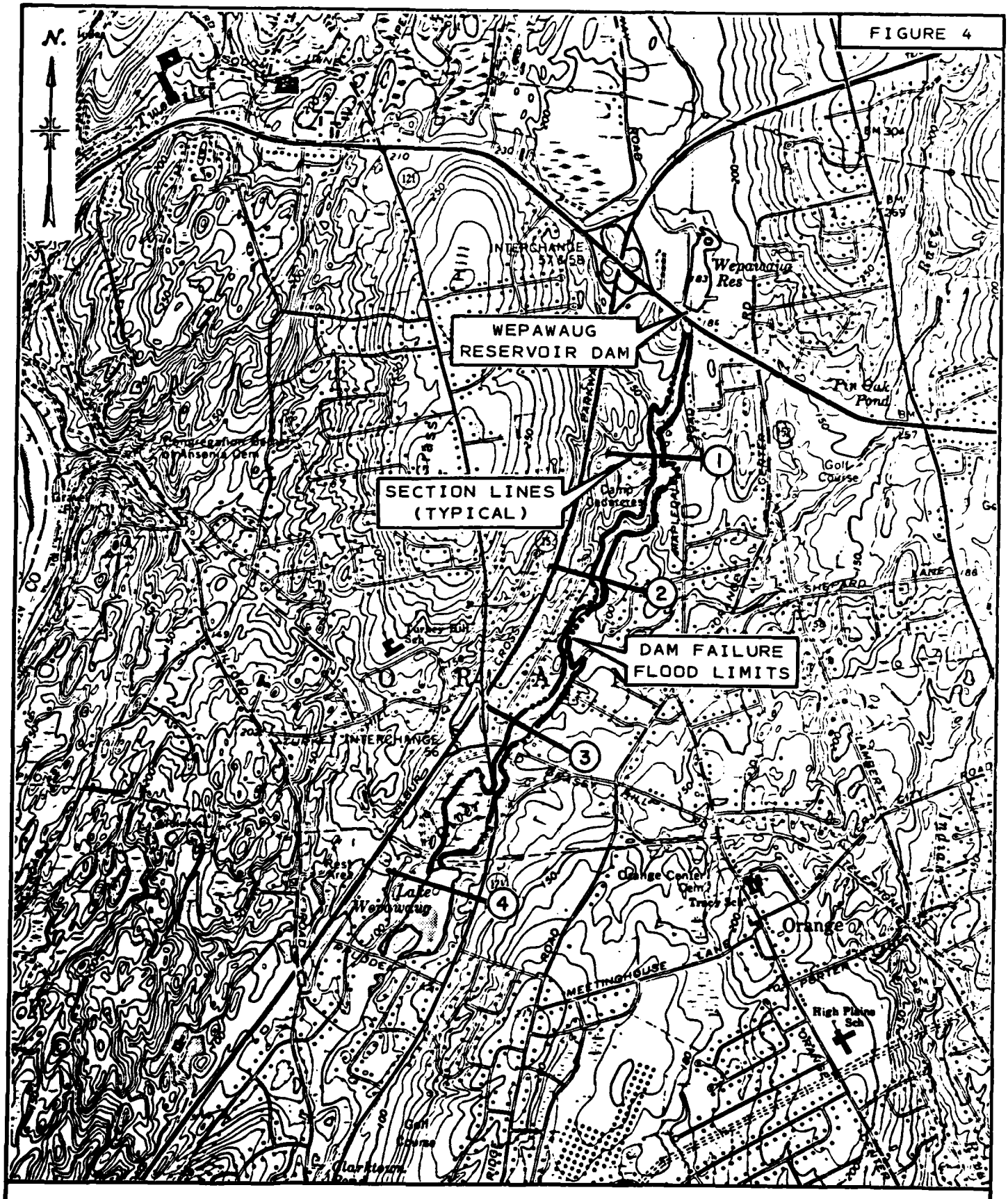


FIGURE 4



DAM FAILURE FLOOD LIMITS

WEPAWAUG RESERVOIR DAM
ORANGE, CONNECTICUT

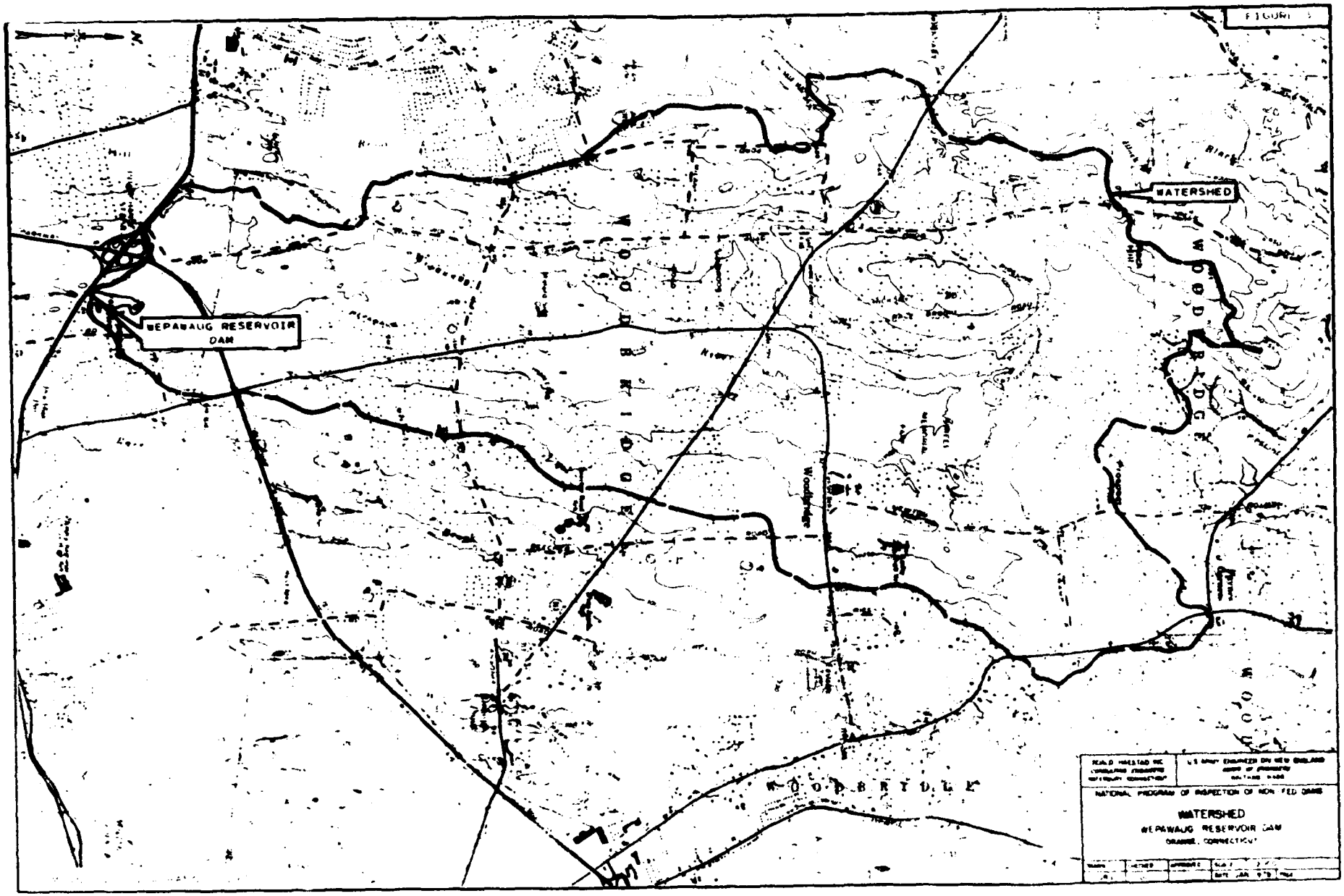
SCALE: 1" = ,0'

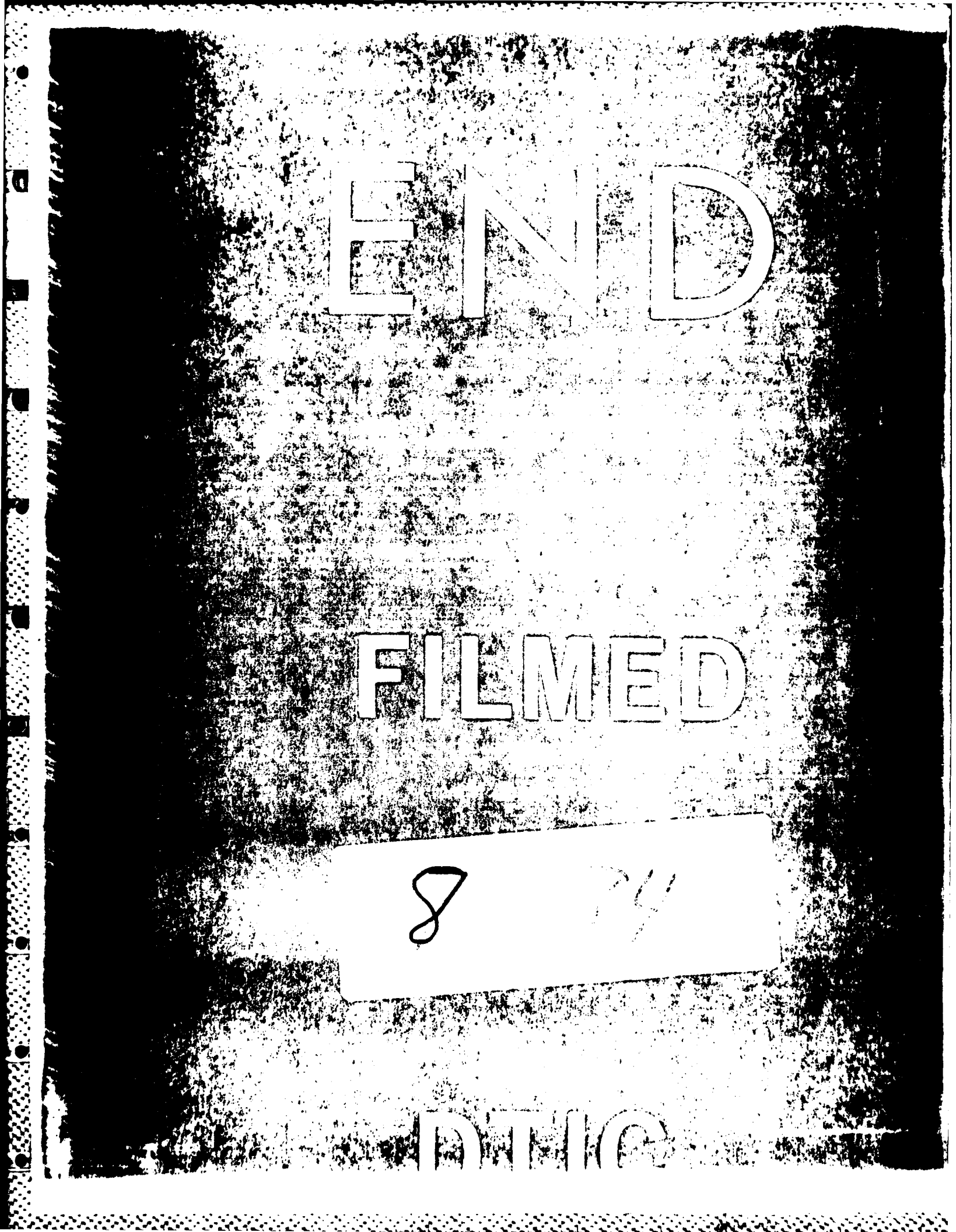
ROALD HAESTAD, INC.

ANSONIA QUADRANGLE 1972

NEW HAVEN WATER CO
PLAN FOR DAM WEPAWAUG RIVER DIVERSION
ORANGE, CONN

PLAN
Scale: 1"=40'
Top of Dam El. 188.2
Riprap
Gate House
Bridge
Fence
Shed
Number Photo Number and Direction in which Photo was taken.
FIGURE 2


WEPAWAUG RESERVOIR DAM
WATERSHED
WOODBRIDGE
NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS
WATERSHED
WEPAWAUG RESERVOIR DAM
ORANGE, CONNECTICUT


END
FILMED
8
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