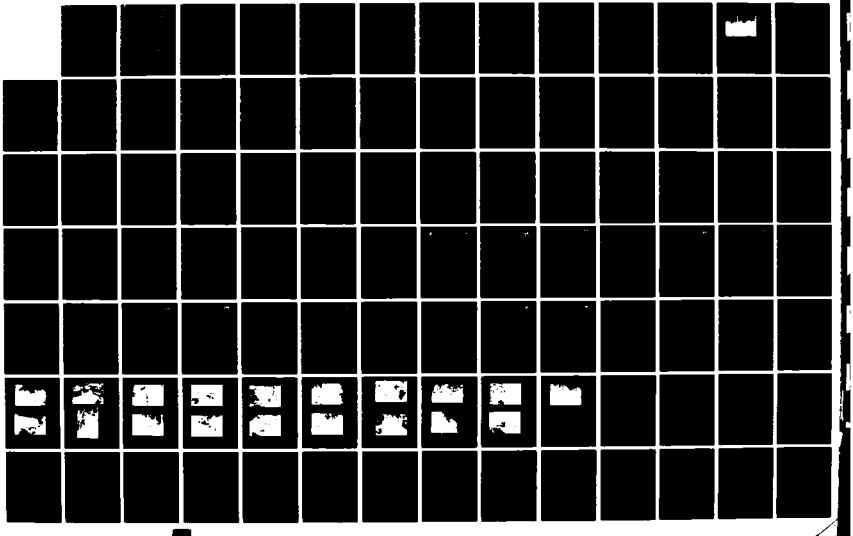
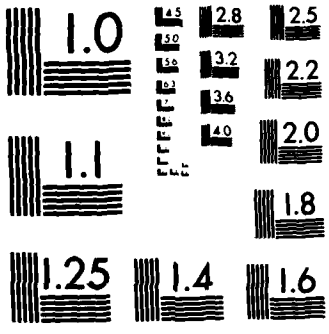
AD-A145 347 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS NEW 1/2
POND DAM (MA 0011.. (U) CORPS OF ENGINEERS WALTHAM MA
NEW ENGLAND DIV MAR 79

UNCLASSIFIED F/G 13/13 NL



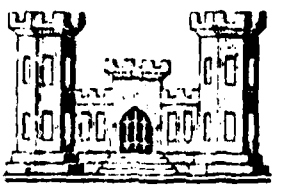


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

THAMES RIVER BASIN
DUDLEY, MASSACHUSETTS

NEW POND DAM
MA 00113

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

MARCH 1979

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED

MAY 29 1979

Honorable Edward J. King
Governor of the Commonwealth of
Massachusetts
State House
Boston, Massachusetts 02133

Dear Governor King:

I am forwarding to you a copy of the New Pond Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts 01570, ATTN: Mr. Robert Javery, Plant Engineer.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

NEW POND DAM
MA 00113

THAMES RIVER BASIN
DUDLEY, MASSACHUSETTS

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

Identification No.: MA 00113
Name of Dam: NEW POND DAM
Town: DUDLEY
County and State: WORCESTER COUNTY, MA
Stream: TRIBUTARY OF FRENCH RIVER
Date of Inspection: 14 SEPTEMBER and 20 SEPTEMBER 1978

BRIEF ASSESSMENT

New Pond Dam consists of two earthen embankments, one to the north and one to the south of the access road to the dam. The southerly embankment, considered the main dam, contains a masonry spillway and an abandoned outlet works. The northerly embankment is considered a separate dike. Each of the embankments is approximately 400 feet long. The dam has a height of approximately 20 feet, while the dike has a height of approximately 12 feet.

The structures are in fair condition. The embankments are heavily overgrown with trees and bush. Seepage or evidence of seepage was observed at both embankments. The outlet structure, which serves as the reservoir drain, is inoperative. The spillway has a limited capacity.

Based on the hazard potential downstream of the dam and in accordance with Corps of Engineers Guidelines, this dam is classified as having a low hazard potential. A 100 year flood was selected as the spillway test flood in accordance with Corps of Engineers Guidelines for "small" dams of "low" hazard. Hydraulic analysis indicates the test flood outflow at the dam would be approximately 580 cfs. The spillway can only pass approximately 17 percent of the test flood before overtopping of the embankments would occur. At test flood peak discharge, the average height of water overtopping the dam and dike would be approximately four inches.

It is recommended that detailed investigations be made to determine required modifications to increase spillway capacity, to determine the effect of seepage at the dam, to determine the geometry of the embankments and, if necessary, the character of embankment materials to check the stability of the dam, and to determine the measures required to make the reservoir drain operational. Remedial measures recommended are the cleaning of trees and brush from the embankments, the filling of eroded areas, the replenishment of riprap at embankment upstream face, the replacement of fallen stones from masonry walls, the reshaping of the embankments to provide uniform freeboard and permit vehicle access, and the removal of debris from both spillway and outlet works channels. It is recommended that the investigations

and remedial measures be accomplished within one year of receipt of the report by the Owner. It addition, it is recommended that the Owner establish formal operational procedures, maintenance program, emergency procedures plan and warning system and program of annual technical inspections.

CAMP DRESSER AND McKEE INC.

Roger H. Wood

Roger H. Wood
Vice-President

This Phase I Inspection Report on New Pond Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

JOSEPH W. FINEGAN, JR., MEMBER
Water Control Branch
Engineering Division

CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

JOSEPH A. MCELROY, CHAIRMAN
Chief, NED Materials Testing Lab.
Foundations & Materials Branch
Engineering Division

APPROVAL RECOMMENDED:

JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I Investigations are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the test flood is based on the estimated "probable maximum flood" for the region (greatest reasonably possible storm runoff), or a fraction thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

APPENDIXES

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER MA 00113	2. GOVT ACCESSION NO. A145347	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) New Pond 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 March 1979 13. NUMBER OF PAGES 75
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)

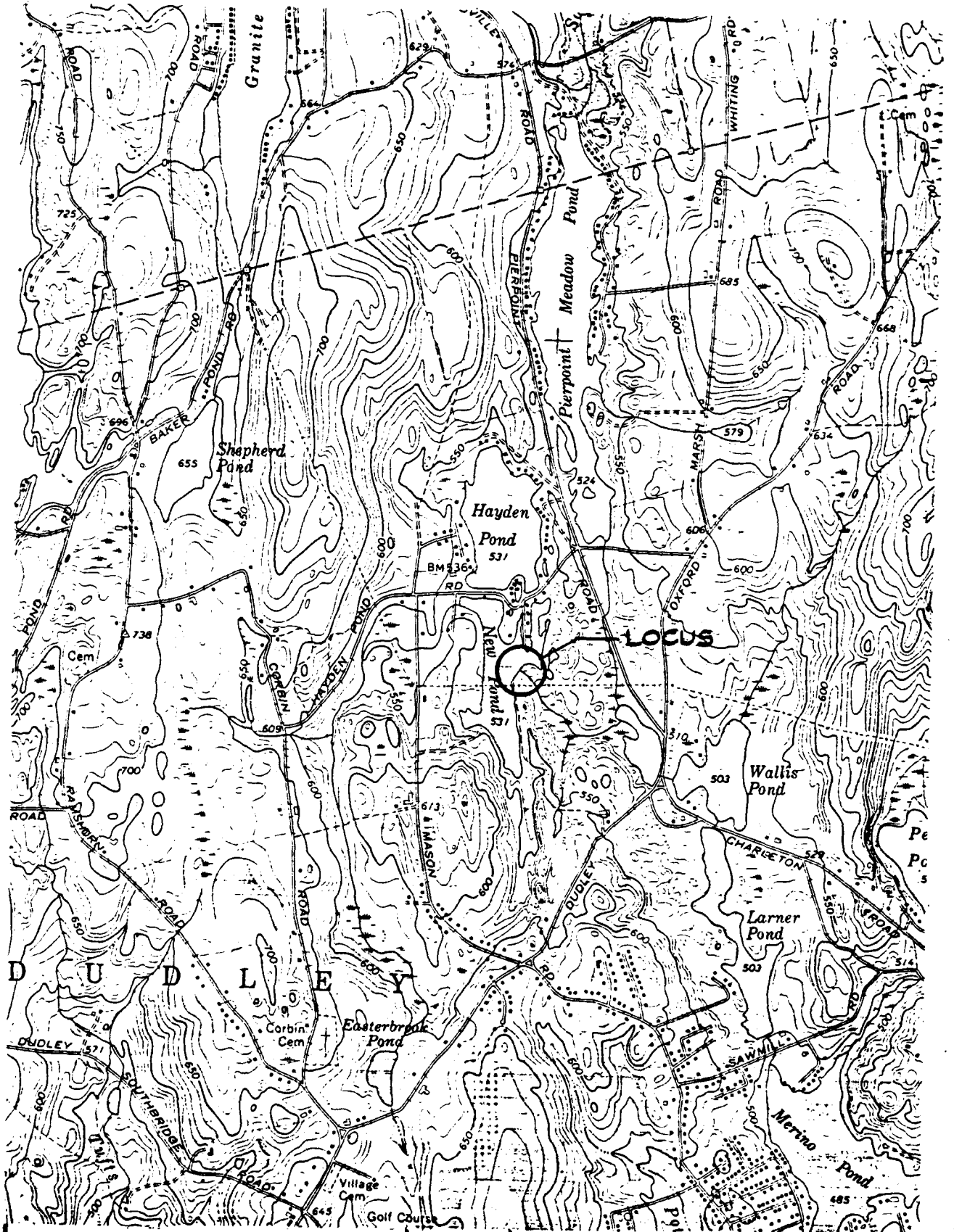
DAMS, INSPECTION, DAM SAFETY,
Thames River Basin
Dudley, Massachusetts

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

New Pond Dam consists of two earthen embankments, ont to the north and one to the south of the access road to the dam. Each of the embankments is approximately 400 feet long. The dam has a height of approximately 20 feet, while the dike has a height of approximately 12 feet. The structures are in fair condition. Based on hazard potential, this dam is classified as having a low hazard potential. A 100 year flood was selected as the spillway test flood. The dam is classified as a "small" dam.

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

1. OVERVIEW OF DAM FROM RIGHT ABUTMENT (MARCH 1979).



DAM: NEW POND

IDENTIFICATION NO.: MA.00113

LOCATION MAP
USGS QUADRANGLE
WEBSTER, MA.
SCALE: 1" = 2000'

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT
NEW POND DAM
MA 00113

SECTION 1: PROJECT INFORMATION

1.1 General

a. Authority - Public Law 92-367, 8 August 1972, authorized the the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region.

Camp Dresser & McKee Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Massachusetts. Authorization and notice to proceed was issued to Camp Dresser & McKee Inc. under a letter of 12 July 1978, from Colonel John P. Chandler, Corps of Engineers. Contract No. DACW 33-78-C-0354 has been assigned by the Corps of Engineers for this work. Haley and Aldrich, Inc. has been retained by Camp Dresser & McKee Inc. for the soils and geological portions of the work.

b. Purpose - The primary purpose of the investigation is to:

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and assist the States to initiate quickly effective dam safety programs for non-Federal dams.

(3) Update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location - New Pond Dam is located on a tributary of the French River, approximately 1,400 feet west of Pierpoint Road in the town of Dudley, Massachusetts, as shown on the report's location map. The dam is located on the east side of New Pond, approximately 900 feet south of the north end of the pond. Waters impounded by the dam are called New Pond and Hayden Pond, a causeway dividing the two. Flow from New Pond passes through a pond known locally as Mosquito Pond and then into Wallis Pond.

b. Description of Dam and Appurtenances - New Pond Dam consists of two irregularly aligned earth embankments, each a little over 400 ft long. The main dam has roughly an east-west orientation; the right half of the dam has a dry-stone masonry downstream face, a concrete overflow spillway and an abandoned stone masonry gated outlet. The dike embankment extends to the north from the left end of the dam. A sketch plan and sections prepared from Phase I inspection records are shown in Appendix C.

The main dam has a maximum height of about 20 ft at the gate location. The cut-stone masonry portion of the downstream face is nearly plane and vertical, but the earth slope portion varies from as steep as 1.5 horizontal to 1 vertical to approximately 3 to 1. The above-water portion of the upstream face slopes irregularly at approximately 1 to 1, and has a cobble slope protection that is partially obscured by roots and brush. The crest and slopes of the main dam are generally irregular and wooded.

The dike embankment is similar to the main dam, but has a maximum height of about 12 ft above a downstream pond. The wooded downstream slope is generally flatter than the slope at the main dam, being typically about 3 or 4 to 1, and the upstream slope cover varies from cobbles and boulders to cobbles and gravel. The crest and slopes of the dike are also generally irregular and wooded.

c. Size classification - The height of the dam is approximately 20 ft and the estimated total storage capacity at the top of the embankment is 500 acre feet. According to guidelines established by the Corps of Engineers, the dam is classified in the small category, based on both storage capacity and height of dam.

d. Hazard Classification - The results of the dam failure analysis indicate that a flood wave resulting from a failure of the dam embankment would cause only minor water damage to one home adjacent to the downstream pond, and the Dudley Street-Oxford, Charlton Road intersection would be overtopped by approximately two feet of water. There is no significant potential for loss of life indicated. It is therefore recommended that New Pond Dam be classified as having a low hazard potential.

e. Ownership - The dam has been owned by Stevens Linen Associates for the last 39 years. The previous owner was J.P. Stevens, Inc. The present owners' address is: Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts, 01570 (phone 617/943-0600). Mr. Robert Javery, Plant Engineer, at the above address is the owners' representative.

f. Operator - Operation of the dam is the responsibility of Mr. Robert Javery, Plant Engineer for Stevens Linen Associates, Inc. His address is: Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts, 01570 (phone 617/943-0600).

g. Purpose of Dam - New Pond Dam originally served as a water supply for the mills downstream. The outlet works have been sealed, and New Pond is presently used for recreational purposes only.

h. Design and Construction History - No records of the construction of the dam are available. The type of construction utilized indicates that the dam was constructed prior to 1900. A 1925 inspection report indicates that water had not run over the spillway for some years. The gate to the outlet works was sealed in approximately the last five years.

i. Normal Operational Procedures - The structures are maintained on a demand basis. There are no operational controls present at the dam.

1.3 Pertinent Data

Elevations given in this report are on National Geodetic Vertical Datum (NGVD) formerly referred to as Mean Sea Level (MSL).

a. Drainage area - The 2.04 square mile watershed surrounding New Pond and Hayden Pond is sparsely developed and heavily wooded. The terrain is hilly with some upland marsh areas. The combined surface areas of New Pond and Hayden Pond occupy about 5.6% of the total drainage area.

b. Discharge at Dam Site - There are no records of discharges at the dam site.

(1) Outlet works size----------2' x 2'-4" (sealed)

(2) Maximum known flood at damsite----------No records available

(3) Ungated spillway capacity at top of dam
100 cfs @ 533 elev.

(4) Ungated spillway capacity at test flood elevation
150 cfs @ 533.35 elev.

(5) Gated spillway capacity at normal pool elevation---------N/A

(6) Gated spillway capacity at test flood elevation----------N/A

(7) Total spillway capacity at test flood elevation 150 cfs @ 533.35 elev.

(8) Total project discharge at test flood elevation 580 cfs @ 533.35 elev.

c. Elevation (ft. above MSL)

(1) Streambed at centerline of dam----------513

(2) Test flood tailwater----------516± (Est.)

(3) Upstream portal invert diversion tunnel----------None

(4) Recreation pool----------531

(5) Full flood control pool----------N/A

(6) Spillway crest----------531

(7) Design surcharge (Original Design)----------Unknown

(8) Top dam----------533

(9) Test flood design surcharge----------533.35

d. Reservoir

(1) Length of test flood pool----------3,950 ft. (Est.)

(2) Length of recreation pool----------3,900 ft. (Est.)

(3) Length of flood control pool----------N/A

e. Storage (acre-feet)

(1) Recreation pool----------300 Ac-ft

(2) Flood control pool----------N/A

(3) Spillway crest pool----------300 Ac-ft

(4) Top of dam----------500 Ac-ft

(5) Test flood pool----------525 Ac-ft

f. Reservoir Surface (acres)

(1) Recreation pool----------74.4

(2) Flood-control pool----------N/A

(3) Spillway crest----------74.4

(4) Test flood pool----------86.0

(5) Top of dam----------84.3

g. Embankments	Dam	Dike
(1) Type	Earth embankment w/partial stone masonry D/S face	Earth embankment
(2) Length	Approx. 450 ft. incl. spillway	Approx. 420 ft.
(3) Height	Approx. 20 ft. max.	Approx. 12 ft. max.
(4) Top width	12 to 25 ft.	11 to 15 ft.
(5) Side slopes	ranges 1.5 to 3:1 D/S except at stone masonry	ranges from 3 to 4:1 D/S
(6) Zoning	Unknown	Unknown
(7) Impervious Core	Unknown, 2" wood noted in 1938 inspect. report	Unknown
(8) Cutoff	Unknown	Unknown
(9) Grout Curtain	Probably none	Probably none

h. Diversion and Regulating Tunnel----------None

i. Spillway

(1) Type----------masonry broad crested weir with 1 ft. deep notch - 3.5 ft. wide

(2) Length of weir----------29 ft.

(3) Crest elevation----------531 for notch, 532 remainder

(4) Gates----------None

(5) U/S Channel----------None-edge of pond

(6) D/S Channel----------25 ft.± drop in 800 ft. then 1,200 ft. of marsh to next pond

i. Regulating Outlets. There is no presently operating regulating outlet or pond drain for this structure. The gate at the intake end has been sealed and the valve stem is no longer in place. The size of the gate is unknown but the outlet conduit dimensions are 2 feet horizontal by 2 feet 4 inches vertical. The invert elevation at the outlet end of the conduit is approximately elevation 513.

SECTION 2: ENGINEERING DATA

2.1 Design Records - No design records were located for the New Pond Dam.

2.2 Construction Records - No records of the original construction were located.

2.3 Operation Records - No operational records were located for the dam.

2.4 Evaluation

a. Availability - No records for the dam other than prior inspection reports were located.

b. Validity - There are no known design, construction or operating records.

c. Adequacy - The absence of known records requires that the evaluation of the dam during this investigation be based on the visual examination described in the following section.

SECTION 3: VISUAL INSPECTION

3.1 Findings

a. General - The hydraulic-hydrologic reconnaissance of the facility with the Owner took place on 14 September 1978. The structural and soils portions of the Phase I visual examination of New Pond Dam were conducted on 20 September 1978.

In general, the dam was observed to be in fair condition. The area is overgrown with trees and there has been a long standing condition of seepage at the embankments.

Visual inspection checklists for the site visits are included in Appendix A and selected photographs are given in Appendix C.

b. Dam - The embankments at this site were divided into two areas for the purpose of this report. The embankment south of the entrance road was considered the dam, while the embankment to the north was considered a dike. There was no visual evidence of major lateral movement or settlement at the dam or dike; however, there is local seepage and erosion, and a heavy growth of brush and trees. The open joint stone masonry walls at the dam and spillway appear to be stable and in good condition. The following specific items were noted during the site examination.

(1) The dam and dike crests and slopes have a heavy cover of brush and trees that limits visual observation of their condition, as shown in Photos 1, 2, 11, 13, 15, & 19. There are also numerous tree cuttings and stumps at the base of the wall below the spillway.

(2) The upstream cobble slope protection at the dam and dike is partly concealed by brush and roots, and does not appear to provide complete coverage on the slopes, as shown in Photos 12, 16, & 18. The root mat is locally undercut along the upstream face.

(3) The downstream toe of the main dam has slight seepage with "rust" staining at the left end as shown in Photo 14 and near the center, and moderate seepage flow from under rocks at the embankment bend near the left quarter point. There are also pockets of water below the stone masonry downstream face and slight flow at the location of the abandoned gate. No evidence of soil movement was observed at the various seepage locations.

(4) The downstream toe of the dike does not show active seepage, but there is currently a pond below the right end, as shown

in Photo 17, and there has been ponded water to a depth of several feet in another low area near the center, as shown in Photo 20.

(5) The crests of both the main dam and the dike are irregular in both width and elevation, with the freeboard varying from as low as 1.8 ft at two locations to over 2 ft at others.

(6) There is an apparent eroded hole about 2 ft deep in the dam crest alongside the left edge of the spillway; this hole has seeping water at the bottom.

(7) The right wingwall at the upstream gate opening has been undercut by erosion.

(8) A few pieces of stone masonry have fallen from the main downstream wall of the dam and from a small wall above the steep downstream slope at the location of the moderate seepage.

(9) There is an apparent eroded notch about 10 ft long and 1 ft deep in the downstream face of the dike where the crest is low, as indicated on the plan in Appendix C.

(10) Vehicle access for maintenance or repairs is difficult at the main dam and nearly impossible at the dike, primarily because of the numerous trees.

c. Appurtenant Structures - The stone masonry wall at the downstream face of the dam, as shown in Photos 5 and 6, is in good condition with very few voids. The outlet structure inlet, as shown in Photos 3 and 4, is also of rubble stone masonry and in good condition. Several of the training wall top stones have been displaced. The valve stem for the conduit inlet is lying on the upstream face of the dam to the right of the intake and the gate is reported to have been sealed. Seepage from the outlet conduit (or from beneath the dam) was observed at the downstream end of the conduit. Debris is present in the downstream channel, as shown in Photo 7.

The spillway, as shown in Photos 8, 9 and 10, is in good condition. The spillway foundation is rubble stone masonry which has been overlain with concrete paving. Minor cracking is present in the paving. A notch (or pilot channel) has been cut in the basic spillway and surfaced with concrete. The stones removed during the resurfacing of the spillway have been dumped at the downstream toe. The entrance of the notch or pilot channel has stop log guides present which are rusted. No stop logs were observed at the dam.

d. Reservoir Area - The reservoir is divided by a causeway into two ponds, New Pond and Hayden Pond. While no outlet for Hayden Pond or connecting culvert to New Pond was located, the ponds apparently have the same water surface elevation. Either a submerged culvert is present or the causeway embankment is very porous. The causeway would therefore act as a flood retarding structure in the event of a dam failure. The area around the ponds is generally wooded and, particularly Hayden Pond, is extensively developed. The present shoreline development includes more than 40 structures.

The side slopes of the ponds are variable and generally wooded. There is no significant potential for landslides into the ponds which would create waves that might overtop the dam. No conditions were noted which would result in a sudden increase in sediment load into the ponds.

e. Downstream Channel - Immediately downstream of the spillway, the channel contains discarded stones from former spillway modifications. The area adjacent to the outlet works contains brush and branch debris from probable former clearing operations. The channel drops approximately 25 feet in 800 feet through a wooded area. This section from the spillway follows a somewhat defined channel while there is little evidence of a channel coming from the outlet works. The next 1,200 feet in the watercourse is through a marsh area which empties into a small pond known locally as Mosquito Pond. The flow then passes through two 60 foot long 42 inch A.C.C.M. pipes under Oxford Road into Wallis Pond. Flow from Wallis Pond passes under Charleton Road via two 45 foot long 54 inch A.C.C.M. pipes into Larner Pond. The area from New Pond to Oxford Road is undeveloped and few houses are present along Wallis and Larner Ponds.

3.2 Evaluation - The New Pond Dam embankments and appurtenances appear to be performing satisfactorily at the present time; previous inspection reports indicate that seepage at the embankments is a long-standing condition. However, the continuing seepage, the low points along the crest, and the numerous large trees could provide significant potential for embankment failure under conditions of higher than normal water levels or heavy winds.

SECTION 4: OPERATIONAL PROCEDURES

4.1 Procedures - In general, there is no established routine for the operation of the dam.

4.2 Maintenance of Dam - The dam and spillway have received minimal maintenance and then only upon demand. There is no established formal procedure for the maintenance of the dam. The present dam and dike have become overgrown with tree and brush growth.

4.3 Maintenance of Operating Facilities - The only operating facility, the reservoir drain, has been sealed.

4.4 Description of any Warning System in Effect - There is no established warning system or emergency preparedness plan in effect for this structure.

4.5 Evaluation - There is currently no operational procedures in effect for this dam. Formal operational procedures, maintenance programs, warning systems and emergency preparedness plans should be established. Periodic observation should be made and the tree and brush growth at the dam and dike should be brought under control. Maintenance of the dam should be performed at regular intervals.

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 Evaluation of Features

a. General - New Pond Dam is an earth embankment located in the town of Dudley. The dam consists of a main embankment and a dike, each having a length of approximately 400 feet with a concrete spillway located at the westerly end of the main embankment. The dam was formerly used to regulate flow for water power for downstream mills. It is no longer used for this purpose but rather to control levels for recreational use of New Pond and Hayden Pond. The pond has a water surface area of approximately 74 acres at a spillway crest elevation of 531, and an estimated total storage capacity of 300 acre feet. The spillway consists of a concrete flume in which a notch has been cut for controlling and lowering the water levels in New Pond. The spillway discharges to the downstream face of the dam where flow is received by a small brook which makes its way in a southeasterly direction for approximately 2,000 feet to Mosquito Pond. From here, flow passes beneath Oxford Road into Wallis Pond then into Larner Pond and, subsequently, to Merino Pond before eventually joining the French River in Webster. All of the information utilized in this report was obtained from visual examination as well as measurements made at the site during the inspection and supplemented by information contained on the U.S.G.S. quadrangle sheets. Data pertaining to the area-elevation-storage capacity of the pond was developed from the U.S.G.S. quad sheets.

b. Design Data - No hydraulic/hydrologic design data are available for the dam site.

c. Experience Data - No records of past floods are available for the dam site.

d. Visual Observations - Inspection of the dam was made on 14 September 1978. At that time the water level was only one-quarter inch below the crest of the spillway. The spillway was noted to be a concrete flume having a width of 29 feet and a length of 22 feet with a drop of one foot in a 20-foot length. The sidewalls to the flume or spillway varied in height from 18 to 30 inches. In the center of the flume is a notch approximately 43 inches wide and about 12 inches deep which apparently had been cut out of the original flume or spillway within the last decade so as to provide releases from the pond at a stage 11 to 12 inches lower than the previous spillway elevation. The spillway was noted to be in good hydraulic condition and the discharge was to a pile of dumped rock some ten feet below the downstream side of the flume where the outlet stream commences. The outlet

stream was noted to drop rather rapidly, falling approximately 25 feet in the first 800 feet to a swampy area, thence flowing through the swampy area a distance of nearly 1,200 feet before entering Mosquito Pond.

e. Test Flood Analysis - Based upon Corps of Engineers guidelines, the recommended test flood for the size (small) and hazard (low) is within the range of 50-year to 100-year flood. The drainage area tributary to the Hayden Pond-New Pond complex is approximately 2.04 square miles. This area is sparsely populated, is hilly with some upland marshy areas, and the combined water surface areas of New Pond and Hayden Pond occupy about five and one half percent of this drainage area. The water shed terrain was determined to be rolling, and an inflow rate of 2,250 cfs per square mile was utilized with the 2.04-square mile drainage area to produce a test flood inflow of approximately 2,300 cfs for one half PMF. The 100-year flood was found to have an inflow rate of 925 cfs. Storage routing of this flow indicated that this peak rate would be reduced to approximately 580 cfs by the storage and spillway characteristics of New Pond. However, routing of this flow indicated that, even with the reduced flow of 580 cfs, the test flood would still overtop the dam by 0.35 feet, resulting in an average flow depth of 4 inches over the embankment.

Hayden Pond shoreline has a low point at its north end leading to Pierpoint Meadow Pond. No culvert or outlet from the pond was located at this point nor did a resident ever hear of overland flow from the pond. However, the resident did report sandbagging had been employed at this location at high pond levels and the residents have been troubled with seepage from the pond along this route.

f. Dam Failure Analysis - Based on Corps of Engineers Guidelines for Estimating Dam Failure hydrographs, and assuming that a failure would occur along a section 67 feet in length in the vicinity of the high point of the dam with the water level 2 ft above the spillway crest (elevation 533), the failure would result in a peak outflow of 10,000 cfs. This flow, however, would undergo a drastic reduction to 3,700 cfs in the first reach between the dam and Mosquito Pond, due to the vast storage area available. The water level in Mosquito Pond would rise to elevation 512, or approximately 2 feet over Oxford Road, as the flow would make its way into Wallis Pond. This level would likely cause minor water damage to one house in the immediate area. The flow from Wallis Pond into Larner Pond would be through the existing twin 54-inch diameter corrugated metal pipes beneath Charleton Road. The reduced failure outflow would overtop Charleton Road by approximately 0.8 foot with no apparent hazard. The considerably greater storage in Larner Pond, just downstream, would be sufficient to completely dampen out the remaining dam failure

flow with no damage to be expected in Marino Pond and other points downstream. It is, therefore, recommended that the high hazard classification for this dam be reduced to "low."

SECTION 6: STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observation - There was no visible evidence of dam, dike, or spillway instability during the site examination on 20 September 1978. Seepage at the various locations along the downstream toe of the dam embankment showed no evidence of active erosion or piping, and is not considered to pose an immediate hazard to the stability of the downstream slope.

b. Design and Construction Data - Except for old inspection report references to a 2-in. wood corewall and gravel embankment material, there is substantially no design or construction information on the dam and dike embankments. Local surface exposures do appear to confirm a gravelly sand embankment material, but the extent of such material is not certain. Thus, theoretical analyses of the structural stability of the embankments are not possible.

The above-water embankment geometry, as determined by limited measurements at the site, and the long period of service of the dam indicate that the embankments would be expected to be adequately stable under static loading conditions. Whether or not the seepage can cause future instability has not been determined.

c. Operating Records - No operating records are known to exist for the dam, except for Inspection Reports by Worcester County.

d. Post-Construction Changes - Without design or "as-built" drawings, it is not known if there have been post-construction changes to the embankments. A 1930 inspection report does make reference to "reconstructed and widened embankments." Based on comments in previous inspection reports and the appearance of the spillway, it appears that the spillway was paved with concrete after its original construction and subsequently the pond was lowered approximately one foot by the cutting of a notch in the broad-crested spillway.

e. Seismic Stability - The dam is located in a Seismic Zone No. 2 and, in accordance with recommended Phase I guidelines, does not warrant seismic analysis.

SECTION 7: ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition - The visual examination of New Pond Dam, including the dike, did not reveal any evidence of failure or conditions which would warrant urgent remedial treatment. However, because of the need for maintenance and additional investigation that is outlined hereinafter, the project is considered to be in only fair condition.

b. Adequacy of Information - All of the information for the Phase I Investigation had to be obtained from visual examination and limited measurements at the site. This information has been sufficient for the purpose of this investigation, but it does not permit detailed evaluation of stability, seepage or available freeboard.

c. Urgency - The recommended additional investigations and remedial measures outlined in Sections 7.2 and 7.3, respectively, should be undertaken within one year after receipt of this report by the Owner.

d. Need for Additional Investigations - Additional investigations should be performed by the Owner as outlined in the following section.

7.2 Recommendations

It is recommended that the following additional investigations be performed by the Owner:

1. An investigation to determine whether or not the seepage that is occurring at the downstream toe of the dam can have a significant effect on long-term dam stability. This would include regular monitoring of the various observed seepage locations, including checks during higher than normal pond levels, to determine if conditions are changing with time.

2. Topographic survey of the dam and dike embankments, including underwater portions, and evaluation of actual embankment configuration with respect to stability and available freeboard. If the survey does not provide sufficient information to confirm adequate stability, it might be necessary to carry out test borings and/or test excavations to determine the character of the embankment material and the existence and condition of core walls.

3. A detailed hydrologic-hydraulic investigation to determine the necessary discharge capabilities of the spillway and the measures required to significantly increase the spillway capacity to meet this requirement.

4. An investigation to determine the required measures to make the outlet works (reservoir drain) operational.

7.3 Remedial Measures

a. Operation and Maintenance Procedures - It is recommended that the following remedial work be undertaken by the Owner, in addition to the investigations outlined in Section 7.2, to correct deficiencies noted during the visual examination:

(1) Clear brush and trees from the dam and dike embankments, including stump removal and backfilling, establish vegetation cover, and cut grass and weeds on the embankments at least once a year.

(2) Provide additional riprap or cobble slope protection where it is lacking or deficient on the upstream faces of the dam and dike; restore and reshape local eroded areas.

(3) Reshape the dam and dike crests to provide uniform freeboard and permit vehicle access for maintenance and repair. Repair eroded notch in dike downstream slope and hole in dam crest near spillway. The extent of the reshaping will be subject to the results of the evaluation of actual embankment configuration recommended in Section 7.2.

(4) Replace fallen stones in stone masonry walls.

(5) Remove debris from downstream side of spillway and outlet structures.

Due to the discharge capabilities of the spillway and the condition of the dam, it is recommended that during high reservoir levels and unusually heavy precipitation the Owner provide surveillance of the embankments and spillway. The Owner should also develop a formal emergency procedures plan and warning system in cooperation with local officials in downstreamm communities. Finally it is recommended that the owner establish a formal operational procedure and maitenance program and a program of annual technical inspections.

7.4 Alternatives - Not applicable.

APPENDIX A - INSPECTION TEAM

ORGANIZATION AND CHECKLIST

VISUAL INSPECTION PARTY ORGANIZATION

NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond

DATE: September 14, 1978 (Soils and structures on 20 September 1978)

TIME: 2:15 p.m.

WEATHER: Clear to partly cloudy - 65°F, lt. var. wind

WATER SURFACE ELEVATION UPSTREAM: ¼" below spillway crest

STREAM FLOW: Only ds flow leakage through abandoned gate and seepage flow less than 1 cfs

INSPECTION PARTY:

1. Joseph E. Downing - CDM
2. Charles E. Fuller - CDM
3. _____
4. Roger H. Wood - CDM - 9/20/78
5. Peter LeCount - H&A - 9/20/78
6. _____

PRESENT DURING INSPECTION:

1. Robert Javery - Stevens Linen Associates
2. _____
3. _____
4. _____

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond DATE: 9/20/78

EMBANKMENT: Dam, Stone

CHECK LIST	CONDITION
1. Upstream Slope	1.
a. Vegetation	a. Thick brush, weeds, trees to 5 in. dia.
b. Sloughing or Erosion	b. Root mat locally undercut few inches
c. Rock Slope Protection - Riprap Failures	c. Cobbles among roots & brush
d. Animal Burrows	d. None observed
2. Crest	2.
a. Vegetation	a. Grass, weeds, overhanging brush & trees.
b. Sloughing or Erosion	b. Hole alongside spillway (2.5' x 4.5' x 2' deep-slight seepage on bottom)
c. Surface cracks	c. None observed
d. Movement or Settlement	d. Crest elevation varies approx. 6 in. cause not known.
3. Downstream Slope	3.
a. Vegetation	a. Brush above wall, trees & brush at base.
b. Sloughing or Erosion	b. N/A (stone masonry wall)
c. Surface cracks	c. N/A (stone masonry wall)
d. Animal Burrows	d. N/A (stone masonry wall)
e. Movement or Cracking near toe	e. N/A (stone masonry wall)
f. Unusual Embankment or Downstream Seepage	f. Local small pockets of water at base of wall, slight flow at drain from gate, slight seepage (w/rust stain) at toe of slope below left abutment.
g. Piping or Boils	g. None observed
h. Foundation Drainage Features	h. None known
i. Toe Drains	i. None known
4. General	4.
a. Lateral Movement	a. Not evident
b. Vertical Alignment	b. Crest elev. varies approx. 6 in.
c. Horizontal Alignment	c. Wall face looks good
d. Condition at Abutments and at Structures	d. Hole alongside spillway, gate wingwall undercut
e. Indications of Movement of Structural Items	e. None observed (except few stones from wall)
f. Trespassing	f. Appears minor
g. Instrumentation Systems	g. None

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond DATE: 9/20/78
EMBANKMENT: Dam, Earth (E-W)

CHECK LIST	CONDITION
1. Upstream Slope	1.
a. Vegetation	a. Brush, weeds, trees to 24 in. dia.
b. Sloughing or Erosion	b. Root mat locally undercut few inches
c. Rock Slope Protection - Riprap Failures	c. Gravel & cobbles, local gaps
d. Animal Burrows	d. None observed
2. Crest	2.
a. Vegetation	a. Grass, weeds, brush & trees
b. Sloughing or Erosion	b. None observed
c. Surface cracks	c. None observed
d. Movement or Settlement	d. Crest elevation varies approx. 6 in. cause not known.
3. Downstream Slope	3.
a. Vegetation	a. Grass, weeds, brush, trees to 24 in. dia.
b. Sloughing or Erosion	b. Slope irregular in few locations possibly from fallen trees; stone wall at steep location partly fallen down.
c. Surface cracks	c. None observed
d. Animal Burrows	d. None observed
e. Movement or Cracking near toe	e. None observed
f. Unusual Embankment or Downstream Seepage	f. Local slight seepage with rust stain where ground is low at toe; moderate seepage flow from under rocks at one location.
g. Piping or Boils	g. None observed
h. Foundation Drainage Features	h. None known
i. Toe Drains	i. None known
4. General	4.
a. Lateral Movement	a., b., c. Dam shape somewhat irregular, movement not evident.
b. Vertical Alignment	
c. Horizontal Alignment	
d. Condition at Abutments and at Structures	d. N/A
e. Indications of Movement of Structural Items	e. N/A
f. Trespassing	f. Appears minor
g. Instrumentation Systems	g. None

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond DATE: 9/20/78

EMBANKMENT: Dike (N-S)

CHECK LIST	CONDITION
1. Upstream Slope	1.
a. Vegetation	a. Brush, weeds, trees to 24 in. dia.
b. Sloughing or Erosion	b. Appears minor
c. Rock Slope Protection - Riprap Failures	c. Gravel & cobbles, generally intact
d. Animal Burrows	d. None observed
2. Crest	2.
a. Vegetation	a. Grass, weeds, brush & trees
b. Sloughing or Erosion	b. Shape varies, possibly due to past erosion by water or foot traffic.
c. Surface cracks	c. None evident
d. Movement or Settlement	d. Crest elevation varies approx. 1 ft. cause not known.
3. Downstream Slope	3.
a. Vegetation	a. Grass, weeds, brush, trees to 24 in. dia.
b. Sloughing or Erosion	b. Local eroded area, approx. 2' x 10' x 1' deep, appears to have been caused by overtopping.
c. Surface cracks	c. None observed
d. Animal Burrows	d. None observed
e. Movement or Cracking near toe	e. None observed
f. Unusual Embankment or Downstream Seepage	f. No obvious active seepage but ponded water along approx. 1/2 of toe length
g. Piping or Boils	g. None observed
h. Foundation Drainage Features	h. None known
i. Toe Drains	i. None known
4. General	4.
a. Lateral Movement	a., b., c. Dam shape irregular, movement not evident.
b. Vertical Alignment	
c. Horizontal Alignment	
d. Condition at Abutments and at Structures	d. Gradual transition to natural ground at north abutment.
e. Indications of Movement of Structural Items	e. N/A
f. Trespassing	f. Appears minor
g. Instrumentation Systems	g. None

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond DATE: Sept. 20, 1978

SPILLWAY:

CHECK LIST	CONDITION
1. Approach Channel a. General Condition b. Obstructions c. Log Boom etc.	1. a. Good condition, spillway adjacent to pond. b. Brush at right & left edge. c. None
2. Weir a. Flashboards b. Weir Elev. Control (Gate) c. Vegetation d. Seepage or Efflorescence e. Rust or Stains f. Cracks g. Condition of Joints h. Spalls, Voids or Erosion i. Visible Reinforcement j. General Struct. Condition	2. a. Steel guides for stop logs present in pilot channel. Some rust-good condition. b. No gate c. None observed in spillway d. None observed e. None observed f. Shrinkage and cold joint cracks g. Good condition h. Minor spalls and chips i. None observed j. Good condition
3. Discharge Channel a. Apron b. Stilling Basin c. Channel Floor d. Vegetation e. Seepage f. Obstructions g. General Stuct. Condition	3. a. None present b. Vertical drop to channel below. Some loose rock & concrete from spillway modification present below. c., d. Heavily forested. Piled branches etc. e. Area moist-some trapped water present f. See 3 b, c & d g. Fair condition
4. Walls a. Wall Location At end of weir (1) Vegetation (2) Seepage or Efflorescence (3) Rust or Stains (4) Cracks (5) Condition of Joints (6) Spalls, Voids or Erosion (7) Visible Reinforcement (8) General Struct.Condition	4. a. Wall is open joint stone masonry wall at end of weir and also serves as downstream wall of dam. (1) Moss growth (2) N/A (3) None observed (4) N/A (5) Open-good condition (6) None observed (7) N/A (8) Good condition

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: New Pond DATE: Sept. 20, 1978

OUTLET WORKS:

CHECK LIST	CONDITION
1. Inlet	1.
a. Obstructions	a. None at surface
b. Channel	b. 12' long, 3'-6" wide at inlet
c. Structure	c. Open joint stone masonry walls. Inlet walls flared. Top slightly displaced.
d. Screens	d. None
e. Stop Logs	e. None
f. Gates	f. Gate abandoned and plugged. Anchor bolt for missing shaft still projecting from stone.
2. Control Facility	2.
a. Structure	a., b., c., d. None
b. Screens	e. Beneath dam - not visible
c. Stop Logs	f. See 3
d. Gates	
e. Conduit	
f. Seepage or Leaks	
3. Outlet	3.
a. Structure	a. Open joint stone masonry well chinked wall. Wall is downstream face of dam. Good condition.
b. Erosion or Cavitation	b. None observed
c. Obstructions	c. Downstream overgrown - heavily forested. Piled branches and tree cuttings.
d. Seepage or Leaks	d. Flow is coming out 2' Horiz. & 2'-4" Vert. outlet of conduit and beneath adjacent stones of downstream wall of dam.
4. Mechanical and Electrical	4. None
a. Crane Hoist	
b. Hydraulic System	
c. Service Power	
d. Emergency Power	
e. Lighting	
f. Lightning Protection	

VISUAL INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: NEW POND DATE: September 14, 1978

HYDROLOGIC-HYDRAULIC CONSIDERATIONS:

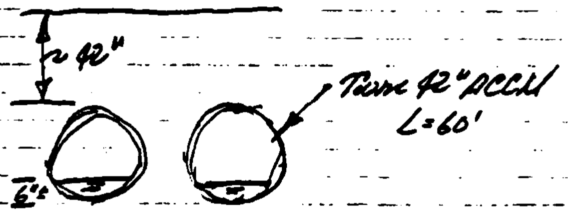
CHECK LIST	CONDITION
1. Upstream Watershed a. Type of Terrain b. Hydrologic Controls	1a. Slight to moderately hilly (5-10% av. slope) 1b. Hydrologic controls include Easterbrook Pond and swampy area (20 acres) just d.s. in southwesterly corner of watershed as well as swampy area (10 acres) west of Corbin Rd. Further control from northerly portion of watershed by Hayden Pond which appears to be hydraulically connected, although no culvert opening could be found.
2. Reservoir a. Type of Terrain b. Development	2a. Slight to moderately hilly with shallow pond. 2b. Development is presently sparse (12 houses around shoreline) although more residential development now evident in area adjacent to shoreline (n.e. of pond)
3. Spillway a. Adjacent Low Points b. Spillway Approach (Slope) c. Spillway Discharge (Slope) d. Spillway Type	3a. Low point on dam is on easterly leg (sta. 2+00) where wash area (2'wide) indicates previous spillage (see sketch) 3b. Approach is edge of pond which is 2-3 ft. deep at stream bank. 3c. Discharge is from concrete flume vertically downward about 9-10-ft on to damped rock and debris. 3d. Concrete flume 29'wide x 22'long (see sketch) with 12" x 42" notch cut out for low flow discharge.
4. Downstream Watershed a. Reach No. (1) Control (Bridge, dam, culvert, etc.) (2) Channel Characteristics (3) Development (4) Visible Utilities (5) Special Problems (Hospital, etc.)	4a. Reach No. 1 - 2000-ft from New Pond to westerly portion of Mosquito Pond (28' drop) with flow thru 1500-ft of swamp before easterly Wallis Pond. Flow from Mosquito Pond to Wallis Pond controlled by twin 42" ACCM as is flow from Wallis Pond to Larner Pond by twin 54" ACCM. Combined storage of Mosquito, Wallis and Larner Pond is probably sufficient to store waters released from New Pond by failure of dam.

DOWNSTREAM CULVERTS

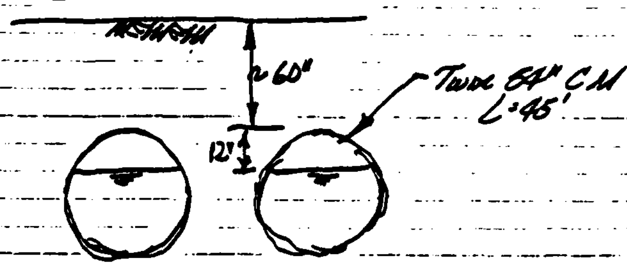
Hayden Pond to New Pond

No visible culvert but stone header suggests one. W.S. 3' below lowpt. in road.

Mosquito Pond to Wallis Pond



Wallis Pond to Larner Pond



APPENDIX B

LIST OF AVAILABLE DOCUMENTS AND PRIOR INSPECTION REPORTS

Page No.

LIST OF AVAILABLE DOCUMENTS

None Available

PRIOR INSPECTION REPORTS

COUNTY OF WORCESTER MASSACHUSETTS
COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by L. O. Marden Date Jan. 7, 1925 Dam No. 14-10

Town Dudley - Hayden Res. Location 1 mi. S Charlton T. Line

Owner Stevens Linen Works Use Storage

Material and Type 400' Earth emb. - 22o' main dam cut stone dry laid wall 8 thick 1/8:1 1½:1 rip rap upstream face

Dam Designed by Constructed by Year

SPILLWAY LENGTH 33't - spillway 25' east end dam.

El. top Abutment 100 - El. Crest 97 El. Apron El. Streambed 8'

Width top Abutment 20-22 Width top Crest 10 Width bottom Spillway 50+-

Width Flashboards carried 3' Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway Gravel soil

Condition Water has not run over top of spillway for some years, grassed over. Filled in top of wall with mortar

EMBANKMENT LENGTH 400'

El. Top 100 El. Natural Ground 81 Width Top 20-22

Width of Bottom 50+- Upstream Slope 1½:1 riprap Downstream Slope 1½:1

Kind of Corewall Riprap 1½:1 ¼ to 5

Material in Embankment Gravel soil Foundation gravel soil

Condition Good except cut off trees and brush

GATES 2x2 waste, main channel 3x2 waste, appears to be stoned up Location just east spillway

Size Kind El. Flowline

Condition

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure none

Recent Repairs and Date none

Topography of Country below Dam Wooded valley -- small slope

Nature of Buildings and Roads below Dam none

Number Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

APPENDIX B-1

Decree No. ..... Dam No. 14-10

COUNTY OF WORCESTER, MASSACHUSETTS

OFFICE OF COUNTY ENGINEER

SECOND REPORT Neg. Nos. .....

INSPECTION OF DAMS, RESERVOIR DAMS AND RESERVOIRS

Town Dudley Date Feb. 9, 1927 Dam No. 14-10

Location ..... Name of Pond or Stream Hayden Res.

Inspected by L.O. Marden

Owner Stevens Linen Works. Use .....

MATERIAL & TYPE See first Inspection Sheet

Elevations in feet: above (+) or below (−) full pond or reservoir level.

FOR DAM Bed of stream below ..... top of spillway .....

FOR RESERVOIR

top of dam ..... top of flashboards ..... ground surface below .....

..... level of overflow pipe ..... length in feet .....

width top in feet ..... width bottom in feet ..... size pipe to mill .....

..... inches ..... length spillway in feet ..... head in feet .....

Size of wheel ..... H. P. developed .....

Size of gates ..... location of gates .....

Foundation and details of construction .....

..... condition of embankment Cut off trees

Constructed by ..... date ..... and brush

Designed by ..... location .....

Recent repairs and date .....

Evidence of leakage .....

Condition Fill in holes in embankment and top of downstream wall.

Topography of country below .....

Nature of buildings and roads below dam .....

No. Acres in watershed ..... No. Acres in pond .....

Plans secured ..... Percent watershed in cultivation .....

Percent in forests ..... Note: Cross out word not applicable .....

APPENDIX B-2

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by L. O. Marden-H. W. Crawford Date April 2, 1930. Dam No. 14-10

Town Dudley Location Hayden Reservoir.

Owner Stevens Line Works Use storage.

Material and Type

Dam Designed by Constructed by Year

SPILLWAY—Length Feet. Depth Feet

El. top Abutment El. Crest El. Apron El. Streambed

Width top Abutment Width top Crest Width bottom Spillway

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition should clean out brush etc and lower level to spillway provide concrete sidewalls.

EMBANKMENT—Length overall Feet

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition Have reconstructed and widened embankments-OK.

GATES Location

Size Kind El. Flowline

Condition OK

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure small leaks- seepage

Recent Repairs and Date see under embankment.

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number of Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by Messr's. Crawford, Healy and L. O. Marden Date July 27,1932 Dam No. 14-10

Town Dudley Location

Owner Stevens Linen Co. Use

Material and Type

Dam Designed by Constructed by Year

SPILLWAY—Length Feet. Depth Feet

Fl. top Abutment El. Crest El. Apron El. Streambed

Width top Abutment Width top Crest Width bottom Spillway

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition

EMBANKMENT—Length overall Feet

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition

GATES Location

Size Kind El. Flowline

Condition Discussed means of improving gates.

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure

Recent Repairs and Date

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number of Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

APPENDIX B-4

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by L.O.M.Master Mecg.Healey Date Jan.13,36 Dam No. 14-10

Town Dudley Location Hayden Reservoir.

Owner Stevens Linen Works. Use

Material and Type

Dam Designed by Constructed by Year

SPILLWAY

El. top Abutment El. Crest El. Apron El. Streambed

Width top Abutment Width top Crest Width bottom Spillway

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition abutment walls should be raised 2 feet-lower freeboard- new concrete creat

EMBANKMENT

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition believe large trees in embankment same cause of leaks if removed stumps should be entirely cut out.

GATES Location

Size Kind El. Flowline

Condition large stream water coming thru gate with same closed leak about 20-35 feet from gate house water side of dam- also several bad leaks along foot of embankment.

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure

Recent Repairs and Date

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by L.O.M., Mast. Mech Healey Date 1-13-37 Dam No. 14-10

Town Dudley Location Hayden Reservoir

Owner Stevens Linen Works Use

Material and Type

Dam Designed by Constructed by Year

SPILLWAY—Length Feet. Depth Feet

El. top Abutment El. Crest El. Apron El. Streambed

Width top Abutment Width top Crest Width bottom Spillway

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition Abutment walls should be raised 2 ft. Low free board new concrete crest.

EMBANKMENT—Length overall Feet

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition Believe large trees in embankment cause some of leak. If removed stumps should be entirely cut out.

GATES Location

Size Kind El. Flowline

Condition Large stream water coming thru gate with same closed. Leak about 30-35 feet from gate house water side of dam. Also several bad leaks along foot of embankment

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure

Recent Repairs and Date

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number of Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

WORCESTER COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

Inspected by E. S. Grover Date 10-18-38 Dam No. 14-10

Town Dudley Location W. Charlton Road

Owner Stevens Linen Works Use

SPILLWAY 28'4 long x 1'6" above crest

El.top abutment El.Crest 1" W.L. El.Apron El.Ct.Bed

Width top Abut. Width top Crest 16" Width bottom Sp.way

Width flashboards none Kind Flashboards

El.Flowline Cleanout Pipe Size and Kind Pipe

Kind of Foundation under Spillway rock

Condition OK below narrow outlet . Water 1" below crest

EMBANKMENT

El. Top 2'0" above crest El.Natural Ground Width Top 22'0"

Width of Borrom Upstream Slope gravel Downstream Slope Masonry

Kind of Corewall 2" wood Riprap none

Material in Embankment Gravel backed by masonry Foundation

Condition OK except for seepage at XX^X in sketch

GATES Location

Size Kind El.Flowline

Condition

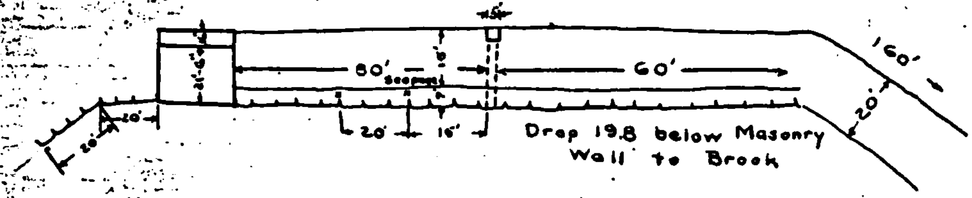
Evidence of Leaks in Structure

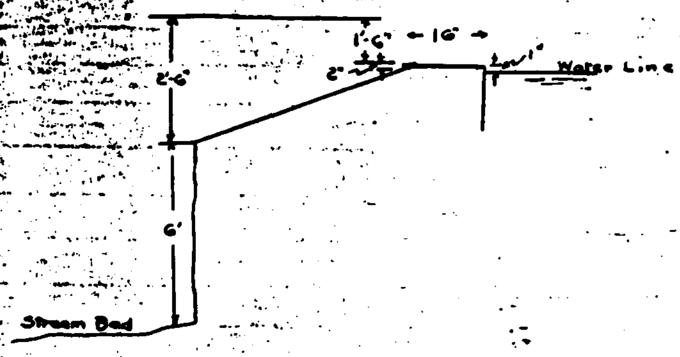
Recent Repairs and Date

Number Acres in Pond Drainage Area in Sq. Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet


80'
60'
160'
20'
20'
16'
20'
20'
Drop 19.8 below Masonry
Wall to Brook


1'-6"
16'
2'-6"
Water Line
6'
Stream Bed

APPENDIX B-8

COUNTY OF WORCESTER MASSACHUSETTS
COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by K.H. Finlayson Date 3-23-1939 Dam No. 14-10

Town Dudley Location Hayden Reservoir

Owner Stevens Linen Works Use

Material and Type Measured

Dam Designed by Constructed by Year

SPILLWAY

El. top Abutment El. Crest El. Apron El. Streambed

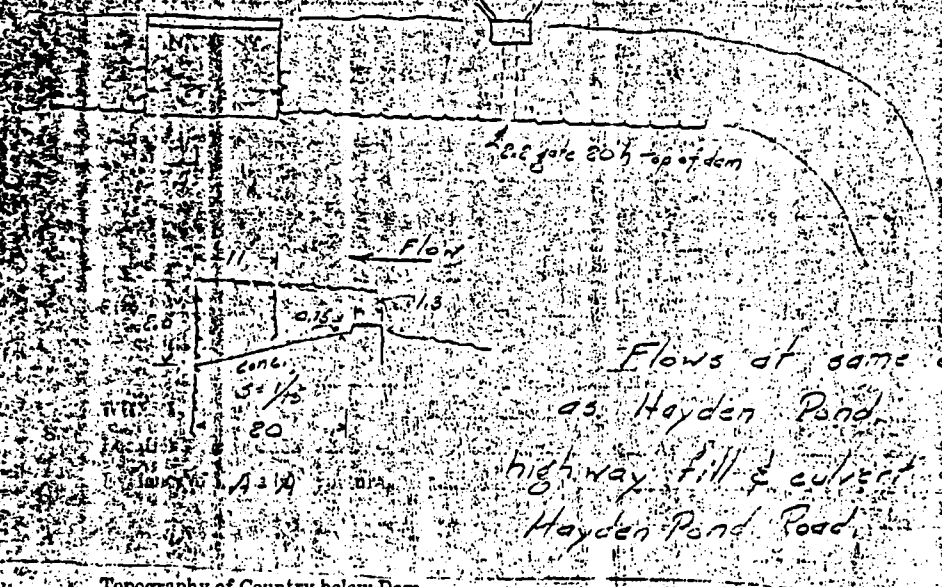
Width top Abutment Width top Crest Width bottom Spillway

12.0

3-23-39

A

Pond



Flows at same elev as Hayden Pond.

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

WORCESTER COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

M.M.Healey

Inspected by L.O.Warden-L.B.Lowell Date 4-17-1939 Dam No. 11-16

Town Dudley Location Hayden Reservoir

Owner Stevens LinenWorks Use

SPILLWAY

El.top abutment El.Crest El.Apron El.St.Bed

Width top Abut. Width top Crest Width bottom Sp.way

Width flashboards Kind Flashboards

El.Flowline Cleanout Pipe Size and Kind Pipe

Kind of Foundation under Spillway

Condition Discuss raising the abutment walls to this spillway at least two feet, or perhaps lowering same- should raise embankment-riprap same

EMBANKMENT

El. Top El.Natural Ground Width Top

Width of Borrom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition

GATES Location

Size Kind El.Flowline

Condition

Evidence of Leaks in Structure

Recent Repairs and Date

Number Acres in Pond Drainage Area in Sq. Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

Inspected by W.O. Lindquist Date Dec. 11, 1940 Dam No. 11-10

Town DUDLEY Location Hayden Pond

Owner Use

Material and Type

Dam Designed by Constructed by Year

SPILLWAY

El. top Abutment El. Crest El. Apron El. Streambed

Width top Abutment Width top Crest Width bottom Spillway

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition O.K. Dam seems to be in good condition but Pond is empty.

EMBANKMENT

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition O.K.

GATES Location

Size Kind El. Flowline

Condition O.K. Wide open

WHEEL Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure

Recent Repairs and Date

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

WORCESTER COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

Inspected by [illegible] Date 12-30-41 Dam No. W-20

Town Oxford Location Hayden Pond

Owner [illegible] Use [illegible]

SPILLWAY

El. top abutment [illegible] El. Crest [illegible] El. Apron [illegible] El. Ct. Bed [illegible]

Width top Abut. [illegible] Width top Crest [illegible] Width bottom Sp.way [illegible]

Width flashboards [illegible] Kind Flashboards [illegible]

El. Flowline Cleanout Pipe [illegible] Size and Kind Pipe [illegible]

Kind of Foundation under Spillway [illegible]

Condition Pond still drawn down

No new repairs

EMBANKMENT

El. Top [illegible] El. Natural Ground [illegible] Width Top [illegible]

Width of Borrom [illegible] Upstream Slope [illegible] Downstream Slope [illegible]

Kind of Corewall [illegible] Riprap [illegible]

Material in Embankment [illegible] Foundation [illegible]

Condition No leaks

GATES [illegible] Location [illegible]

Size [illegible] Kind [illegible] El. Flowline [illegible]

Condition Gate open

Evidence of Leaks in Structure [illegible]

Recent Repairs and Date [illegible]

Number Acres in Pond [illegible] Drainage Area in Sq. Miles [illegible]

Discharge in Second Feet per Square Mile [illegible]

Estimated Storage Million Cubic Feet [illegible]

WORCESTER COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

Inspected by J. L. A. Hertel Date 12-10-41 Dam No. 14-10

Town Dudley Location Hayden Res.

Owner Stevens Mills Inc. Use Storage

SPILLWAY

El.top Abutment ____ El.Crest ____ El.Apron ____ El.St.Bed ____

Width top Abut. ____ Width top Crest ____ Width bottom Sp.way ____

Width flashboards none Kind Flashboards ____

El.Flowline Cleanout Pipe ____ Size and Kind Pipe ____

Kind of Foundation under Spillway ____

Condition good - no water over - See Lom report dated 14-10

EMBANKMENT

El.Top ____ El.Natural Ground ____ Width Top ____

Width of Bottom ____ Upstream Slope ____ Downstream Slope ____

Kind of Corewall ____ Riprap ____

Material in Embankment Rubble & Earth Foundation ____

Condition ____

GATES 1 - open Location ____

Size ____ Kind ____ El.Flowline ____

Condition good

Evidence of Leaks in Structure several leaks on secondary embankment.

Recent Repairs and Date None

Number Acres in Pond ____ Drainage Area in Sq.Miles ____

Discharge in Second Feet per Square Mile ____

Estimated Storage Million Cubic Feet ____

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs

Inspected by ..... Date 3-18-44 Dam No. 72

Town Dudley Location .....

Owner ..... Use .....

Material and Type .....

Dam Designed by ..... Constructed by ..... Year .....

SPILLWAY

El. top Abutment ..... El. Crest ..... El. Apron ..... El. Streambed .....

Width top Abutment ..... Width top Crest ..... Width bottom Spillway .....

Width Flashboards carried ..... Kind Flashboards .....

El. Flowline Cleanout Pipe ..... Size and Kind Cleanout Pipe .....

Kind of Foundation under Spillway .....

Condition Good

EMBANKMENT

El. Top ..... El. Natural Ground ..... Width Top .....

Width of Bottom ..... Upstream Slope ..... Downstream Slope .....

Kind of Corewall ..... Riprap .....

Material in Embankment ..... Foundation .....

Condition Good

GATES ..... Location .....

Size ..... Kind ..... El. Flowline .....

Condition Gate stem is rusted and in poor condition. Gate open probably OK. Machinery protected by Gate House.

WHEEL ..... Kind ..... Size ..... Rated H. P. .....

Location ..... Ave. Head .....

Evidence of Leaks in Structure None

Recent Repairs and Date .....

Topography of Country below Dam Heavy brush & woods

Nature of Buildings and Roads below Dam .....

Number Acres in Pond ..... Drainage Area in Square Miles .....

Discharge in Second Feet per Square Mile .....

Estimated Storage Million Cubic Feet .....

COUNTY OF WORCESTER MASSACHUSETTS

COUNTY ENGINEER

Inspection of Dams, Reservoir Dams, and Reservoirs.

Inspected by K. M. Finlayson Date 12-10-45 Dam No. 14-10

Town Dudley Location Hayden Pond

Owner Stevens Linen Use Storage

Material and Type

Dam Designed by Constructed by

RECEIVED

SPILLWAY

El. top Abutment El. Crest El. Apron El. Streambed

DEC 11 1945

Width top Abutment Width top Crest Width bottom Spillway

WORCESTER COUNTY ENGINEERING DEPT.

Width Flashboards carried Kind Flashboards

El. Flowline Cleanout Pipe Size and Kind Cleanout Pipe

Kind of Foundation under Spillway

Condition Structure ok — Cut bank in spillway and Pond 4" below flow line

EMBANKMENT

El. Top El. Natural Ground Width Top

Width of Bottom Upstream Slope Downstream Slope

Kind of Corewall Riprap

Material in Embankment Foundation

Condition — Seepage for length of 30' under end of dam

GATES Location

Size Kind El. Flowline

Condition ok

WHEEL None Kind Size Rated H. P.

Location Ave. Head

Evidence of Leaks in Structure

Recent Repairs and Date

Topography of Country below Dam

Nature of Buildings and Roads below Dam

Number Acres in Pond Drainage Area in Square Miles

Discharge in Second Feet per Square Mile

Estimated Storage Million Cubic Feet

TOWN Dudley

THIS DAM NEEDS ATTENTION

DAM NO. 14-10

LOCATION Hayden Reservoir

STREAM

WORCESTER COUNTY ENGINEERING DEPARTMENT

WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

OWNED BY Stevens Line Associates PLACE Dudley USE stor gae

INSPECTED BY E.V.Meagher LOM DATE Dec.1,1947

TYPE OF DAM high earth emb.-do. stone wall CONDITION fair
s one spillway with concrete crest

SPILLWAY

FLASHBOARDS IN PLACE none RECENT REPAIRS none

CONDITION Good, but new concrete abutments should be built
capacity of spillway about enough for 1375 flood-needs higher pts.

REPAIRS NEEDED

EMBANKMENT

RECENT REPAIRS brush should be cut, roots grubbed out in top and face of embankment. Sould raise embankment at least 1f inches.

CONDITION

REPAIRS NEEDED See above statement

GATES

RECENT REPAIRS none

CONDITION g te OK, but should mortar joints in stone supporting walls of forebay.

REPAIRS NEEDED

LEAKS

HOW SERIOUS Good sized leaks exist at gate section-along downstream face of gate abutment wall and embankment.

DATE Dec.1,1947

L.V. Marden
COUNTY ENGINEER

APPENDIX B-16

TOWN Dudley DAM NO. 14-10

LOCATION Hayden Reservoir STREAM

WORCESTER COUNTY ENGINEERING DEPARTMENT

WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

OWNED BY Stevens Linen Associates PLACE Dudley USE Storage

INSPECTED BY LOM DATE Dec. 2, 1950

TYPE OF DAM High earth emb. - Stone wall CONDITION fair to good

SPILLWAY

FLASHBOARDS IN PLACE None RECENT REPAIRS None

CONDITION

REPAIRS NEEDED Should raise abt 2'-0" for increased capacity. or lower spillway crest

EMBANKMENT

RECENT REPAIRS None

CONDITION Sh.

REPAIRS NEEDED Should raise 2½" leaks see below

GATES

RECENT REPAIRS None

CONDITION appears OK

REPAIRS NEEDED —

LEAKS

HOW SERIOUS Good sized leak at gate section - Also three ones at East Dike Section

DATE Dec. 2, 1950

L.O. Marden

COUNTY ENGINEER

TOWN Dudley DAM NO. 240

LOCATION Hayden Pond STREAM

WORCESTER COUNTY ENGINEERING DEPARTMENT

WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

OWNED BY Stevens Linen Co PLACE USE New

INSPECTED BY Lt Spafford DATE 11/21/51

TYPE OF DAM Stone Breast Wall CONDITION

SPILLWAY

FLASHBOARDS IN PLACE None RECENT REPAIRS None

CONDITION Good

REPAIRS NEEDED None

EMBANKMENT

RECENT REPAIRS None

CONDITION Good

REPAIRS NEEDED None

GATES

RECENT REPAIRS New head screw put in in 1950

CONDITION Good

REPAIRS NEEDED None

LEAKS

2 Old leaks - one at gate and one at mid point of Embankment - both old - not particularly dangerous

HOW SERIOUS

DATE

COUNTY ENGINEER

TOWN Dudley

LOCATION

DAM NO.

STREAM

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

OWNED BY PLACE USE

INSPECTED BY LHS & LHS, DATE Sept. 13, 1955

TYPE OF DAM CONDITION

SPILLWAY

FLASHBOARDS IN PLACE RECENT REPAIRS

CONDITION OK

REPAIRS NEEDED

EMBANKMENT

RECENT REPAIRS

CONDITION OK

REPAIRS NEEDED

GATES

RECENT REPAIRS

CONDITION Small Gate - lead screw taking total discharge.

REPAIRS NEEDED

LEAKS

HOW SERIOUS

DATE

COUNTY ENGINEER

TOWN Dudley DAM NO. [illegible]

LOCATION Westerly of Pierpoint Rd. on a cart road STREAM New Pond Brook

"New Pond"

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

Owned by Stevens Linen Associates Place Dudley Use Storage Pond

Inspected by WOL Date Oct 25, 1963

Type of Dam Earth, stone and concrete Condition Poor

SPILLWAY

Flashboards in Place No boards Recent Repairs

Condition This granite stone spillway has a concrete floor

Repairs Needed The height of this spillway is only 2' - very little freeboard. The crest should be lowered at least 2'.

EMBANKMENT

Recent Repairs The easterly embankment is 25'± high and 24' wide on top

Condition The vertical downstream wall is good except some dry stones

Repairs Needed are missing. The westerly embankment is also 24' wide (average) on top. Both of these embankments are covered with brush and trees

GATES

Recent Repairs

Condition The gate and gate house are good. The gate is open

Repairs Needed The water level on this date is about 6' below the spillway crest

LEAKS

How Serious No leaks are visible

DATE: County Engineer

APPENDIX B-20

TOWN Dudley DAM NO. 14-10

LOCATION Westerly of Pleasant Rd. STREAM New Pond Brook

New Pond

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

Owned by Same as 14-10 Place Dudley Use Storage pond

Inspected by Wel. Date Oct. 25, 1963

Type of Dam Earth dike Condition Fair

SPILLWAY

Flashboards in Place _____ Recent Repairs _____

Condition No spillway at this dike

Repairs Needed This 200' long earth dike is located on the easterly end of the pond and extends northerly from the main dam

EMBANKMENT

Recent Repairs This embankment is 15' to 20' high - 6' to 8' wide on top - 1½ to 1 slopes - There is some small stone riprap on the upstream slope. It is covered with brush and large trees

GATES

Recent Repairs _____

Condition No gate

Repairs Needed (There is a 20"x20" pond drain just below the crest of this earth dike. This water probably comes from seepage through this dike.)

LEAKS

How Serious _____

DATE: _____ County Engineer

TOWN Dudley DAM NO. 14-10

LOCATION 2500' Wly of Pierpoint Rd. STREAM (Hayden Pond) Brook

"New Pond"

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

Owned by Stevens Linen Assoc's Place Dudley Use Storage Reservoir

Inspected by FEP- WOL. Date May 15 1964

Type of Dam Earth and Stone Condition Fair

SPILLWAY

Flashboards in Place No boards Recent Repairs

Condition Spillway area is too small - more freeboard should

Repairs Needed be provided - water level is too high

EMBANKMENT

Recent Repairs No recent repairs

Condition Brush and dead trees should be removed from dam

Repairs Needed No maintenance to this dam for many years

Missing stones on downstream wall should be replaced and wall repaired.

GATES

Recent Repairs

Condition Gate is partly open - gate is located in locked gate house

Repairs Needed

LEAKS

How Serious No leaks visible.

DATE: County Engineer

TOWN *Dudley* DAM NO. *14-10 [illegible]*

LOCATION *1200' westerly - Pierpoint Rd. [illegible] Road* STREAM *Hayden Pond Brook - New Pond*

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

Owned by *Stevens Linen Associates, Inc.* Place *Dudley* *Mill St.* Use *Storage Pond*

Inspected by *W.O.L.* Date *Aug. 29, 1968*

Type of Dam *Earth and stone dam* Condition *Fair to poor*

SPILLWAY

Flashboards in Place *No boards* Recent Repairs

Condition *12" wide concrete crest on the upstream side of the spillway - flat*

Repairs Needed *crest spillway. The abutment walls should be extended to the crest [illegible] for each wall. The water level is 1.5' below the crest.*

EMBANKMENT

Recent Repairs *The downstream wall is 20'(±) high with some of the top stones*

Condition *missing. There are 3 or 4 leaks visible below this wall.*

Repairs Needed *(14-10A) There is a 300' long earth dike Northeasterly of the easterly end of the dam. It is 6' to 20' wide on top - 6' to 15' high - earth slopes - trees and brush on top and slopes - riprap on the upstream slope. There are [illegible] seepage pools below this dike.*

GATES

Recent Repairs *The small wood gate house is locked. The gate leaks at the outlet.*

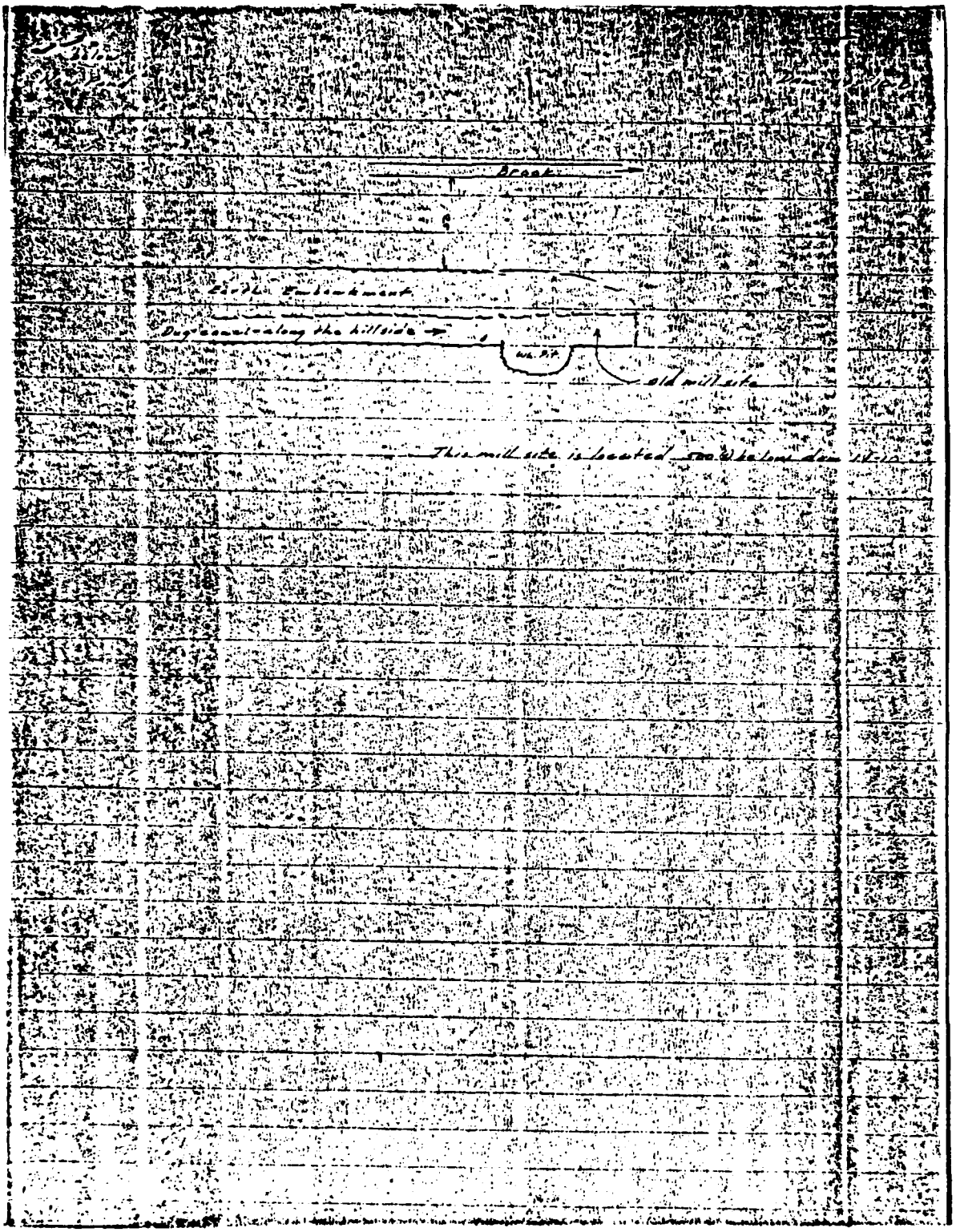
Condition *(14-10B) There is a large leak at the old 2'x2' sluicegate. The old canal*

Repairs Needed *is located [illegible] above the brook - is 500' long or 300' beyond the [illegible] - the 3' wide walled canal - the old wheel pit and the old mill site are still in place.*

LEAKS

How Serious

DATE: County Engineer


Brook
old mill site

TOWN Dudley DAM NO. 14-10 Haydon Pond

LOCATION STREAM

WORCESTER COUNTY ENGINEERING DEPARTMENT
WORCESTER, MASSACHUSETTS

DAM INSPECTION REPORT

Owned by Place Use

Inspected by Reynolds Date

Type of Dam Condition

SPILLWAY

Flashboards in Place None Recent Repairs

Condition Water [illegible] 3 ft below [illegible]

Repairs Needed [illegible]

EMBANKMENT

Recent Repairs

Condition

Repairs Needed

GATES

Recent Repairs

Condition

Repairs Needed

LEAKS

How Serious

DATE [illegible] County Engineer

H.

INSPECTION REPORT & DATA FOR DAMS

Dam No. 14-10
Town: DUDLEY
Stream: BROOK
Pond: HAYDEN POND
Date: 2/9/72
By: R. Fichelson

Owner: STEVENS LINEN ASSOC. INC
His Address:
Function of Dam: MILL ST STORAGE RESEVOIR

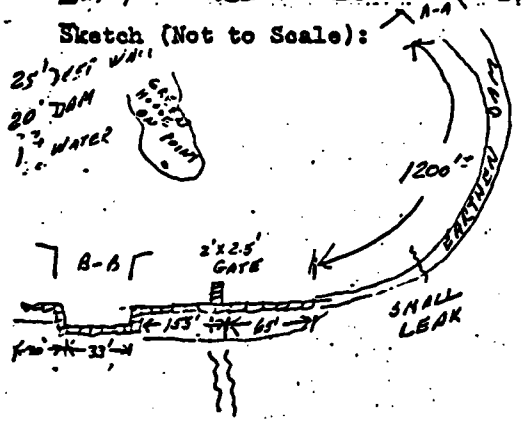
Location & Access: .7 TO MILE WEST ON HAYDEN RD FROM JCT OF PIERPONT & HAYDEN RDS. TO PATH ON LT JUST BEFORE POND.
USGS Quad. WEBSTER Lat. 42-04-15 Long. 72-55-10
Drain.Ar.: 1.97 Sq.Mi.; Ponds: 93 ac.; Res.Cdam:
Character of D.A.:

CONDITION RATING
Structural: GOOD
Hydraulic: 33' X 1' + 2' X 2.5' GAT
General: GOOD
PRIORITY: NONE

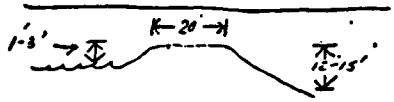
Estimated
Discharge
Capacity:

General Description of Dam and Discharge Control:
283' STON MASONRY DAM INCLUDES SPILLWAY (NO SLOTS FOR FLASHBOAR
1200'± EARTHEN DAM. ONE LEAK EAST OF GATE.
MANY LARGE TREES ON DAM & DAM FACES.

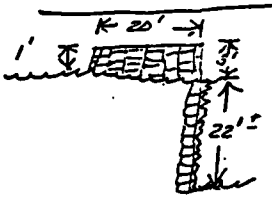
Sketch (Not to Scale):



A-A DAM END VIEW



B-B STONE MASONRY SPILLWAY SIDE VIEW



Remarks and Recommendations:

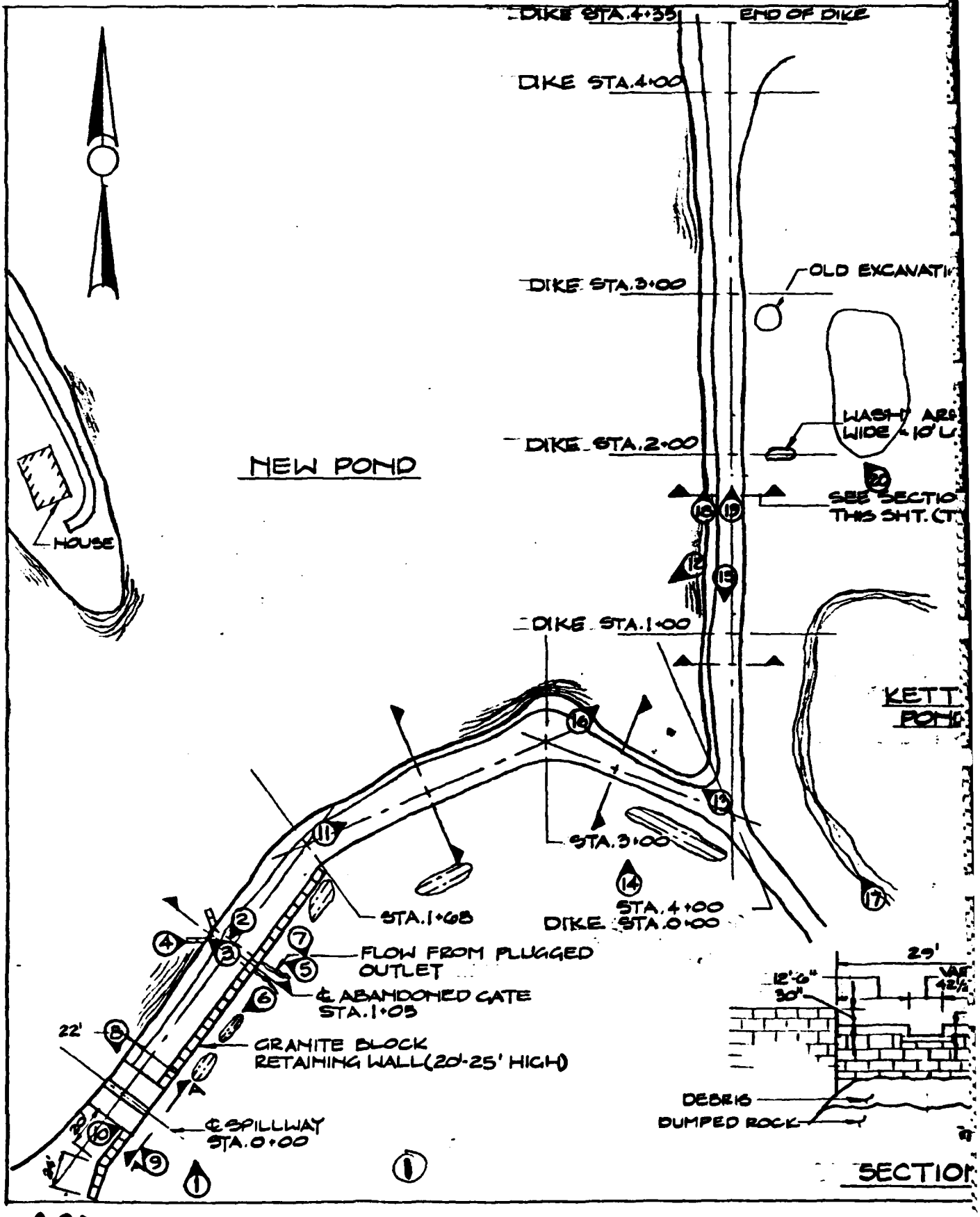
N

Date	By	Comment
2/9/72	R. Fichelson V. P. E. M	

Dam No. 3-14-10-10

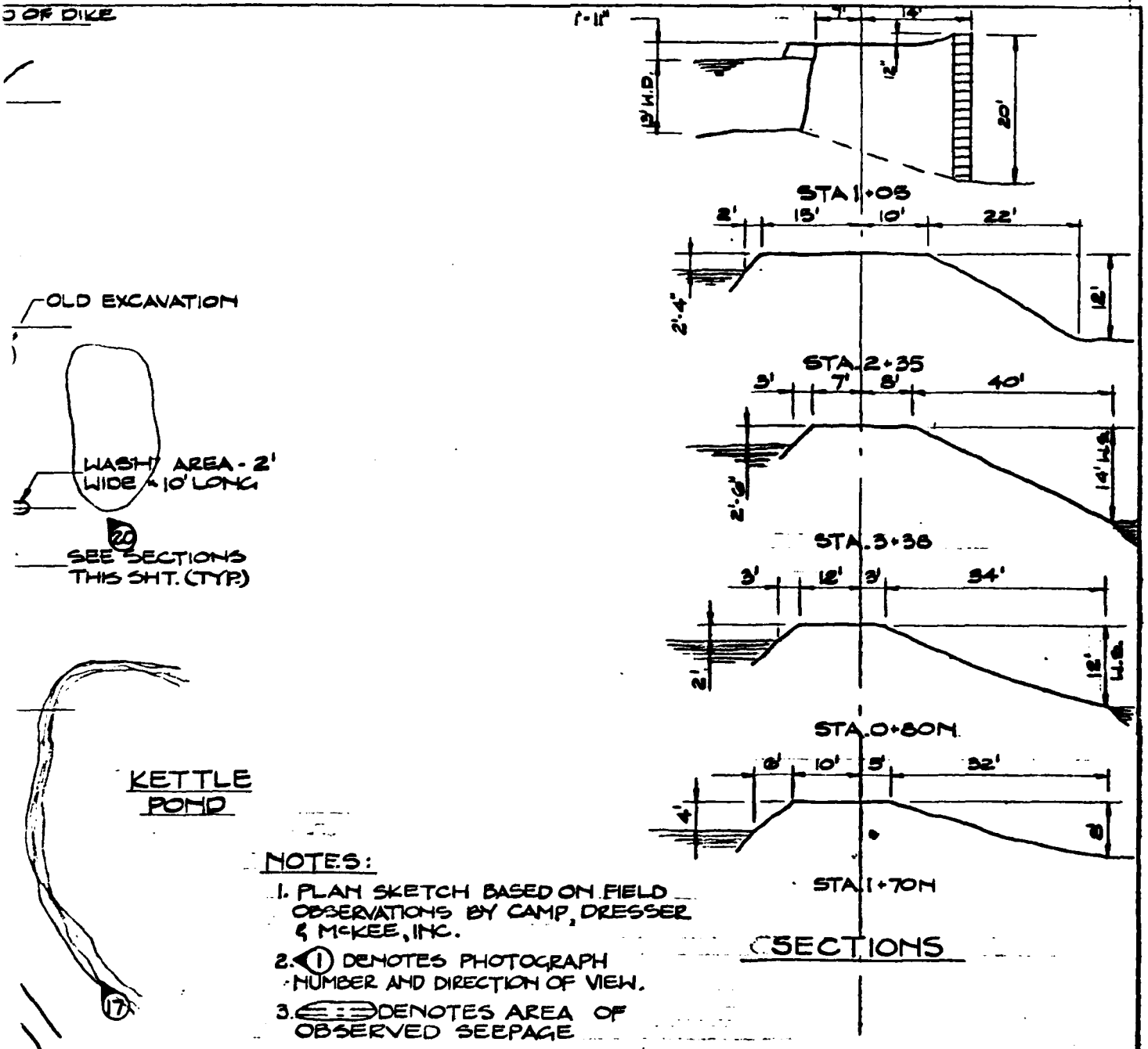
APPENDIX C

SELECTED PHOTOGRAPHS OF PROJECT


DIKE STA. 4+35
END OF DIKE
DIKE STA. 4+00
DIKE STA. 3+00
OLD EXCAVATI
WASH
WIDE
DIKE STA. 2+00
NEW POND
SEE SECTIO
THIS SHT. CT
HOUSE
DIKE STA. 1+00
KETT
POND
STA. 3+00
STA. 4+00
DIKE STA. 0+00
STA. 1+68
FLOW FROM PLUGGED OUTLET
℄ ABANDONED GATE
STA. 1+05
22'
GRANITE BLOCK
RETAINING WALL (20'-25' HIGH)
℄ SPILLWAY
STA. 0+00
29'
12'-0"
30"
DEBRIS
DUMPED ROCK
SECTIO

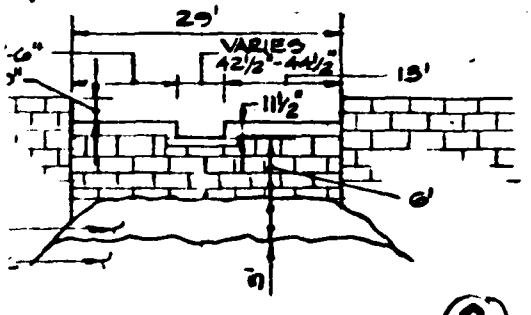
APPEND C-1

D OF DIKE



NOTES:

1. PLAN SKETCH BASED ON FIELD OBSERVATIONS BY CAMP, DRESSER & McKEE, INC.
2. (1) DENOTES PHOTOGRAPH NUMBER AND DIRECTION OF VIEW.
3. DENOTES AREA OF OBSERVED SEEPAGE



SECTION A-A (2)

CAMP DRESSER & McKEE, INC. BOSTON, MASSACHUSETTS	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MA.

NATIONAL PROGRAM OF INSPECTION OF NON FED. DAMS

NEW POND DAM
SITE PLAN SKETCH

NEW POND MASSACHUSETTS

DATE: SEPT. 1978	SCALE: NONE
	APPENDIX C-1

2. CREST OF DAM FROM OUTLET WORKS TO THE RIGHT ABUTMENT.

3. INTAKE CHANNEL OF THE OUTLET WORKS.

4. STONE MASONRY WALLS OF OUTLET WORKS INTAKE CHANNEL.

5. DOWNSTREAM FACE OF DAM AND DISCHARGE END OF OUTLET CONDUIT.

6. STONE MASONRY WALL AT DOWNSTREAM FACE OF DAM.

7. TERRAIN DOWNSTREAM OF OUTLET WORKS DISCHARGE CONDUIT.

8. VIEW OF SPILLWAY FROM UPSTREAM.

9. VIEW OF SPILLWAY FROM DOWNSTREAM.

10. CHANNEL DOWNSTREAM OF SPILLWAY.

11. VIEW NORTHEAST OF STATION 1+50± ALONG CREST OF DAM.

12. VIEW OF UPSTREAM FACE OF DAM BETWEEN STATIONS 3+00± AND 4+00±.

13. VIEW OF CREST OF DAM FROM STATION 4+00± TOWARDS STATION 3+00.

14. SLIGHT SEEPAGE DOWNSTREAM OF DAM AT STATION 3+50±.

15. VIEW OF CREST OF DIKE FROM DIKE STATION 1+25± TOWARDS DIKE STATION 0+00.

16. VIEW OF UPSTREAM FACE OF DIKE BETWEEN DIKE STATION 0+50± TO STATION 2+00± FROM DAM STATION 3+00.

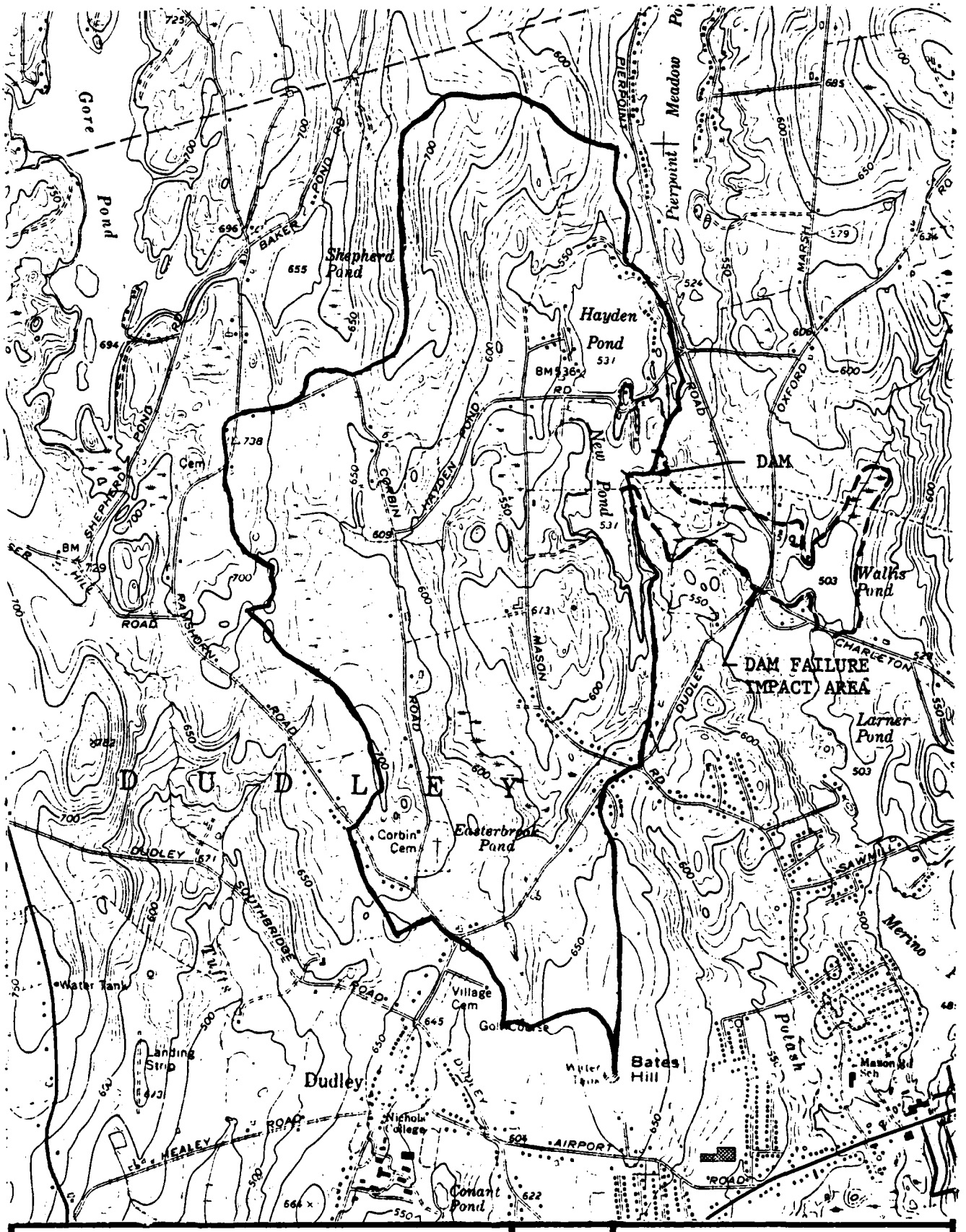
17. VIEW OF DOWNSTREAM FACE OF DIKE BETWEEN DIKE STATIONS 0+50± AND 1+50± AND KETTLE POND FROM ACCESS ROAD.

18. RIPRAP AT UPSTREAM FACE OF DIKE AT APPROXIMATELY DIKE STATION 2+00.

19. VIEW OF DIKE CREST LOOKING NORTH FROM DIKE STATION 1+80±

20. SMALL SEEPAGE POND AT DOWNSTREAM FACE OF DIKE AT APPROXIMATELY DIKE STATION 2+50.

APPENDIX D
OUTLINE OF DRAINAGE AREA AND HYDRAULIC COMPUTATIONS



CAMP DRESSER & McKEE Inc. Consulting Engineers Boston, Mass.	N	NEW POND DAM DRAINAGE AREA MAP SCALE: 1" : 2000'

APPENDIX D-1

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COE
PROJECT New Pond
DETAIL HAVLEN & NEW PONDS (1)
WEBSTER MASS-CONN. QUAD

JOB NO. 380-5-01
DATE CHECKED 6-17-79
CHECKED BY [illegible]

PAGE 1
DATE 8/11/79
COMPUTED BY PAE

Scale of Mappings: 1"=2000' ∴ #Sq. in x 91.63 = #Acres (A)
#A ÷ 640 = #mi²

DRAINAGE AREA

1. 14.17
2. 28.40
> 14.23 Ave = 14.20 Sq in = 1303.9 Acres = 2.037 Sq. mi.

WATER SURFACES

EL. 531

1. 0.52
2. 1.62
> 0.80 Ave = 0.81 Sq in. = 74.4 A = 0.116 mi²

EL. 540

1. 1.34
2. 2.59
> 1.25 Ave = 1.30 in² = 118.9 A = 0.186 mi²

EL. 550

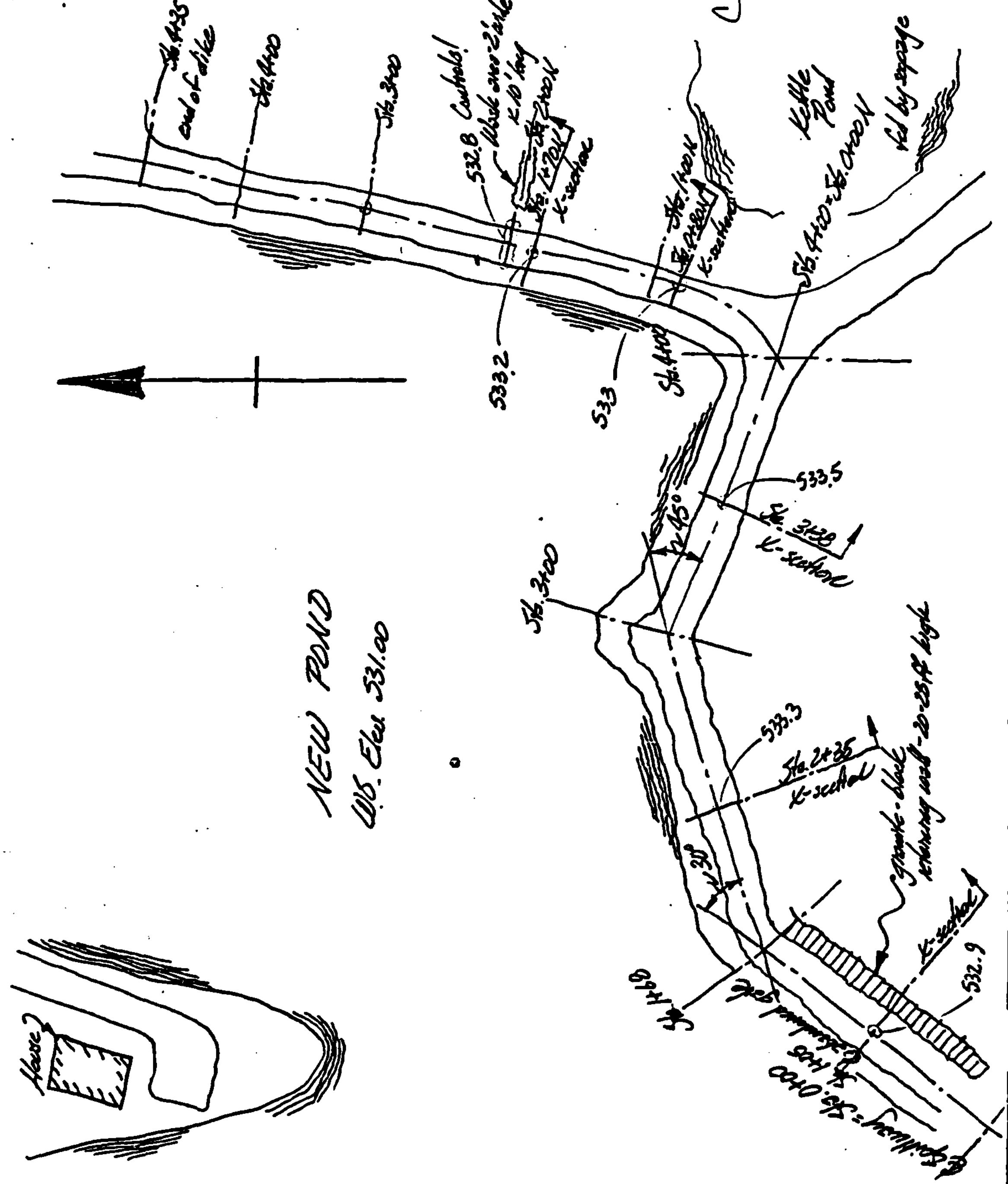
1. 2.03
2. 4.04
> 2.01 Ave = 2.02 in² = 185.5 A = 0.290 mi²

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT ______
PROJECT ______
DETAIL ______

JOB NO ______
DATE CHECKED 9-15-78
CHECKED BY ______

PAGE ______
DATE Sept 14 1978
COMPUTED BY ______



APPENDIX D-3

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

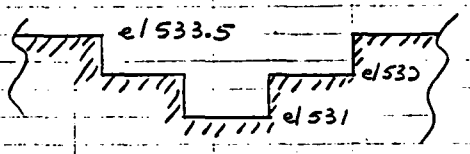
CLIENT COE
PROJECT NEW POND
DETAIL

JOB NO. 380-5-1
DATE CHECKED 1-10-79
CHECKED BY

PAGE 2
DATE 12 Oct 1978
COMPUTED BY J.W.

ELEVATIONS

Spillway Crest	531
Top of Dam	533
Toe of Dam @ spillway	513
Embankment	533



Water Surface el 531 from USGS topo assumed to be crest el. Other elevations obtained from field measurements relative to crest

SURFACE AREAS

@ el 531 : 74.4 Ac = 0.116 mi² (spillway crest)
540 : 118.9 Ac = 0.186 mi²
550 : 185.5 Ac = 0.290 mi²

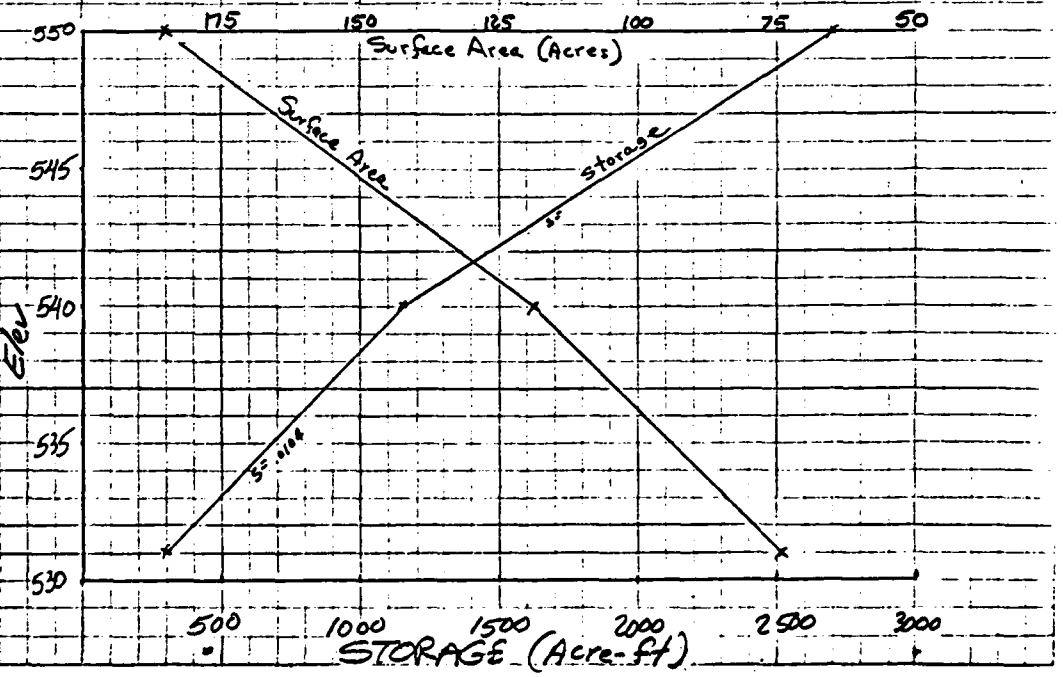
STORAGE CAPACITIES

assumed avg depth

@ spillway crest el 531 $V = \frac{1}{3}AH = \frac{1}{3}(74.4)(12) = 297.6$ Ac-ft

el 540 $V = \left(\frac{118.9+74.4}{2}\right)(9) + 297.6 = 1167$ Ac-ft

el 550 $V = \left(\frac{185.5+118.9}{2}\right)(10) + 1167 = 2689$ Ac-ft



SIZE CLASSIFICATION

Hydraulic Height: Top of Embankment 533.0
Toe of Dam @ Spillway 513.0
20'

Size classification based on height = small

Storage Capacities
@ El 531.0 = 297.6 Ac-ft
@ El 533.0 = 500 Ac-ft
Size classification based on storage is small

∴ Size classification is small

HAZARD CLASSIFICATION

Discharge from New Pond is conveyed through a large swamp area adjacent to New Pond, through Wallis Pond and Larner Pond. These storage areas should significantly reduce flows from New Pond. There are a few houses around the latter named ponds. There are no other developments in this downstream area. The existing homes in this area may experience minor water damage in the event of a dam failure. The Dudley St-Oxford, Cherlton Rd intersection may be overtopped by floodwaters but should not be washed out.

∴ hazard classification is low

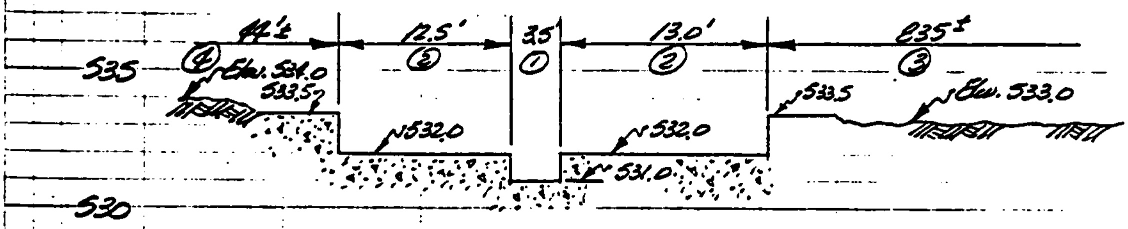
TEST FLOOD

Small size + low hazard → 50 yr to 100 yr

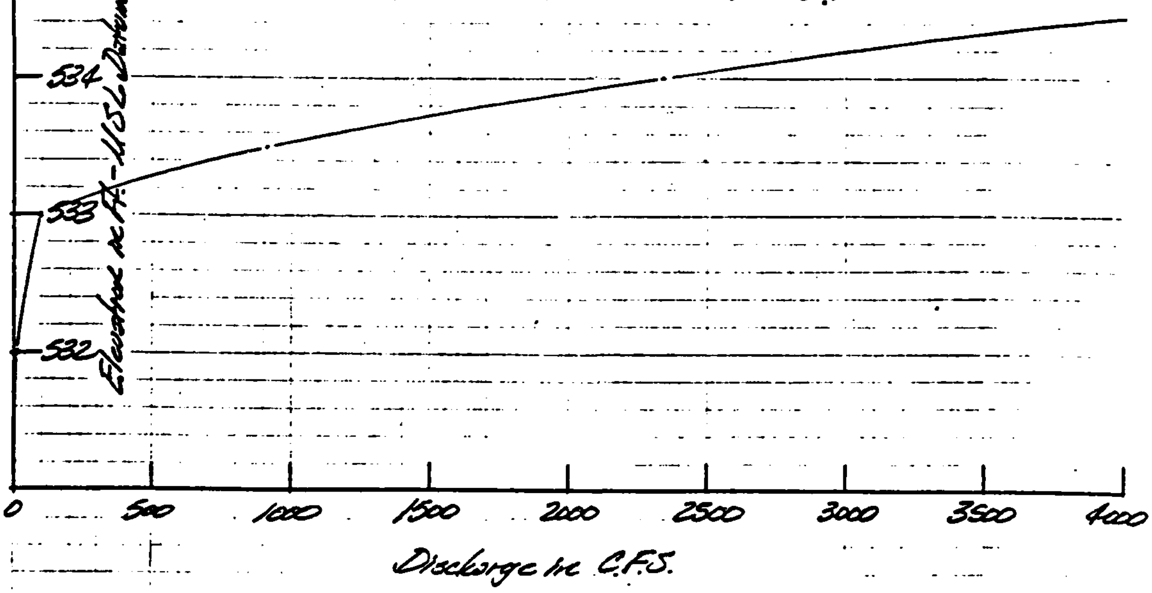
DRAINAGE AREA

1304 acres = 2.04 mi². The drainage area is sparsely populated. The terrain is hilly with some upland marshy areas. There is an abundance of brush and trees throughout the area. The combined areas of New Pond + Hayden Pond occupy about 5.6% of the D.A.

CAMP DRESSER & McKEE Environmental Engineers Boston, Mass.	CLIENT Corps of Engineers-Dam Inspections 380-5-01 PROJECT New Hurd Dam (?) DETAIL Spillway Rating Curve	DATE CHECKED 20 Feb 1979 CHECKED BY [illegible]	PAGE 4 DATE Jan. 17, 1979 COMPUTED BY [illegible]



Water Surface Elevation	① L=3.5' C=2.8 H	Q	② L=25.5' C=2.8 H	Q	③ L=835' C=2.5 H	Q	④ L=44' C=2.5 H	Q	Q total
531.0	0	0	—	—	—	—	0	0	0
532.0	1.0	9.8	0	0	—	—			9.8 cfs
533.0	2.0	27.7	1.0	71.4	0	0			99.1
533.5	2.5	38.7	1.5	131.2	0.5	738			908
534.0	3.0	50.9	2.0	201.9	1.0	2088	0	0	2341
534.5	3.5	64.2	2.5	282.2	1.5	3835	0.5	38.9	4220



CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COE
PROJECT
DETAIL NEW POND

JOB NO. 380-5-01
DATE CHECKED 20 Feb 1979
CHECKED BY JW

PAGE 5
DATE 2-12-79
COMPUTED BY CEF

100 YR INFLOW DETERMINATION

Use SCS TP-149 Method for Estimating Volume and Rate of Runoff in Small Watersheds

Drainage Area = 2.04 mi²

Slope = (610 - 548) / 7460 = 0.0078

Lag = $L^{0.8}(S+1)^{0.7} / 1900(Y)^{0.5}$ where L = 11,400 ft.
Y = 0.78
S = 1000/CN - 10

Curve Number (CN) Analysis

Land Use	Area	CN	Area x CN
Pond	73.5 ac.	100	7,350
Meadow / Woods	1,232 ac.	60	73,920
	1,305.5		81,270

Wt. CN = 81,270 / 1,305.5 = 62

S = 1000/62 - 10 = 6.129

Lag = $(11,400)^{0.8}(6.129+1)^{0.7} / 1900(0.78)^{0.5}$ = 4.15 hrs.

$\Delta D = 0.4 L = 0.4 \times 4.15$ hrs = 1.66 hrs.

$7\Delta D = 7 \times 1.66 = 11.62$ hrs.

Assume mid-point @ max. increment of runoff is 11.68 hrs, then start of storm = 11.68 hrs - 4.5(1.66) = 4.41 hrs.
and time @ 7ΔD = 4.41 + 11.62 = 16.03

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT Corps of Engineers - Dur lugs JOB NO. 380-5-01 PAGE 6
PROJECT New Pond Dam DATE CHECKED 16 Feb 79 DATE 2-12-79
DETAIL 100-Yr. Flood Flow CHECKED BY JW COMPUTED BY Butler

100-Yr. Flood Flow Determination - SCS Method

from comps. by J.E.Downing: Drainage Area = 2.04 sq. mi.

P_{24} = 6.75" Rainfall
for 100-yr. storm

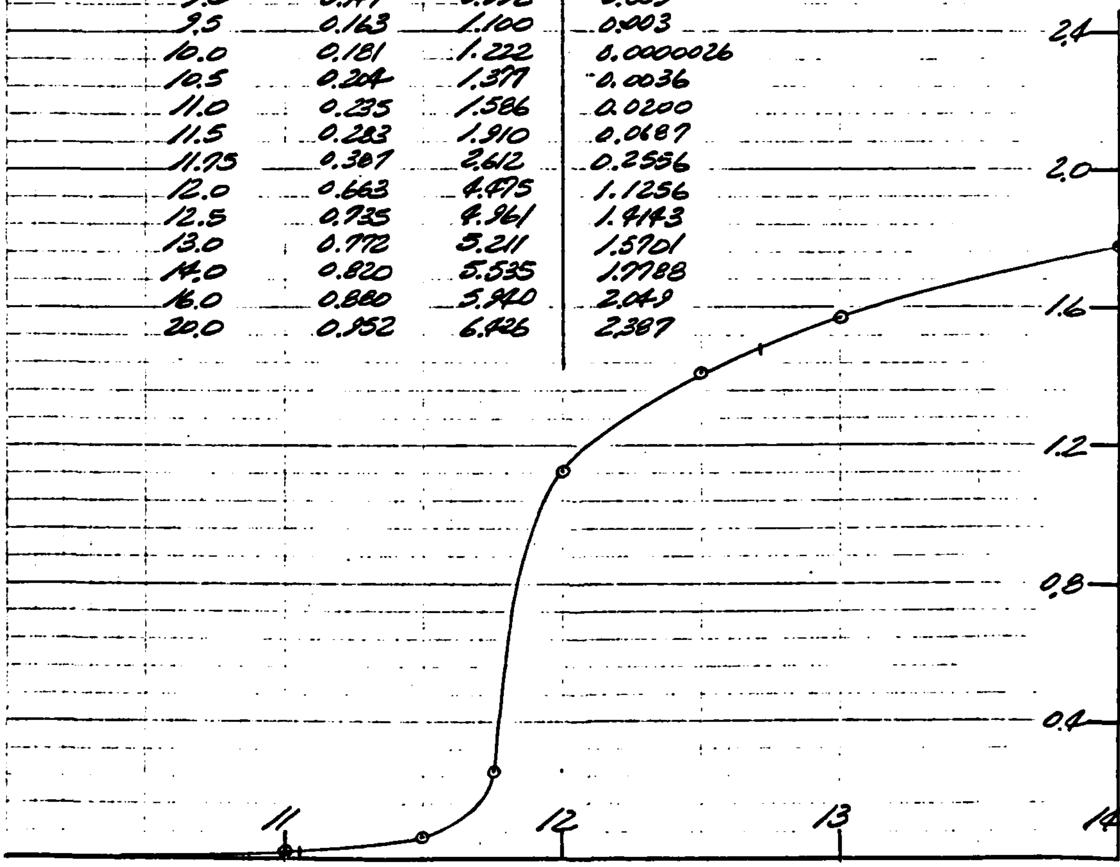
CN = 62 (say 65) S = $\frac{1000}{62}$ - 10 = 6.129

$L_{ag} = \frac{(11,400)^{0.8}(7.129)^{0.7}}{1900\sqrt{0.78}}$ = 4.15 hrs.

ΔD = 0.4L = 0.4 (4.15 hrs.) = 1.66 hrs.

$T_{\Delta D}$ = 11.62 hrs. 11.88 hrs - 4.5(1.66) = 4.41 hrs.

Time (Hrs.)	$P_t/P_{24hr.}$	Mass P (Inches)	Mass Q (Inches)
4.0	0.048	0.324	0.155
6.0	0.080	0.540	0.086
8.0	0.120	0.810	0.030
9.0	0.147	0.992	0.009
9.5	0.163	1.100	0.003
10.0	0.181	1.222	0.0000026
10.5	0.204	1.377	0.0036
11.0	0.235	1.586	0.0200
11.5	0.283	1.910	0.0687
11.75	0.387	2.612	0.2556
12.0	0.663	4.475	1.1256
12.5	0.735	4.961	1.4143
13.0	0.772	5.211	1.5701
14.0	0.820	5.535	1.7788
16.0	0.880	5.940	2.049
20.0	0.952	6.426	2.387



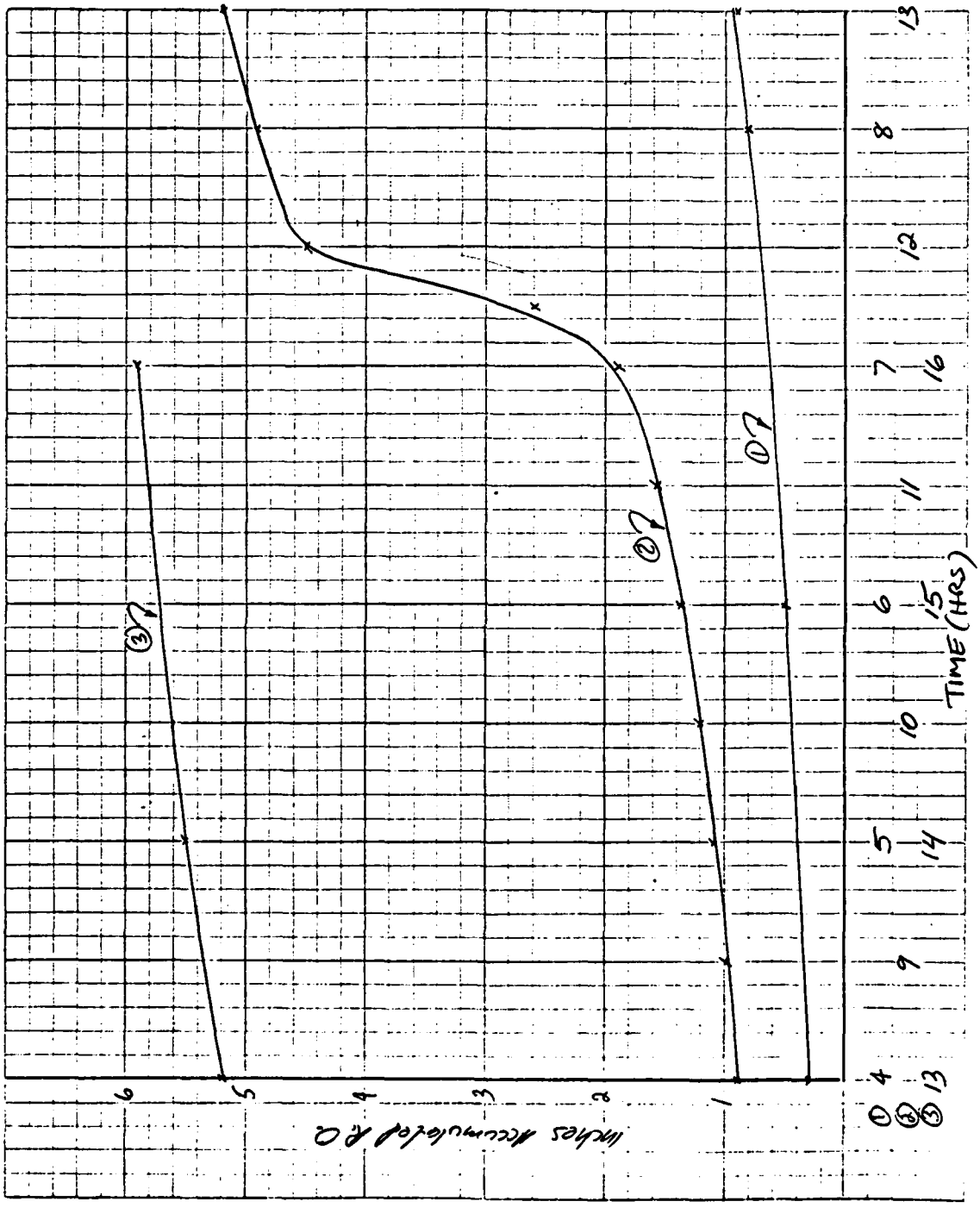
APPENDIX D-8

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COE
PROJECT NEW POND
DETAIL

JOB NO. 380-5-01
DATE CHECKED
CHECKED BY

PAGE 7
DATE 16 Feb 79
COMPUTED BY JGL



APPENDIX D-9

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COE
PROJECT NEW POND
DETAIL

JOB NO. 380-5-01
DATE CHECKED 2-16-79
CHECKED BY

PAGE 8
DATE 16 Feb 79
COMPUTED BY

100 yr Flow via SCS

11.88 - 4.5 (1.66) = 4.41

1	2	3	4	5	6	7
Increment	Time (hr)	Mass R.O. (in) from curve	ΔQ (in)	Δq* (cfs)	Y	Y(Δq) (cfs)
	4.91	.35				
ΔD_1			.15	29.7	.2	5.94
	6.07	.50				
ΔD_2			.25	49.5	.4	19.80
	7.73	.75				
ΔD_3			.30	59.5	.6	35.70
	9.39	1.05				
ΔD_4			.53	105.1	.8	84.08
	11.05	1.58				
ΔD_5			3.47	688.0	1.0	688.00
	12.71	5.05				
ΔD_6			.55	109.0	2/3	72.67
	14.37	5.60				
ΔD_7			.30	59	1/3	19.67
	16.03	5.90				
						Q = 925.8 cfs

$$*\Delta q = \frac{484 A (\Delta Q)}{\frac{\Delta D}{2} + L} = \frac{(484)(2.04)(\Delta Q)}{\left(\frac{1.66}{2}\right) + 4.15}$$

$$= 198.265 \Delta Q$$

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COE
PROJECT NEW POND
DETAIL

JOB NO. 360-5-01
DATE CHECKED 2-16-79
CHECKED BY

PAGE 9
DATE 16 Feb 79
COMPUTED BY

SURCHARGE - STORAGE ROUTING

@ Q = 925 cfs el = 533.45

Surcharge storage = $\frac{533.45 - 531}{.0104}$ = 235 Ac-ft

$STOR_1 = \frac{(235)(12)}{1304 \text{ Ac}}$ = 2.17 in

$Q_{p_2} = 925\left(1 - \frac{2.17}{8}\right)$ = 590 cfs

@ 590 cfs el = 533.35

Surcharge storage = $\frac{533.35 - 531}{.0104}$ = 225 Ac-ft

$STOR_2 = \frac{(225)(12)}{1304}$ = 2.08 in

$STOR_{avg} = \frac{2.08 + 2.17}{2}$ = 2.12 in

$Q_{p_3} = 900\left(1 - \frac{2.12}{8}\right)$ = 581 cfs

@ 581 cfs el = 533.35 OK

Top of Embankment 533

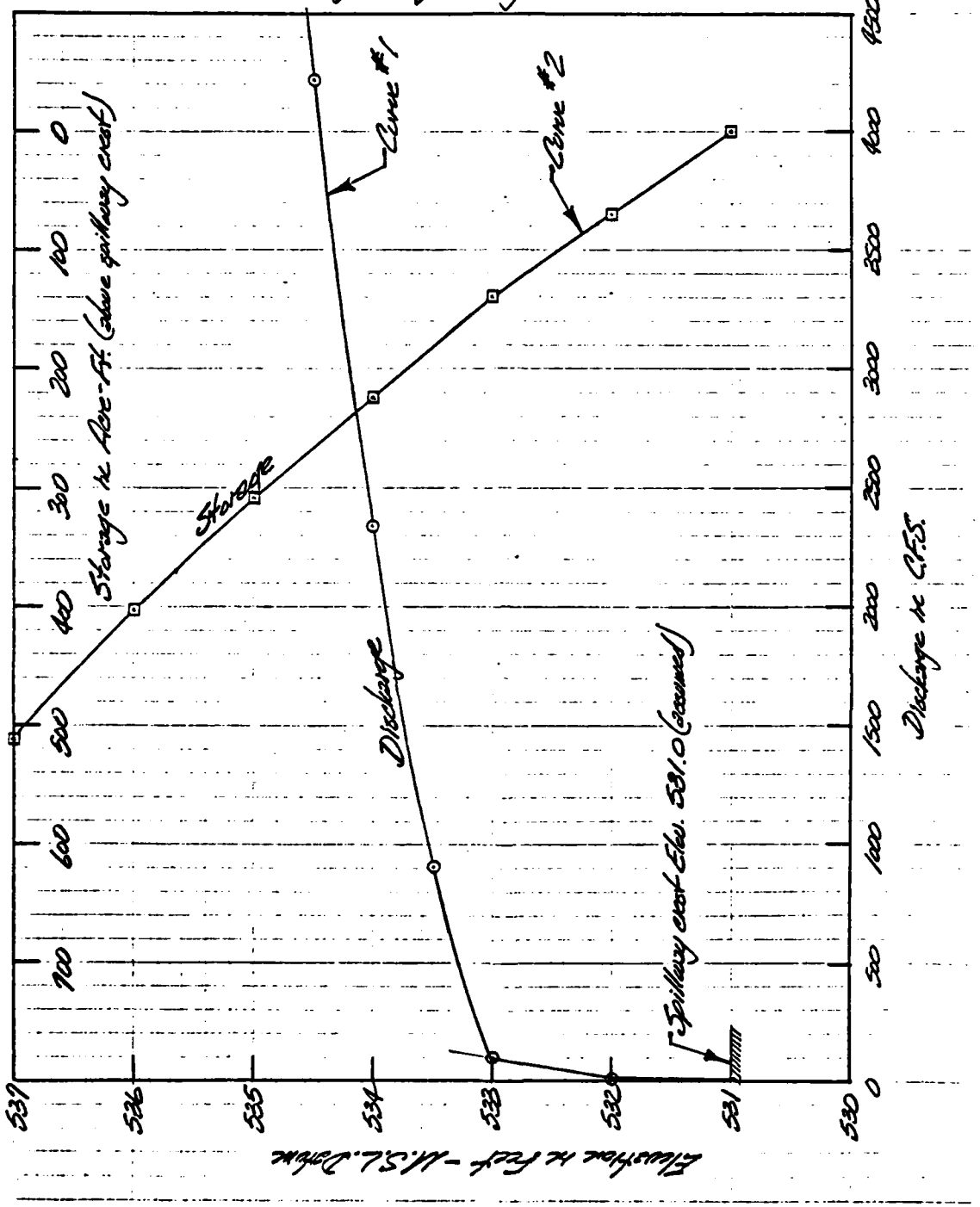
Surcharge El 533.35

100 yr Test Flood, after routing, would overtop dam by .35 ft (4.2 inches). As a practical matter, the spillway would be adequate for the 100 yr event. Technically, the spillway is inadequate.

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT Corps of Engineers-Dam Insp. JOB NO. 390-5-01
PROJECT Stew Pond Dam DATE CHECKED
DETAIL Surcharge-Storage Rating CHECKED BY

PAGE 10
DATE 2-12-79
COMPUTED BY CBFuller



APPENDIX D-12

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT COG
PROJECT NEW POND
DETAIL

JOB NO. 380-5-1
DATE CHECKED 1-17-79
CHECKED BY

PAGE 11
DATE 16 Feb 79
COMPUTED BY

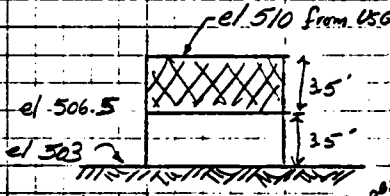
TAILWATER ANALYSIS

Tailwater will be controlled by a storage area between New Pond and Oxford Rd. Mosquito Pond is located in this area

@ el 503 Surface area = 8.7 acres ≈ 0 Ac-ft
el 510 = 30 acres ≈ 142 Ac-ft
520 = 65 acres ≈ 627 Ac-ft

Develop Rating Curve for Culvert under Oxford Rd

2- 60' long 42" ϕ ACCP Culverts assume S=0.00035



Use CMP Nomograph

Weir flow = $CLH^{3/2} = (2.5)(500)(H)^{3/2}$
$= 1250(H)^{3/2}$

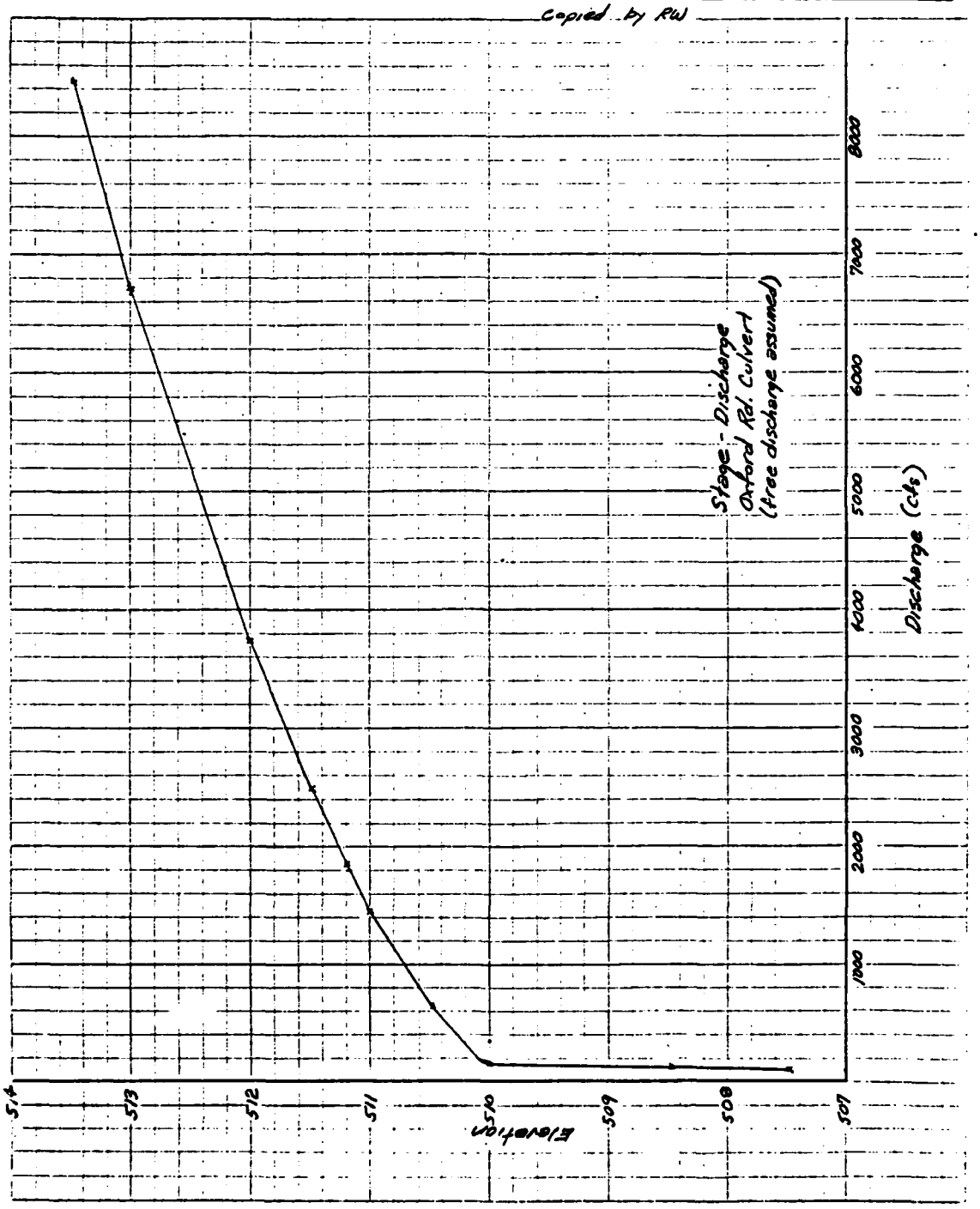
el	Q (from Nomograph)	2 pipes	Weir Q	Total Q
507				
507.5	49.5 cfs	x 2	—	99 cfs
508.5	69 cfs	x 2	—	138
510	84 cfs	x 2	—	168
510.5	95	x 2	$(1250)(.5)^{3/2}$	632
511	102	x 2	$(1.0)^{3/2}$	1454
511.2	106	x 2	$(1.2)^{3/2}$	1855
511.5	110	x 2	$(1.5)^{3/2}$	2516
512	114	x 2	$(2)^{3/2}$	3764
513	122	x 2	$(3)^{3/2}$	6739
513.5	125	x 2	$(3.5)^{3/2}$	8435
514	130	x 2	$(4)^{3/2}$	10260
514.5	135	x 2	$(4.5)^{3/2}$	12202

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT Corps of Engineers
PROJECT
DETAIL New Pond

JOB NO. 380-5-01
DATE CHECKED 1-12-79
CHECKED BY CE Fuller
Copied by RW

PAGE 12
DATE 16 Feb 79
COMPUTED BY JW



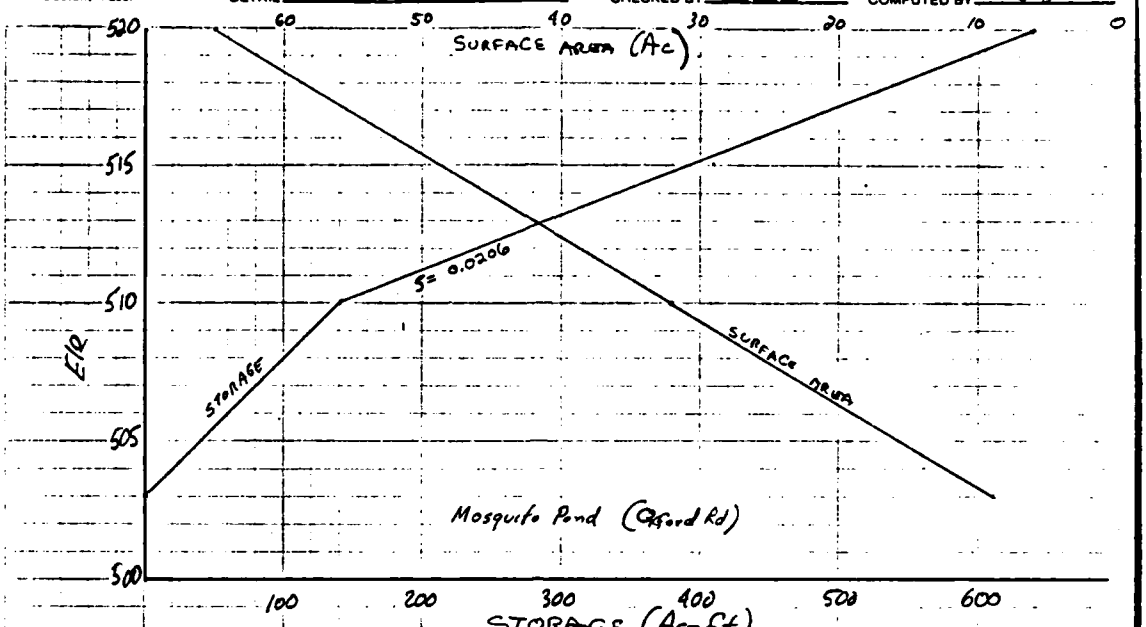
APPENDIX D-14

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT CoE
PROJECT
DETAIL NEW POND

JOB NO. 380-5-01
DATE CHECKED 10-19-78
CHECKED BY [illegible]

PAGE 13
DATE 13 Oct 1978
COMPUTED BY JCJ



Route flow through Storage Area — $STOR_1$ = 4 inches

Q_{p_1} = 2000 cfs

Surcharge Ht to pass Q_{p_1} = el 511.1 Vol of surcharge storage = $\frac{511.1-510}{.0206} + 142 = 195$ Ac-ft

$Q_{p_2} = 2000\left(1-\frac{4}{19}\right) = 1579$ cfs

Surcharge Ht to pass 1579 cfs = el 510.8

Vol of surcharge storage at el 510.8 = $\frac{510.8-510}{.0206} + 142 = 180$ Ac-ft

AVG STOR = $\frac{195+180}{2} = 188$ Ac-ft

el = $(188-142)(.0206) + 510 = 510.9$

This elevation is well below toe elevation of spillway ∴ Spillway is able to discharge freely

Toe of dam at el 513.0. No information is available on down stream channel geometry. Based on topo map analysis and above analysis, there is no backwater expected to influence spillway discharge

CAMP DRESSER & McKEE
Environmental Engineers
Boston, Mass.

CLIENT Corps of Engineers
PROJECT
DETAIL New Pond

JOB NO 380-5-01
DATE CHECKED 1-17-79
CHECKED BY C.E. Fuller

PAGE 14
DATE 16-Oct 1978
COMPUTED BY JW
copied by R. W.

Dam Failure Analysis

Assume dam fails in area of max. height L = 168' ±
Assume water elevation at failure elev 533

S = 440 Ac-ft. $W_b = .4(168) = 67$ $Y_o = 533 - 513 = 20'$

$$Q_{P_1} = \frac{8}{27} W_b \sqrt{g}\, Y_o^{3/2} = \frac{8}{27}(67)(\sqrt{32.2})(20)^{3/2} \cong 10{,}000 \text{ cfs}$$

First Reach: Dam to Oxford Rd

for Q_{P_1} stage = 513.9 Vol V_1 = 340 Ac-ft.

Trial $Q_{P_2} = Q_{P_1}(1 - \frac{V_1}{S}) = 10000(1 - \frac{340}{440}) = 2273$ cfs

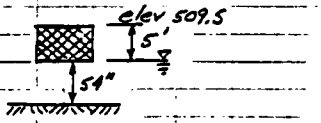
$\therefore V_2 = 214$ Ac-ft Avg $V_1 + V_2 = (\frac{340+214}{2}) = 277$ Ac-ft.

$Q_{P_2} = 10{,}000(1 - \frac{277}{440}) = 3705$ cfs elev 512.0 ± Oxford Rd elev 510 ±

Flood may do minor damage to one house as it flows over Oxford Rd to Wallis Pond.

Wallis Pond

Compute pressure flow via CMP Nomograph.
2 - 54"ϕ C.M Pipes 45' long
(2)(200) = 400 cfs



flow culverts can pass w/o overtopping Charlton Rd.
From topo map: Storage available in Wallis Pond is about double that provided by Mosquita Pond.
Q_1 = 3705 cfs stage = 506.5 in Wallis Pond
Assume can store 3' to elev. 509.5 (3 sec)(3)2 = 186 Ac-ft
$Q_{P_2} = 3705(1 - \frac{186}{440}) = 2139$ cfs

Flow overtops Charlton Rd for a length of about 1000 ft.
2139 - 400 = 1739 cfs in weir flow $H = \sqrt[3/2]{\frac{Q}{CL}} = \sqrt[3/2]{\frac{1739}{2.5(1000)}} = 0.8$ ft.

No structures are disturbed as Q flows into Lorner Pond. Storage available in Lorner Pond is a bit greater than that available in Wallis Pond. No data is available on dams on Lorner Pond. However, from previous analysis on upstream ponds, it is assumed enough storage is available in Lorner Pond to contain and abate the remaining dam failure flow with no damage to be expected further downstream.

APPENDIX E
INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

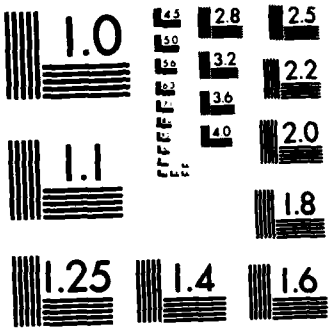
AD-A145 347 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS NEW POND DAM (MA 0011... (U) CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV MAR 79 2/2

UNCLASSIFIED F/G 13/13 NL

END

FILMED

DTIC



INVENTORY OF DAMS IN THE UNITED STATES

STATE	IDENTITY NUMBER	DIVISION	STATE	COUNTY	CONGR DIST.	STATE	COUNTY	CONGR DIST.	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REPORT DATE DAY	MO	YR
MA	113	NED	MA	027	02				NEW POND DAM	4204.3	7155.5	00	FEB	79

POPULAR NAME	NAME OF IMPOUNDMENT
HAYDEN POND	NEW POND

REGION	BASIN	RIVER OR STREAM	NEAREST DOWNSTREAM CITY-TOWN-VILLAGE	DIST FROM DAM (MI.)	POPULATION
01	07	TR-FRENCH RIVER	WEBSTER	2	14500

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
REGCIPG	1900	R	20	20	500	300	NED	N	N	N	N	07MAR79

REMARKS
21-STONE

O/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.)
3	870	U	29	100												

OWNER	ENGINEERING BY	CONSTRUCTION BY
STEVENS LINEN ASSOC INC		

REGULATORY AGENCY			
DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
NONE	NONE	NONE	NONE

INSPECTION BY	INSPECTION DATE DAY	MO	YR	AUTHORITY FOR INSPECTION
CAMP DRESSER AND MCKEE INC	20	SEP	78	PL 92-367

REMARKS

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED

MAY 29 1979

Honorable Edward J. King
Governor of the Commonwealth of
Massachusetts
State House
Boston, Massachusetts 02133

Dear Governor King:

I am forwarding to you a copy of the New Pond Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts 01570, ATTN: Mr. Robert Javery, Plant Engineer.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED

MAY 29 1979

Honorable Edward J. King
Governor of the Commonwealth of
Massachusetts
State House
Boston, Massachusetts 02133

Dear Governor King:

I am forwarding to you a copy of the New Pond Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts 01570, ATTN: Mr. Robert Javery, Plant Engineer.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED

MAY 29 1979

Honorable Edward J. King
Governor of the Commonwealth of
Massachusetts
State House
Boston, Massachusetts 02133

Dear Governor King:

I am forwarding to you a copy of the New Pond Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Stevens Linen Associates, Inc., Box 220, Webster, Massachusetts 01570, ATTN: Mr. Robert Javery, Plant Engineer.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:
NEDED-E

MAY 29 1979

Mr. Anthony D. Cortese, Commissioner
Department of Environmental Quality
Engineering
Commonwealth of Massachusetts
100 Cambridge Street
Boston, Massachusetts 02202

Dear Commissioner Cortese:

Forwarded herewith for your information and use is a copy of the Inspection Report on New Pond Dam. This inspection was performed in accordance with Public Law 92-367 under the direction of the Corps of Engineers. Copies of the finished report have been forwarded to the Governor and the owner. We thank you for your cooperation and assistance in carrying out this program and hope this report will help you to develop an effective dam safety program.

Sincerely yours,

Joe B. Fryar

JOE E. FRYAR
Chief, Engineering Division

Incl
As stated

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:
NEDED-E

MAY 29 1979

Mr. Robert Javery, Plant Engineer
Stevens Linen Associates, Inc.
Box 220
Webster, Massachusetts 01570

Dear Mr. Javery:

Forwarded herewith for your information and use is a copy of the Inspection Report on the New Pond Dam. This inspection was made under the authority of Public Law 92-367 by the firm of Camp, Dresser & McKee, Inc., Boston, Massachusetts under the direction and supervision of the Corps of Engineers. Copies of the finished report have been forwarded to the Governor and the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts.

Section 7 of the report contains an evaluation and recommendations. If you have any questions concerning this report, we suggest that you contact the Department of Environmental Quality Engineering first. Then, if there are further questions contact the Project Management Branch, Engineering Division of this office. We thank you for your cooperation and assistance in carrying out this program.

Sincerely yours,

Joe B. Fryar

JOE B. FRYAR
Chief, Engineering Division

Incl
As stated