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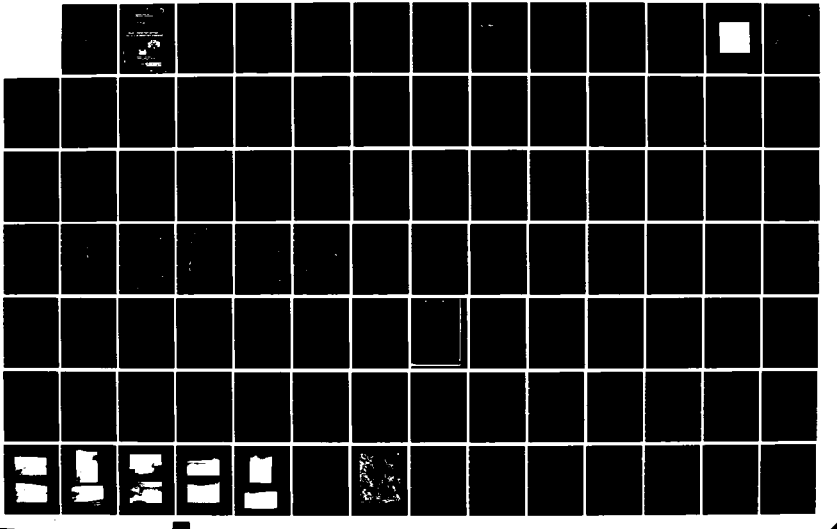

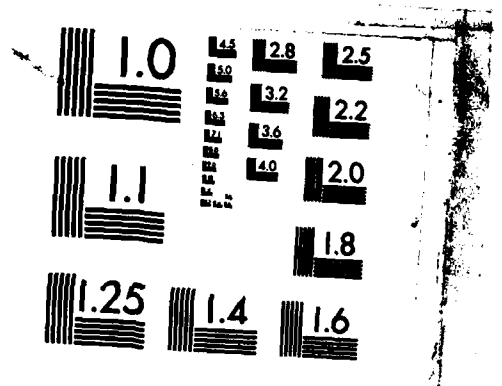

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THOUSAND ACRE SITE NO. 1 DAM
MA 00826

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

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

OCTOBER 19[redacted]

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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

DAMS, INSPECTION, DAM SAFETY,
Housatonic River Basin
New Marlborough, Massachusetts
Whiting River, tributary of the Housatonic River

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

The dam is a 600 foot long earthfill dam which has a maximum height of 31.1 feet. There are minor deficiencies that must be corrected but generally the dam is in good conditon. The dam is intermediate in size and has a high hazard potential. THe owner should employ a professional engineer to install an underdrain system and monitor seepage at the downstream toe of the dam.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

NEDED

MAR 18 1981

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

Dear Governor King:

Inclosed is a copy of the Thousand Acre Site No. 1 Dam (MA-00256) 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, Massachusetts Water Resources Commission, Boston, MA..

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,

C. E. EDGAR, III
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

THOUSAND ACRE SITE NO. 1 DAM

MA 00256

HOUSATONIC RIVER BASIN
NEW MARLBOROUGH, MASSACHUSETTS

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION
PROGRAM

NATIONAL DAM INSPECTION
PROGRAM

PHASE I INSPECTION REPORT

BRIEF ASSESSMENT

Identification No.: MA00256

Name of Dam: Thousand Acre Site No. 1 Dam

Town: New Marlborough

County and State: Berkshire County, Massachusetts

Stream: Whiting River, tributary of the Housatonic River

Date of Inspection: August 20, 1980

Thousand Acre Site No. 1 Dam is a 600-foot long zoned earthfill dam built in 1960. The facility is used primarily for flood control and recreation. The dam has a maximum height of 31.1 feet and the top varies from Elevation (El) 1414.4 to 1415.2 (National Geodetic Vertical Datum of 1929). A concrete intake structure, which serves as a spillway and low level outlet, contains four rectangular orifices at invert El 1399.4 and two rectangular orifices at invert El 1402.5. Trash racks are provided along the sides of the intake structure. The 30-inch diameter corrugated metal low level outlet is controlled by a sluice gate located on the upstream wall of the intake structure. The orifices and low level outlet discharge into a 36-inch diameter prestressed concrete pipe through the dam. An emergency spillway is located at the right (north) abutment of the dam. The crest is 150 feet long and at El 1406.1. The emergency spillway joins the Whiting River approximately 140 feet downstream of the dam.

There are minor deficiencies which must be corrected to assure the continued performance of this dam. This conclusion is based on the visual inspection of the site and a review of the available data. Generally the dam is in good condition.

The following deficiencies were observed at the site: unmonitored localized seepage at the downstream toe of the dam, the unknown operability of the low-level outlet, a dense growth of brush and trees at the downstream end of the emergency spillway, and animal burrows on the upstream slope of the dam.

Based on Corps of Engineers' guidelines, the dam has been classified in the intermediate size and high hazard categories. A test flood equal to the full probable maximum flood (PMF) was used to evaluate the capacity of the spillway. The test flood outflow is 4200 cfs, resulting in a pond level at El 1410.7 which is 3.7 feet below the top of the dam. Hydraulic analyses indicate that the intake structure and emergency spillway combined can discharge 100 percent of the test flood outflow without overtopping the dam.

The Owner should employ a qualified registered professional engineer to install an underdrain system and monitor seepage at the downstream toe of the dam. The Owner should repair the deficiencies listed above, as described in Section 7.3. The Owner should also continue the program of annual technical inspections, implement a plan for surveillance of the dam during and after periods of heavy rainfall, and implement a formal plan for notifying downstream residents in the event of an emergency at the dam.

The measures outlined above and in Section 7 should be implemented by the Owner within a period of 2 years after receipt of this Phase I Inspection Report.

Edward M. Greco, P.E.
Project Manager
Metcalf & Eddy, Inc.

Massachusetts Registration
No. 29800

Approved by:

Stephen L. Bishop, P.E.
Vice President
Metcalf & Eddy, Inc.

Massachusetts Registration
No. 19703

This Phase I Inspection Report on Thousand Acre Site No. 1 Dam (MA-00256) 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 judgement and practice, and is hereby submitted for approval.

ARAMAST MAHTESIAN, MEMBER
Geotechnical Engineering Branch
Engineering Division

CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

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

APPROVAL RECOMMENDED:

JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in Recommended Guidelines for Safety Inspection of Dams, for a Phase I Investigation. 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 investigations, 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 will be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions 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 aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general conditions and the downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

THOUSAND ACRE SITE NO. 1 DAM

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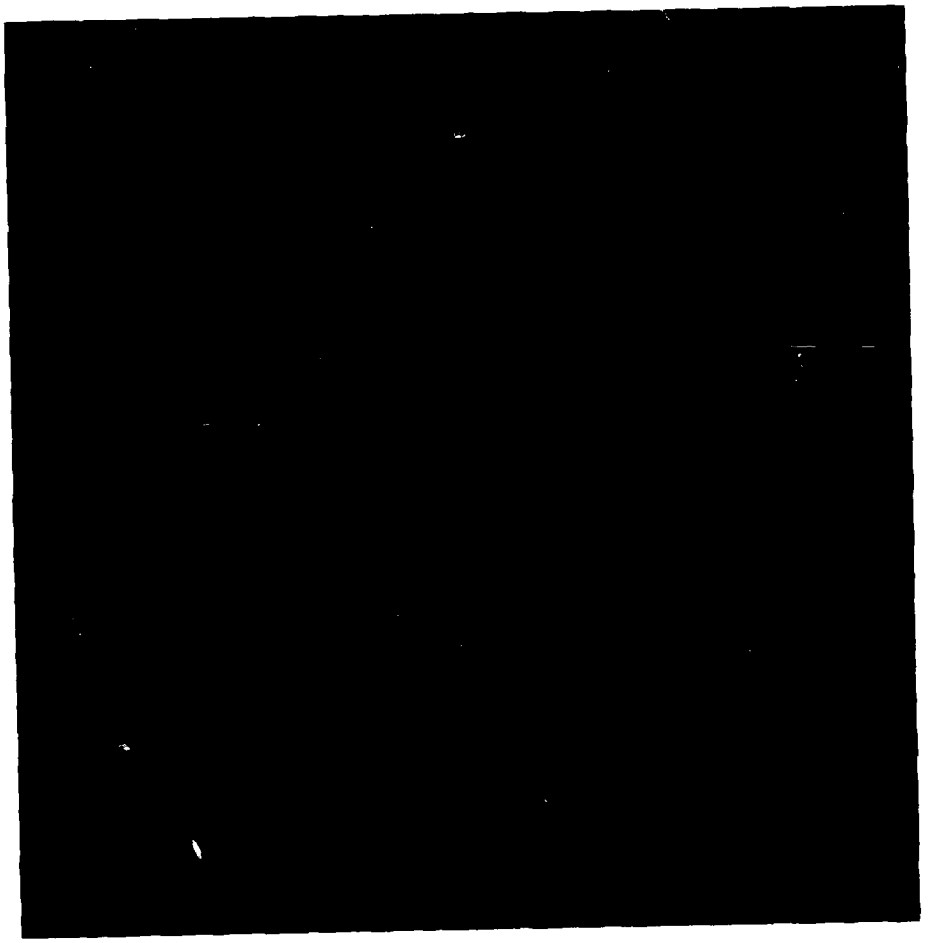
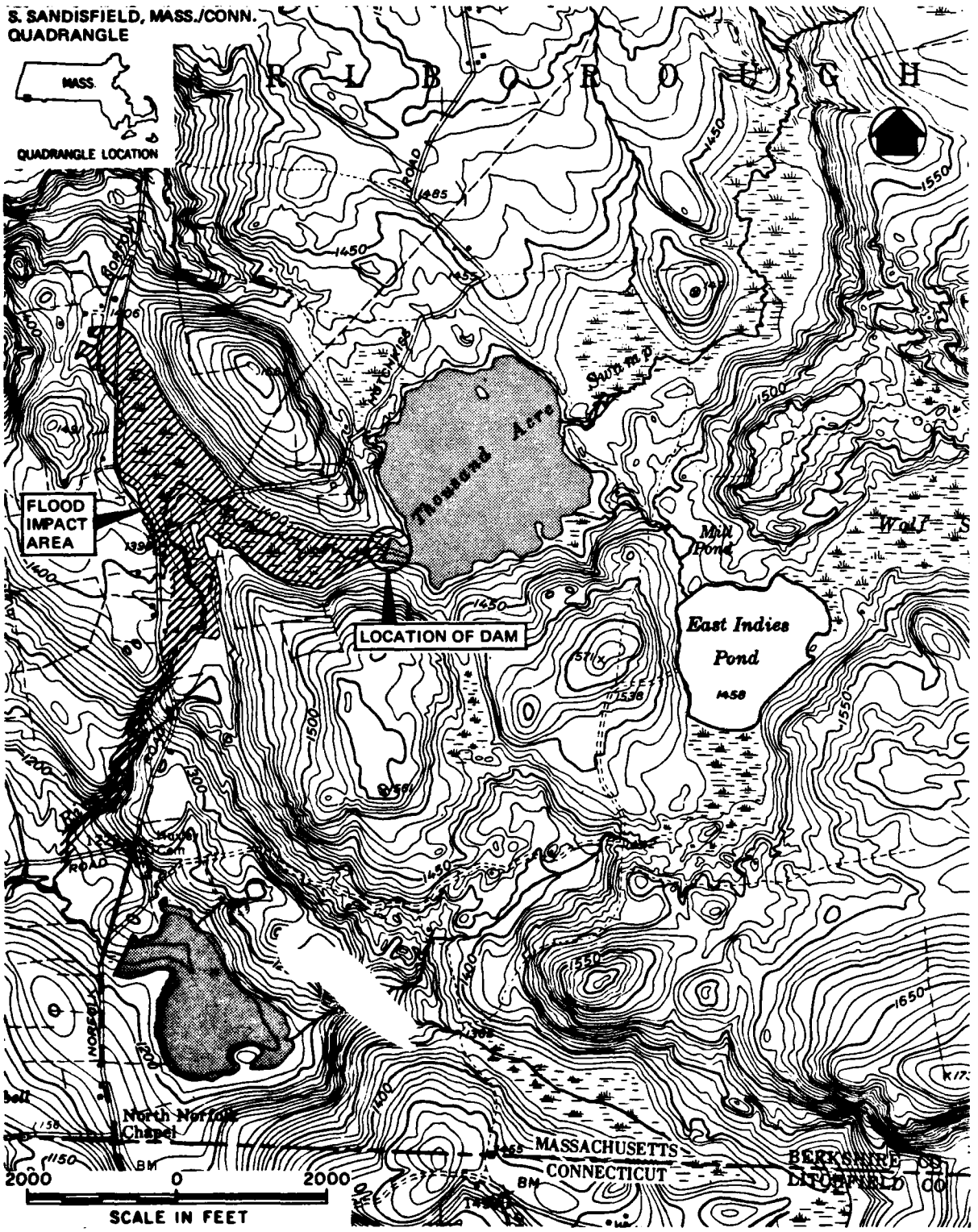
OVERVIEW
THOUSAND ACRE SITE NO. 1 DAM
NEW MARLBOROUGH, MASSACHUSETTS





LOCATION MAP – THOUSAND ACRE SITE NO. 1 DAM

SECTION 5

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General. Thousand Acre Site No. 1 Dam has a drainage area of 5.2 square miles of which 9.4 percent is ponds and swamps (see Figure D-1, Drainage Area Map). The land is gently rolling and sparsely developed.

The surface area of the normal pool is approximately 154 acres, and the maximum storage capacity of the dam is 4500 acre-feet at El 1414.4.

The low-level outlet can discharge 79 cfs when the pond is at El 1399.4 which is the crest of the spillway. At this pond elevation and with no additional inflow, the outlet can lower the pond 1 foot in about a day.

5.2 Design Data. Hydraulic computations are available at the Soil Conservation Service office in Amherst, Massachusetts. A review of these calculations and preliminary plans indicate that the dam was designed to impound a 100-year frequency storm without discharge occuring in the emergency spillway (designed at El 1407.9). The inflow used for this storm was 2380 cfs. The design elevation of the spillway crest was 1407.9 but the actual crest was constructed at El 1406.1. The top of the dam was designed to be at El 1414.3, but elevations taken during this Phase I investigation show that the top varies from El 1414.4 to El 1415.2.

5.3 Experience Data. No records of past discharge or reservoir levels are available.

5.4 Test Flood Analysis. Thousand Acre Site No. 1 Dam has been classified in the "intermediate" size and "high" hazard categories. According to the Corps of Engineers' guidelines, a test flood equal to the full PMF (Probable Maximum Flood) should be used to evaluate the capacity of the spillway.

The PMF rate for the Thousand Acre Swamp watershed was calculated to be 1150 cfs per square mile of drainage area. This calculation is based on the average slope of 1.85 percent in the drainage area, the pond-plus-swamp area to drainage area ratio of 9.4 percent, and the U.S. Army Corps of Engineers' guide curves for Maximum Probable Flood Peak Flow Rates (dated December 1977).

SECTION 4

OPERATING AND MAINTENANCE PROCEDURES

4.1 Operating Procedures

a. General. There are no regular operating procedures for this dam. Personnel from the Soil Conservation Service reportedly visit the dam once a year to inspect the dam and appurtenances and recommend necessary repairs.

b. Warning System. There is no warning system in effect at this dam.

4.2 Maintenance Procedures

a. General. The dam is generally well maintained. The State of Connecticut, Department of Environmental Protection is responsible for maintenance of the facility. Periodic inspections by the Soil Conservation Service, the State of Connecticut, and the Massachusetts Water Resources Commission have been conducted in the past. Typical maintenance procedures have included backfilling eroded areas on the dam, clearing bush and trees from the slopes and discharge channel, clearing debris from the spillway and outlet, mowing grass on the dam and emergency spillway, repairing the access road, and replacing dislodged or missing riprap along the upstream slope of the dam.

b. Operating Facilities. There has been periodic maintenance of the operating facilities at the dam. However, the sluice gate has reportedly not been operated since the dam was built in 1960.

4.3 Evaluation. There is a program for maintaining the embankment and appurtenant structures in good operating condition. Technical inspections are conducted on an annual basis, but there is no plan for surveillance of the embankment during and after periods of heavy rainfall, and no emergency warning system in effect. This is undesirable, considering that the dam is in the high hazard category. These programs should be implemented, as recommended in Section 7.3.

.2 Evaluation. The visual inspection indicates that the dam is in good condition. The stated deficiencies which must be corrected to assure the continued performance of this dam and measures to improve these conditions are outlined in Section 7.

The concrete on the intake structure is in good condition. Minor spalling and erosion has occurred along the normal pool level. There is minor efflorscence of the concrete in this area.

The low level outlet was submerged and not visible. The sluice gate stem is enclosed in a gate well. The hand wheel to operate the sluice gate was not in place, therefore its operability could not be determined. Minor rusting was noted on the sluice gate shaft. No seepage through the sluice gate was observed.

The discharge pipe is only visible at the intake and outlet ends. Some debris was noted near the intake and minor siltation was visible near the outlet. Moderate flow was noted at the time of the inspection (see Photo No. 6).

The emergency spillway is a trapezoidal-shaped, earth channel located at the right abutment of the dam. The channel is unlined and covered with grass. At the downstream end, there is a heavy growth of brush and small trees which could obstruct or divert water discharging from the spillway. This could affect the capacity of the spillway in the future.

d. Reservoir Area. The reservoir area is sparsely developed. Only light residential development exists north of the reservoir, and no dwellings or structures have frontage along the reservoir perimeter. Most of the land is wooded with moderate slopes. There is limited potential for future development in the reservoir area.

e. Downstream Channel. Both the intake structure and the emergency spillway discharge into a natural streambed. The streambed is unlined, and some silt has accumulated near the end of the pipe that extends from the intake structure. Approximately 50 feet downstream, the valley becomes flat and swampy with standing water. No trees overhang the channel.

About 2300 feet downstream of the dam, a road embankment restricts the discharge from the dam. Water flows under the road through a 17-foot wide and 5.3 foot high opening. The area above and below the first road embankment is undeveloped, flat, and swampy. A second road embankment, 1400 feet farther downstream, further restricts the flow. Some residential development abuts the channel in this area.

SECTION 3

VISUAL INSPECTION

3.1 Findings

a. General. The Phase I Inspection of the dam at Thousand Acre Site No. 1 was performed on August 20, 1980. A copy of the inspection checklist is included in Appendix A. Previous inspections were conducted by the Soil Conservation Service from 1964 to 1980 and by the Massachusetts Department of Environmental Quality Engineering from 1971 to 1977. Copies of those reports are given in Appendix B. Selected photographs taken during our Visual Inspection are included in Appendix C.

b. Dam. The dam is an earthfill structure with a combined spillway and low-level outlet and an emergency spillway. The embankment is clear of trees and brush, and there are no visible signs of settlement. Evidence of seepage was noted at one location near the downstream toe of the dam to the right of the discharge pipe. The seepage is indicated by a wet area containing a growth of cattails (see Photo No. 4). A drain of pervious fill is constructed along the downstream toe of the dam. The seepage area is located approximately at the low point at the downstream toe, and probably consists of the flow collected by the toe drain. However, there is no system to monitor the quantity of seepage.

The upstream slope of the dam is covered with grass above the normal pool level and covered with riprap below the normal pool. Two small animal burrows 6 to 8 inches in diameter are located on the grass portion of the upstream slope in the vicinity of the intake structure. The riprap is mostly submerged and consists of dumped cobbles (see Photo No. 3). Some pieces of riprap are dislodged from the upstream face of the embankment.

Slight erosion due to vehicular traffic was noted along the top and abutments of the dam.

c. Appurtenant Structures. A concrete intake structure on the upstream slope of the dam serves as the spillway and receives flow through the low level outlet. A 36-inch diameter discharge pipe extends from the bottom of the intake structure to the downstream toe of the dam.

compaction, density or moisture content of the earth-fill comprising most of the embankment. The evaluation of this dam is based on a review of the available data, the visual inspection, past performance history and engineering judgment.

c. Validity. Comparison of the available drawings with the field survey conducted during the Phase I inspection indicates that the available information is valid.

SECTION 2

ENGINEERING DATA

2.1 General. The engineering data available for this Phase I inspection includes drawings, specifications, and computations dated 1960 prepared by personnel of the Soil Conservation Service (see Figures B-3 to B-7). The drawings, specifications, and computations were obtained from The Soil Conservation Service in Amherst, and Massachusetts Water Resources Commission, in Boston, Massachusetts. Copies of previous inspection reports dated 1964 to 1980, prepared by the Soil Conservation Service and reports dated 1971 to 1977 prepared by the Department of Environmental Quality Engineering, Division of Waterways are included in Appendix B. The most recent inspection was conducted in 1980 by the Soil Conservation Service. A copy of that report is also given in Appendix B.

We acknowledge the assistance and cooperation of personnel from the Massachusetts Department of Environmental Quality Engineering, Division of Waterways; the Massachusetts Water Resources Commission, the Soil Conservation Service (SCS), and the Berkshire County Engineers Office. In addition, we acknowledge the assistance of Mr. Ernest Stuzziero of the Massachusetts Water Resources Commission, and Mr. Ray Curran of the Soil Conservation Service who were present during the inspection of the dam and who provided information on the history, design, and operation of the dam.

2.2 Construction Records. As-built drawings are available from the Amherst, Massachusetts office of the SCS. A review of these drawings indicates the dam was built generally in accordance with the design plans.

2.3 Operating Records. No operating records are available, and there is no daily record kept of the elevation of the pool or rainfall at the dam site.

2.4 Evaluation

a. Availability. There is some engineering data available for this dam.

b. Adequacy. A review was made of the hydraulic, soils, structural, and construction data. However, there is no detailed information on the grain size, permeability,

(5) Upstream channel: none

(6) Downstream channel: 36-inch prestressed concrete pipe through dam

Emergency spillway

(1) Type: broad-crested

(2) Length of weir: 150 feet

(3) Crest elevation: 1406.1

(4) Gates: none

(5) Upstream channel: 0.4 percent earth slope

(6) Downstream channel: trapezoidal earth channel, bottom slope 0.8 to 2.7 percent

j. Regulating Outlets

(1) Invert El: upstream: 1387.2
downstream: 1386.5

(2) Size: 30-inch diameter

(3) Description: bituminous coated corrugated metal pipe

(4) Control mechanism: hand wheel operated 30-inch sluice gate

(5) Other: discharges into 36-inch discharge pipe through dam

f. Reservoir surface (acres)

(1) Normal pool: 154

(2) Flood-control pool: 230

(3) Spillway crest: 154
Emergency spillway crest: 230

(4) Test flood pool: 286

(5) Top of dam: 328

g. Dam

(1) Type: zoned-earthfill embankment

(2) Length: 600 feet

(3) Height: 31.1 (maximum)

(4) Top width: 12 feet

(5) Side slopes: downstream: 2.5:1
upstream: 3:1 above El 1399
2:1 below El 1399

(6) Zoning: earthfill with upstream zone of sand and gravel and seepage drain at downstream toe.

(7) Impervious core: none

(8) Cutoff: varies from El 1381 to 1412

(9) Grout curtain: none

h. Diversion and Regulating Tunnel: Not applicable

i. Spillway

Intake Structure

(1) Type: rectangular concrete structure with six orifices

(2) Length of weir: 34 feet

(3) Crest elevation: 16 feet at El 1399.4
18 feet at El 1402.5

(4) Gates: none

(9) Total project discharge at test flood elevation: 4200 cfs

c. Elevation (feet above National Geodetic Vertical Datum of 1929 (NGVD)). A benchmark was established at El 1404.5 on top of the intake structure. This elevation was estimated from plans by the Soil Conservation Service.

(1) Streambed at toe of dam: 1384.1

(2) Bottom of cutoff: 1380 (deepest point)

(3) Tailwater (during inspection): 1385.1

(4) Normal pool: 1399.4

(5) Full flood control pool: 1406.1 (crest of emergency spillway)

(6) Spillway crest: 1399.4 and 1402.5
Emergency spillway crest: 1406.1

(7) Design surcharge (original design): 1411.6

(8) Top of dam: 1414.4 to 1415.2

(9) Test flood surcharge: 1410.7

d. Reservoir (Length in feet)

(1) Normal pool: 3100

(2) Flood control pool: 5300

(3) Spillway crest pool: 3100

(4) Top of dam: 6600

(5) Test flood pool: 6200

e. Storage (acre-feet)

(1) Normal Pool: 920

(2) Flood control pool: 2230

(3) Spillway crest pool: 920

(4) Top of dam: 4500

(5) Test flood pool: 3370

Water Resources Commission reportedly visit the dam once a year. At that time they inspect the site and recommend repairs if needed. The low level outlet has reportedly not been opened since the dam was built in 1960.

1.3 Pertinent Data

a. Drainage Area. The drainage area is approximately 3314 acres (5.2 square miles) and consists of gently rolling land (see Figure D-1 in Appendix). The topography in the watershed ranges from El 1400 to El 1650. The drainage area includes drainage from East Indies Pond, Mill Pond and the upper section of Thousand Acre Swamp. About 9.4 percent of the drainage area is ponds and swamps. In general, the undeveloped portions of the drainage area consist of woodlands. Sparse residential development occurs within the drainage area.

b. Discharge. Discharge from Thousand Acre Site No. 1 Dam flows through the orifices on the intake structure into a 36-inch diameter pipe which discharges into the downstream channel. Flow over the emergency spillway joins the downstream channel about 150 feet below the dam.

(1) Outlet: Size - 30-inch diameter Invert El - 1387. Discharge Capacity at El 1399.4 - 79 cfs

(2) Maximum known flood at damsite: unknown

(3) Ungated spillway capacity with water level at top of dam:
190 cfs at El 1414.4 (orifices)
9,680 cfs at El 1414.4 (emergency spillway)

(4) Ungated spillway capacity at test flood elevation:
175 cfs at El 1410.7 (controlled by 36-inch outlet pipe)
4,025 cfs at El 1410.7 (emergency spillway)

(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: 4200 cfs at El 1410.7

(8) Total project discharge with water level at top of dam elevation: 9,870 cfs at El 1414.4

c. Size Classification. Thousand Acre Site No. 1 Dam has a maximum height of 31.1 feet and a maximum storage capacity of 4,500 acre-feet. The storage capacity places the dam in the "intermediate" size category which ranges from 1,000 to 50,000 acre-feet.

d. Hazard Classification. There are four houses located along the stream about 4,000 feet downstream of the dam (see Flood Impact Area shown on the Location Map). The foundations of these structures are approximately 10 feet above the floor of the stream. An assumed failure of the dam would result in a flood wave 13 feet high 4,000 feet downstream of the dam. This is an increase of 4.5 feet over the depth of flow in the channel prior to failure. It is possible that more than a few lives could be lost and a significant amount of property damage could occur in the residences downstream of the dam. Accordingly, the dam has been placed in the "high" hazard category.

e. Ownership. The dam is owned by the Massachusetts Water Resources Commission, Room 1901, 100 Cambridge Street, Boston, Massachusetts 02114. Mr. E. Struzziero (telephone 617-727-3267) acting for Mr. Michael Beshara granted permission to enter the property and inspect the dam.

f. Operator. The dam is operated and maintained by personnel from The State of Connecticut Department of Environmental Protection.

g. Purpose of the Dam. The storage in Thousand Acre Site No. 1 Dam is currently used for flood control and recreation.

h. Design and Construction. Construction of Thousand Acre Site No. 1 Dam was completed in 1960 as part of the Blackberry River Watershed Project. The dam is also known as the New Marlborough Reservoir. Drawings and specifications dated December, 1960 and prepared by the U.S. Department of Agriculture Soil Conservation Service are available. The drawings show that the dam was constructed essentially as it appears today. Previous inspection reports indicate that since construction the dam has been in good condition. Repairs have been made such as mowing the slopes, clearing brush, filling animal burrows, and repairing the access road.

i. Normal Operating Procedures. Personnel from the Connecticut Department of Environmental Protection, the Soil Conservation Service, and the Massachusetts

b. Description of Dam and Appurtenances. Thousand Acre Site No. 1 Dam is a 600-foot long, earthfill dam with a maximum height of 31.1 feet (see Plan of Dam and Sections in Appendix B and photographs in Appendix C). The top of the dam is 12 feet wide and varies from El 1414.4 to 1415.2.

The upstream face is a 3:1 (horizontal to vertical) grassed slope. The downstream face is a 2.5:1 grassed slope. Available drawings indicate that the dam is a zoned embankment founded on silty sand with a cutoff trench varying from 2 to 6 feet deep. The zoned embankment consists of earthfill with an upstream zone of sand and gravel below El 1408.3, and a seepage drain at the downstream toe (see typical sections on Figure B-5).

A concrete intake structure serves as both the spillway and low level outlet. A total of six rectangular orifices are located on two sides of the intake structure. Four of the orifices are 4.0 feet long and 0.5 feet high with inverts at El 1399.4, and two are 9.0 feet long and 1.3 feet high with inverts at El 1402.5. A trash rack, consisting of three 2 1/2-inch diameter galvanized pipes spaced 10 inches on center, is located on each side of the riser (see Photo No. 5). The low level outlet is a 30-inch diameter corrugated metal pipe that discharges into the bottom of the intake structure. The outlet pipe extends 30 feet upstream into the pond and has an invert at El 1387.2. Flow through the outlet pipe is controlled by a sluice gate mounted on the upstream face of the intake structure. A corrugated metal pipe forms a shield around the gate stem. A removable wheel operates the sluice gate. Discharge from the orifices and the low level outlet is carried by a 36-inch diameter prestressed concrete pipe through the dam. The downstream channel is 18-foot wide and is located in the middle of a flat, swampy valley about 500 feet wide.

The emergency spillway is a 150 foot wide, grass-covered channel with the crest at El 1406.1. Downstream of the crest, the floor of the channel slopes at 0.8 percent to El 1405.4 and then at 2.7 percent to El 1400.9. The channel is about 350 feet long and terminates about 250 feet from the toe of the dam. The intervening area is covered with a heavy growth of brush and small trees.

NATIONAL DAM INSPECTION
PROGRAM

PHASE I INSPECTION REPORT

THOUSAND ACRE SITE NO. 1 DAM

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority. Public Law 92-367, August 8, 1972, authorized 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. Metcalf & Eddy, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Massachusetts. Contract No. DACW 33-80-C-0054, dated April 18, 1980, has been assigned by the Corps of Engineers for this work.

b. Purpose

(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 quickly initiate 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. The dam is located on the Whiting River, about 7.5 miles upstream of the confluence with the Blackberry River, in the Housatonic River Basin. The dam is in the Town of New Marlborough, Berkshire County, Massachusetts (see Location Map). The coordinates of this location are Latitude 42 deg. 4.0 min. north and Longitude 73 deg. 12.7 min. west.

For this analysis, the peak flow rate was determined to be slightly above the guide curve for flat and coastal topography.

Applying the full PMF rate to the 5.2 square mile drainage area results in a peak test flood inflow of 5980 cfs. By adjusting the test flood inflow for surcharge storage, the peak test flood outflow was calculated to be 4200 cfs (808 cfs per square mile). The pond level would rise to El 1410.7 during the test flood.

Using one-half the PMF rate, the peak test flood inflow is 2,990 cfs. The peak test flood outflow is 1,600 cfs with the pond at El 1408.9.

Data from the Soil Conservation Service indicates that a flood inflow of 5,630 cfs which is close to the full PMF was used to establish the design high water level at El 1411.6. Above this elevation, a freeboard of 2.8 feet exists to the top of the dam. Also, the crest of the emergency spillway was actually constructed 1.8 feet lower than the design elevation, increasing its discharge capacity. As a result of the freeboard and the lower crest, the emergency spillway can discharge 9,680 cfs with the reservoir at the top of the dam. In addition, the maximum discharge through the spillway at the intake structure is 190 cfs. Therefore, the total discharge capacity of the spillways is 9,870 cfs or 235 percent of the test flood outflow with the reservoir at the top of the dam.

5.5 Dam Failure Analysis. The peak discharge rate due to failure of the dam was calculated to be 12600 cfs with the pond at El 1410.7. This calculation is based on a maximum head of 26.6 feet and an assumed 180-foot wide breach occurring in the middle embankment. Failure of the dam would produce a flood 13 feet deep 4,000 feet downstream, as compared to channel flow 8.5 feet deep prior to failure.

Three houses on Norfolk Road and one house on Hotchkiss Road are located along the stream about 4000 feet below the dam. The foundations of these structures are approximately 10 to 15 feet above the floor of the stream. Due to the configuration of the valley, some attenuation of the flood flow was considered in the computations. An assumed failure of the dam could produce a flood that would rise above the foundation level of these houses resulting in the possible loss of more than a few lives and a significant amount of property damage. Accordingly, the dam has been placed in the "high" hazard category.

SECTION 6

STRUCTURAL STABILITY

6.1 Visual Observations. The evaluation of the structural stability of Thousand Acre Site No. 1 Dam is based on a review of previous inspection reports, a review of available engineering data, and the visual inspection conducted on August 20, 1980.

As discussed in Section 3, Visual Inspection, the dam is in good condition. Seepage was observed in one area along the toe of the embankment. Review of the available drawings indicates, however, that seepage in this wet area is at the location of the seepage drain constructed along the downstream toe of the dam. No settlement of the embankment was noted, and only minor erosion and ruts due to vehicular traffic were noted on the top and abutments of the dam. There are no trees or brush growing on the dam.

6.2 Design and Construction Data. Construction of Thousand Acre Site No. 1 Dam was completed in 1960. Computations for design of the dam intake structure, and emergency spillway are available.

Drawings dated December 1960 prepared by the Soil Conservation Service show the as built construction of the dam (see Figures B-3 through B-7). The drawings show that the dam is a zoned earthfill embankment founded on firm to compact silty sand (SP-SM).

The earthfill (Zone I) comprising most of the embankment was obtained from on-site areas near the emergency spillway. The only data on this material are visual classifications of soil samples that indicate the soil is silty sand (SP-SM). There are no grain size analyses, permeability tests, or records of field tests. A cutoff trench that extends 2 to 6 feet below the base of the dam is also shown on the drawings as Zone I material. The upstream slope of the embankment is 3:1 above El 1399.0 and 2:1 below El 1399.0. A layer of clean sand and gravel (Zone II - 6 percent to 8 percent passing No. 200 sieve) is shown on the upstream slope below El 1408.3. The downstream slope of the embankment is 2.5:1. A seepage drain comprised of filter material and rockfill is located at the downstream toe between Stations 20+80 and 4+90 (see Figure B-5).

Specifications for construction of the dam are available. They include some details on the earth materials, riprap and concrete used in construction.

There is no information on the shear strength or permeability of the soil and/or rock materials of the embankment.

6.3 Post-Construction Changes. There have been no changes to the dam since the original construction. Periodic repairs have been made such as painting of metalwork on the intake structure maintaining the grass cover on the dam, and grading the access road.

6.4 Seismic Stability. The dam is located in Seismic Zone No. 1, and in accordance with Corps of Engineers' guidelines does not warrant further seismic analysis.

SECTION 7

ASSESSMENT, RECOMMENDATIONS, AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition. As a result of the visual inspection, the review of available data, and information on operation and maintenance, the dam is considered to be in good condition. The following deficiencies must be corrected to assure the continued performance of this dam: unmonitored localized seepage at the downstream toe near the discharge pipe, the unknown operability of the sluice gate on the low-level outlet, the dense growth of trees and brush at the downstream end of the emergency spillway channel, and animal burrows on the upstream slope of the dam.

b. Adequacy. The evaluation of this dam is based on a review of the available design and construction data, the visual inspection, past performance and engineering judgment.

c. Urgency. The remedial measures outlined below should be implemented by the Owner within 2 years after receipt of this Phase I Inspection Report.

7.2 Recommendations. It is recommended that the Owner employ a qualified registered professional engineer to install an underdrain system to determine quantities of seepage at the downstream toe of the dam. The seepage should be monitored and evaluated on a regular basis. The Owner should implement any recommendations made by the engineer.

7.3 Remedial Measures

a. Operating and Maintenance Procedures. It is recommended that the Owner accomplish the following:

(1) Determine the operability of the sluice gate and, if necessary, restore the low-level outlet to good operating condition. This should include clearing of any silt or debris from the outlet pipe. The operability of the low-level outlet and sluice gate should be checked as part of the annual technical inspections.

(2) Clear trees and brush from the area at the downstream end of the emergency spillway channel.

(3) Fill in animal burrows.

(4) Institute a definite plan for surveillance of the dam and spillway during and after periods of heavy rainfall and a formal plan to warn people in downstream areas in the event of an emergency at the dam.

(5) Continue the program of maintenance inspections. The inspection program should be supplemented by additional inspections during and after severe storms. All repairs and maintenance should be undertaken in compliance with all applicable State regulations. The maintenance program should include removal of any debris from the spillway orifices, low-level outlet, and discharge pipe.

(6) Continue the program of technical inspections of the dam conducted on an annual basis.

7.4 Alternatives. There are no practical alternatives to the above recommendations.

APPENDIX A

PERIODIC INSPECTION CHECKLIST

THOUSAND ACRE SITE NO. 1 DAM

PERIODIC INSPECTION

PARTY ORGANIZATION

PROJECT THOUSAND ACRE SITE #1 DAM

DATE August 20, 1980

TIME 0930

WEATHER Cloudy - 65 F

W.S. ELEV. 1399.4* U.S. 1385.5* N.S.

*Based on benchmark at El. 1404.5 on top of intake structure

PARTY:

1.	Scott Nagel	Metcalf & Eddy, Inc. - Geotechnical
2.	Ed Greco	Metcalf & Eddy, Inc. - Geotechnical
3.	Marie Nowak	Metcalf & Eddy, Inc. - Hydraulics
4.	Lyle Branagan	Metcalf & Eddy, Inc. - Hydraulics
5.	Bill Cheechi	Metcalf & Eddy, Inc. - Geotechnical
6.	Frank Gordon	Metcalf & Eddy, Inc. - Geotechnical
7.	Ray Curran	Soil Conservation Service
8.	Ernie Struzziero	Mass. Water Resources Commission
9.		
10.		

	PROJECT FEATURE	INSPECTED BY	REMARKS
1.	Dam	Nagel/Greco/Checchi	
2.	Intake Structure	Nagel/Greco, Nowak/Branagan	
3.	Discharge Pipe	Nagel/Greco, Nowak/Branagan	
4.	Emergency Spillway	Nagel/Greco, Nowak/Branagan	
5.			

PERIODIC INSPECTION CHECK LIST

PROJECT THOUSAND ACRE SITE #1 DAM DATE August 20, 1980

PROJECT FEATURE Dam Embankment NAME Scott Nagel

DISCIPLINE Geotechnical NAME Ed Greco

N/A=Not Applicable U/S = Upstream D/S = Downstream

AREA EVALUATED	CONDITIONS
DAM EMBANKMENT	
Crest Elevation	1414.4 to 1415.2
Current Pool Elevation	1399.4
Maximum Impoundment to Date	Unknown
Surface Cracks	Seeded slopes-no visible cracking
Pavement Condition	N/A
Movement or Settlement of Crest	Minor rutting due to vehicular traffic no exposed soil
Lateral Movement	None visible
Vertical Alignment	Level
Horizontal Alignment	Straight
Condition at Abutment and at Concrete Structures	Abutments tie into natural ground minor vehicular rutting at left abutment
Indications of Movement of Structural Items on Slopes	N/A
Trespassing on Slopes	Animal burrows on U/S slope Footpath along U/S toe at waters edge
Sloughing or Erosion of Slopes or Abutments	8'x15' area to left of discharge pipe, mostly concealed by tall grass.
Rock Slope Protection - Riprap Failures	Cobble riprap visible at U/S waters edge, mostly submerged
Unusual Movement or Cracking at or near Toes	None visible
Unusual Embankment or Downstream Seepage	Wet area with cattails to right of discharge pipe
Piping or Boils	None visible
Foundation Drainage Features	None visible
Toe Drains	Embedded in D/S toe-no visible outlet
Instrumentation System	None

PERIODIC INSPECTION CHECK LIST

PROJECT THOUSAND ACRE SITE #1 DAM **DATE** August 20, 1980

PROJECT FEATURE Intake Structure **NAME** Nagel/Greco

DISCIPLINE Geotechnical/Hydraulic **NAME** Nowak/Branagan

AREA EVALUATED	CONDITION
OUTLET WORKS - INTAKE STRUCTURE	
a. Approach Channel	None
General Condition	N/A
Loose Rock Overhanging Channel	N/A
Trees Overhanging Channel	N/A
Floor of Approach Channel	N/A
b. Weir	Rectangular orifices on sides of concrete intake structure
General Condition of Concrete	Good-minor spalling and erosion at normal pool level
Rust or Staining	Minor staining visible
Spalling	Minor at normal pool level
Any Visible Reinforcing	None
Any Seepage or Efflorescence	None
Drain Holes	None
c. Intake Structure	Concrete rectangular drop inlet that leads to discharge pipe
General Condition	Good-minor erosion and staining at normal pool level
Loose Rock Overhanging Structure	None
Trees Overhanging Structure	None
Floor of Structure	Clear of debris and silt

d. Low Level Outlet- corrugated pipe that extends from bottom of pond
Intake - submerged and not visible
Outlet Pipe - submerged and not visible
Sluice Gate - submerged, gate stem surrounded by corrugated metal pipe well, no handwheel is available to operate slide gate. Gate reportedly has not been operated since 1960.

PERIODIC INSPECTION CHECK LIST

PROJECT THOUSAND ACRE SITE #1 DAM **DATE** August 20, 1980

PROJECT FEATURE Discharge Pipe **NAME** Nagel/Greco

DISCIPLINE Geotechnical/Hydraulic **NAME** Nowak/Branagan

AREA EVALUATED	CONDITION
OUTLET WORKS - DISCHARGE PIPE AND DOWNSTREAM CHANNEL	36-inch diameter prestressed concrete pipe - good
General Condition of Concrete	
Rust or Staining	Minor staining near current water level
Spalling	None visible
Erosion or Cavitation	None visible
Visible Reinforcing	None visible
Any Seepage or Efflorescence	None visible
Condition at Joints	Unknown
Drain Holes	None visible
Channel	Unlined stream bed surrounded by flat swamp
Loose Rock or Trees Overhanging Channel	Some small trees and brush along edge of channel
Condition of Discharge Channel	Flat and unlined-some silt accumulated near discharge pipe.

PERIODIC INSPECTION CHECK LIST

PROJECT THOUSAND ACRE SITE #1 DAM DATE August 20, 1980

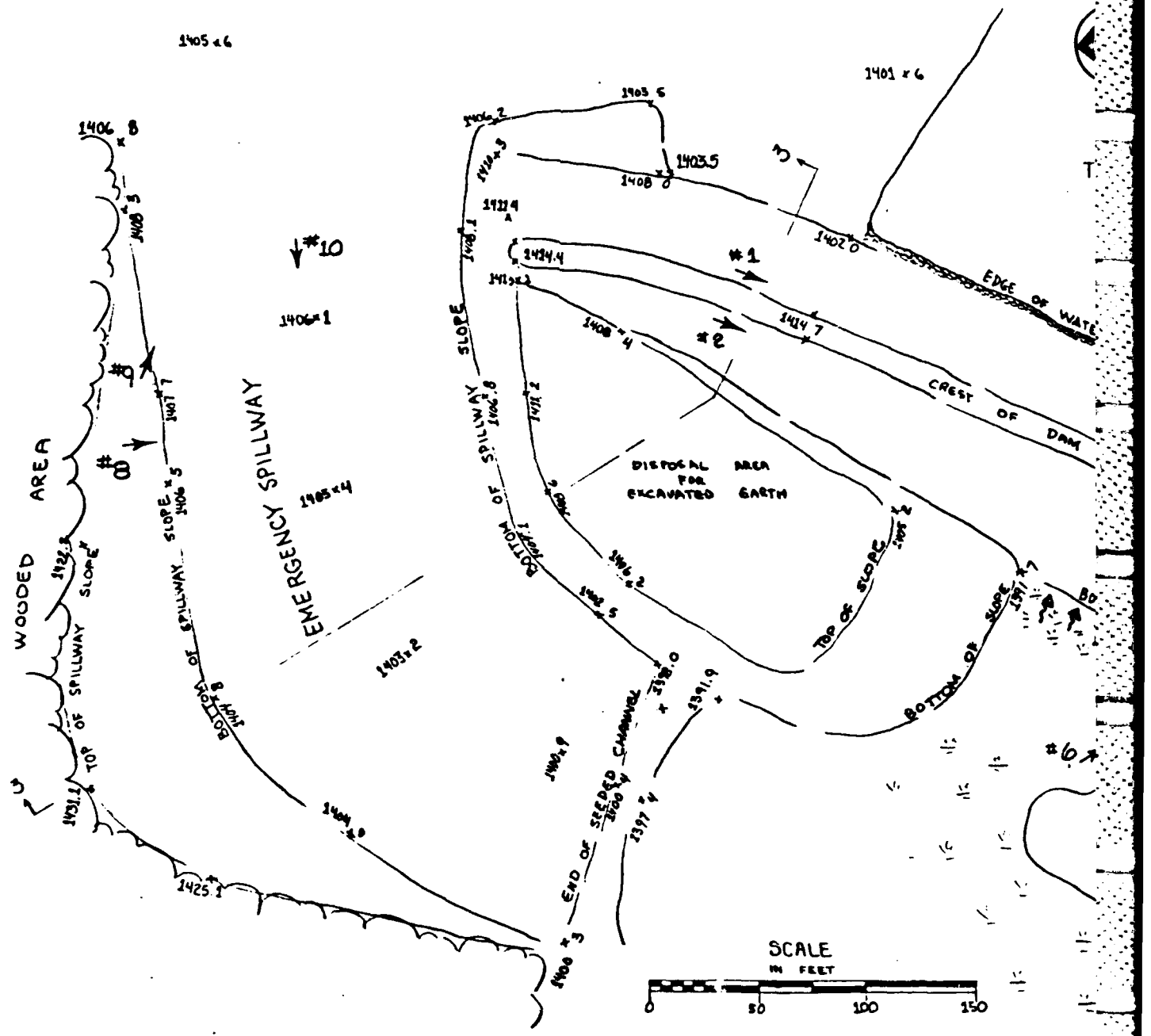
PROJECT FEATURE Emergency Spillway NAME Nagel/Greco

DISCIPLINE Geotechnical/Hydraulic NAME Nowak/Branagan

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	Seeded earth slope
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Approach Channel	No erosion or growth of vegetation
b. Weir and Training Walls	Trapezoidal earth channel
General Condition	Good - no erosion or growth of vegetation
Rust or Staining	N/A
Spalling	N/A
Any Visible Reinforcing	N/A
Any Seepage or Efflorescence	N/A
Drain Holes	N/A
c. Discharge Channel	Broad earth channel
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Channel	Unlined but no erosion clear of debris and vegetation
Other Obstructions	Dense growth of trees and brush between downstream end of emergency spillway and main channel below dam.

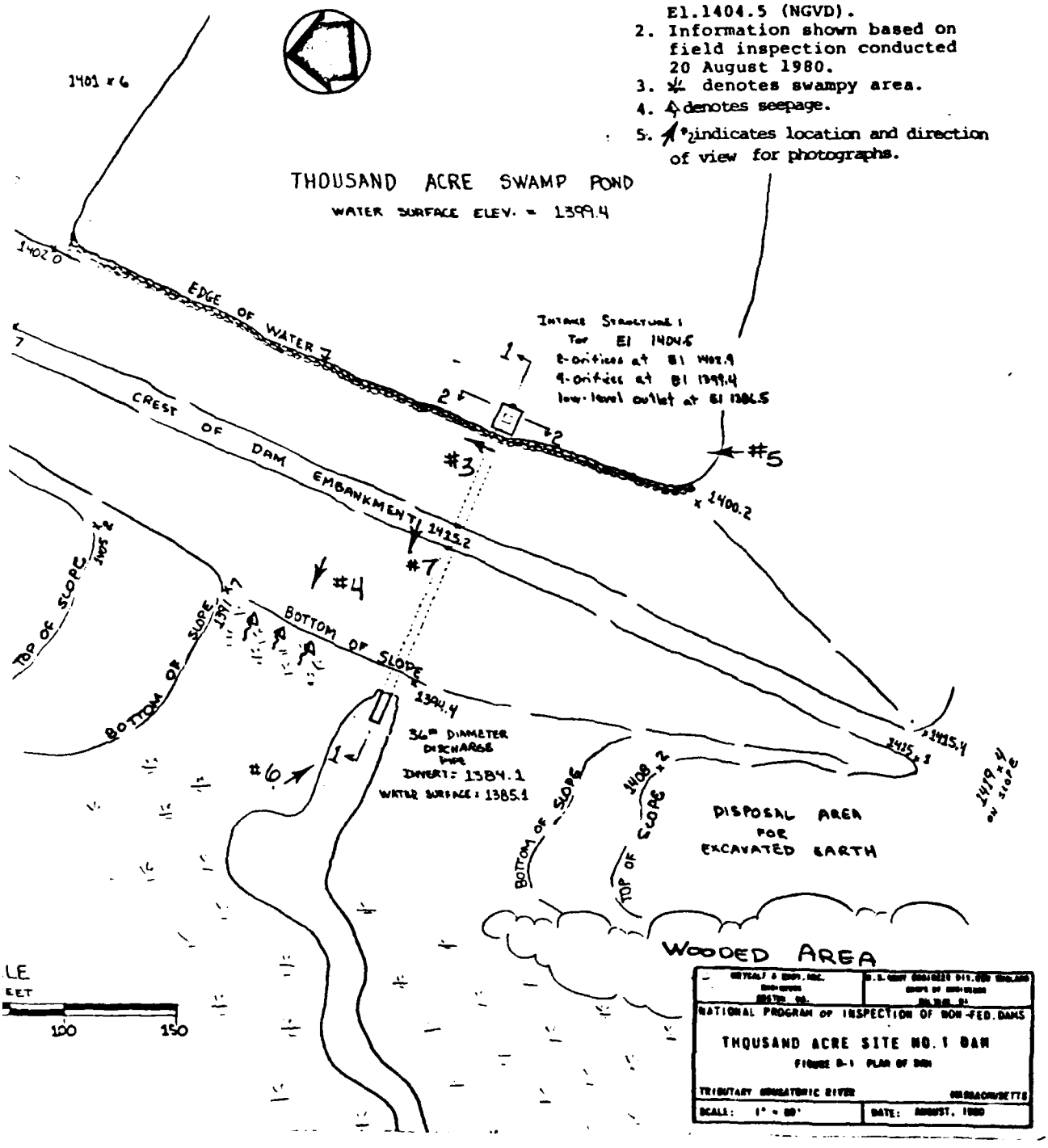
APPENDIX B

PLANS OF DAM AND PREVIOUS
INSPECTION REPORTS



1 of 2

NOTES:
1. Elevations shown based on top of concrete intake structure El.1404.5 (NGVD).
2. Information shown based on field inspection conducted 20 August 1980.
3. ⁂ denotes swampy area.
4. ⁂ denotes seepage.
5. ⁂ indicates location and direction of view for photographs.



NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

THOUSAND ACRE SITE NO. 1 DAM

FIGURE 8-1 PLAN OF DAM

TRIBUTARY BLACKSTONE RIVER — MASSACHUSETTS

SCALE: 1" = 80' — DATE: AUGUST, 1980

2 of 2

REPORT OF ANNUAL INSPECTION
PL 566 Structures

May 1, 19--
Date

Black Berry Town Watershed [illegible]

ITEM	Current Report Remarks and Recommendations	Season
nbankment	slight seep D.S. Rt side of P.S.	
lopes		
. Vegetation*		
. Erosion		
op of Dam & Berms		
. Vegetation*		
. Erosion		
utters		
. Vegetation*		
. Erosion		
ermanent Pool		
. Undersirable Vegetation		
. Debris		
rincipal Spillway		
iser		
. Undermining of Footing		
. Trash Rack		
. Cats		
. Appurtenances		
nduit		
. Alignment		
. Separation of Joints		
. Cracks		
. Obstructions		
ssipation Basin		
. Trash		
. Cracks		
. Drains		
hannels & Ditches		
. Vegetative Cover*		
. Erosion		
. Sedimentation or Riprap		
. Drains		
mergency Spillway		
. Vegetation*	car tracks has cutted bottom	
. Erosion		
. Drainage	Wet portion along Rt side	
. Obstructions		

(See over)

TO: WATERSHED [illegible]

Report of Annual Inspection
Blackberry River Watershed
Site No. 1

May 22, 1968

May 1, 1968, the following people met at the Blackberry River
tershed, Site No. 1, for the purpose of conducting an annual
spection.

Thomas Doucette, Water Resources Commission ✓
Victor Galgowski, Dept. of Agriculture, Connecticut ✓
W. T. Ferguson, Soil Conservation Service, Connecticut ✓
J. Czak, University of Massachusetts
W. Myers, Chairman Berkshire County Conservation District ✓
W. Heaphy, Berkshire County Engineer ✓
E. Turner, Bershire County Engineers' Office
G. Laycoe, Berkshire County Engineers' Office
G. Garaini, Berkshire County Engineers' Office
W. Warren, Soil Conservation Service, Pittsfield ✓
G. Greenleaf, Soil Conservation Service, Otis
C. Moustakis, Soil Conservation Service, Amherst ✓
C. Dodge, Soil Conservation Service, Amherst KKK

is site appears in very good condition. There is a slight seep
the downstream toe adjacent to the end of the pipe. There is
indication of concentrated flow and those present felt that
was caused by seepage from the drainage blanket.

ere is still a wet area due to what appears to be a seep on the
ght side of the emergency spillway. There is heavy vegetative
ver present and no corrective measures were recommended at this
ne. The area should be observed periodically and corrective
asures taken when deemed necessary.

ere is some rutting of the emergency spillway approach channel,
auto traffic. Mr. Galgowski requested and received permission
om Mr. Doucette to install a barricade where the access road enters
e emergency spillway. One end of the barricade cable will be
stened with a Connecticut padlock and the other with a Massachusetts
dlock. This will allow both states access to the site. Placing
e barricade at this location will not prevent fishermen from using
e site, but will keep cars from damaging vegetation.

Charles H. Dodge/ntl
Chester H. Dodge/ntl
Civil Engineer

tattoos checked ✓

eaver dam located downstream from the Site #1 dam was backing up er upstream such that the end of the principal spillway was half merged. It was not determined whether the beaver dam noted and orted last year during the inspection had been removed since the nty engineer was not present. The submergence is not presently tricting flow from the spillway nor has there been any noticeable sion in and around the plunge pool. The high water is, however, sing problems at Hawkness Road downstream. Donald Stockwell unteered to contact the county engineer to determine what he had omplished after last year's inspection with reference to the beaver removal and to see if the present beaver dam could be removed.

fishing groups were using the site during the inspection. Small kerel, blue gill, and bass were seen along the edges and bass and e gill were nesting along the shoreline.

access road and the plaque were in satisfactory condition.

Donald M. Stockwell/mgc
Design Engineer
July 5, 1967

M. Graf, Water Resources Commission
T. Doucette, Water Resources Commission
L. Diamond, Department of Natural Resources
Col. K. Hand, Sandisfield Conservation Commission
W. Warren, NUC
V. Galgowski, Dept of Agrilculture, Connecticut
W. Meyers, Berkshire Conservation District
J. Elasmar, Soil Conservation Service
B. Gullion, Department of Natural Resources
G. Bliss, Department of Natural Resources
K. Klingelhofer
C. Brown
C. Moustakis
E. Swenson
J. Swieder, Dep Comm of Agric, Conn
J. Ward, Soil Cons Div, Dept of Agric, Conn

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
29 Cottage Street
Amherst, Massachusetts 01002

REPORT OF ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED
Site #1
by
Donald M. Stockwell

June 26, 1967, the following people met at the Blackberry River watershed, Site #1, for the purpose of conducting an annual inspection:

Thomas Doucette, Water Resources Commission
Victor Galgowski, Department of Agriculture, Connecticut
Colonel K. S. Hand, of Sandisfield
Mr. Wilson, a visitor
John Folan, Soil Conservation Service
Christopher Moustakis, Soil Conservation Service
Donald Stockwell, Soil Conservation Service

s noted last year, the vegetative cover at this site is in very good ondition. The only vegetative measures needed and recommended this year re clipping and raking or shredding the clippings. It was recommended iat portions of the high bank above the emergency spillway be fertilized ith a complete fertilizer in the fall or earlier. Should the remainder f site be fertilized, it was recommended that the nitrogen portion of ie fertilizer be reduced or omitted, particularily in areas where the egume, birdsfoot trefoil, represents a high percentage of the vegetative over.

n addition to vegetative maintenance during the year, the soil onservation division of the Connecticut Department of Agriculture ainted the metal work on the riser and studied the location of the pper trash rack bar. Victor Galgowski reported that following iscussions with Ted Wire, State Conservation Engineer, at Storrs, that ie present trash rack bar spacing was adequate and plans to revise it ere dropped. Victor Galgowski reported the trash had been removed from ie vicinity of the riser earlier this summer. No trash was present at ie time of the inspection. He reported, that during the course of the mmer, he would tighten the Geological Service's rain gage that had oosened.

ie wet area in the emergency spillway was still moist. Since r. Galgowski indicated he could restrict maintenance equipment from iis area during wet periods, and, since the area was heavily vegetated, ie group did not recommend corrective measures but rather that the rea be observed periodically and corrective measures that may become ecessary be reported.

WATERSHED FILE

REPORT OF ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED
Site #1
by
Karl R. Klingelhofer
State Conservation Engineer

June 9, 1966

On June 9, 1966, the following people met at the Blackberry River Watershed, Site #1, for the purpose of conducting an annual inspection:

Donald Kirby, Water Resources Commission, Massachusetts
Jerry Knight, Department of Agriculture, Connecticut
Nick Galgowski, Dept. of Agriculture, Connecticut
Joseph Swieder, Deputy Commissioner of Agriculture, Conn.
Joseph Ward, Department of Agriculture, Connecticut
Lou Diamond, Berkshire County Engineer
Bill Warren, Soil Conservation Service
Karl R. Klingelhofer, Soil Conservation Service

This site appears to be in good shape and demonstrates what proper maintenance can do. It is estimated that 70% of the dam is now covered with Birdsfoot trefoil. Two years ago it is estimated that less than 25% of the dam was covered with trefoil. Ferlilizing of the dam is not recommended at present based upon the lush growth present. The emergency spillway has already been fertilized this year with 1400 lbs. of 15-15-15 fertilizer. However, this was handspread and several spots were missed. Representatives of the Connecticut Department of Agriculture stated that they would return to re-do the areas needing fertilizer.

It is recommended that the site be mowed in October.

Apparently a beaver dam down stream from the outlet of the principal spillway is backing up water such that the end of the pipe is half submerged. This appears to be worse than noted last year and it is recommended that measures be taken to lower this water level. The County Engineer stated that he would contact local officials to see if they would remove the beaver dam. If he is not successful, he will contact the Water Resources Commission in Boston.

The top hanger plate of the slide gate needs to be repainted. There is some evidence of rusting of the half round corrugated metal pipe which encloses this slide gate. The rusting is apparent at and slightly below the water line. This would be difficult to re-coat at this time and it is recommended that it not be corrected until the entire section needs replacement..

A general observation is that the spacing between the top trash rack bar and the concrete top of the riser is greater than desirable. The Soil Conservation Service will look into the merits of adding a steel grating on each side of the riser to reduce the size of this opening.

Distribution: Correspondents
WRC, Titcomb, County Engr, Berkshire Cons. District Chrman, Conn. Dept. Agriculture Klingelhofer, R. Brown W.S. file

REPORT OF ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED
Site #1

by
Donald M. Stockwell, Design Engr.
SCS, 29 Cottage St., Amherst, Mass.

May 10, 1965, the following people met at Blackberry River Watershed, te #1 for the purpose of conducting an Annual Inspection:

Donald Kirby, Water Resources Commission, Massachusetts
Jerry Knight, Department of Agriculture, Connecticut
Donald Violett, " "
Lane Violett, " "
Lou Diamond, Berkshire County Engineer - Massachusetts
William Meyer, Berkshire Conservation District, Massachusetts
Wayne A. George, U.S.Geological Survey, Hartford Post Office
(Tel: Htfd 244-2528)
Donald Stockwell, Design Engineer, SCS, Amherst

e pleasing appearance of the dam site and adjacent areas reflected the gular maintenance this site has received. Areas which were previously ported as having sparse cover have filled in with vegetation. Fewer than half dozen small logs were floating in the vicinity of the riser and ese were removed during the inspection. The access road is passable to low hicles and thus permits ready entrance for maintenance of structure. The t area at the toe of the emergency spillway still exists, but has a satis- ctory vegetative cover and corrective measures were not thought necessary.

minant mixtures are birds foot trefoil on most of the dam surface; creeping d fescue at the upstream water edge; and blue grass and clover on the ergency spillway.

e Connecticut Department of Agriculture is acting for the Massachusetts ter Resources Commission in maintaining this site. They are testing the ils in the Fall and apply the necessary fertilizer and lime in the Spring. The mowing is done in late August. They have been able to cut e grasses on 2:1 side slopes of the emergency spillway.

e half-round corrugated metal pipe which protects the gate stem has had otective bituminous coating removed at the water surface. This has probably en caused by ice action. Corrosive action has not set in and it was cided to view the situation during the 1966 annual inspection to note any terioration.

. George was present at this inspection. He asked Mr. Kirby for verbal rmission to install an outside staff gauge on the riser (pending appro- l of a written request submitted by Mr. John Horton through regular chan- ls, permission was granted to install the gauge after Mr. Kirby consulted th undersigned during this inspection). This gauge was installed imme- ately following permission. The Geological Survey intends to read the uge monthly. They are primarily interested in determining the volume of orage retained behind the Blackberry structure.

Donald M. Stockwell
D.M.Stockwell, Design Engineer
May 11, 1965

All down timber should be picked up between the permanent pool water line and the design high water elevation. There does not appear to be a great deal of this material to be picked up, but what is loose should be removed. This will lessen the problems of trash at the riser. The Connecticut Department of Agriculture representatives have already cleaned up the trash which had accumulated at the riser.

The right edge of the emergency spillway bottom is still somewhat wet, but no one felt that it was serious enough to need correcting.

A large number of dead fish (bullhead) were in evidence near the riser. This condition was thought to be brought about by natural causes.

Karl R. Klingelhofer

Karl R. Klingelhofer/wmb

cc: Louis Diamond
Malcolm Graf, WRC
Barney Titcomb
William Meyers, Chrmn, Berk.Cons.Dis.
Ted Wire, SCS-Conn.
Klingelhofer
R. Brown
W.S. file

REPORT OF ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED
Site #1

by

Karl R. Klingelhofer
State Conservation Engineer
Soil Conservation Service, Mass.

On June 10, 1964, the following people met at Blackberry River Watershed Site #1 for the purpose of conducting an Annual Inspection:

Donald Kirby, Water Resources Commission, Massachusetts
Hans van Leer, Water Resources Commission, Massachusetts
Joe Ward, Department of Agriculture, Connecticut
Jerry Knight, Department of Agriculture, Connecticut
Lou Diamond, Berkshire County Engineer - Massachusetts
William Meyer, Berkshire Conservation District - Massachusetts
Donald Ziegler, Berkshire Conservation District - Massachusetts
Karl R. Klingelhofer, Soil Conservation Service, Massachusetts
Donald Stockwell, Soil Conservation Service, Massachusetts

General appearance of the site was good. The downstream slope of the dam, top width, and upper half of the upstream slope had a good stand of vegetation. Birdsfoot Trefoil was the dominant vegetation on the upper half of the dam. There was some grass present, but it was not making much growth. Spittle bug was active in the Trefoil.

The emergency spillway bottom width has a good stand of vegetation, but appears to need fertilizer. The stand of vegetation on the side slopes of the emergency spillway is sparse, but will probably thicken satisfactorily if properly fertilized.

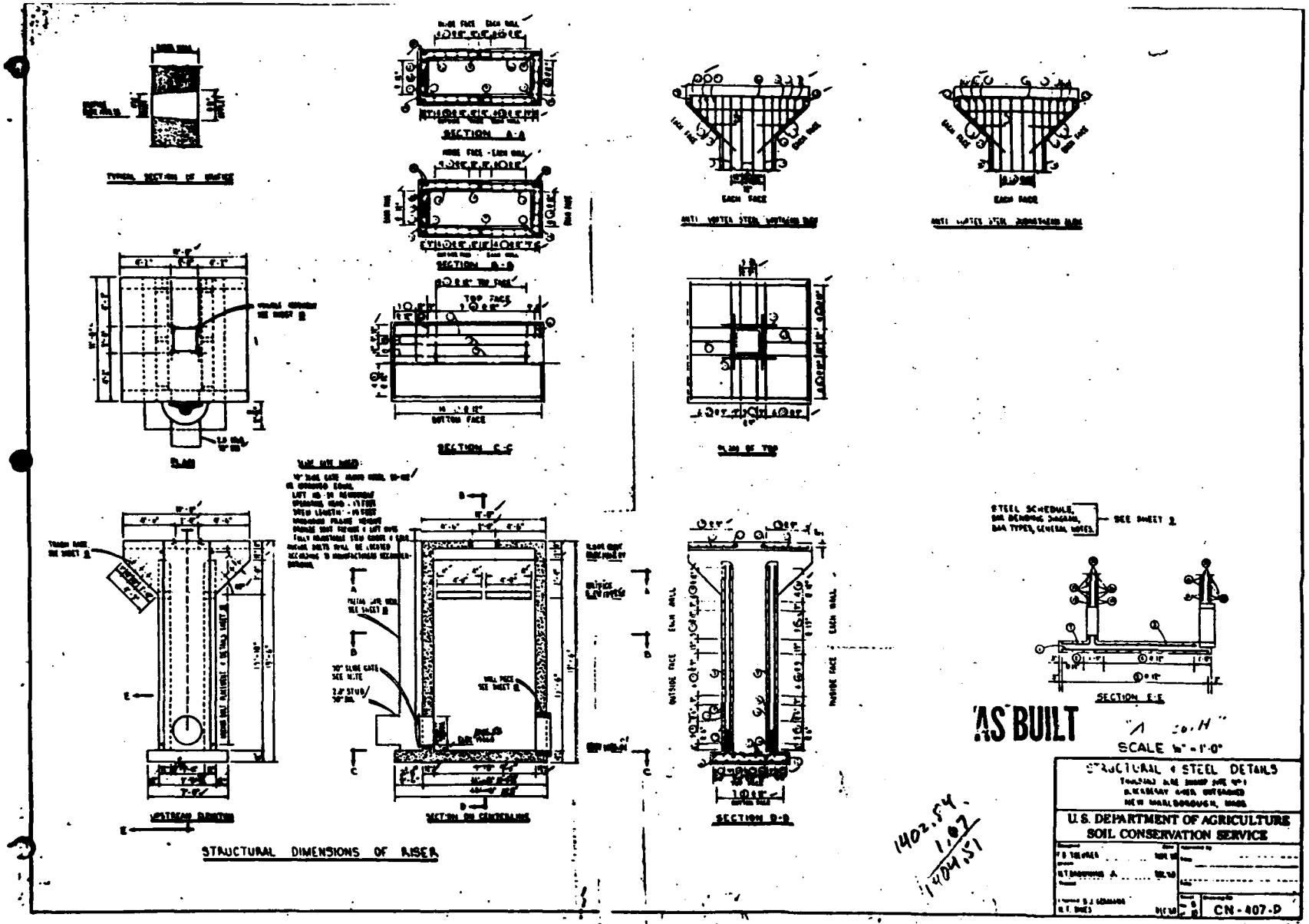
Items needing attention are as follows:

1. Collect and dispose of driftwood along shoreline of dam and at principal spillway riser.

2. Lime and fertilize seeded area in late August or early September as indicated by soil tests. The Soil Conservation Service will provide quantity recommendations following soil tests if desired. It appears quite important that this be done this year. The emergency spillway side slopes and lower half of the upstream dam slope should receive particular attention.

3. Mow the area before July 15 and again in the fall if needed.

4. Remove fallen trees from access road and gravel wet areas.



STRUCTURAL DIMENSIONS OF RISER

FIGURE B-7

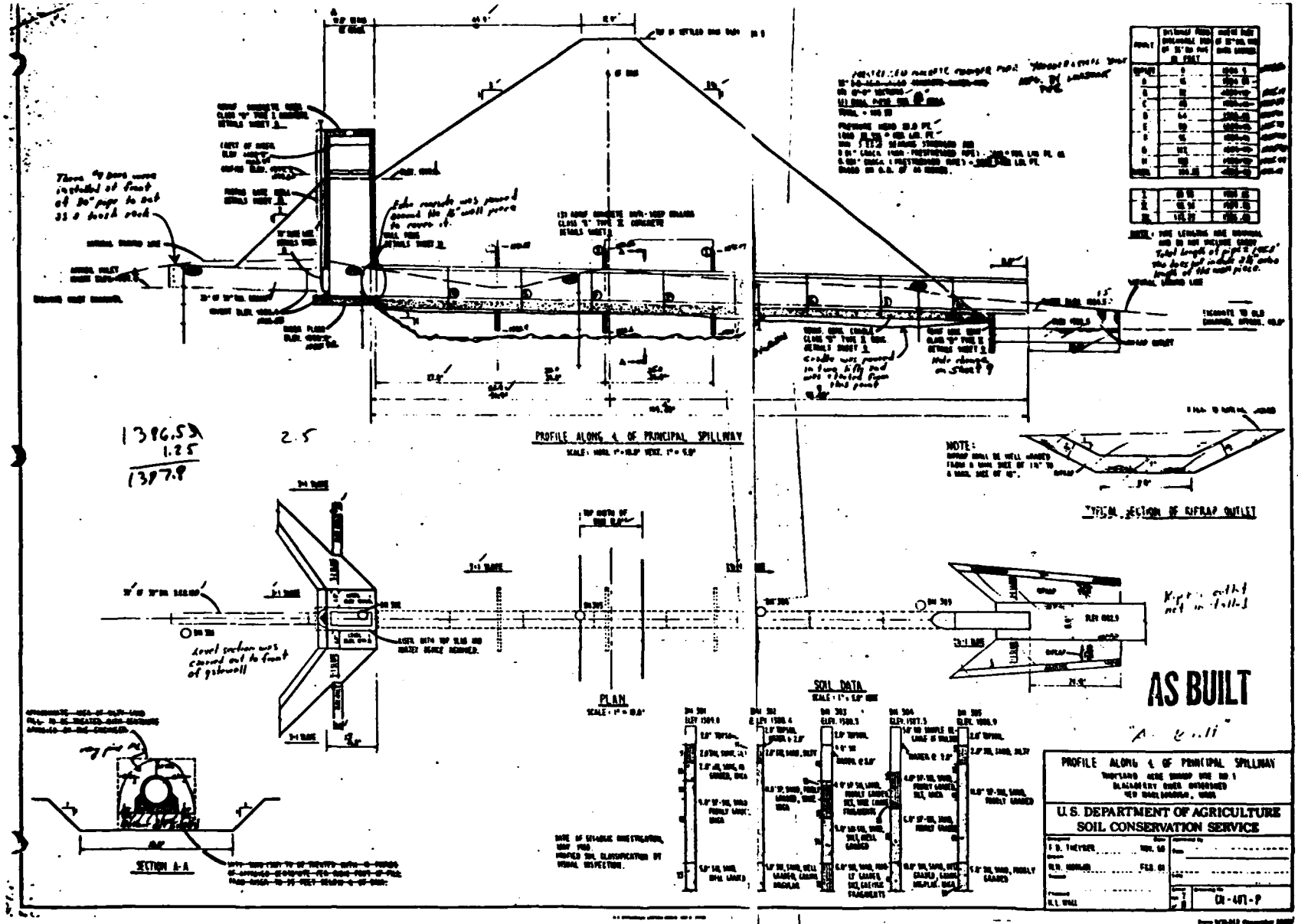


FIGURE B-6

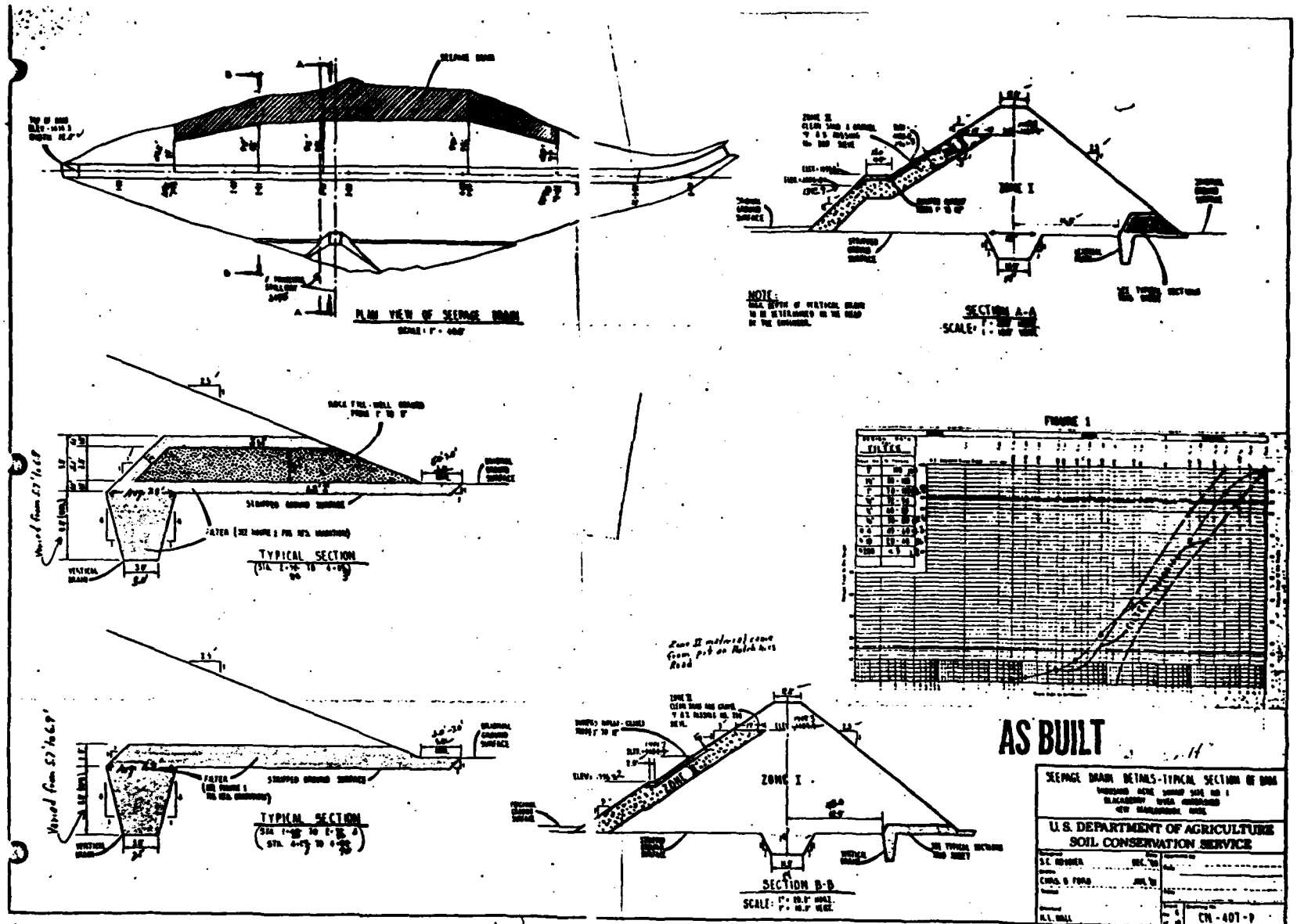
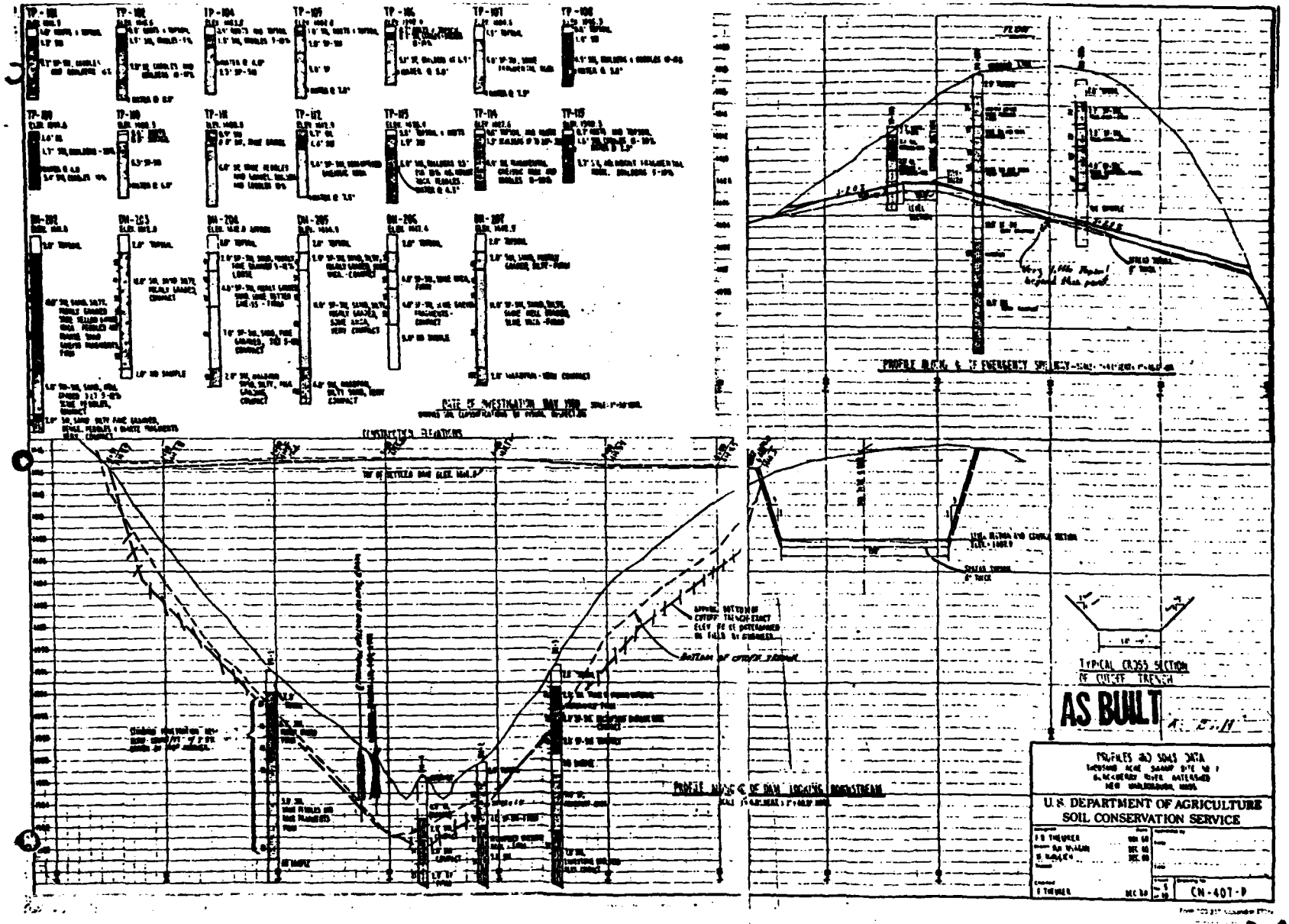


FIGURE B-5



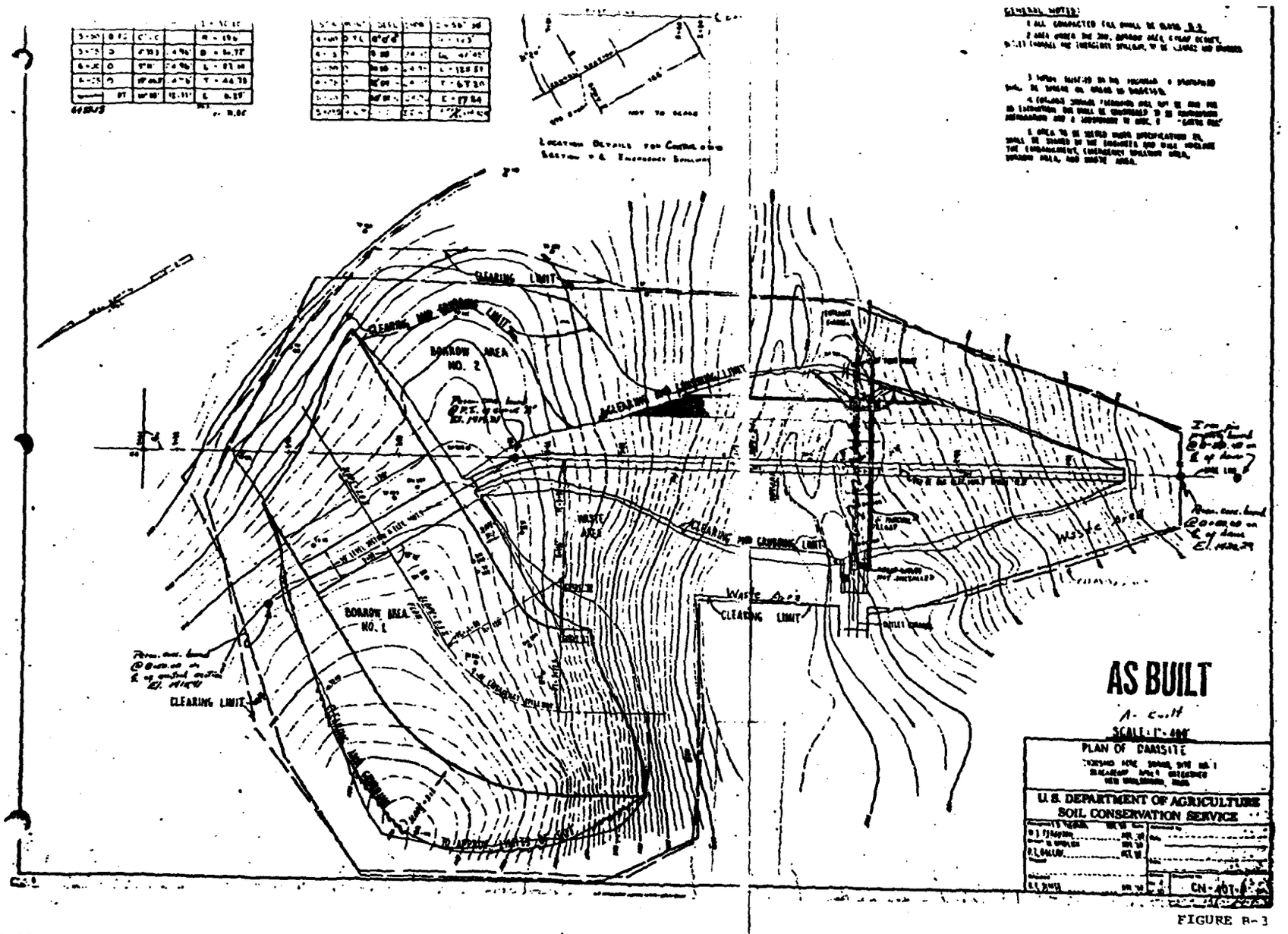
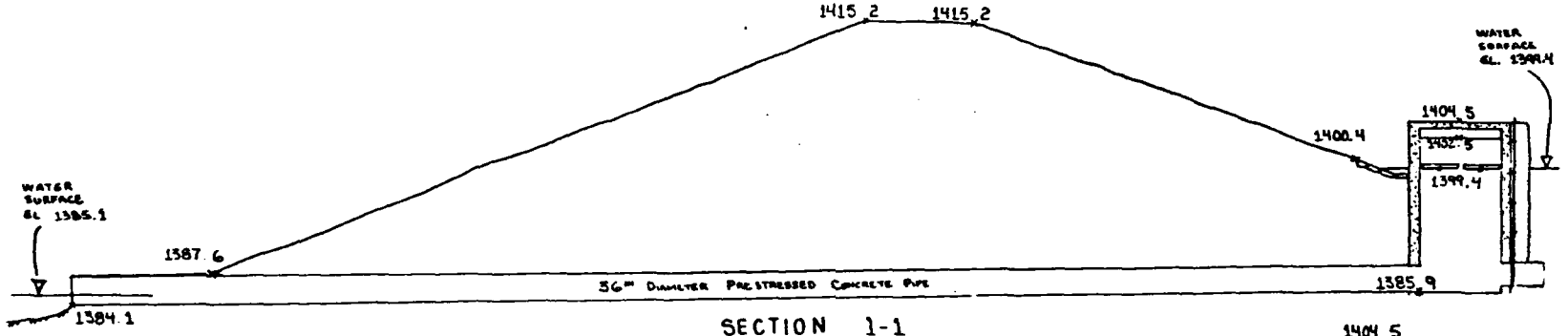


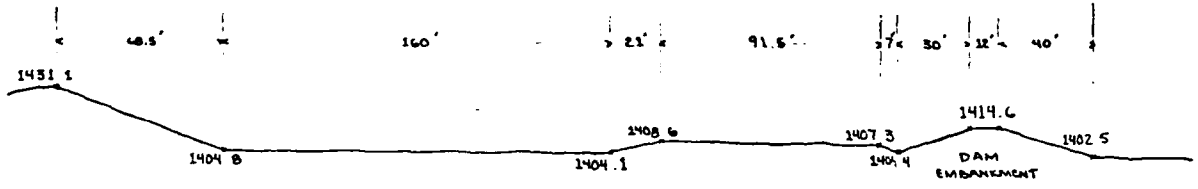
FIGURE B-3



SECTION 1-1

DAM EMBANKMENT AT OUTLET

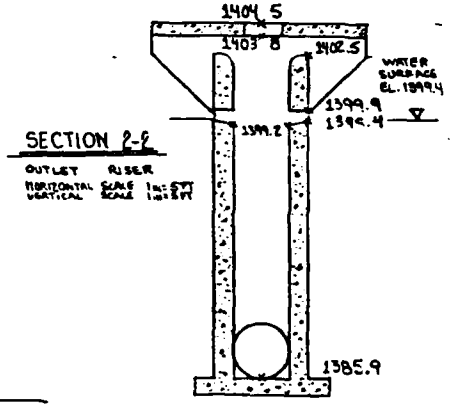
HORIZONTAL SCALE 1 in = 10 FT
VERTICAL SCALE 1 in = 10 FT



SECTION 3-3

EMERGENCY SPILLWAY

HORIZONTAL SCALE 1 in = 40 FT
VERTICAL SCALE 1 in = 4 FT



SECTION 2-2

OUTLET RISER

HORIZONTAL SCALE 1 in = 5 FT
VERTICAL SCALE 1 in = 5 FT

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

THOUSAND ACRE SITE NO 1 DAM

FIGURE 5-2 SECTIONS THROUGH DP.

MASSACHUSETTS

SCALE: AS SHOWN

DATE: AUGUST, 1980

REPORT OF ANNUAL INSPECTION
PL 566 Structures Date: ____________

____________ Town ____________ Watershed ____________

Item	Current Report — Remarks and Recommendations	Season
Access Roads 29. Obstructions		
29. Gullying		
30. Drainage & Culverts		
Appurtenances 31. Plaques		
32. Barricades	Consider installing barricade	
33. Fences		
34. Other		

…eral Remarks and Recommendations:

Vic ~~Gilgochil~~ Galgowski
~~Spec.~~ Ferguson
W.T. Warren
Dowcetts
Heaphy
Greenless
Chris
G. Czak
~~…~~. Laycoc
G. Gavaini

~~… in april, 68~~

Wm. Meyer - Chairman York County Conservation district

…rent soils tests should be made to determine the amounts of lime and …tilizer needed. If soils tests are not made, the recommendations below …y be used.

Vegatative Check List	Season	Rate
…wing	:	In.
…aking	:	
…her	:	
…iming	:	T/Ac
…rtilizing	( ):	Lb/Ac
…eding	(Species) :	Lb/Ac

Inspection Team			

Report of Annual Inspection
PL-566 Structures

May 19, 1969
Date

Site # 1 Town New Marlborough Watershed Blackberry

Participants in Inspection:

Thomas F. Doucette	WRC	William F. Warren	SCS
William A. Heaphy	County Engr.	James Elasmar	SCS
Robert J. Saulnier	Asst. County Engr.	Gregory Buteau	SCS

A. Vegetative Evaluation: Embankment slopes, top & gutters and emergency spillway; need for fertilizing, lime, re-seeding, mowing, erosion control, etc.

Grasses are now predominating with some clumping of growth. Mowings are producing some matting, but in general protection is good. Quack grass is coming in strong on embankment. Reed canary grass is taking over wet areas in the E.S. Conn. rep. states that no fertilizer was applied last year nor will there be any this year because of lack of funds. However, this fertilization might need to be resumed next year.

B. Principal spillway & appurtenances: Stability, condition of concrete & steel, water tightness of gate, rip-rap at outlet, etc.

Riser and gate on pond drain appeared in good condition. Seepage in E.S. same as observed in previous years. Excess water observed at downstream toe where rock drain had been installed. However, at this toe area the vegetation is not weakening.

C. Permanent Pool: Water quality, debris, undesirable vegetation, etc.

No debris and area is very clean.

D. Facilities & Miscellaneous: Beach, boat ramp, bath house, access road, fences, signs, barricades, etc.

None

STATE OF CONNECTICUT
Sponsor responsible for Operation and Maintenance

By James J. Thomas
SCS, Otis, Mass

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
29 Cottage Street
Amherst, Massachusetts 01002

REPORT OF THE ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED
June 11, 1970

On May 15, 1970 the following met at the Blackberry Site of the Blackberry River Watershed in the town of New Marlborough, Massachusetts for the purpose of conducting the annual inspection:

Thomas Doucette, Water Resources Commission
Fletcher Pyle, Water Resources Commission
Richard Spofford, Water Resources Commission
William Heaphy, County Engineer
Robert Saulnier, Assistant County Engineer
Benjamin Warner, Connecticut Soil Conservation Division
Victor Galgowski, Connecticut Department of Agriculture
Felix Zeleznicky, Connecticut Department of Agriculture
Edward Konieczny, Soil Conservation Service
James Elasmar, Soil Conservation Service

The appearance of the vegetation looks very good. The mowings have produced some matting. It is recommended that mowed areas be raked in the future to prevent this matting which smothers new growth. The cover on the emergency spillway looks better than last year. The reed canary is taking over in the emergency spillway. At the south end of the dam there is a wet spot about 20' X 30', it is recommended that this area be seeded with reed canary. On the upstream side of the dam near the riser an area of 20' X 100' should be fertilized with 10-10-10, 15-10-10, or equivalent of either at the rate of 400 pounds per acre.

The riser and the gate on the pond drain are in good condition. The concrete in the riser looks very good. The seepage in the emergency spillway is the same as last year. However the vegetation in the area remains good. It was noted that a large log was stuck inside the riser. This should be removed as soon as possible so as not to plug the riser. Riprap should be replaced and extended at the left side of the outlet conduit.

No debris in the permanent pool and the area looks very good. The State of Connecticut is responsible for the operation and maintenance of this site.

Edward C. Konieczny and James J. Elasmar
District Conserv. Project Engineer /dmb

Distribution:
C.Kennedy,WRC (2)
Heaphy, County Engineer
E.Konieczny,Pittsfield
Chairman,Berkshire Cons.Dis.
J.Elasmar
C.Moustakis
K.R.Klingelhofer
A. Verdi
W.S.file (2)
Conn.SCS,-SCE
Conn.(Dept. of Agriculture and Natural Resources)

Brown

REPORT OF ANNUAL INSPECTION

BLACKBERRY RIVER WATERSHED

May 21, 1971

On May 18, 1971 the following met at the Blackberry Site of the Blackberry River Watershed in the town of New Marlborough, Massachusetts for the purpose of conducting the annual inspection:

E.T. Lewicke, Water Resources Commission
K. Maguire, Water Resources Commission
Edward Konieczny, Soil Conservation Service
John Folan, Soil Conservation Service
James J. Elasmar, Soil Conservation Service

The appearance of the vegetation looks very good. The cover on the emergency spillway looks the same as last year. At the south end of the dam there is a wet spot. It is recommended that an intercept ditch be constructed to keep surface water from running downstream. The upstream side of the dam area should be fertilized with 10-10-10 or equivalent at the rate of 400 lbs per acre.

The riser and the gate on the pond drain are in good condition. The concrete in the riser looks very good. The seepage in the emergency spillway remains the same as last year. However the vegetation remains good. Logs stuck inside riser should be removed. Riprap should be replaced and extended at the left side of the outlet conduit.

No debris in the permanent pool and the area looks very good. The state of Connecticut is responsible for the operation and maintenance of this site.

Submitted By James J. Elasmar
James J. Elasmar
Project Engineer
Otis, Ma.

Dist: 9/13/71
Conn, SCS-SCS
Conn, Dept of Agric.

B-19

THOUSAND ACRE SITE NO.1 DAM

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
29 Cottage Street
Amherst, Massachusetts 01002

July 25, 1972

REPORT OF ANNUAL INSPECTION

Blackberry River Watershed

BLACKBERRY SITE, New Marlborough, Mass.

On May 16, 1972, the following met at the Blackberry Site of the Blackberry River Watershed in the town of New Marlborough, Massachusetts, for the purpose of conducting the annual inspection.

Victor Galgowski, Dept. of Environmental Protection, Hartford, Conn.
W. H. Meyer, Chairman, Berkshire Conservation District
E. T. Lewicke, Division of Water Resources, Boston, Mass.
John F. Folan, Soil Conservation Service, Otis, Mass.
James J. Elasmar, Soil Conservation Service, Otis, Mass.

Structural Conditions and Recommendations

1. At the south end of the dam there is a wet spot. It is recommended that an intercept ditch (about 100 feet long) be constructed to keep surface water from running downstream.

2. The riser and the gate on the pond drain are in good condition. The concrete in the riser looks good.

3. Logs and debris inside the riser should be removed.

4. The seepage in the emergency spillway remains the same as last year.

5. Riprap should be replaced and extended at the left side of the outlet conduit.

6. Two (2) wood chuck holes should be filled, one is at the left abutment of the emergency spillway, and the other is at the right side of the emergency spillway.

7. Dead trees at the flood pool edge should be removed.

Agronomic Conditions and Recommendations

The earthen dam and emergency spillway were inspected for adequacy of vegetation. The general appearance of vegetation is good. The pale green color of grasses indicates the need for nitrogen fertilizer. Weed species are becoming established in spots of weak sod. Yarrow, goldenrod, cinquefoil were observed on the eastern edge of the emergency spillway.

Spot seeding Tall or Red Fescue in open area on the upstream side of the dam is desirable. There are about eight to ten of the areas ranging three to six feet in diameter that should be spot seeded.

Wet spot on the south end of the dam continues to hamper proper mowing. The installation of a short diversion ditch about 100 feet long as recommended above would intercept spring flow and could make mowing much easier.

Fertilization of Reed Canarygrass in the wet spots of the emergency spillway should thicken the sod and reduce rutting by maintenance-mowing equipment.

An application of two tons per acre of ground limestone (about eight (8) tons for the estimated four-acre area) and 300 pounds per acre of 10-10-10 or equal analysis fertilizer (1200 pounds total) are recommended.

GENERAL

There is evidence of increased use of the area primarily for fishing. Space is available for parking only about six (6) vehicles in the pull-out areas along Hotchkiss Road. The access road has deteriorated to the extent that automobiles cannot drive to the fishing area at the dam. If it is considered desirable for greater utilization of the facility, improvement should be made to the access road.

The State of Connecticut is responsible for the operation and maintenance of this site.

Submitted by: James J. Elasmar/wmb
Project Engineer

cc: C. Kennedy, WRC (3)
E. Konieczny, Pittsfield SCS
J. Elasmar
C. Moustakis
D. Basinger
C. E. Mills
W. P. Annable
A. Verdi (2)
Chairman, Berkshire Conservation District
Connecticut Dept. of Environmental Protection

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
29 Cottage Street
Amherst, Massachusetts 01002

June 25, 1973

REPORT OF ANNUAL INSPECTION

Blackberry River Watershed

BLACKBERRY SITE, New Marlborough, Mass.

On May 4, 1973, the following met at the Blackberry Site of the Blackberry River Watershed in the Town of New Marlborough, Massachusetts for the purpose of conducting the annual inspection:

Victor Galgowski, Dept. of Environmental Protection, Hartford, Co.
Morgan Ely, Connecticut Soil Conservation Division
Benjamin Warren, Connecticut Soil Conservation Division
Kevin Maguire, Water Resources Commission, Boston, Mass.
Edward G. Konieczny, Soil Conservation Service
James J. Elasmar, Soil Conservation Service

GENERAL

The State of Connecticut is responsible for the operation and maintenance of this site. The access road has deteriorated to the extent that automobiles cannot drive to the fishing area at the dam. It is recommended that this road be reconstructed.

STRUCTURAL CONDITIONS AND RECOMMENDATIONS

Wet spot at the south end of the dam is in the same condition as a year ago, It is recommended that an intercept ditch be constructed to keep surface water from running downstream.

Logs and debris inside the riser should be removed.

The seepage in the emergency spillway is the same as last year.

Riprap that is missing should be replaced and extended at the left side of the outlet conduit.

Two woodchuck holes should be filled. One is at the left abutment of the emergency spillway and the other is at the right side of the emergency spillway.

Dead trees at the flood pool edge should be removed.

The concrete in the riser looks good. The riser and the gate on the pond drain are in good condition.

AGRONOMIC CONDITIONS AND RECOMMENDATIONS

The earthen dam, vegetated spillway and the area in the general vicinity were inspected for adequacy of vegetation and general appearance.

Looking at a distance away from the dam and vegetated spillway, the general appearance is very good. Upon closer examination of the dam and vegetated spillway, much can be done to provide a more effective cover for erosion control and wildlife. Weed species are becoming more prominent. Some of the open spots on the dam, observed last year, have vegetated with weed species -- primarily cinquefoil and yarrow. There are still eight to ten areas, three to four feet in diameter , on the dam that should be spot seeded. Sedges are starting to grow in the wet area on the south end of the dam and in the vegetated spillway.

There is evidence of increased use of the area for fishing and hunting. Several piles of trash were observed along the waters edge in front of the vegetated spillway and on the north side of the impoundment (Hotchkiss Road side). A short access road, about 200 feet east of the access road that leads to the dam, is being used by fishermen to drive closer to the impoundment. It appears that some boats are being launched from this site. Trash was observed in this area also.

Spot seed the bare areas with Tall Fescue and Red Fescue.

Consider drainage measures for the wet area south of the dam and the wet portion of the vegetated spillway. Subsequent liming, fertilizing and seeding of disturbed areas should be carried out.

Apply lime to dam, spillway and open land area at the rate of 2 tons per acre of ground limestone to promote growth of desirable grasses. Fertilization, 400 to 600 pounds of 10-10-10 or equivalent, is desirable to thicken sod. At least 25% of the nitrogen should be derived from an organic source.

Grass should be mowed at least once (after July 1) each year.

cc: C. Kennedy, WRC (3)
E. Konieczny, Pittsfield SCS
J. Elasmar
C. Moustakis
D. Basinger
C.E. Mills
W. Annable
A. Verdi (2)
Chairman, Berkshire Conservation District
Connecticut Dept. of Environmental Protection

Orig (original)

July 1, 1974

REPORT OF ANNUAL INSPECTION

BLACKBERRY RIVER WATERSHED

Blackberry Site

On June 24, 1974, the following met at the Blackberry Site in the Town of New Marlborough, Massachusetts for the purpose of conducting the annual inspection:

Robert Semickser	Water and Related Resources - Conn.
Kevin Maguire	Water Resources Commission - Boston
W. H. Meyers	Berkshire Conservation Commission
Stetson Adams	Department of Natural Resources
William Annable	Soil Conservation Service - Amherst
James J. Elasmar	Soil Conservation Service - Otis
George Greenleaf	Soil Conservation Service - Otis

GENERAL

The State of Connecticut is responsible for the operation and maintenance of this site. Access Road should be graded to fill in pot holes.

STRUCTURAL CONDITIONS AND RECOMMENDATIONS

Wet spot at the south end of the dam is in a drier condition. Seepage in the emergency spillway is the same as last year. This condition has remained the same for at least six years. Missing riprap should be replaced and extended at the left side of the outlet channel. The concrete in the riser looks good. The riser and the gate on the pond drain are in good condition.

AGRONOMIC CONDITIONS AND RECOMMENDATIONS

Vegetation is in very good condition. Spillway and top of dam should be mowed and treated with 400 pounds/acre of 5-10-10 or equivalent.

Submitted by

James J. Elasmar
Project Engineer

Ronald E. Thompson
District Conservationist
SCS, Pittsfield, Mass.

June 17, 1975

REPORT OF ANNUAL INSPECTION
BLACKBERRY RIVER WATERSHED

On June 2, 1975, the following met at the Blackberry Site in the Town of New Marlborough, Massachusetts for the purposes of conducting the annual inspection

Kevin Maguire	Water Resource Commission-Boston
Ken Wood	" " " "
Mr. Galgowski	Conn. - D.E.P.
R. Somicksen	" "
Sue Michaud	" "
Jim Fenn	" "
Warren Whitney	" "
David Dumlavey	" "
Art Cross	SCS-Litchfield, Conn.
Ron Thompson	SCS-Pittsfield, Mass.
Rick DeVergilio	" " "

GENERAL

The State of Connecticut is responsible for the operation and maintenance of this site. Access road should be graded to fill in potholes.

Structural Conditions

There was a wet spot at the south end of the dam. Vehicle tracks are causing water to stand. A wet spot exists to the right of the outlet pipe. The people present did not feel that the problem had enlarged compared to past years. There is some vehicle damage in the emergency spillway. The wet spot is still present in the spillway but it appears to dry up during the summer.

Agronomic Conditions and Recommendations:

Vegetation is in excellent condition. The top of dam and emergency spillway should be mowed. The State of Conn. stated that the site had not been fertilized last year. Top of dam should be treated with 400 pounds/acre of 5-10-10 or equivalent. If possible, some control should be installed to keep vehicles off the dam.

Submitted by:

Ronald E. Thompson,
District Conservationist

rrk
cc: James Elasmar, Otis SCS

'RIAL

RATION AND MAINTENANCE
INSPECTION RECORD

U.S. Dept. of Agriculture
Soil Conservation Service

BLACKBERRY RIVER WATERSHED Inspection Date MAY 24, 1976

me/No. ~~BLACKBERRY~~ SITE #1 Type MULTIPURPOSE
THOUSAND ACRE SWAMP (#1)

Inspection: Special [ ] Annual [✓]
Structure Operation: Satisfactory [✓] Unsatisfactory [ ]

ing Local Organization: STATE OF CONNECTICUT

for Inspection: K. MAGUIRE WRC, C. CURTIN DEM, E. STRUZZIERO
EVERGILIO, SCS PITTSFIELD, JAMES J. ELASMAR

M	Condition * S or U	Maintenance & Needed Repairs	Estimated Costs	Agreed Date Repairs to be Completed
getation	S	FERTILIZE WITH 400 LBS PER ACRE OF 10-10-10. LIME ENTIRE AREA 2½ TONS PER ACRE	450.00	
nces				
ncipal llway	S	CLEAN DEBRIS FROM TRASH RACK	30.00	
ergency llway	S	SOME VEHICLE TRACKS ON SLOPE Regrade + seed.	50.00	
bankment Riprap	S			
servoir ea	S	Clean up debris along edge of pond	50.00	
tes or lves	S			
tlet annels	S	Rearrange and place needed riprap to the right of the outlet pipe (a [illegible])	100.00	
ructure ainage tlets	S			
cess Rd.	U	REMOVE BOULDERS FROM ROADWAY, PLACE GRAVEL AND GRADE	250.00	

S: (over) * S = Satisfactory; U = Unsatisfactory

No one was present for the inspection from the state of Connecticut
[illegible] available for SLO signature. + Spot seed wet area at south end
[illegible]em. Need canary grass. Try to discourage vehicles from passing on dam.

[signature] [signature]
(ct Conservationist) (Project Engineer) (SLO Representative)

due, annually: July 1)

THOUSAND ACRE SITE NO.1 DAM

TRIAL
6

OPERATION AND MAINTENANCE
INSPECTION RECORD

U.S. Dept. of Agriculture
Soil Conservation Service

t BLACKBERRY RIVER WATERSHED Inspection Date 5/11/77

ame/No. THOUSAND ACRE SWAMP Type MULTI-PURPOSE

f Inspection: Special ☐ Annual ☒

Structure Operation: Satisfactory ☒ Unsatisfactory ☐

ring Local Organization: STATE OF CONNECTICUT

t for Inspection: Ernest Struzziero w/ R.C. Ron [illegible] James [illegible] SCS
[illegible] GALCOWSKI, CONN.

EM	Condition * S or U	Maintenance & Needed Repairs	Estimated Costs	Agreed Date Repairs to be Complete
getation	S	Fertilize with 10-10-10. 400#/Acre	400.00	
nces	—			
incipal pillway	S	Remove debris from trash rack	35.00	
nergency pillway	S	Regrade + seed vehicle tracks	55.00	
nbankment Riprap	S			
eservoir rea	S	Remove debris from edge of pool	60.00	
ates or alves	S			
utlet hannels	S	Replace riprap, right of outlet pipe	75.00	
tructure rainage utlets	S			
ccess Rd.	U	Remove boulders, place and grade gravel.	370.00	

KS: (over) * S = Satisfactory; U = Unsatisfactory

Copy to STANLEY PAC. COMMISSIONER, D.E.P. STATE OFFICE, HARTFORD CONN.

[signature] (District Conservationist) [signature] (Project Engineer) [signature] (SLO Representative)

rt due, annually: July 1)

THOUSAND ACRE SITE NO.1 DAM

O ATION AND MAINTENANCE
INSPECTION RECORD

.S. Dept. of Agriculture
Soil Conservation Service

ACKBERRY RIVER WATERSHED Inspection Date 8-4-78

o. THOUSAND ACRE SWAMP Type MULTI-PURPOSE

pection: Special ☐ Annual ☒

Structure Operation: Satisfactory ☐ Unsatisfactory ☐

Local Organization: STATE OF CONNECTICUT

Inspection:

	Condition * S or U	Maintenance & Needed Repairs	Estimated Costs	Agreed Date Repairs to be Completed
ion	S	FERTILIZE WITH 10-10-10 - 400#/ACRE	500.00	
	—			
al y	S	LOCKS GOOD		
ncy ay	S	~~[illegible]~~		
ment ap	S			
oir	S			
or	S			
ls	S	Replace riprap right of outlet	75.00	
ure ge s	S			
Rd.	U	Place and grade gravel	275.00	

ver) * S = Satisfactory; U = Unsatisfactory

Thompson (Conservationist) Jan [illegible] (Project Engineer) Ken B. Maggini (SLO Representative)

e, annually: July 1

CONSERVATI. SERVICE
ASSACHUSETTS

OPERATION AND MAIN. NANCE
INSPECTION RECORD

MA-AS-9
Revised 9/79
File Code 52-11-15

BLACKBERRY RIVER W/S Inspection Date 10/15/79
lo. THOUSAND ACRE SWAMP Purpose MULTI-PURPOSE
spection: Special ☐ Structure Operation: Satisfactory ☒
Annual ☒ Unsatisfactory ☐
Local Organization: STATE OF CONNECTICUT
r Inspection: ERNIE STRUZZIERO-URC., GARY PARKER-SCS(MASS)
RRAN(MASS)-SCS, ART CROSS, SCS(CONN.), BOB RANDO - D.E. MGT.

	Condition * (S or U)	Maintenance & Needed Repairs	Estimated Costs	Agreed Date Repairs to be completed
tion	S			
	—			
pal ay	S			
ncy ay	S			
ment ap	S			
oir	S			
and	S			
ls	S	REPLACE RIPRAP RT OF CHANNEL	75.00	MAY 1980
ure ge s	S			
Rd.	S			

over) * S = Satisfactory; U = Unsatisfactory

Conservationist) (Project Engineer) (SLO Representative)

APPENDIX C

PHOTOGRAPHS

e: Location and direction of photographs shown on Figure B-1 in Appendix B.

L-168B

DAM NO. 1-2-203-7

12. Remarks & Recommendations; (Fully Explain)
PREVIOUS INSPECTION DATE: April 14, 1975

This earthern structure is in good condition There were no deficiencies noted at this inspection.

For location see Topo Sheet 6-C.

13. Overall Condition:

X 1. Safe

_____ 2. Minor repairs needed

_____ 3. Conditionally safe - major repairs needed

_____ 4. Unsafe

_____ 5. Reservoir impoundment no longer exists (explain)

Recommend removal from inspection list

168-A

DAM NO. 1-2-203-1

Downstream Face of Dam:

Condition: 1. Good X 2. Minor Repairs _____

3. Major Repairs _____ 4. Urgent Repairs _____

Emergency Spillway

Condition: 1. Good X 2. Minor Repairs _____

3. Major Repairs _____ 4. Urgent Repairs _____

Comments: _____

_____

Water level at time of inspection 0.3' above X below _____

top of dam _____

principal spillway X

other _____

Summary of Deficiencies Noted:

NONE Growth (Trees & Brush) on Embankment _____

" Animal Burrows and Washouts _____

" Damage to slopes or top of dam _____

" Cracked or damaged masonry _____

" Evidence of seepage _____

" Evidence of piping _____

" Erosion _____

" Leaks _____

" Trash and/or debris impeding flow _____

" Clogged or blocked spillway _____

" Other _____

File: No Letter

L-168

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF WATERWAYS

RECEIVED JUN 23 1977

INSPECTION REPORT - DAMS AND RESERVOIRS

1. Location: City/Town NEW MARLBOROUGH Dam No. 1-2-203-7

Name of Dam 1,000 Acre Site-#1 Inspected by RDJordan-WRMcCarty

Date of Inspection June 14, 1977

Previous Inspection April 14, 1975

2. Owner/s per: Assessors _____
Reg. of Deeds _____ Personal Contact _____

1. Massachusetts Water Resources Commission 15 School St. Boston
Name St. & No. City/Town/State Tel. No.

2. _____
Name St. & No. City/Town/State Tel No.

3. Caretaker (if any) e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

_____
Name St.& No. City/Town/State Tel.No.

4. No. of Pictures taken 2

5. Degree of Hazard: (If dam should fail completely)*

1. Minor X 2 Moderate _____

3. Severe _____ 4. Disastrous _____

*This rating may change as land use changes (future development)

6. Outlet Control: Automatic _____ Manual X

Operative X Yes _____ No _____

Comments: _____

_____

7. Upstream Face of Dam:

Condition: 1. Good X 2. Minor Repairs _____

3. Major Repairs _____ 4. Urgent Repairs _____

Comments: _____

_____

_____

Remarks & Recommendations: [Fully Explain] PREVIOUS INSPECTION: February 6, 1973

The embankment is stable and has a good turf cover. No sloughing or settlement was noted. The concrete riser is in good condition, and free of any debris. The dam appears to be safe.

For location see Topo Sheet 6-C.

Overall Condition:

1. Safe X.
2. Minor repairs needed_____.
3. Conditionally safe - major repairs needed_____.
4. Unsafe_____.
5. Reservoir impoundment no longer exists [explain]

   Recommend removal from inspection list_____.

A

DAM NO. 1-2-203-7

wnstream Face of Dam: Condition: 1. Good X. 2. Minor Repairs___.
3. Major Repairs___ 4. Urgent Repairs___.

Comments: _____

_____.

nergency Spillway: Condition: 1. Good X. 2. Minor Repairs_____.
3. Major Repairs_____.4. Urgent Repairs_____.

Comments: _____.

_____

_____

ater level @ time of inspection: 0.2 ft. above X. below_____.
top of dam_____.
principal spillway X.
other_____.

ummary of Deficiencies Noted:

Growth [Trees and Brush] on Embankment NONE.
Animal Burrows and Washouts ".
Damage to slopes or top of dam ".
Cracked or Damaged Masonry ".
Evidence of Seepage ".
Evidence of Piping ".
Erosion ".
Leaks ".
Trash and/or debris impeding flow ".
Clogged or blocked spillway ".
Other ".

-168-

OK/FILE

INSPECTION REPORT - DAMS AND RESERVOIRS

1. Location: City/Town New Marlborough. Dam No. 1-2-203-7.

Name of Dam 1000 Acre Site. Inspected by: RJordan-PFezzie.

Date of Inspection 4/14/75.

2. Prev. Inspection X.

Owner/s: per: Assessors_____.

Reg. of Deeds_____. Pers. Contact_____.

1. Mass. Water Res. Comm. 15 School St, Boston, MA
Name St. & No. City/Town State Tel. No.

2. _____
Name St. & No. City/Town State Tel. No.

3. _____
Name St. & No. City/Town State Tel. No.

3. Caretaker [if any] e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

Dept. Nat'l Resour. Pittsfield, MA
Name St. & No. City/Town State Tel. No.

4. No. of Pictures taken 2.

5. Degree of Hazard: [if dam should fail completely]*

1. Minor X. 2. Moderate_____.

3. Severe_____. 4. Disastrous_____.

*This rating may change as land use changes [future development]

6. Outlet Control: Automatic_____. Manual X.

Operative X yes:_____no.

Comments:_____

_____

Upstream face of Dam: Condition:

1. Good X. 2. Minor Repairs_____.

3. Major Repairs_____. 4. Urgent Repairs_____

Comments:_____

_____

_____

12. Remarks & Recommendations: [Fully Explain]

There were no deficiencies noted during the inspection. The dam appears to be sound and in my opinion, it is safe.

---

13. Overall Condition:

1. Safe X.
2. Minor repairs needed_____
3. Conditionally safe - major repairs needed_____.
4. Unsafe_____.
5. Reservoir impoundment no longer exists [explain]

   Recommend removal from inspection list_____.

8.

Downstream Face of Dam: Condition: 1. Good X. 2. Minor Repairs___.

3. Major Repairs___ 4. Urgent Repairs___.

Comments: _____

_____.

9.

Emergency Spillway: Condition: 1. Good X. 2. Minor Repairs_____.

3. Major Repairs_____.4. Urgent Repairs_____.

Comments: _____

_____

_____

10.

Water level @ time of inspection: 0.2 ft. above x. below_____.

top of dam_____.

principal spillway x_____.

other_____.

11.

Summary of Deficiencies Noted:

Growth [Trees and Brush] on Embankment None.

Animal Burrows and Washouts "_____.

Damage to slopes or top of dam "_____.

Cracked or Damaged Masonry "_____.

Evidence of Seepage "_____.

Evidence of Piping "_____.

Erosion "_____.

Leaks "_____.

Trash and/or debris impeding flow "_____.

Clogged or blocked spillway "_____.

Other "_____.

L-16E

OK FILE

INSPECTION REPORT - DAMS AND RESERVOIRS

1. Location: City/Town New Marlborough. Dam No. 1-2-203-7.

Name of Dam 1000 Acre Site #1. Inspected by: RDJordan - FMancari

Date of Inspection 2-6-73.

2. Prev. Inspection X.

Owner/s: per: Assessors_____.

Reg. of Deeds_____. Pers. Contact_____.

1. Massachusetts Inland Resources Commission 15 School St Boston, MA

Name St. & No. City/Town State Tel. No.

2. _____

Name St. & No. City/Town State Tel. No.

3. _____

Name St. & No. City/Town State Tel. No.

3. Caretaker [if any] e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

Name St. & No. City/Town State Tel. No.

4. No. of Pictures taken 2.

5. Degree of Hazard: [if dam should fail completely]*

1. Minor X. 2. Moderate_____.

3. Severe_____. 4. Disastrous_____.

*This rating may change as land use changes [future development]

6. Outlet Control: Automatic_____. Manual X.

Operative X yes:_____no.

Comments:_____

_____

7. Upstream Face of Dam: Condition:

1. Good X. 2. Minor Repairs_____.

3. Major Repairs_____. 4. Urgent Repairs_____

Comments:_____

_____

_____

L-169 A

DAM NO1-2-203-7

10.

Risk to life and property in event of complete failure.

No. of people None.

No. of homes *.

No. of Businesses *.

No. of Industries *. Type_____.

No. of Utilities *. Type_____.

Railroads *.

Other dams *.

Other Norfolk Road.

11.

Attach Sketch of dam to this form showing section and plan on 8-1/2" x 11" sheet.

L-169

DESCRIPTION OF DAM

DISTRICT ONE.

Submitted by RDJordan Dam No. 1-2-203-7

Date 2-6-73. City/Town New Marlborough

Name of Dam 1000 Acre Site #1

---

1. Location: Topo Sheet No. 6-C.

Provide 8-1/2" x 11" in clear copy of topo map with location of Dam clearly indicated.

---

2. Year built: 1963. Year/s of subsequent repairs _____

---

3. Purpose of Dam: Water Supply _____. Recreational _____.

Irrigation _____. Other flood control.

---

4. Drainage Area: 5.2 sq. mi. _____ acres.

---

5. Normal Ponding Area: 155 Acres; Ave. Depth _____.

Impoundment: _____ gals; _____ acre ft.

---

6. No. and type of dwellings located adjacent to pond or reservoir _____

i.e. summer homes etc. _____

---

7. Dimensions of Dam: Length 570'. Max. Height 28'.

Slopes: Upstream Face earth 3:1.

Downstream Face earth 3:1.

Width across top 12'.

---

8. Classification of Dam by Material:

Earth X. Conc. Masonry _____. Stone Masonry _____.

Timber _____. Rockfill _____. Other _____.

---

9. A. Description of present land usage downstream of dam: 100 % rural; _____ % urban.

B. Is there a storage area or flood plain downstream of dam which could accommodate the impoundment in the event of a complete dam failure

Yes X. No _____.

1-2-203-7

INSPECTION OF DAMS Dam #17-3

City or Town of New Marlboro Date May 27, 1971

Name of Dam 1000 Acre Site #1 Inspector ~~R.Northrup~~ P.Feazie

Owner MA Water Resources Comm. Address 15 School St. Boston

Caretaker MA Water Resources Comm. Address 15 School St. Boston

Location Southfield - 1 mile south on Hotchkiss Rd.

Type of Dimensions Earth fill - USDA Design - 600' long - 13' wide to outlet - 27.5 ' over all height - 12' wide

Spillway, type and size Mech. R.C. Riser - 11' X 11' - emergency 150' wide

Outlets, type and size 30" inlet and gate - 36" R.C. pipe

Flashboards, type and height none

Date Built 1963 Condition good

When last repaired _____ By whose orders _____

Nature of Repairs _____

Purpose of Dam flood control

Approximate storage of water 155 acres (permenant pool)

Approximate area of water shed 5.2 square miles

Possible damage due to failure of dam Norfolk Rd. - possible to life and property

Remarks none

Recommendations _____

File

FA-AS-TRIAL
3/22/76

OPERATION AND MAINTENANCE
INSPECTION RECORD

U.S. Dept. of Agriculture
Soil Conservation Service

Project BLACKBERRY RIVER W/S Inspection Date 5/7/80

Site Name/No. 1000 AC SWAMP Type MULTI-PURPOSE

Type of Inspection: Special ☐ Annual ☒

Structure Operation: Satisfactory ☒ Unsatisfactory ☐

Sponsoring Local Organization: STATE OF CONNECTICUT

Present for Inspection: E. STRUZZIERO, USDC, ALBA ROBERTS, DEP, WALTER WHITNEY, DEP

ITEM	Condition * S or U	Maintenance & Needed Repairs	Estimated Costs	Agreed Date Repairs to be Completed
1. Vegetation	S			
2. Fences	S			
3. Principal Spillway	S	CLEAR DEBRIS AROUND RISER	300 SQ	
4. Emergency Spillway	S	MOW E.S. & SLOPES	500 SQ	
5. Embankment & Riprap	S	RIPRAP - U/S FACE OUTGROWTH BTWN ROCK FILL IN RUTS, LEFT ABUT.	300 SQ 100 SQ	
6. Reservoir Area	S	CUT GROWTH AROUND SHORELINE JUST U/S FA DAM.	200 SQ	
7. Gates or Valves	S			
8. Outlet Channels	S	CLEAR BRUSH BOTH SIDES REPLACE RIPRAP RT OF CHANNEL	100 SQ 100 SQ	
9. Structure Drainage Outlets	S			
10. Access Rd.	S			
11. CLEAN UP		DEBRIS IN VICINITY OF DAM	100 SQ	

REMARKS: (over)

* S = Satisfactory; U = Unsatisfactory

(District Conservationist) (Project Engineer) (SLO Representative)

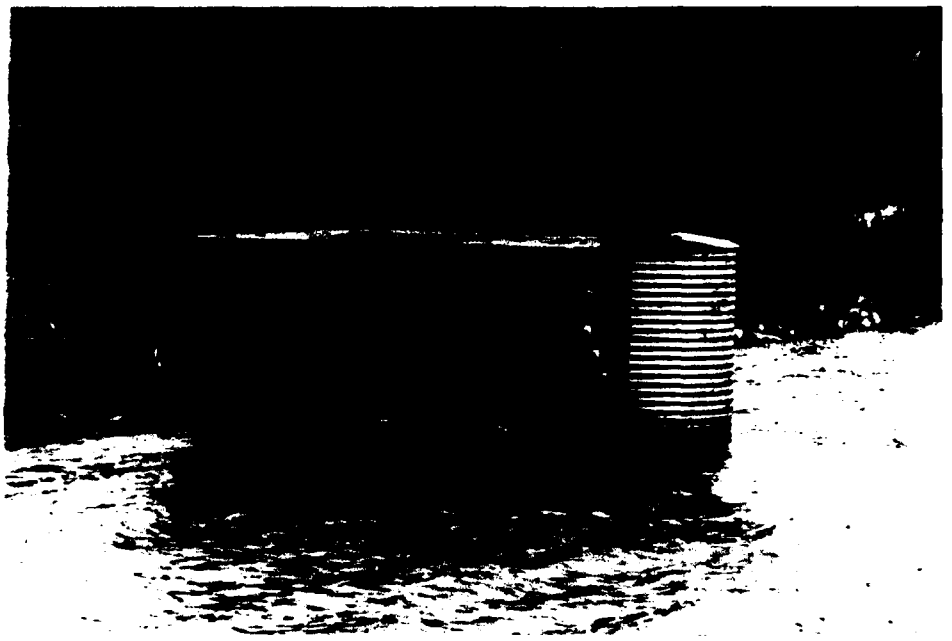
(Report due, annually: July 1)

NO. 1 TOP AND UPSTREAM SLOPE OF DAM

NO. 2 DOWNSTREAM SLOPE OF DAM

NO. 3 COBBLE RIPRAP AT BOTTOM OF UPSTREAM SLOPE OF DAM

NO. 4 SEEPAGE AREA AT DOWNSTREAM TOE OF DAM

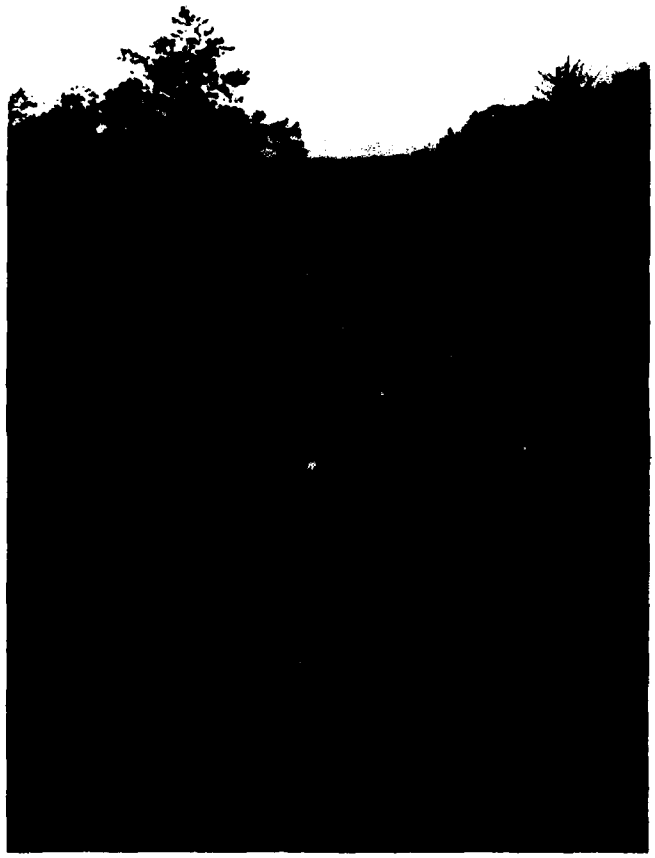


NO. 5 CONCRETE INTAKE STRUCTURE AND GATE STEM ON LOW LEVEL OUTLET

NO. 6 DISCHARGE PIPE AT DOWNSTREAM TOE OF DAM

NO. 9 APPROACH CHANNEL OF EMERGENCY SPILLWAY

NO. 10 DOWNSTREAM CHANNEL OF EMERGENCY SPILLWAY



NO. 7 DISCHARGE CHANNEL BELOW DAM

NO. 8 EMERGENCY SPILLWAY AND DOWNSTREAM SLOPE OF DAM

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

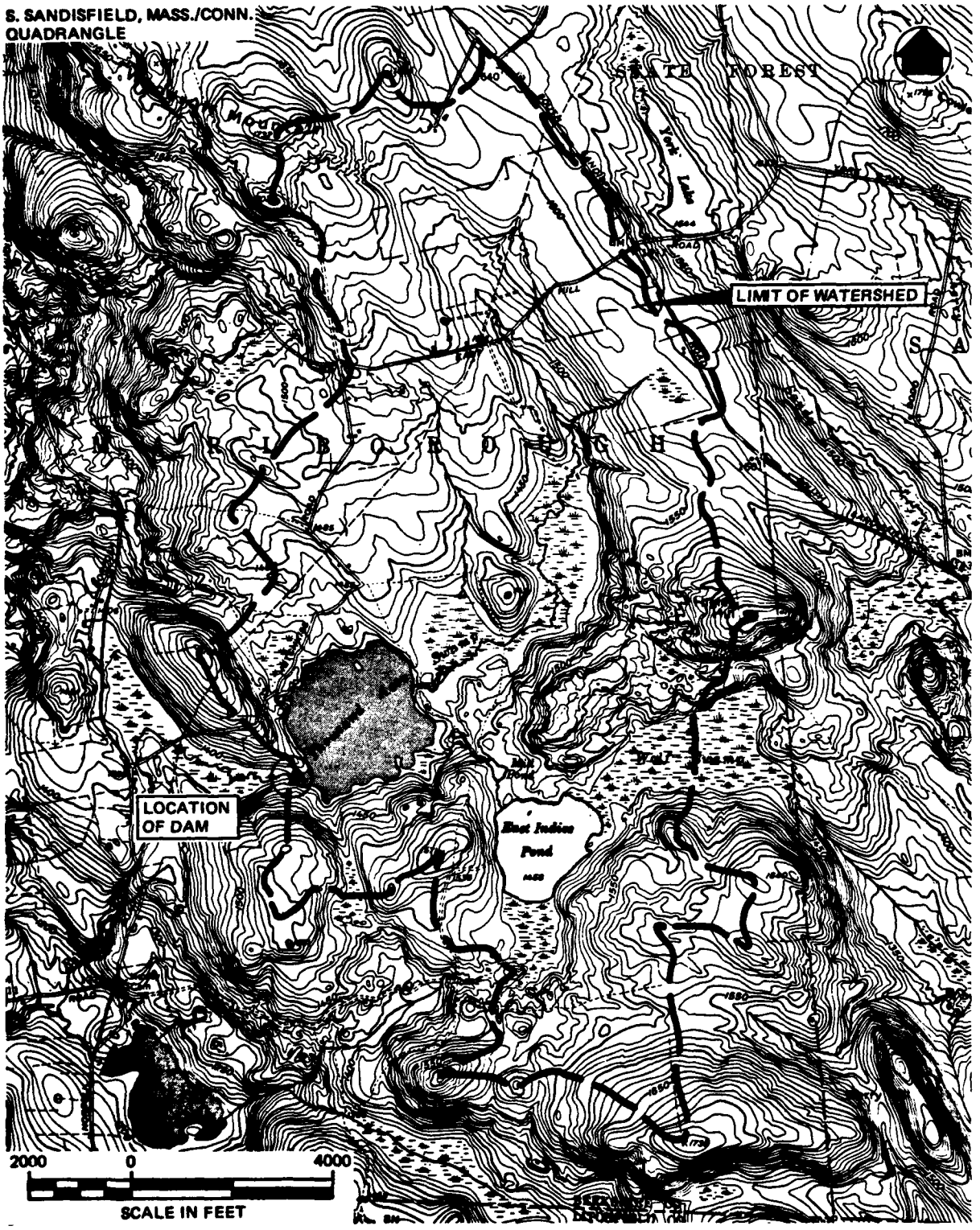


FIG. D-1 DRAINAGE AREA MAP

THOUSAND ACRE SITE NO. 1 DAM

(I) Test Flood, Storage & Storage Function

1- Total Drainage Area - 5.2 mi²

2- Pond(s) Area: 0.11 = 0.11 mi²
Swamp(s) Area: 0.12 + 0.03 + 0.03 + 0.10 + 0.04 + 0.06 = 0.38 "
Total Area Pond(s) & Swamp(s): 0.49 "

$\%$ Ponds & Swamps $= \frac{0.49}{5.2} = 9.4\%$

3- $\frac{1720 - 1399.5}{17700} = .01811$ } Say Ave Slope = 1.85%

4- Using C. of E. Curves for Peak Flow Rates & above guide values the Peak Flow Rate was estimated to be between "Rolling" and "Flat & Coastal", and taken at 1150 c.f.s./mi²
Size Class: Interm.; Hazard Pot.: High; Spill. Des. Flood: Full PMF
Use: Test Flood = PMF

5- **Test Flood Inflow = (1150) 5.2 = 5980 c.f.s.**

6- Pond Storage
The pond area is 0.217 sq. mi. at elev. 1399.4
Based on a const. area, storage increases at 139 ac. feet per foot of depth increase.

7- Spillway crest elev. is 1399.4

8- Storage Functions are based on $Q_{out} = Q_{in}\left[1 - \frac{S_{out}}{R}\right]$
S_{out} = Storage Vol. in Reservoir related to final Q_{out} in terms of inches of rain over the drainage area.

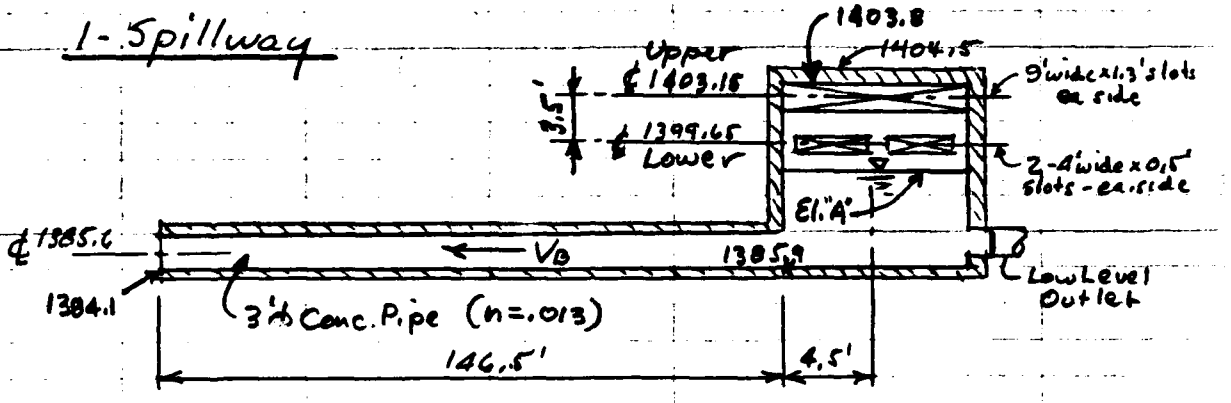
S(in Inches) $= 12\,D\left(\frac{.217}{5.2}\right) = 0.50\,D$; R = 6hr rain of storm
D = Storage depth in feet above spillway crest in reservoir

9- Storage Functions: (Test Flood & ½ PMF - if needed)

$F_{TF} = 5980 - 314.7\,S = 5980 - 157.6\,D$
$F_{½PMF} = 2990 - 314.7\,S = 2990 - 157.6\,D$

(II) Discharge Relations

1-Spillway



A - Slots — Free Discharge

Assume act as orifice - C = 0.61

$Q_{Lower} = 0.61\,(2 \times 0.5 \times 4 \times 2)\sqrt{2g H_L} = 39.2\sqrt{H_L}$

$Q_{UPPER} = 0.61\,(2 \times 1.3 \times 9)\sqrt{2g H_U} = 187.8\sqrt{H_U}$; or $Q_U = 4(18) H_U^{1.5}$ as weir

Res El.	1405	1407	1409	1411	1402	1403	1404	1414.4
H_L	5.35	7.35	9.35	11.35	2.35	3.35	4.35	14.75
Q_L	90	110	120	130	60	70	80	150
Q_U	260	370	450	530	—	30	130	630
ΣQ_A	350	480	570	660	60	100	210	780

B - Outlet Pipe - Upstr. Head inside Outlet Struct.

151' - 3'ϕ - n=.013 - Ent. & Exit Loss = $1.5\frac{V^2}{2g}$ - H_B = El. "A" - 1385.6

$H_B = 1.5\frac{V^2}{2g} + L\left[\frac{V_B n}{1.49 R^{2/3}}\right]^2 = V_B^2\,[.023291 + .016867] = .040158\,V_B^2$

H_B	4	7	10	14	18	28.8
V_B	10.0	13.2	15.8	18.7	21.2	26.8
Q_B	70	90	110	130	150	190
El. "A"	1389.6	1392.4	1395.6	1399.6	1403.6	1414.4

Inspection of above indicates that spillway operates as a unified element, for res. levels above ± 1403

(II) Discharge Relations - Cont.

C - Total Spillway

Treat orifices as an Ent. + Exit Loss $= 1.5 \frac{V_o^2}{2g}$

$V_o = \frac{Q}{A_o}$; $A_o = 4(0.5 \times 4) + 2(1.3 \times 9) = 31.4\ ft^2$

$V_o = V_B \left(\frac{7.07}{31.4}\right) = V_B .2252$; $V_o^2 = .05067\ V_B^2$

$H_c = H_B + 1.5 \frac{V_e^2}{2g} = V_B^2 [.04016 + .00118] = .04134\ V_B^2$

$H_c = (\text{Res. El.}) - 1385.6$

Res. El.	1404	1406.1	1408	1410	1409	1411	1414.4
H_c	18.4	20.5	22.4	24.4	23.4	25.4	28.8
V_B	21.1	22.3	23.3	24.3	23.8	24.8	26.4
Q_c	150	160	170	170	170	180	190

2 - Emergency Spillway

A - Broad Crested Weir Control

Width ±150', Broad Crest @ el. ± 1406.1

$Q_D = 2.7(150) H_D^{1.5}$

Res El.	1408	1410	1412	1414	1409	1411	1414.4
H_D	1.9	3.9	5.9	7.9	2.9	4.9	8.3
Q_D	1060	3120	5800	8990	2000	4390	9680

(II) Discharge Relations - Cont.

B-Channel Control

Upper, flattest sections - $S = \frac{0.7}{80}$, $n = 0.04$; $R \approx y$

$V = \frac{1.49}{.04} y^{2/3} \left(\frac{0.7}{80}\right)^{1/2} = 3.484\ y^{2/3}$; $Q \cong 150\ V y^{*}$

*side areas omitted

Res. El. = $1406.1 + y + \frac{V^2}{2g}$.

y	2	4	3	1
V	5.53	8.78	7.24	3.48
$\frac{V^2}{2g}$	0.5	1.2	0.8	0.2
Res. El.	1408.6	1411.3	1409.9	1407.3
Q	1660	5270	3260	520

→ Assume outflow controlled by broad crested weir, not channel as above.

(III) Low Level Discharge

± 35' of 30"ϕ C.M.P., $n = .026$; Ent. + Exit Loss = $1.5 \frac{V^2}{2g}$

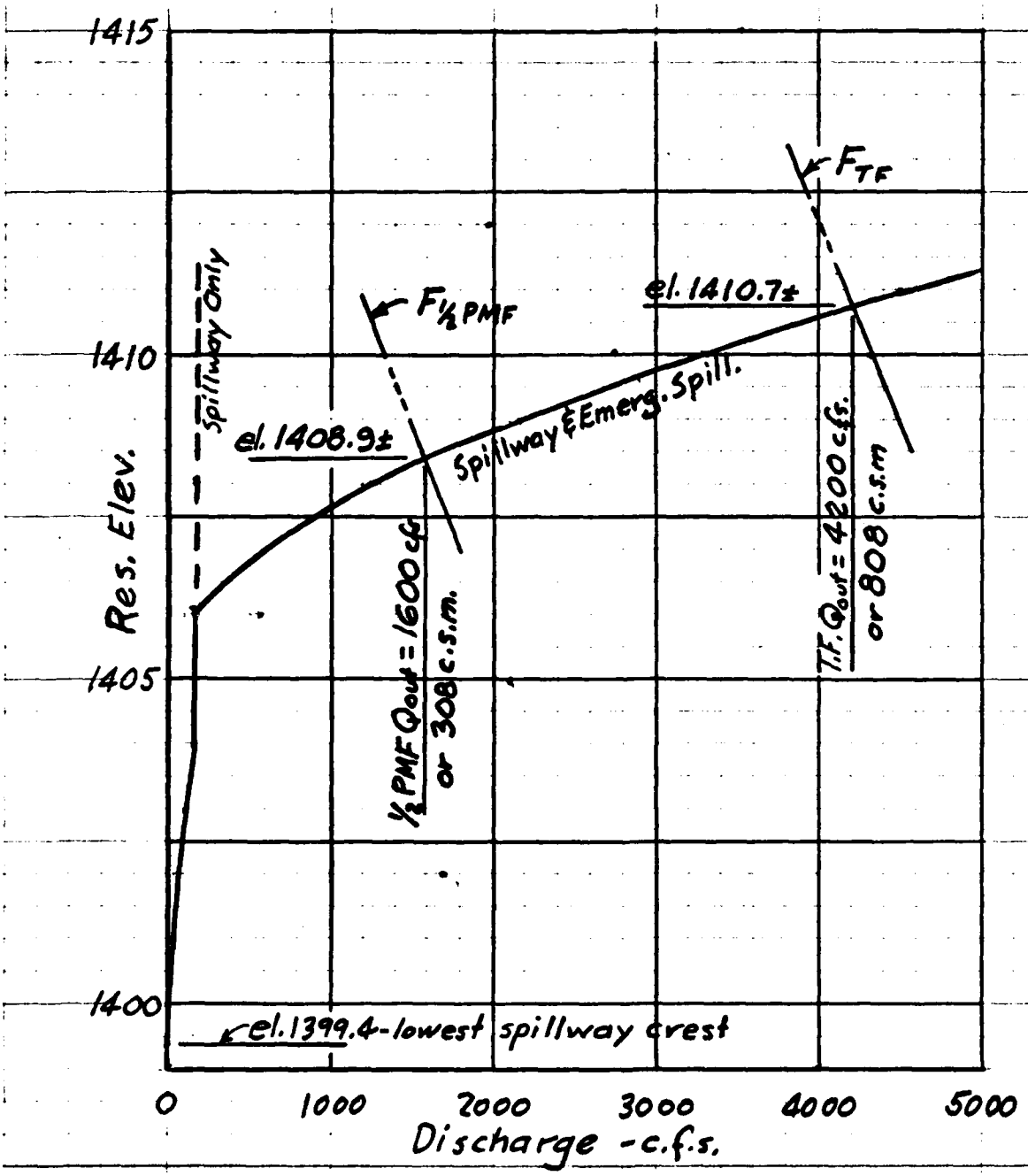
℄ exit ± 1387.8, Res. @ el. 1399.4, Head = 11.6' − 0.5 = 11.1 (average hd)

$11.1' = 1.5 \frac{V^2}{2g} + 35\left[\frac{V(.026)}{1.49(.625)^{2/3}}\right]^2 = 0.043235\ V^2$

$\bar{V} = 16.02$ fps, $\bar{Q} = 78.7$ cfs. [Assume loss in 36" pipe, dnstr., is insignificant]

Time to lower res. 1 foot = $\frac{139(43560)}{78.7(3600)} = 21.4$ hours = 1283 min.

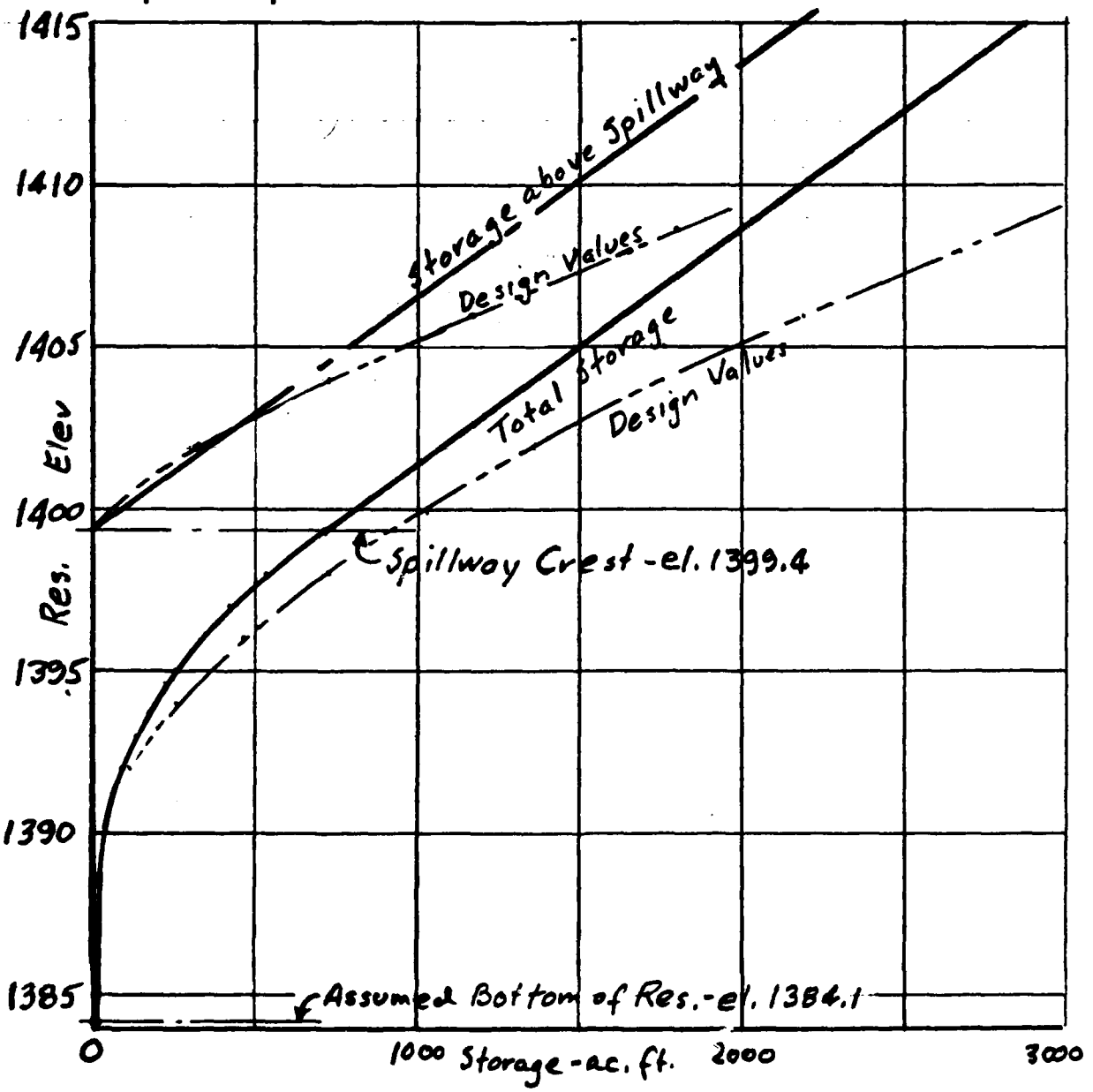
(IV) Discharge & Storage Function vs. Reservoir Elev.



(V) Storage vs. Reservoir Elevation

The reservoir area is 139 acres, based on the U.S.G.S. topo map. Based on an assumed const. area vs depth, the reservoir storage increases 139 ac.-feet per foot of rise, above the spillway crest elev. of 1399.4. Below the spillway crest, it is assumed that storage varies similar to the volume of a conic section.

Curves labled "Design Values" are based on data in the design computations for the dam. These were not used in hydr. comp. since method used is more conservative.



(VI) Failure of Dam

Peak Failure Flow:

Pond Elevation - 1410.7 - Test Flood Max. El.
Toe Elevation — 1384.1
Y_o = 26.6

Dam Length Subject to Breaching = 180' (width at rubble slope)
$W_o = 40\%(180) = 72$

$$Q_{P_1} = 1.68\, W_o\, (Y_o)^{1.5} = 1.68(72)(26.6)^{1.5} = {}^{*}16{,}600 \text{ cfs}$$

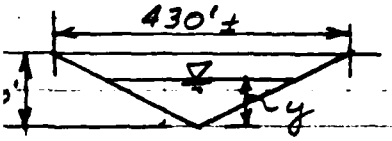
Continuing Spill. Disch.: 4000 cfs (Emerg. Spill. only)
Peak Failure Flow: 16,600 "
20,600 " Total Peak-unadjusted *

Storage Volume Released:

Storage Above Spillway 11.3(139) = 1570 ac ft.
Storage Below Spillway 1/3(15.3)(139) = 710 " "
Total Storage 2280 " "

Channel Hydraulics:

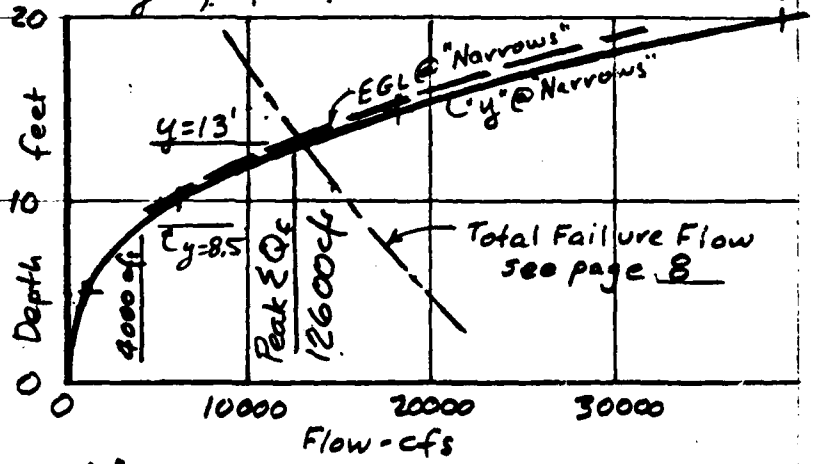
Disch. runs thru a swamp, then thru a "narrows" about 4000 feet below the dam. The following is for the narrows.



$S = \frac{10}{900}$; $n = .08$; $R = \frac{1}{2}y$; $V = 1.2367\, y^{2/3}$

$A = 10.75\, y^2$; $Q = AV$

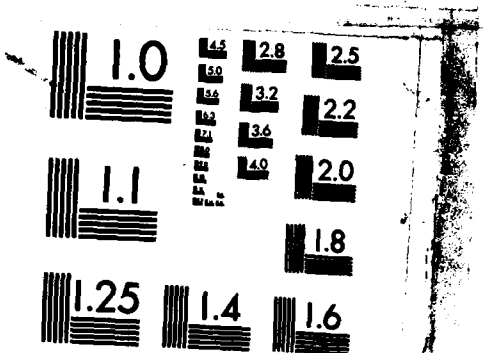
y	$V^2/2g$	V	Q
5	0.2	3.62	970
10	0.5	5.74	6170
15	0.9	7.52	18200
20	1.3	9.11	39200



*Note: See page B, for "Results".

AD-A154 493 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS THOUSAND ACRE SITE NU..(U) CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV OCT 80 2/2

UNCLASSIFIED F/G 13/13 NL



(VII) Failure of Dam - Cont.

As dam failure progesses, flow depth must increase at the downstream "narrows". This depth increase causes flooding of the intervening swamp with some storage of the failure flow and a significant rise in tailwater at the dam, impeding the failure flow.

Assuming that the full failure width does not occur until after downstream transient conditions are settled, then the peak failure flow is regulated by the narrows

At dam: $Q_f = 1.68\,(72)\,[H]^{1.5}$ & $H = 26.6 - T.W.\ Depth$

$T.W.\ Depth = EGL@"Narrows" + 1380 - 1384.1$

Total Failure Flow vs. EGL@"Narrows"

H	Q_f	Q_{spill}	ΣQ_f	T.W. Depth	EGL@Narrows
5	1350	4000	5350	21.6	25.7
10	3820	"	7820	16.6	20.7
15	7030	"	11030	11.6	15.7
20	10820	"	14820	6.6	10.7
25	15120	"	19120	1.6	5.7

Results

Using the plot on the previous page, the peak total failure flow is 12,600 cfs, of which 8,600 cfs comes from the failure. Depths at the "Narrows" rise from 8.5 feet to 13'

APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

THOUSAND ACRE SITE NO. 1 DAM

END

FILMED

7-85

DTIC