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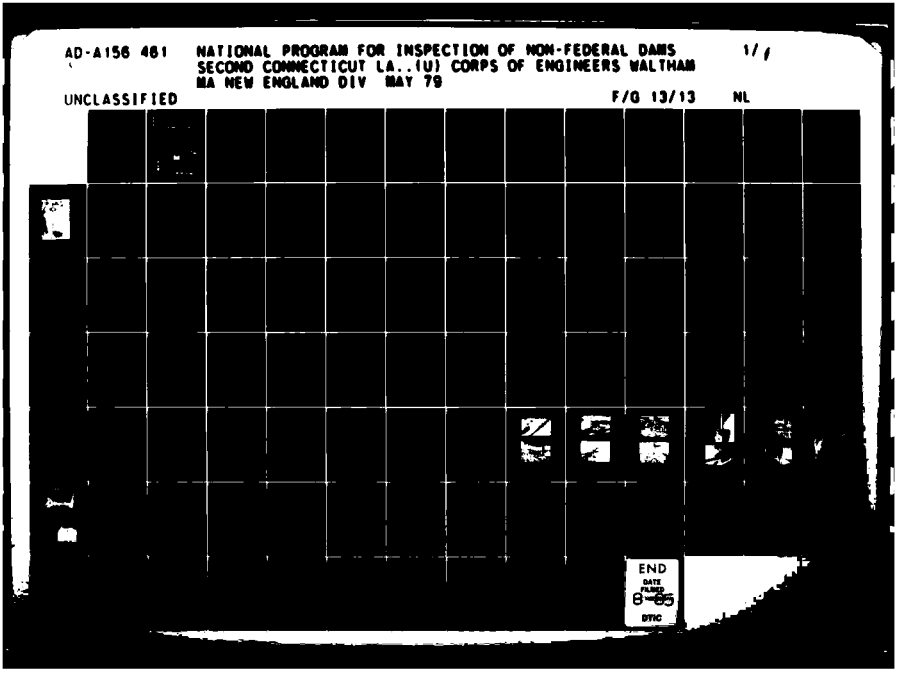

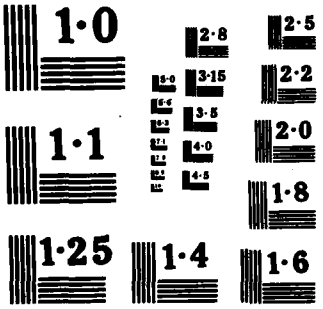
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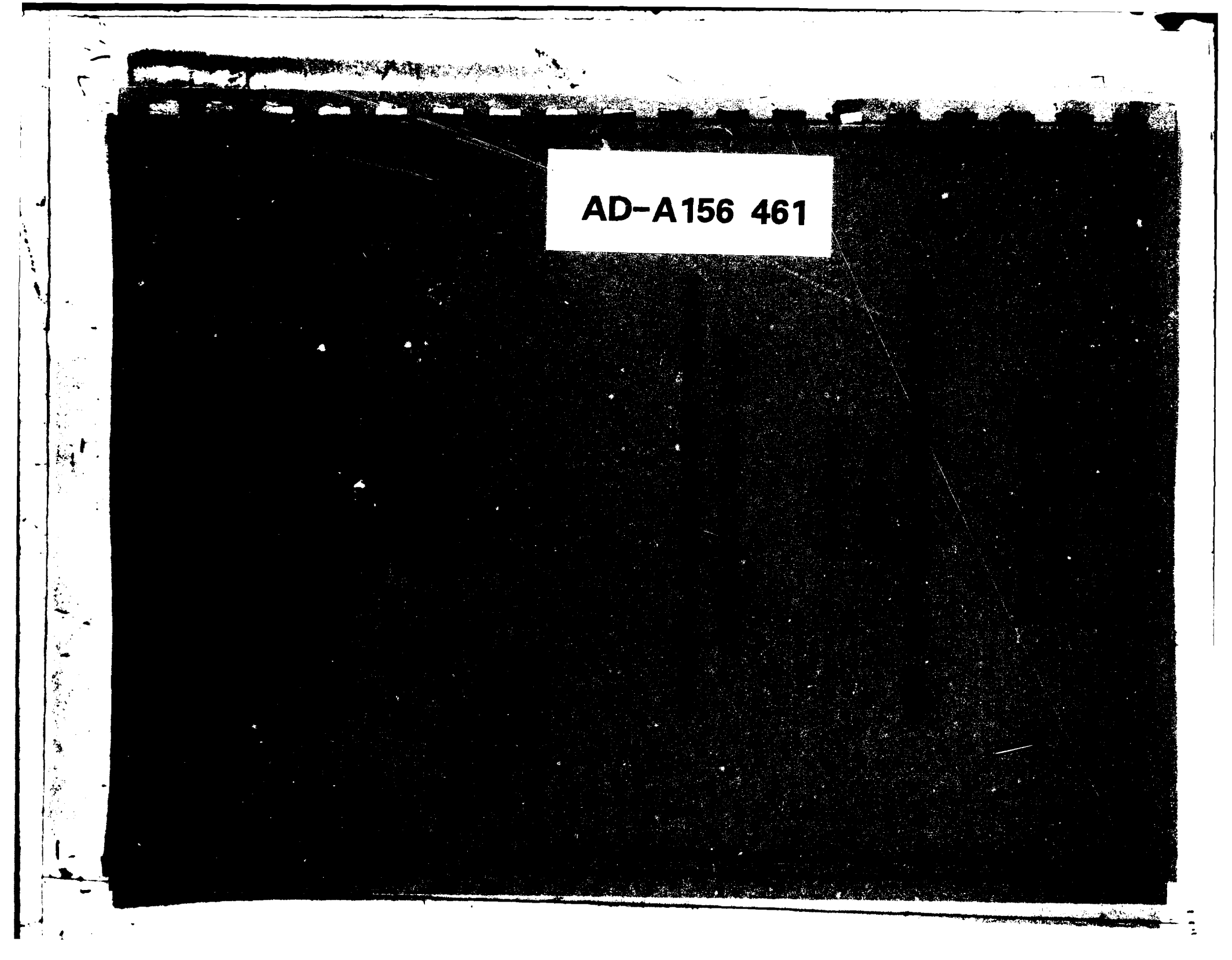
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NH 00187	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Second Connecticut Lake Dam NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254		12. REPORT DATE May 1979 13. NUMBER OF PAGES 65
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

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

18. SUPPLEMENTARY NOTES

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

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

DAMS, INSPECTION, DAM SAFETY,

Connecticut River easin
Pittsburg, New Hampshire
Connecticut River

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

The dam is a 28 ft. high concrete dam with earth embankments on both sides.. The dam is in good condition although deteriorated concrete requires superficial patch work. Continuance of this classification depends on proper operations and maintenance of the dam. It is intermediate in size with a significant hazard classification.

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

REPLY TO
ATTENTION OF:
NEDED

JUN 28 1979

Honorable Hugh J. Gallen
Governor of the State of New Hampshire
State House
Concord, New Hampshire 03301

Dear Governor Gallen:

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

A copy of this report has been forwarded to the Water Resources Board, the cooperating agency for the State of New Hampshire. In addition, a copy of the report has also been furnished the owner, New England Power Company, 9 Court Street, Lebanon, New Hampshire 03766.

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 Water Resources Board for your cooperation in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

SECOND CONNECTICUT LAKE DAM

NH 00187

NHWRB 194.07

CONNECTICUT RIVER BASIN
PITTSBURG, NEW HAMPSHIRE

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

Identification No.:	NH 00187
Name of Dam:	Second Connecticut Lake Dam
Town:	Pittsburg
County & State:	Coos, New Hampshire
Stream:	Connecticut River
Date of Inspection:	June 28, and 29, 1978

BRIEF ASSESSMENT

Second Connecticut Lake Dam is a 28-foot high concrete dam with earth embankments on both sides. The overall crest length of the dam is 568 feet, and the total spillway length is 118 feet. It is a buttress type dam with wooden planks resting on concrete beams that are anchored to concrete piers. The spillway is equipped with pin-type flashboards designed to fail automatically in successive sections. The dam is located on the Connecticut River, about 14 miles northeast of the town of Pittsburg.

The dam is in good condition although deteriorated concrete requires superficial patch work. Continuance of this classification depends on proper operations and maintenance of the dam.

The dam falls under the category of significant hazard potential, and it is intermediate in size. The test flood peak inflow is equal to the probable maximum flood, 63,560 cfs, and the test flood peak outflow is 11,000 cfs. Hydraulic analysis indicates that the maximum surcharge pool elevation will be 1874, approximately 1 foot below the top of the earth dike. The spillway will pass the test flood peak outflow without overtopping the dam and therefore, the spillway capacity is adequate.

The following recommended operation and maintenance measures, as stated in Section 7.3, should be implemented within two years of the receipt of this Phase I report by the owner:

(1) Maintenance program of the owner and the technical annual periodic inspection being performed by the owner's engineering staff should be continued.

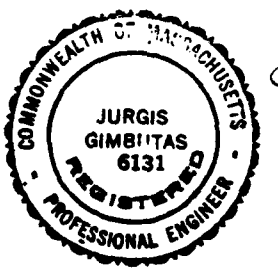
(2) All observation wells on the south embankment shall be capped, and water levels in them recorded during high and low lake levels.

(3) Vegetation should be removed except for grass cover that prevents slope erosion.

(4) The upstream slope of the dam should be inspected at low water.

(5) Surveillance should be continued and a warning system should be developed for periods of unusually heavy rains and runoff.

FAY, SPOFFORD & THORNDIKE, INC.
By:



Jurgis Gimbutas, P.E.
Project Engineer

Richard W. Albrecht, P.E.
Vice President

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

Charles G. Tiersch

CHARLES G. TIERSCH, Chairman
Chief, Foundation and Materials Branch
Engineering Division

Fred J. Ravens Jr

FRED J. RAVENS, Jr., Member
Chief, Design Branch
Engineering Division

Saul Cooper

SAUL COOPER, Member
Chief, Water Control Branch
Engineering Division

APPROVAL RECOMMENDED:

Joe B. Fryar

JOE B. FRYAR
Chief, Engineering Division

PREFACE

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

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

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

Phase I 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 reasonable 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 aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition, and the downstream damage potential.

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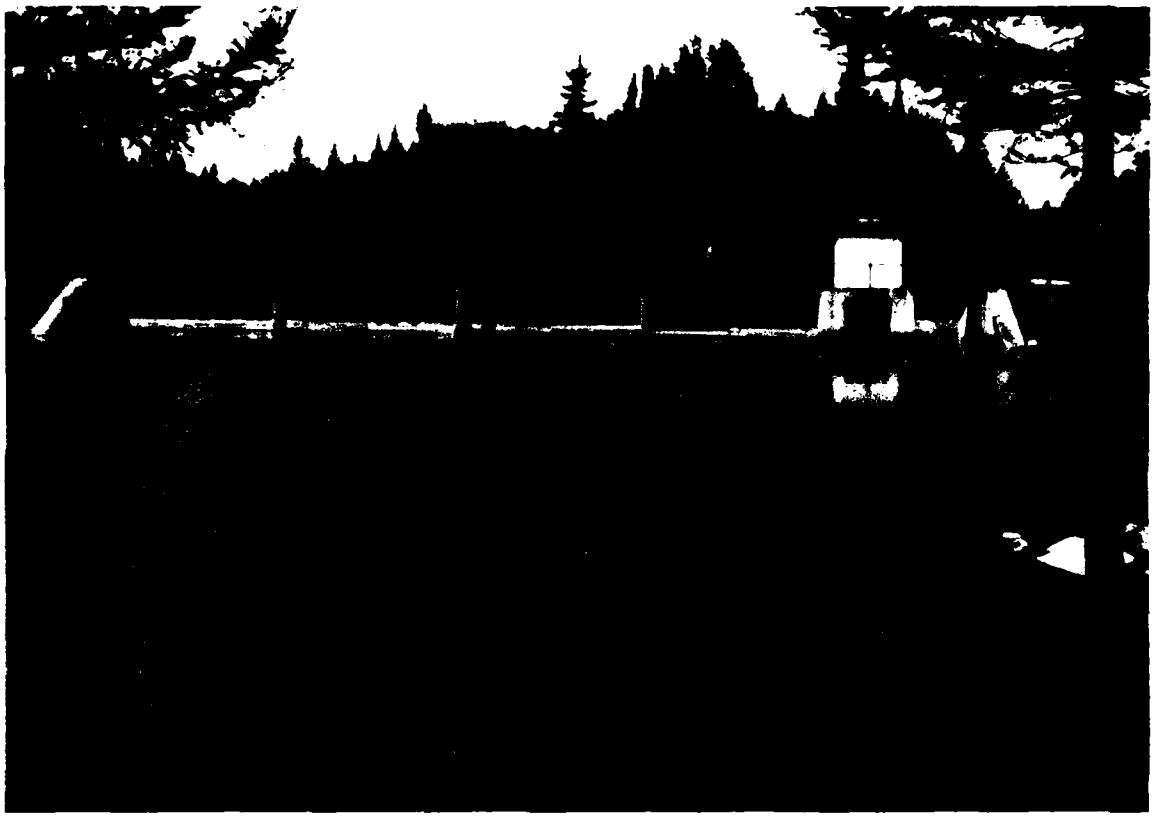
OVERVIEW PHOTOGRAPH



SECOND CONNECTICUT LAKE DAM, LOOKING DOWNSTREAM FROM THE NORTH SHORE
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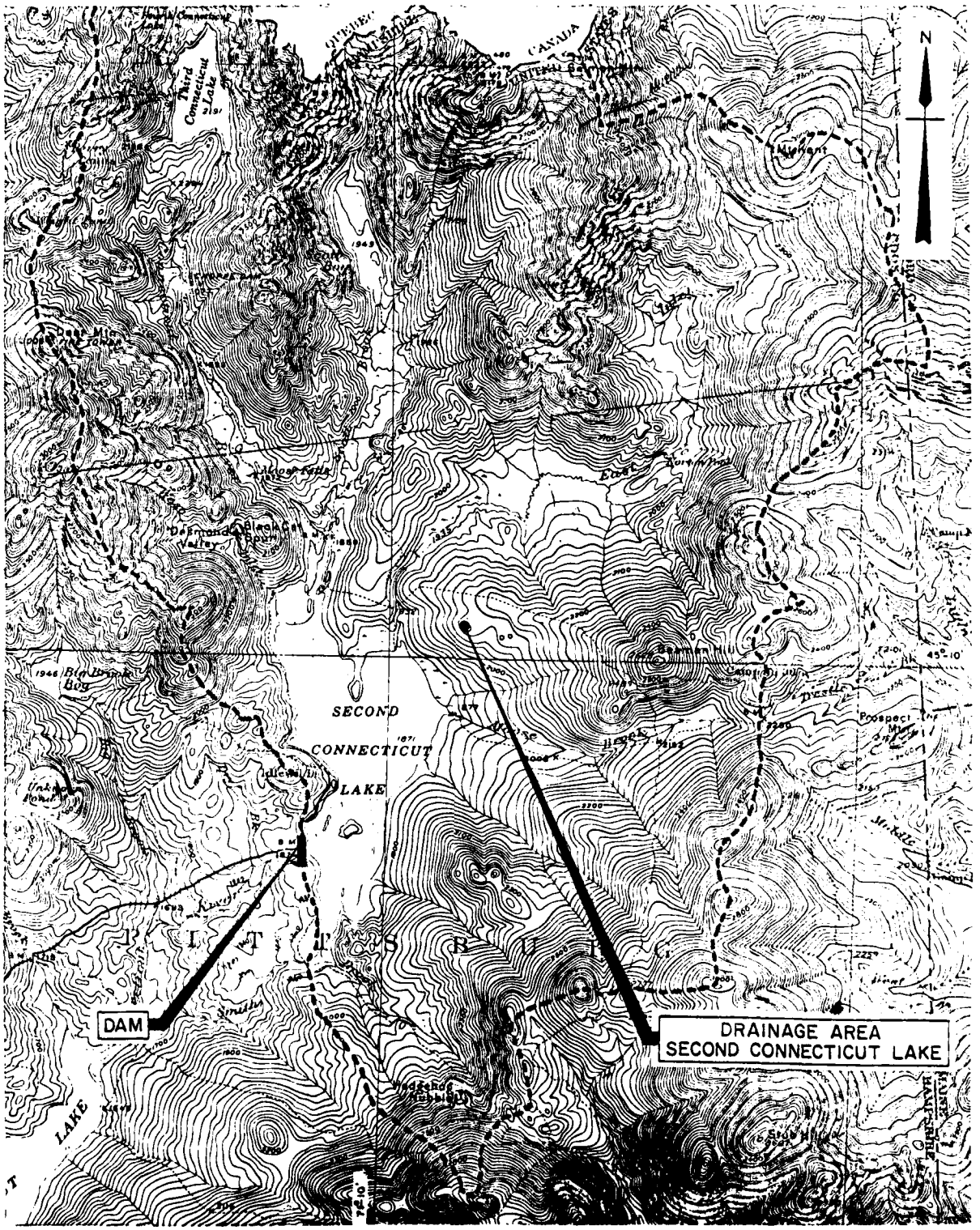

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UNITED STATES
DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY

NEW HAMPSHIRE-MAINE
SECOND CONNECTICUT LAKE
QUADRANGLE 1927

SECOND CONNECTICUT LAKE 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. Fay, Spofford & Thorndike, Inc., have been retained by the New England Division to inspect and report on selected dams in the State of New Hampshire. Authorization and notice to proceed was issued to Fay, Spofford & Thorndike, Inc., under a letter of May 3, 1978, from Mr. Ralph T. Garver, Colonel, Corps of Engineers. Contract No. DACW33-78-C-0308 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 prepare the states to initiate quickly effective dam safety programs for non-federal dams.

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

1.2 Description of Project

a. Location

Second Connecticut Lake is located in the extreme northern part of the state of New Hampshire. The dam is located on the Connecticut River outlet at the southwest shore of the lake and about 7 miles south from the headwaters of the Connecticut River. The dam is adjacent to U.S. Highway Route 3, about 14 miles northeast of the town of Pittsburg, and 8 miles south from the Canadian border. The dam is located within the boundary of the town of Pittsburg.

The dam outlet is a 2 1/2-mile long stretch of the river that flows into the First Connecticut Lake. At the very southern tip of the Second Connecticut Lake, there is a minor outlet, Smith Brook, which also flows into the First Connecticut Lake. The flow into Smith Brook is regulated at an earth dike across the narrow bay. This dike is used to supplement the flow into the First Connecticut Lake. Available records indicate that no discharge occurs until the water level in the lake reaches Elevation 1870, see Sheet 8 of Appendix D. The dike is approximately 600 feet long and 10 feet high, Crest Elevation 1875.

The Second Connecticut Lake is surrounded by the Connecticut Lake State Forest and mountains. There are no houses located near the lake, and the land surrounding the lake is owned by the New England Power Company.

b. Description of Dam

This is an 118-foot long concrete dam with timber decking. The sloping timber deck on the upstream side spans between concrete piers and abutments across the main river channel. There is a log way and a regulating gate near the north abutment (Photographs No. 1 and 2, Appendix C).

A continuous concrete heel block on the upstream side of the tapered piers provides support to the bottom edge of the timber deck. A continuous concrete crest beam at the top of the piers provides lateral support to the upper edge of the timber deck and supports the pin-type timber flashboards at the crest of the spillway (Photographs No. 7 and 8, Appendix C). During inspection of the dam, the water level was at Elevation 1868, and therefore the timber deck could not be observed.

The spillway flashboards extend over a length of 97 feet, divided into four equal sections between the gate structure and the south abutment. The top of the flashboards is about 20 feet above the riverbed at approximately the center of the dam.

The 4-foot by 5-foot regulating gate is power operated. The structural height of the concrete intake structure with the gate at the bottom is 25 feet. The structural height from the deepest foundation to the top of the dam is 28 feet. The log way is 9 feet wide and fitted with removable stop logs that have a maximum height of 8 feet (Photographs No. 9, 10, 11, and 12, Appendix C).

There are dike embankments at either end of the dam. These embankments are of the rolled earth fill type. The north dike is 290 feet long, and the south dike is approximately 160 feet long. The

south dike has a maximum height of about 23 feet and is 12 feet wide at the top. The north dike is lower; it is 13 feet in height and 10 feet wide at the top. All the earth slopes are 1 vertical to 2 horizontal, except that the upstream slope of the south dike is 1 vertical to 2.5 horizontal and is protected by riprap (Photographs No. 3 and 6, Appendix C).

The south dike has a 40-foot long concrete cutoff wall that joins the dam abutment. This wall is 15 inches thick and 16 feet high with a 4-foot thick base. Observation wells were observed in the north end of the south dike. Presently, these wells are not being monitored (Photograph No. 5, Appendix C).

A timber footbridge with railings on both sides is located along the top of the dam. The deck is 5.5 feet above the top of the flashboards.

c. Size Classification

The storage capacity of this dam is 11,650 acre-feet which falls in the range of $\geq$ 1,000 acre-feet and $<$ 50,000 acre-feet. On the basis of Table 1, Size Classification, in the "Recommended Guidelines for Safety Inspection of Dams," furnished by the Corps of Engineers, the dam is classified as intermediate in size.

d. Hazard Classification

There is little development between the First and Second Connecticut Lake Dams. It is conservatively estimated that in the event of failure of this dam loss of a few lives could occur. Therefore, on the basis of Table 2, Hazard Potential Classification, in the "Recommended Guidelines for Safety Inspection of Dams," furnished by the Corps of Engineers, this dam falls in the category of significant hazard potential.

e. Ownership

Connecticut Valley Lumber Company, Boston, Massachusetts, was the owner until 1924, when the Upper Connecticut River and Lake Improvement Co. became the owner. Ten years later, the Connecticut River Power Company of Littleton, New Hampshire, was the owner. They were responsible for maintaining appropriate water levels for recreation.

Since 1967, the owner has been the New England Power Co. of Lebanon, New Hampshire, a member of the New England Electric System.

f. Operator

The dam on the Second Connecticut Lake is being operated by the owner, New England Power Co. Daily operation of the dam is entrusted to Mr. Linsay L. Covill, supervisor, living adjacent to the First Connecticut Lake on Route 3.

g. Purpose of Dam

During the 19th century, the prime purpose of this dam was to regulate the flow of water for log driving. Since 1920, the regulated flow of water has been used for generation of electricity in a power plant downstream. The impounded water reservoir adds to the recreational value of the surrounding state forest.

h. Design and Construction History

According to a summary written in 1959, by Mr. W. G. White, Chairman of the New Hampshire Water Resources Board, it appears that in 1849, a crib dam was erected at the outlet of Second Connecticut Lake with a gate allowing the rapid lowering of the water The use of this water was for log driving. In 1914, the dam was rebuilt on a larger scale. The builder was Mr. J. M. Swan, who has built many dams in New England.

In 1934, the New Hampshire Public Service Commission decided that a new dam located about 200 feet downstream of the existing dam and maintaining the same water level elevation would be of public use and benefit. They authorized the construction of what is now known as the Second Connecticut Lake Dam. The Fish and Game Department, through its commissioner, has expressed satisfaction that ample protection to its interests has been provided in the new construction. The engineering of the new dam was done by the New England Power Engineering & Service Corp. of Boston, Massachusetts, who prepared the plans and specifications.

The construction started in the summer of 1934, and finished in the spring of 1935. The concrete aggregate was obtained offsite and the fill for the dike embankments was obtained from a borrow pit adjacent to the site. During construction, the water was controlled by the old dam and diverted by means of sluices or low cofferdams. Nearly all of the new construction was built on stripped ledge. Thompson & Lichtner, Inc., of Boston, Massachusetts, were engaged for the testing of the materials. The old dam was removed during the summer of 1935.

According to the Engineering Department of the New England Power Co., the dam was repaired during the summer of 1967. The deteriorated concrete in the crest beam was removed, additional reinforcing steel dowelled, and approximately 6 inches of new concrete added. These repairs were done with the water level about 1 foot below the concrete crest of the dam, or 5 feet below the top of the flashboards, which is the normal operating level of the lake. The work was completed in about two months. Since 1967, the dam has been considered to be in satisfactory condition, except that some spalling of concrete was noticed in 1974.

i. Normal Operational Procedure

Mr. Lindsay L. Covill, supervisor, lives adjacent to the First Connecticut Lake Dam, approximately 6 miles from this dam site. Therefore, during periods of high precipitation, round-the-clock surveillance is provided. He is responsible for the daily inspection, routine maintenance, and the regulation of flow. The water level, temperature and rainfall are recorded daily. Flow rates may be varied at the discretion of the supervisor or at the direction of the owner, New England Power Co. In agreements reached with the state of New Hampshire, the lake will not be drawdown below Elevation 1858 msl.

The dam is inspected yearly by the owner's engineering staff and remedial work performed based on their recommendations. The New Hampshire Water Resources Board has inspected this dam at irregular intervals.

1.3 Pertinent Data

a. Drainage Area

Second Connecticut Lake, as shown on the U.S.G.S. map, is located at a distance of 14 miles northeast of Pittsburg, New Hampshire. The lake is a natural lake with a dam on the outlet to the Connecticut River. It has a drainage area of 45.4 square miles. The watershed area is heavily wooded and mountainous.

b. Discharge at Dam Site

(1) Outlet works - 10-inch steel pipe having an elevation of 1856. The estimated discharges through this pipe are 7 cfs at Reservoir Elevation 1865.5 and 9 cfs at Reservoir Elevation 1871.0.

The outlet channel is 9 feet wide and has stop logs with an invert elevation of 1859. The estimated discharges through the outlet channel are furnished below:

363 cfs at Reservoir Elevation 1865.5.
952 cfs at Reservoir Elevation 1871.0

A 4-foot by 5-foot electrically-powered regulating gate with a sill elevation of 1852.0 controls the flow through the waste way. The estimated discharges through this gate are 259 cfs at Reservoir Elevation 1861.5 and 398 cfs at Reservoir Elevation 1871.0.

(2) Maximum known flood at the dam site - Exact figure is unknown, but the flood of September, 1938, is considered to be the maximum.

(3) The spillway capacity is 4,000 cfs at Elevation 1871.0.

(4) The total discharge capacity of the spillway, log way, waste way, and fish pipe (fully open) at the maximum surcharge pool Elevation 1874 is 11,000 cfs.

c. Elevation (Feet above MSL)

(1) Top of dam - 1875.

(2) Maximum design surcharge pool - 1870.2. This information was provided by the New England Power Engineering & Service Corp.

(3) Full flood control pool - not applicable.

(4) Recreation pool or top of boards - 1869.5

(5) Spillway crest - 1865.5.

(6) Stream bed at centerline of dam - 1850.

(7) Maximum tail water - 1858 (estimated).

d. Reservoir

(1) Length of maximum pool - 3.5 miles (estimated).

(2) Length of recreation pool - 3 miles (estimated).

(3) Length of flood control pool - not applicable.

e. Storage (Acre-Feet)

The following values have been taken from the capacity curve furnished by the New England Power Engineering & Service Corp.:

(1) Water reservoir at spillway crest elevation - 6,900 acre-feet.

(2) Flood control pool - not applicable.

(3) Design surcharge - 850 acre-feet.

(4) Top of dam - 18650 acre-feet.

(5) Top of boards - 11,650 acre-feet.

(6) Maximum design pool - 12,500 acre-feet.

f. Reservoir Surface (Acres)

The following values have been taken from area-elevation curve furnished by the New England Power Engineering & Service Corp.:

(1) Top of dam - 1,480 acres.

(2) Maximum pool - 1,300 acres.

(3) Flood-control pool - not applicable.

(4) Recreation pool or top of boards - 1,272 acres.

(5) Spillway crest - 1,080 acres.

g. Dam

(1)	Type	Timber deck on concrete piers.
(2)	Length	118 feet between abutments.
(3)	Height	28 feet.
(4)	Top width	
	(a) Spillway	4.5 feet.
	(b) Log way	8.75 feet.

(5) Side slopes		
	(a) Upstream	1 vertical to 1 horizontal.
	(b) Downstream	2± vertical to 1 horizontal.
(6) Zoning		Not applicable.
(7) Impervious core		Not applicable.
(8) Cutoff		Concrete heel block and piers excavated to bedrock.
h. Spillway		
(1) Type		Ungated concrete weir.
(2) Length of weir		97 feet.
(3) Crest elevation		1865.5.
(4) Top of flashboard		1869.5.
(5) Gates		None.
(6) U/S channel		Lake.
i. Regulating Outlets		
(1) Concrete waste way.		
	(a) Invert	1852 msl.
	(b) Control mechanism	4-foot by 5-foot vertical lift gate, electrically powered.
(2) Log way		
	(a) Invert	1859.0 msl.
	(b) Control mechanism	Manually operated stop logs.

(3)	10-inch steel fish pipe	
	(a) Invert	1856 (estimated).
	(b) Control mechanism	None.
j.	South Embankment	
(1)	Type	Compacted earth fill.
(2)	Length	160 feet.
(3)	Height	23 feet maximum.
(4)	Top width	12 feet.
(5)	Side slopes	
	(a) Upstream	1 vertical to 2.5 horizontal.
	(b) Downstream	1 vertical to 2 horizontal.
(6)	Zoning	Homogenous consisting of selected local material.
(7)	Impervious core	None.
(8)	Cutoff	Concrete cut-off wall extending approximately 40 feet from the abutment and approximately 15 inches in width.
(9)	Grout curtain	Along the cut-off wall.
k.	North Embankment	
(1)	Type	Compacted backfill.
(2)	Length	290 feet.
(3)	Height	13 feet maximum.
(4)	Top width	10 feet.
(5)	Side slopes	1 on 2.

(6)	Zoning	Homogenous consisting of selected local material.
(7)	Impervious core	None.
(8)	Cutoff	None.
(9)	Grout curtain	None.

SECTION 2 - ENGINEERING DATA

2.1 Design

As-built drawings indicating plans, elevations and sections of the dam, appurtenant structures and outlet works were obtained from New England Power Co.

Selected drawings are included in Appendix B, following the listing of records and past inspection reports. Discharge rating curve of the spillway and the sluices was also obtained from New England Power Co. These curves are furnished in Appendix D. Construction specifications were obtained from project records.

2.2 Construction

a. Concrete Properties

(1) The plans specified the use of Leeds joint aggregate in a concrete mix proportioned 1:2.15:4.0 dry and loose.

(2) The cement used and the results of testing are not available from the project records.

b. Construction History

(1) During construction, water was controlled by the old dam and diverted from the areas where work was progressing by means of sluices or low cofferdams.

(2) Available records indicate that in 1935, seepage was observed at the downstream toe of the northern portion of the south embankment. The remedial action taken was to construct approximately a 40-foot long cut-off wall and the use of grout.

(3) Construction sequence and alterations are not available from project records.

(4) Modifications and maintenance repairs are available from project records and described in Section 1.2h.

c. Testing

(1) Construction control test data are not available from project records.

(2) Soil analysis and concrete testing was performed by Thompson & Lichtner of Boston, Massachusetts. See Appendix B for listing of data related to testing of materials.

2.3 Operation

The New Hampshire Water Resources Board controls the operation of this reservoir. They require a minimum discharge of 8 cfs from the Second Connecticut Lake. This minimum discharge usually occurs from mid-March to mid-July according to runoff conditions. Normally, there is considerable flow for the remainder of the year.

2.4 Evaluation

a. Availability

Pertinent structural, geotechnical, hydrologic, and hydraulic data, which formed the basis of the design of the dam, are available from the project records.

b. Adequacy

Sufficient engineering data are available for a Phase I inspection.

c. Validity

The available engineering data is considered valid on the basis of the results of the visual inspection.

SECTION 3 - VISUAL INSPECTION

3.1 Findings

a. General

The Phase I inspection of the Second Connecticut Lake Dam was performed on June 28, and June 29, 1978. A copy of the inspection check list is included in Appendix A.

In general, the soil and rock features are in good condition. The concrete buttresses and abutments are in fair condition, see subparagraph c.

b. Dikes

The dikes on either side of the spillway are in good condition. No evidence of vertical or horizontal misalignments was observed nor was there any indication of sloughing, bulging, or movement of the slope. The upstream riprap slope protection is generally in fair condition but could scarcely be seen through the vegetation, consisting of weeds and grass. There is no evidence of seepage or piping except that water was observed discharging from the drains located at the south abutment.

Observation wells were observed in the north end of the south dike. Presently, these wells are not being monitored, and two uncovered wells were also observed.

c. Appurtenant Structures

The concrete of the spillway, log way, wingwalls, and piers of the footbridge was observed to be in fair condition. Spalled areas were noted at the top and bottom of the piers of the footbridge near the south dike wingwall and at the bottom of the southern buttress. Joint alignment is generally good and no cavitation was noted. Efflorescence was noted at the lower part of the gate structure.

The footbridge and railing that are located over the spillway were observed to be in good condition. The chain hoist for the log way was observed to be in good working condition.

The wooden gate house enclosing the electric motor for gate lifting and the gasoline motor to be used in emergencies is well maintained. Both motors are in good condition. The 4 x 5 regulating gate and the 10-inch diameter fish pipe were observed to be in good working condition.

Field observations indicate that the lake level is maintained by the spillway and log way. There is a 10-inch diameter fish pipe for maintaining a minimum discharge. Drawdown is accomplished by the opening of the regulating gate.

d. Reservoir Area

Second Connecticut Lake is a natural one. Its storage capacity is increased by the construction of the dam on the Connecticut River outlet at the southwest shore of the lake. There is another outlet from the southern tip of the Second Connecticut Lake which also flows into the First Connectitcut Lake. This outlet, Smith Brook, is regulated by an earth dike across the narrow bay of the Second Connecticut Lake. The Second Connecticut Lake is surrounded by the Connecticut Lake State Forest and mountains.

e. Downstream Channel

The river valley below the dam is not deep but it is wide. The depth of flow in the downstream channel at the time of the inspection was about 1 foot. The side slopes of the river below the dam are rocky but only for a distance of about 100 feet below the dam. The width of the riverbed is about 175 feet. The riverbed is lined with rocks. The riverbed was concreted for a distance of about 3 feet downstream of the toe of the buttress dam piers. The flow from the log way as well as the waste way does not fall directly into the river. The downstream channel and side slopes are in good condition. No appreciable scour was observed at the time of the inspection.

3.2 Evaluation

The observed condition of the dam is good. No potential problems were observed during the visual inspection except for the spalling of some concrete.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 Procedures

The New England Power Co. has operated the First Connecticut Lake Dam since about 1935. The lake level is maintained by the spillway and log way. The flow is controlled by flashboards at the spillway and log boards at the log way. There is a 10-inch diameter pipe for maintaining minimum discharge. Drawdown is accomplished by the opening of the regulating gate which is operated by an electric motor.

4.2 Maintenance of Dam

The maintenance of the Second Connecticut Lake Dam is the responsibility of the New England Power Co.

4.3 Maintenance of Operating Facilities

The dam is inspected yearly by the owner's engineering staff and daily by the owner's supervisor, residing near the dam site.

Maintenance of the facilities operating the 4-foot by 5-foot gate and controlling the flow through the log way by log boards is good.

4.4 Description of any Warning System in Effect

There is no flood warning system, but the supervisor who resides near the dam keeps a close watch during floods. He has both telephone and radio communications with the Lebanon, New Hampshire office.

4.5 Evaluation

The operational and maintenance procedure consisting of daily and yearly inspections should ensure that all problems encountered can be remedied within a reasonable period of time.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 Evaluation of Features

a. Design Data

(1) This dam falls under the category of significant hazard potential and is intermediate in size. Using the "Recommended Guidelines for Safety Inpsection of Dams," the recommended spillway test flood peak inflow equals the probable maximum flood. The spillway test flood inflow hydrograph (with an approximate peak value of 63,560 cfs) is furnished in Appendix D.

(2) The estimated peak outflow is 11,000 cfs, obtained as a result of flood routing. See Appendix D for details.

(3) The reservoir storage capacity versus the elevation curve is furnished in Appendix D.

(4) The estimated composite rating curve for the spillway and all the discharging facilities is furnished in Appendix D.

(5) The hydrologic map of the watershed above the dam site, including the reservoir area and the watercourse, is furnished in Appendix D.

b. Experience Data

There is no evidence of the magnitude of floods and resulting maximum peak inflows in the past.

c. Visual Observations

At the time of inspection, the water surface level in the lake was at Elevation 1868.0, and the fish pipe and log way were flowing at their capacity. There are no energy dissipation works below the dam. Water is allowed to fall freely over the spillway onto the downstream riverbed which consists of sound rock. Noticeable scour of the riverbed was not detected.

d. Overtopping Potential

For analysis the spillway test flood peak inflow has been taken to be equal to 63,560 cfs. Based on the capacity curve for the Second Connecticut Lake, the spillway test flood inflow hydrograph and

the composite rating curve with all discharge facilities functioning at their capacity, detailed flood routing has been made and the estimated maximum surcharge pool elevation has been found to be approximately 1874.0. This elevation indicates a surcharge of 8.5 feet above the spillway crest. As the estimated spillway test flood inflow is very conservative, it is safe to assume that the dam is unlikely to be overtopped.

Currently, a report on the detailed hydrologic studies of this lake is being prepared by Chas. T. Main, Inc., and it is expected that it will be available in the latter part of 1978. The approximate conclusions pertaining to overtopping should be subject to revision depending on the spillway test flood inflow hydrograph evaluated by Chas. T. Main, Inc.

SECTION 6 - STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations

The upstream slope could not be seen due to the fact that it was underwater. The slopes of the embankment do not show any erosion or other weak areas. The visual inspection revealed no evidence of stability problems.

b. Design and Construction Data

No design computations were available, but specifications and design drawings were obtained from project records. As-built drawings were obtained from the owner, New England Power Co.

c. Operating Records

Except for the records listed in Appendix B, other operating records are available at the office of the New England Power Co.

d. Post-Construction Changes

No design changes were made after construction was completed in 1935, but extensive repairs were made in 1967.

e. Seismic Stability

The dam is located in seismic zone 2, and in accordance with recommended Phase I guidelines does not warrant seismic analyses.

SECTION 7 - ASSESSMENT, RECOMMENDATIONS, & REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition

Examination of available documents and visual inspection of Second Connecticut Lake Dam and its appurtenant structures did not reveal any defects which would render the project inadequate from the standpoint of structural stability and the Dam is judged to be in good condition.

b. Adequacy of Information

An adequate assessment of the Dam consistent with the scope of Phase I investigation has been made based upon the visual inspection and available information.

c. Urgency

The operational and maintenance measures, enumerated in Section 7.3 below, should be implemented within two years of receipt of this report by the owner.

d. Need for Additional Investigation

The information available from the visual inspection is adequate to identify the potential problems. At this time there are no problems which would require additional investigation.

7.2 Recommendations

No major modification or engineering investigation is recommended at this time.

7.3 Remedial Measures

Although the dam is generally maintained in good condition, it is considered important that the following operating and maintenance procedures be accomplished:

a. The maintenance program of the owner should be continued.

b. A significant amount of erosion and spalling of concrete was observed especially at the base of the piers and on top of the bridge piers. The concrete should be repaired as continued deterioration could develop into a serious problem.

c. All observation wells on south embankment should be capped. Water levels should be read periodically during high and low lake levels.

d. Vegetation should be removed from the earth embankment except for grass cover that prevents slope erosion.

e. Upstream slope of dam should be inspected at low water.

f. The technical annual periodic inspection being performed by the owner's engineering staff should be continued.

g. Round-the-clock surveillance should be continued during periods of high precipitation.

h. The owner should develop a formal warning system. An operational procedure to follow in the event of an emergency should be adopted.

7.4 Alternatives

None recommended.

APPENDIX A

VISUAL INSPECTION CHECK LISTS

APPENDIX A

VISUAL INSPECTION CHECK LIST
PARTY ORGANIZATION

PROJECT Second Connecticut Lake Dam

DATE June 28, and 29, 1978

TIME June 28, 1100 - 1230
June 29, 9 - 1100

WEATHER Fair, Sunny

W.S. ELEV. 1868 U.S. DN.S.

PARTY:

1. Jurgis Gimbutas, P.E.	Team Captain - Structural and Concrete
2. Harvey H. Stoller, P.E.	Soils, Geology & Foundations
3. V. Rao Maddineni, P.E.	Hydraulics and Hydrology

PROJECT FEATURE	INSPECTED BY	REMARKS
1. Dike Embankment	H. H. Stoller	Good
2. Log Way	J. Gimbutas	Good
3. Gate House	J. Gimbutas	Good
4. Outlet Works - Concrete Waste Way and Fish Pipe	J. Gimbutas	Good
5. Spillway Weir	J. Gimbutas	Fair to Good
6. Approach and Discharge Channels	V. R. Maddineni H. H. Stoller	Good
7. Footbridge	J. Gimbutas	Good
8. Lake and Downstream Channel	V. R. Maddineni	Good

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Dike Embankment

DISCIPLINE Soils & Foundations NAME [signature]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
DIKE EMBANKMENT	
Crest Elevation	1875.0 msl
Current Pool Elevation	1868.0 msl
Maximum Impoundment to Date	1869.5 msl
Surface Cracks	None observed
Pavement Condition	None
Movement or Settlement of Crest	None observed
Lateral Movement	None observed
Vertical Alignment	No visual vertical misalignment observed
Horizontal Alignment	No visual horizontal misalignment observed
Condition at Abutment and at Concrete Structures	Normal

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Dike Embankment

DISCIPLINE Soils & Foundations NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
Indications of Movement of Structural Items on Slopes	None observed
Trespassing on Slopes	None apparent
Sloughing or Erosion of Slopes or Abutments	None observed
Rock Slope Protection - Riprap Failures	Fair condition
Unusual Movement or Cracking at or Near Toes	None observed
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None observed
Foundation Drainage Features	None
Toe Drains	None
Instrumentation System	South dike (see narrative)

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Log Way

DISCIPLINE Structures & Concrete NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - INTAKE STRUCTURE - LOGWAY	
Condition of Concrete	Good
Stop Logs and Slots	Good condition

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Gate House

DISCIPLINE Structures NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - GATE HOUSE	
a. Concrete and Structural	
General Condition	Good (wooden structure)
b. Mechanical and Electrical	
Air Vents	None
Float Wells	None
Chain Hoist (Log Way)	Good working condition
Elevator	None
Hydraulic System	None
Service Gates	One gate, operated by an electric motor
Lightning Protection System	None

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Gate House

DISCIPLINE Structures NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
Emergency Power System	Gasoline motor and manually operated
Wiring and Lighting System	None

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Outlet Works

DISCIPLINE Structures & Concrete NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - CONCRETE WASTE WAY	
General Condition of Concrete	Good
Erosion or Cavitation	None observed
Outlet Works - Fish Pipe	
Size	10-inch diameter steel pipe
General Condition	Good
Gate	None

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Spillway Weir

DISCIPLINE Structures & Concrete NAME [illegible]

PROJECT FEATURE Approach Channel

DISCIPLINE Soils & Foundations NAME [illegible]

DISCIPLINE Hydraulics & Hydrology NAME [illegible]

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Approach Channel	Could not be observed
b. Weir and Training Walls	
General Condition of Concrete	Fair to good
Rust or Staining	None observed
Spalling	Several areas (see narrative)

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Spillway Weir

DISCIPLINE Structures & Concrete NAME

PROJECT FEATURE Discharge Channel

DISCIPLINE Soils & Foundations NAME

DISCIPLINE Hydraulics & Hydrology NAME

AREA EVALUATED	CONDITION
Any Visible Reinforcing	None
Any Seepage or Efflorescence	Flashboard leaks, efflorescence in the vicinity of gate structure
Drain Holes	None
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	Occasional
Floor of Channel	Good
Other Obstructions	None

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Footbridge

DISCIPLINE Structures & Concrete NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - FOOTBRIDGE	
a. Superstructure	
Bearings	None
Longitudinal Members	Very good condition (wood)
Underside of Deck	Very good condition
Secondary Bracing	None
Deck	Sound, creosoted wood planking
Drainage System	Good condition
Railings	Very good condition (steel pipe)
Expansion Joints	None
Paint	Good condition

PERIODIC INSPECTION CHECK LIST

PROJECT Second Connecticut Lake Dam DATE June 28, and 29, 1978

PROJECT FEATURE Footbridge

DISCIPLINE Structures & Concrete NAME [illegible]

PROJECT FEATURE _____

DISCIPLINE _____ NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
b. Abutment and Piers	
General Condition of Concrete	Fair
Alignment of Abutment	Good
Approach to Bridge	Good
Drain Holes	Two pipes at bottom of south abutment, apparently in working condition

APPENDIX B

EXISTING AVAILABLE INFORMATION

APPENDIX B

1. Listing of Records and Their Location

In the files of the New Hampshire Water Resources Board, 37 Pleasant Street, Concord, New Hampshire, there are three folders of engineering and maintenance data, dated from 1917 to 1974, and labeled under Town/Dam No. 194.07, Pittsburg/Second Connecticut Lake.

The documents of importance are the following:

(1) March 12, 1917. Inquiry by the Public Service Commission to the Connecticut Valley Lumber Co. in Boston, regarding the safety of the dam that was built in 1914. The response, dated March 14, 1917, lists twenty dams, that all located in New England, and built by Mr. J. M. Swan.

(2) October 31, 1919. Storage capacity table by Stone & Webster of Boston.

(3) June 6, 1922. Pond gage readings from 1919 to 1922.

(4) 1924. Inventory sheet of dams showing pertinent data for the Second Connecticut Lake Dam.

(5) August 15, 1929. Outline of proposed improvements of the timber crib dam, by the New England Power Construction Co.

(6) October 3, 1934. Revised general specifications for the new storage dam at Second Connecticut Lake by New England Power Engineering & Service Co. of Boston, Massachusetts.

(7) September, 1934 to August, 1935. Memorandums, letters, calculations, and reports regarding the construction of the new concrete dam, including the reports of the concrete and soils by Thompson & Lichtner, Inc., of Boston, Massachusetts.

(8) 1929-1934. More than fifty large photographs showing the old timber crib dam and construction phases of the new one.

(9) November 23, 1934. Report regarding exact location of the dam by Mr. S. J. Lord, including a diagram by Mr. H. E. Trowbridge, dated November 3, 1934.

(10) November 30, 1934. Computations of crest beam by Mr. M. N. Clair of Thompson and Lichtner, Inc. (10 pages).

(11) July, - August, 1935. Data on elevations of the old and new dams, and on extension of the core wall at the south abutment.

(12) May 4, 1959. Readings of water levels from 1954 to 1959 and notes on operation of three lakes in Pittsburg, New Hampshire, by Mr. W. G. White, chairman of the New Hampshire Water Resources Board.

(13) July 31, 1967. Letter describing proposed repairs to the concrete crest beam by Mr. A. T. Simmonds of New England Power Co.

(14) January 13, 1975 (revised January 7, 1977). FIA Flood Hazard Boundary Maps by the Department of Housing and Urban Development (4 pages, 11 inches by 17 inches).

From the files of the Engineering Department of the New England Power Co. in Westborough, Massachusetts, we have received the following hydrological data:

(1) Spillway discharge rating curve, dated April 26, 1935.

(2) Area capacity curve, dated November 19, 1947.

(3) Discharge rating curve and tables, dated July 15, 1948 (2 pages)

(4) Storage tables, dated February 1, 1956 (1 page)

(5) Design inflow hydrograph, no date.

2. Past Inspection Reports

Copies included with this report are:

(1) September 1, 1939, by New Hampshire Water Control Commission, tabulated by RLT.

(2) October 23, 1974, by Mr. Francis C. Moore of the New Hampshire Water Resources Board.

3. Drawings

The New Hampshire Water Resources Board has the prints listed below, that show the layout of the dam, sections, and some details.

Numbers (2) thru (4) were made by New England Power Engineering & Service Corp., Engineers & Contractors, Boston, Massachusetts, and are under a general title: Second Connecticut Lake Storage.

(1) September, 1914, Drawing No. R-685. Sketch of Second Connecticut Lake Headwaters Investigation, by Stone & Webster of Boston, Massachusetts.

(2) September, 1928, Drawing No. H-3488. Topography of Smith Brook Outlet, Pittsburgh, New Hampshire.

(3) August - October, 1934, Drawing Nos. H-5642, 5649, 5653, 5655, 5658, and 5666. Dam general layout, plan, sections, details of concrete abutments, spillway, crest beam, log way, regulating gate, timber deck.

(4) August, October, 1935, Drawing Nos. H-5760 and 5793. Dam extension to cut-off wall in south dike.

New England Power Co. Engineering Department at Westborough, Massachusetts, have original tracings of drawings, three of which are included in this report. These drawings are:

(1) H-5642 August 1934 - Dam - Details of Concrete Abutments.

(2) H-5653 September 28, 1934 - Dam - Spillway Concrete.

(3) H-5647 August 28, 1934 - Dam - General Layout.

All three drawings have revisions: "Added 1951 concrete 3-13-163."

NEW HAMPSHIRE WATER CONTROL COMMISSION
DATA ON DAMS IN NEW HAMPSHIRE

LOCATION STATE NO. 194.07

Town Pittsburg ✓ : County Coos

Stream Conn. River ✓

Basin-Primary Conn. River ✓ : Secondary Conn. Lake

Local Name Outlet Second Conn. Lake

Coordinates—Lat. : Long.

GENERAL DATA

Drainage area: Controlled Sq. Mi.: Uncontrolled Sq. Mi.: Total 35.8 ✓ PSC. Sq. Mi.

Overall length of dam ft.: Date of Construction

Height: Stream bed to highest elev. ft.: Max. Structure ft.

Cost—Dam : Reservoir

DESCRIPTION

Waste Gates

Type

Number : Size ft. high x ft. wide

Elevation Invert : Total Area sq. ft.

Hoist

Waste Gates Conduit

Number : Materials

Size ft.: Length ft.: Area sq. ft.

Embankment

Type

Height—Max. ft.: Min. ft.

Top—Width 12' : Elev. ft.

Slopes—Upstream on : Downstream on

Length—Right of Spillway : Left of Spillway

Spillway

Materials of Construction

Length—Total 94 ft.: Net ft.

Height of permanent section—Max. 4 ft.: Min. ft.

Flashboards—Type : Height ft.

Elevation—Permanent Crest : Top of Flashboard

Flood Capacity cfs.: cfs/sq. mi.

Abutments

Materials:

Freeboard: Max. ft.: Min. ft.

Headworks to Power Devel.—(See "Data on Power Development")

OWNER Upper Conn. River & Lake Imp., Co.

REMARKS No other information
outlet second Conn Lake

Tabulation By RLT Date 9/1/39

M E M O R A N D U M

DATE: October 23, 1974

FROM: Francis C. Moore, Civil Engineer FCM

SUBJECT: Second Connecticut Lake Dam Inspection - #194.07 - Pittsburg

TO: Vernon A. Knowlton, Chief Water Resources Engineer

On October 10, 1974, Francis C. Moore and Donald Rapoza inspected Second Connecticut Lake Dam. The following comments are noted:

1. There is some spalling of concrete, but not serious yet.

2. Base of piers have spalling that should be patched.

3. Observation wells should all be capped. Water levels should be read in them periodically, both in high and low lake level situations.

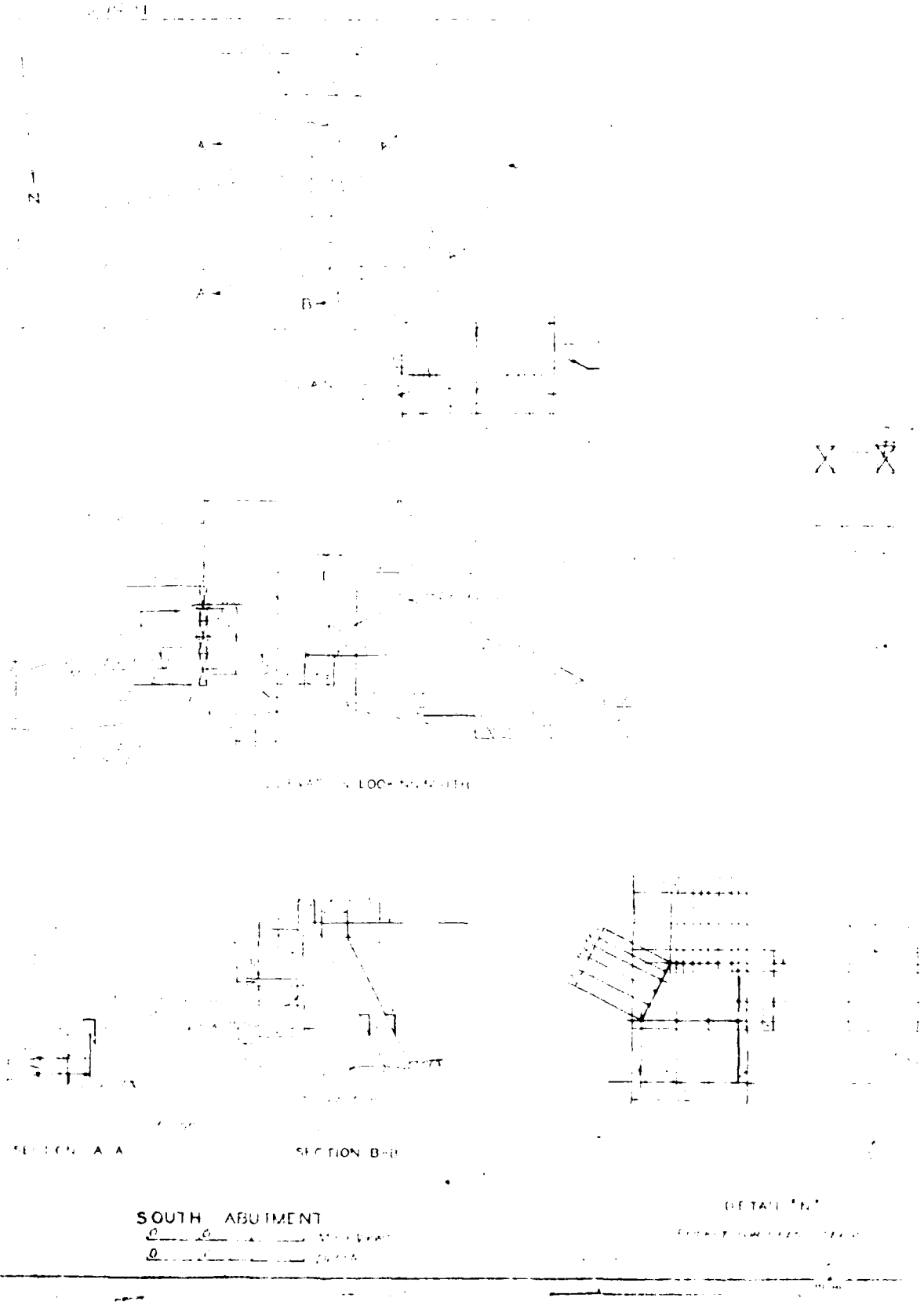
4. Left downstream concrete abutment wall has some water flowing out of weep holes.

5. Dike on right next to N.H. HW Rt. #3 should either be cleared of growth (brush and trees) or the dike terminate in the east bank to this highway by compacting one or two loads of impervious fill. The top of dike is about 1 1/2 feet below road surface at this location.

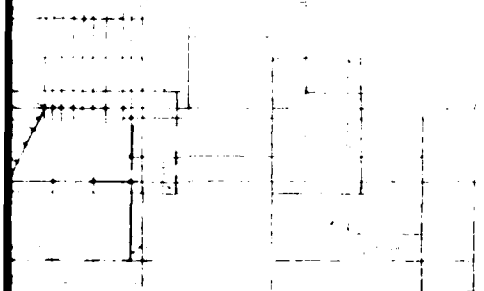
6. It is suggested that this report be forwarded to N.E. Power Company and request that they comment on the five points noted.

This dam, at present, is not considered by us to be in disrepair.

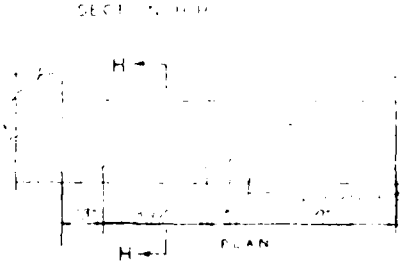
fcm/js



SOUTH ABUTMENT



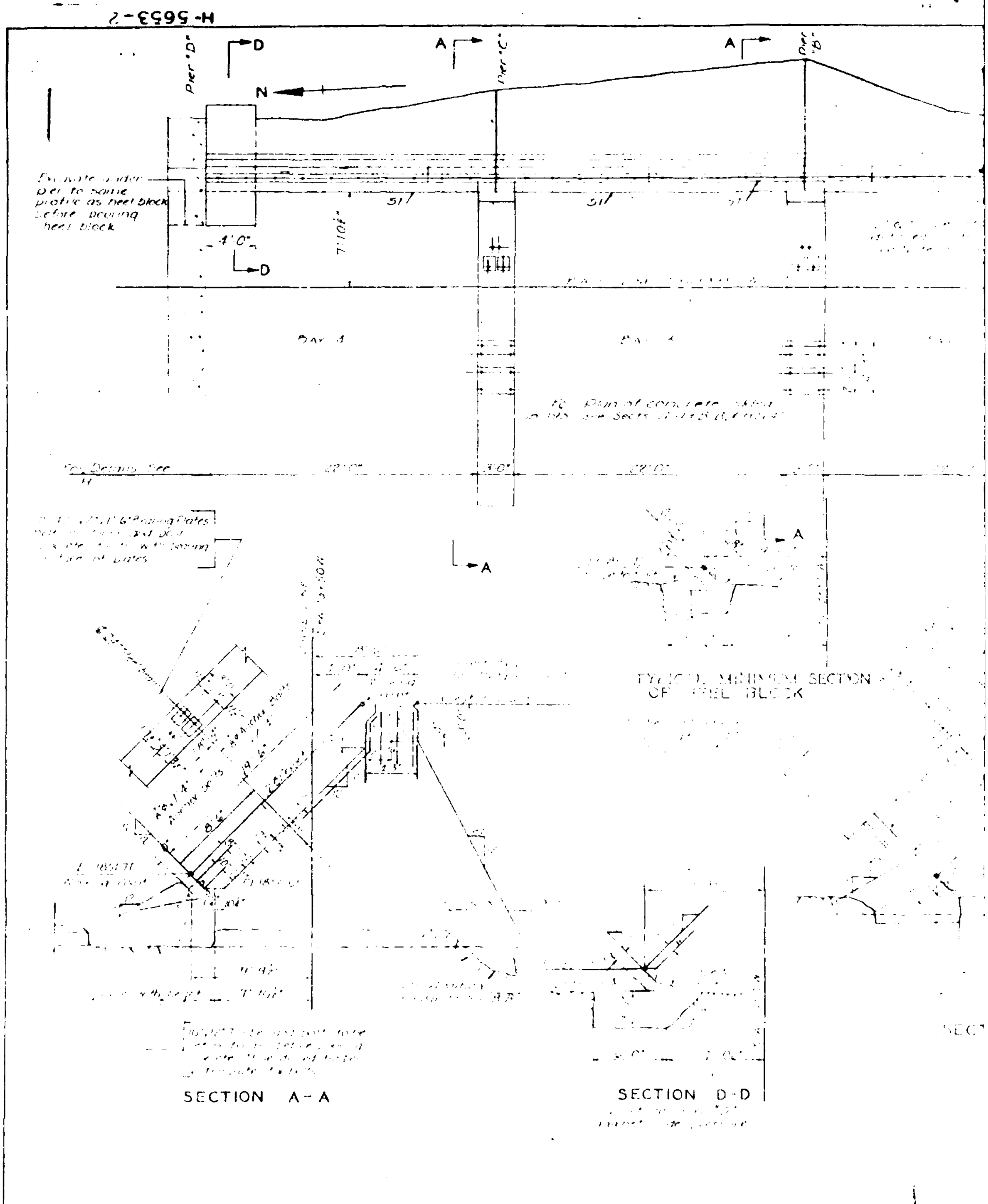
DETAIL "N"

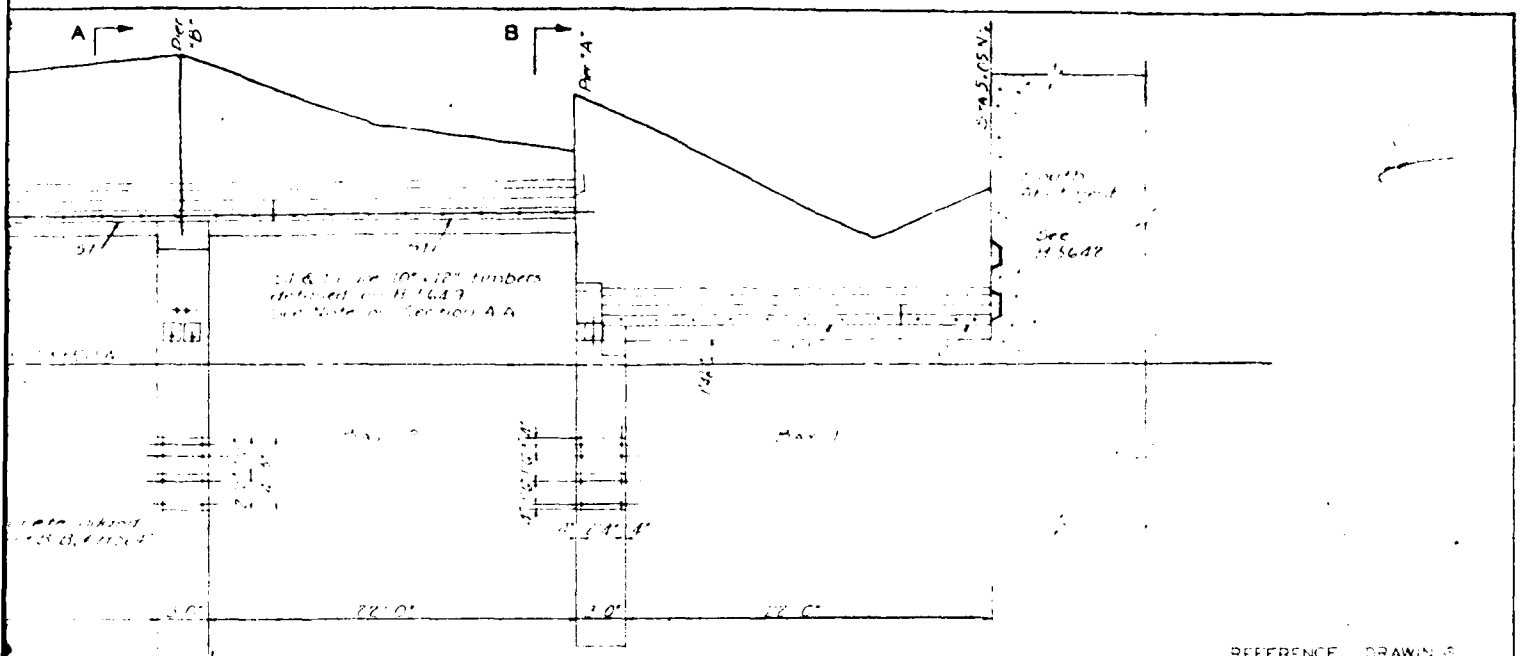


DETAIL "P"

DETAILS OF CONCRETE APPURTENANCES

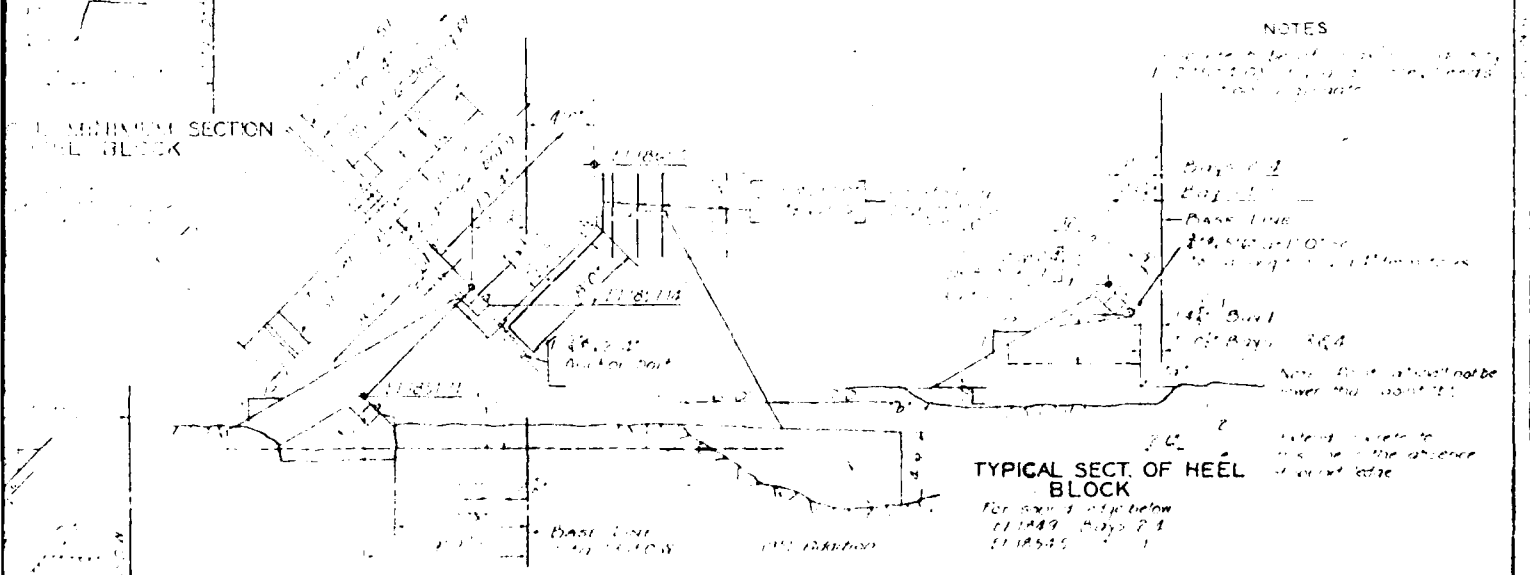
H-5642





REFERENCE DRAWINGS

NOTES

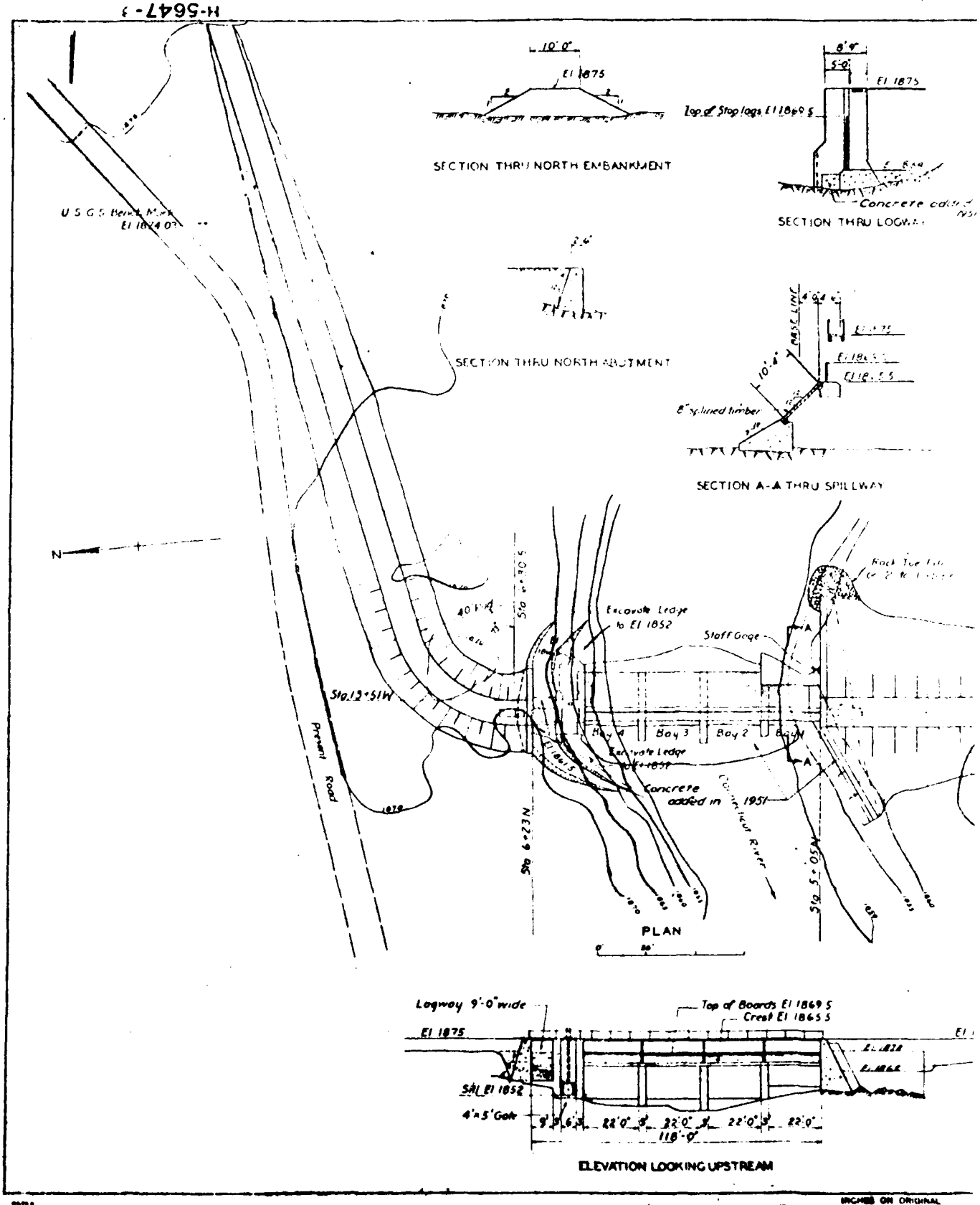


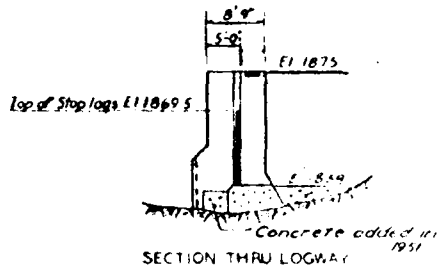
SECTION B-B

NEW ENGLAND POWER
ENGINEERING & SERVICE CORPORATION

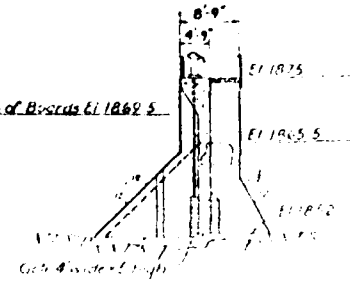
DAM
SPILLWAY CONCRETE

H-5653-

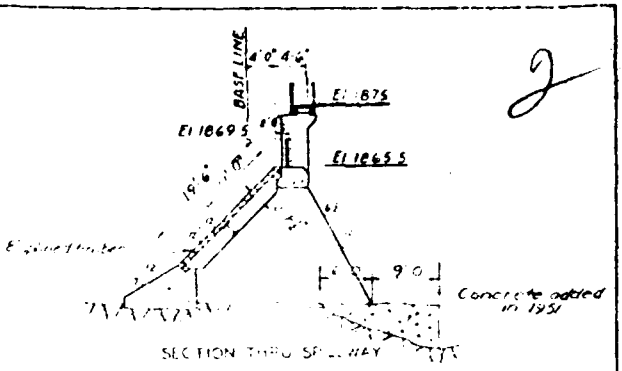




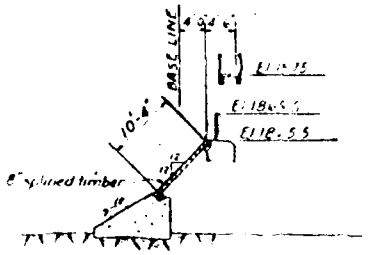
SECTION THRU LOGWAY



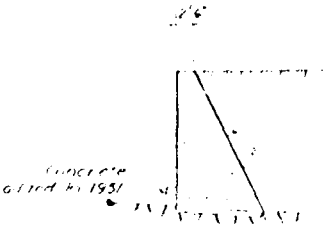
SECTION THRU GATE



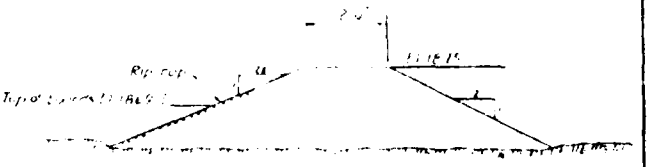
SECTION THRU SPILLWAY



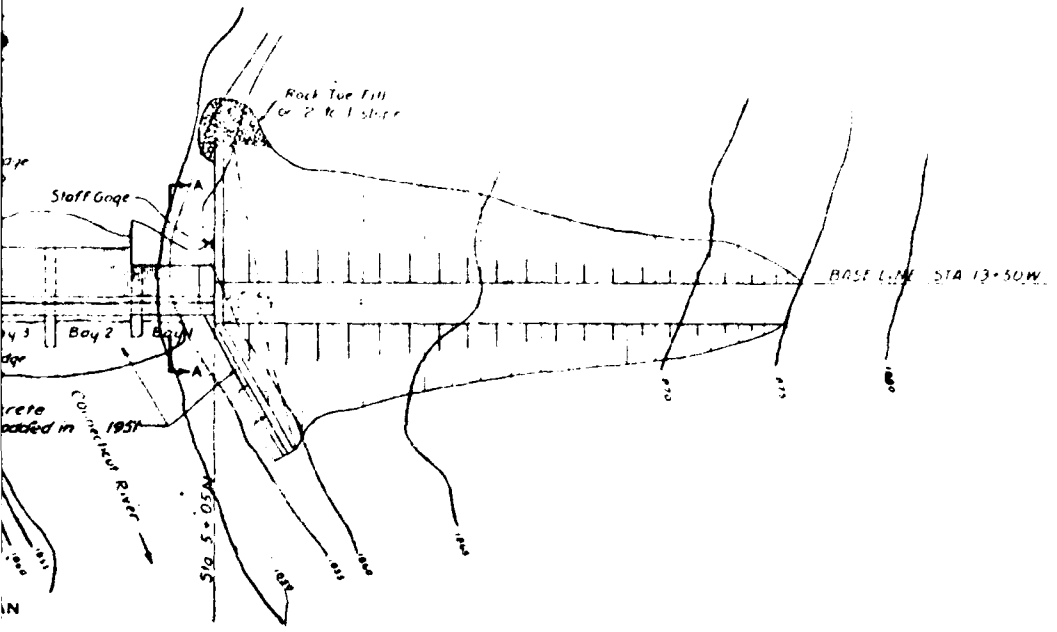
SECTION A-A THRU SPILLWAY



SECTION THRU NORTH ABUTMENT



SECTION THRU SOUTH EMBANKMENT

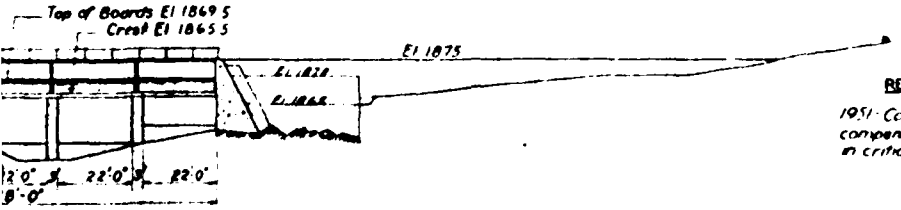


FLASHBOARDS

Pins 2" Standard W.I. Pipe
Spacing Bay 1 - 2'-0" c to c
Bay 2 - 2'-6" "
Bay 3 - 3'-1" "
Bay 4 - 2'-0" "

REFERENCE DRAWINGS

Topography	H-3943
Details of Concrete Abutments	H-5647
Spillway Concrete	H-5653
Crest Beam Details	H-5646
Timber Deck Details	H-5649
Walkway Timber & Railing Details	H-5650
Logway & Regulating Gate Concrete	H-5658



DIKING UPSTREAM

RECORD OF REPAIRS

1951 - Concrete added to compensate for impact erosion in critical areas - shown green

NEW ENGLAND POWER
ENGINEERING & SERVICE CORPORATION
ENGINEERS & CONTRACTORS

CONNECTICUT RIVER POWER COMPANY
SECOND CONNECTICUT LAKE STORAGE
DAM

GENERAL LAYOUT

H-5647-3

INCHES ON ORIGINAL

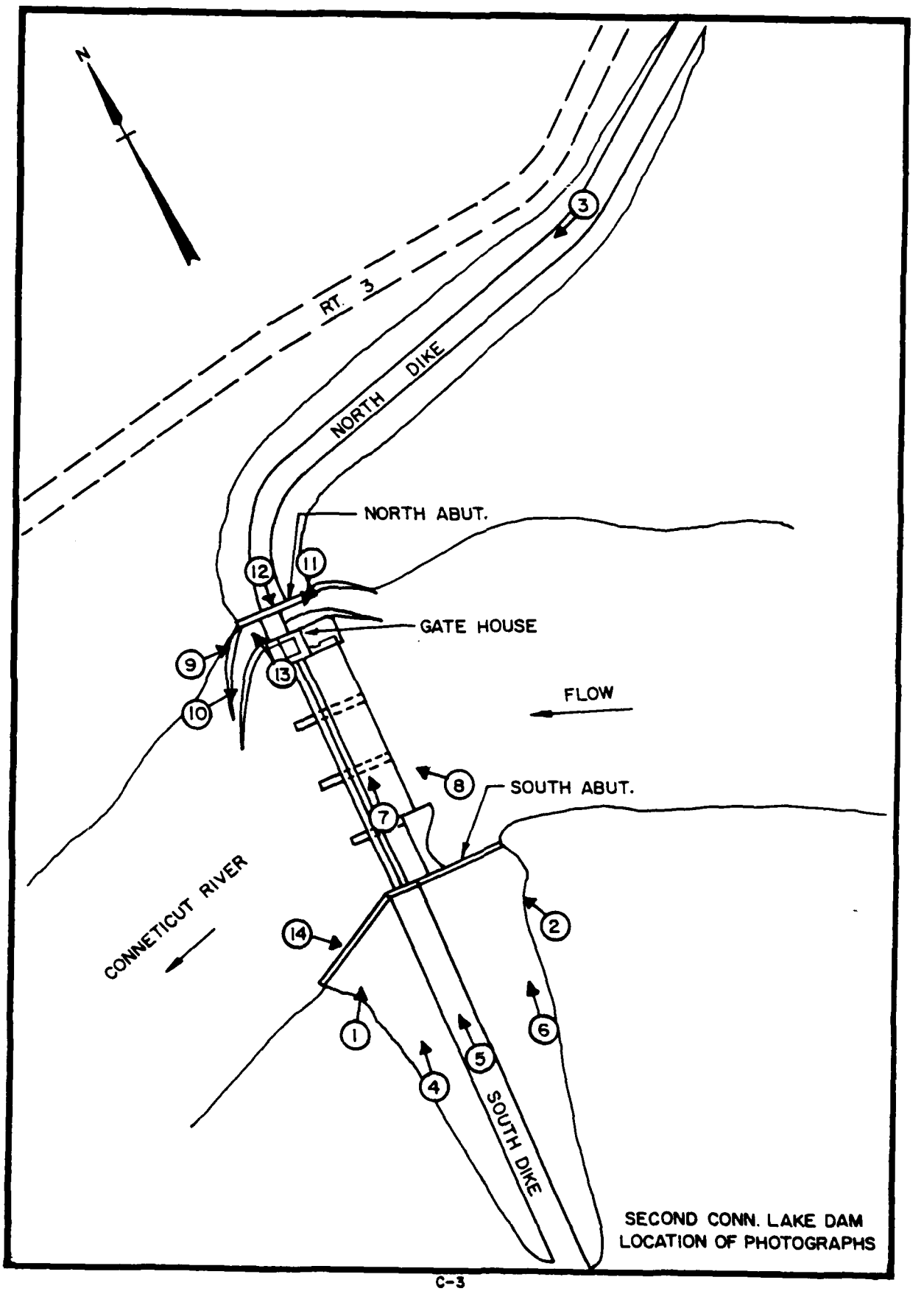
APPENDIX C

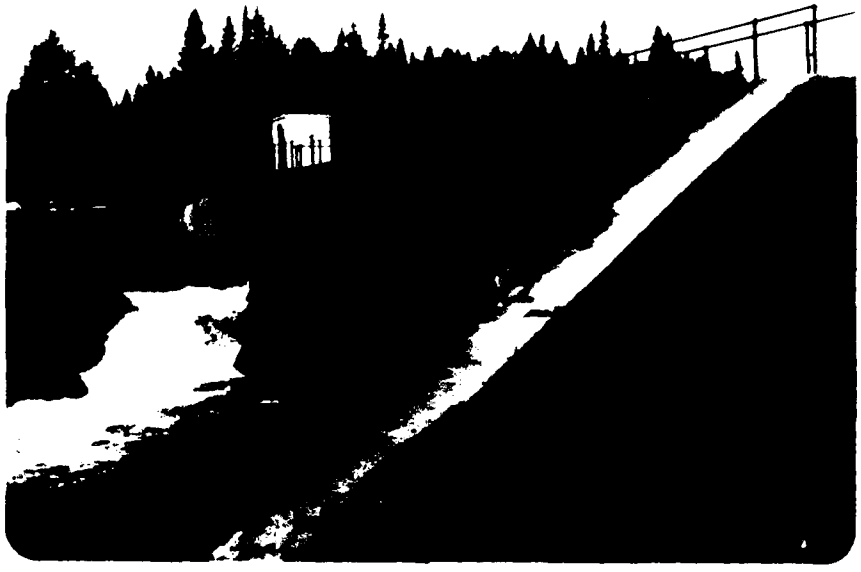
PHOTOGRAPHS

APPENDIX C

REPRESENTATIVE PHOTOGRAPHS OF PROJECT

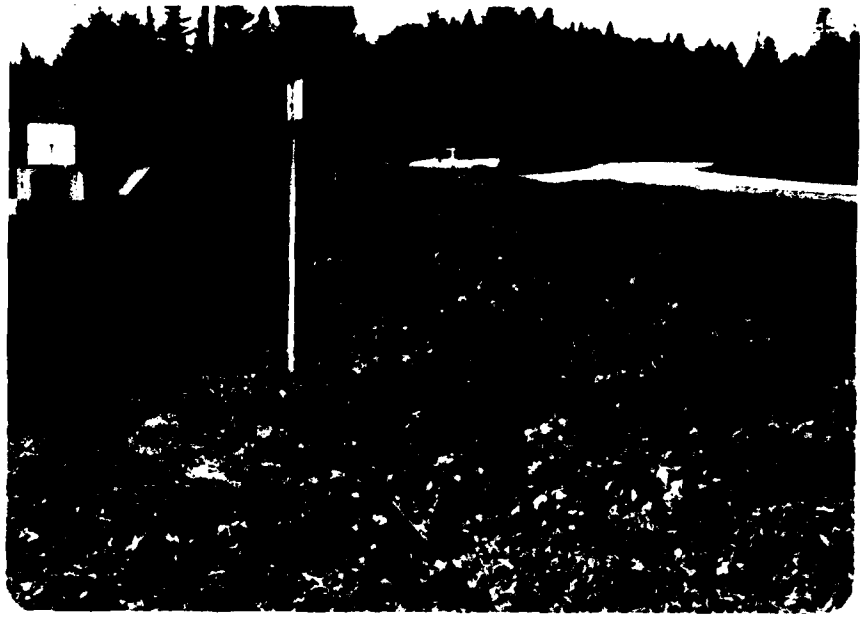
No.		Negative No.	Page
13.	North abutment on downstream side.	9-25A	C-10
14.	South abutment on downstream side and drain pipe.	10-26	C-10


N
RT. 3
NORTH DIKE
NORTH ABUT.
GATE HOUSE
FLOW
SOUTH ABUT.
CONNETICUT RIVER
SOUTH DIKE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
SECOND CONN. LAKE DAM
LOCATION OF PHOTOGRAPHS



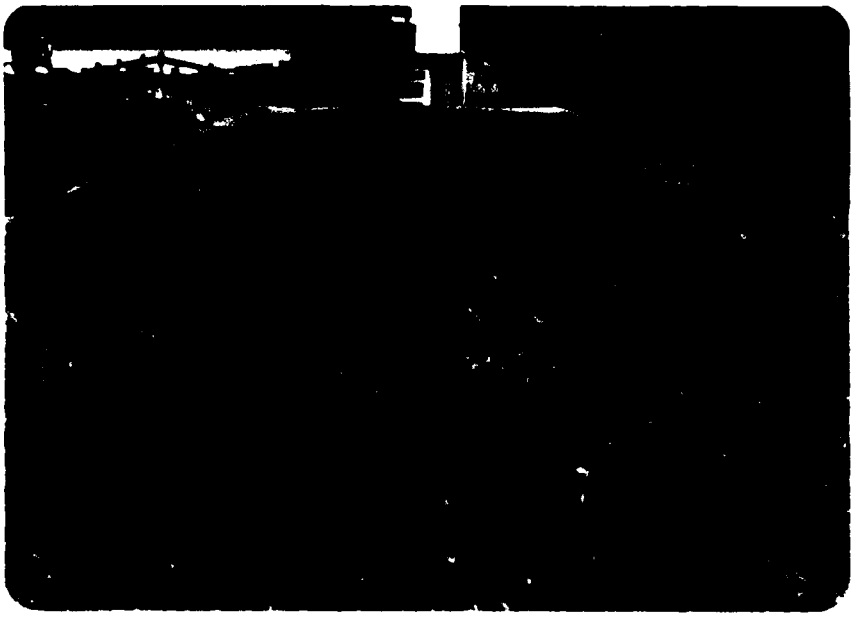
1. South abutment and downstream side of dam, looking north.

2. Upstream side of dam, looking north.

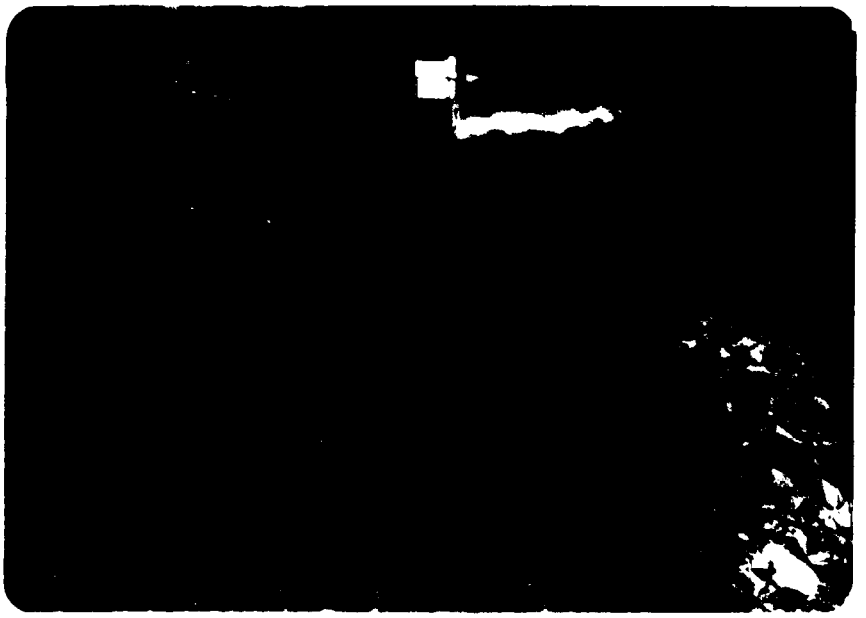


3. Upstream slope of north dike by Route 3 highway.

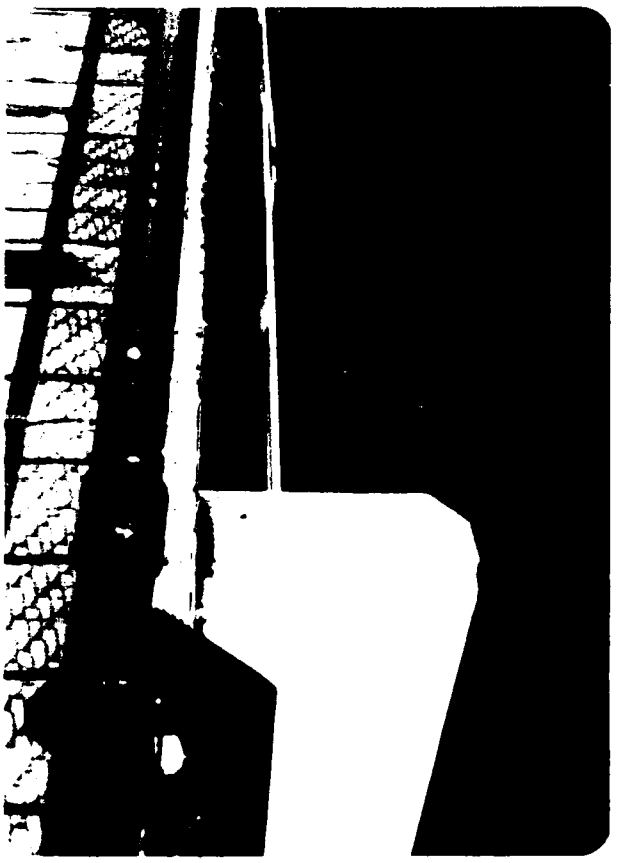
4. Downstream slope of south dike.



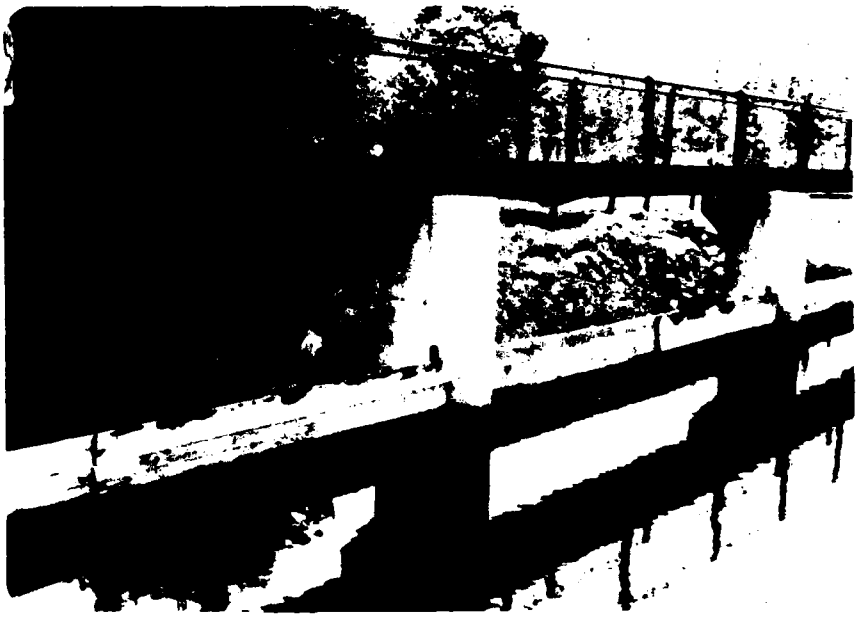
5. South dike with piezometers.



6. Upstream slope of south dike.

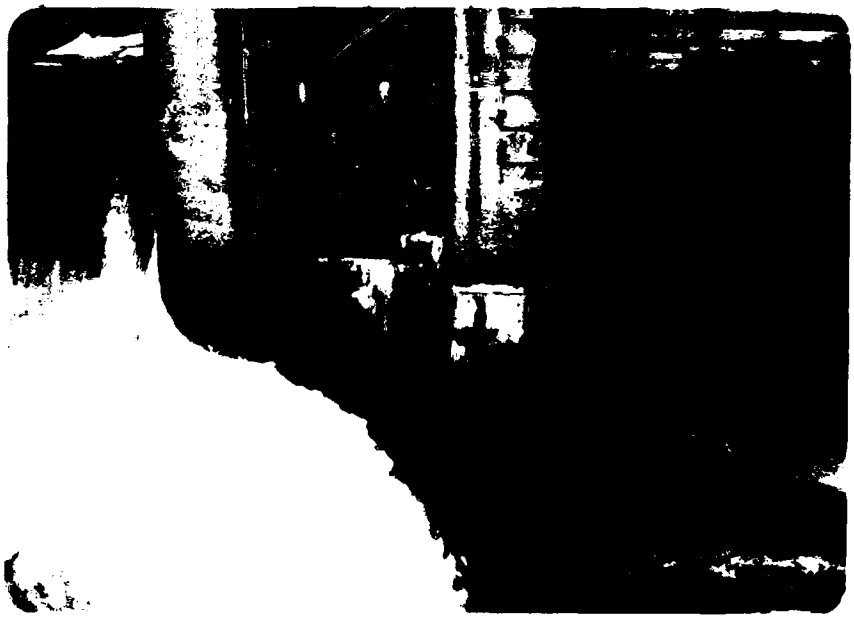


7. Spillway flashboards, pins and upstream concrete pier, looking north.

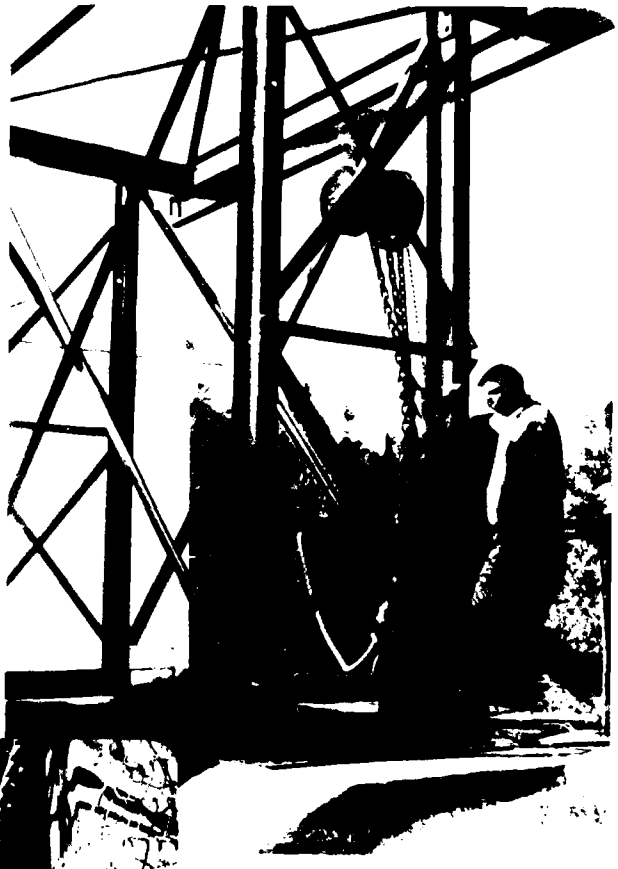


8. Spillway flashboards and footbridge, looking northwest.

9. North abutment, stop log sluice and gate structure.



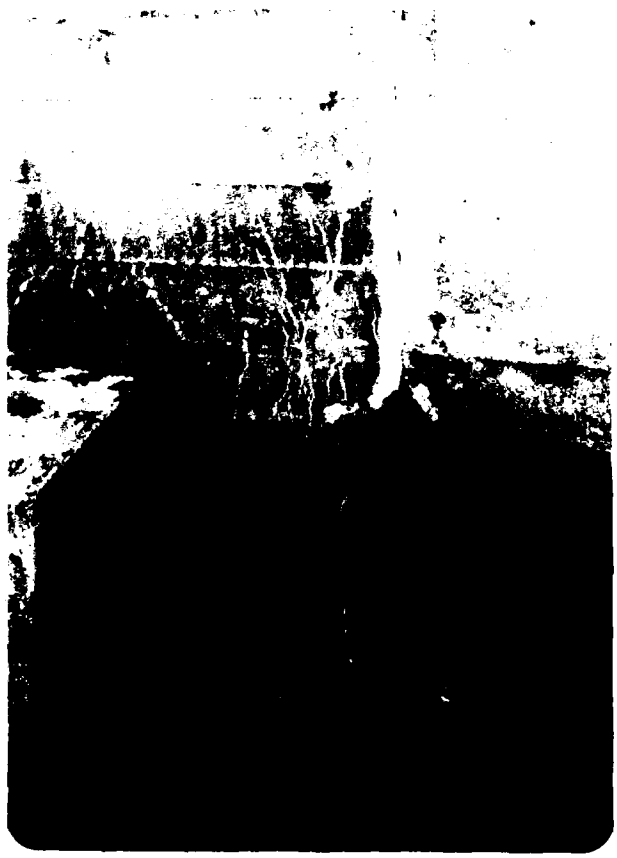
10. Lower part of gate structure, with the fish pipe at right and stop logs at left.



11. Chain hoist for stop logs, looking north.

12. Lifting of a stop log.

13. North abutment on downstream side.



14. South abutment on downstream side and drain pipe.

APPENDIX D

HYDROLOGIC & HYDRAULIC COMPUTATIONS

APPENDIX - D

FAY SPOFFORD & THORNDIKE INC
ENGINEERS
BOSTON

PROJECT EN-206(3)

FILE NUMBER EN-206
SHEET NUMBER 1
DATE 9-8-1975
COMPUTED BY VRM
CHECKED BY

SUBJECT NATIONAL DAM INSPECTION
SECOND CONNECTICUT LAKE DAM

Total drainage area of Second Connecticut Lake

= 45.4 square miles

The drainage area of Second Connecticut Lake is characterised by mountainous topography. Therefore, from the guide curves, furnished by the corps of Engineers, it is found that

Probable maximum inflow flood peak = 45.4 × 1400

= 63,560 CFS.

According to size classification as given in table 1, in "Recommended Guidelines for safety Inspection of Dams" Second Connecticut Lake Dam is intermediate in size.

According to Hazard Potential classification it falls under the category of significant hazard.

∴ According to Hydrologic Evaluation Guidelines as given in TABLE 3, spillway Test INFLOW FLOOD

PEAK = 63,560 CFS

FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS BOSTON

PROJECT EN-006(3)

FILE NUMBER EN1-0006

SHEET NUMBER 2

DATE 3-25-74

COMPUTED BY PMM

CHECKED BY

SUBJECT SECOND COLLECTOR LAKE DAM

SPILLWAY TEST FLOOD INFLOW HYDROGRAPH
(BASED ON SCS DIMENSIONLESS UNIT HYDROGRAPH)

Length of Travel = 45,000'

Difference in Elevation = 525'

$$T_c = \frac{(45{,}000)^{1.15}}{7700 \times (525)^{0.38}}$$

$$= \frac{224{,}488.6}{7700 \times 10.8}$$

$$= 2.70 \quad \text{say } 3.0 \text{ hrs.}$$

PAY BRADFORD & THORNDIKE INC
ENGINEERS
BOSTON

PROJECT EN-006(3)

FILE NUMBER EN-006
SHEET NUMBER 3
DATE 4/22/73
COMPUTED BY
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
SPILLWAY TEST FLOOD INFLOW HYDROGRAPH

T_c = 3.00 HRS

SPILLWAY TEST FLOOD PEAK INFLOW = 63,560 CFS.

T (hr.)	T/Tc	Q/Qp	Q (cfs)
0.75	0.25	0.05	3178
1.50	0.50	0.18	11411
2.25	0.75	0.73	46399
3.00	1.00	1.00	63,560
3.75	1.25	0.80	50848
4.50	1.50	0.40	25,425
5.25	1.75	0.25	15,890
6.00	2.00	0.17	10,806
8.25	2.75	0.06	3814
10.50	3.50	0.02	1271
12.00	4.00	0.01	636

FAY SPOFFORD & THORNDIKE INC
ENGINEERS
BOSTON

PROJECT EN-006 (3)

FILE NUMBER EN-006
SHEET NUMBER 4
DATE 8/24/78
COMPUTED BY CGL
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
COMPOSITE DISCHARGE RATING TABLE

CONSIDER THAT STOP LOGS IN THE BAYS AND LOGWAY ARE REMOVED AND THE WASTE GATE IS OPEN.

	DISCHARGE IN CFS.								
ELEV.	BAY 1	BAY 2	BAY 3	BAY 4	LOGWAY	WASTE GATE	FISH PIPE	SMITH BROOK	TOTAL FLOW
1861.5	0	0	0	0	0	259	7	0	266
1862.0	0	0	0	0	11	268	7	0	286
2.5	0	0	0	0	33	277	7	0	317
3.0	0	0	0	0	66	285	7	0	352
3.5	0	0	0	0	92	294	7	0	393
4.0	0	0	0	0	128	302	7	0	437
4.5	0	0	0	0	169	310	7	0	486
5.0	0	0	0	0	213	317	7	0	537
5.5	0	0	0	0	260	325	7	0	592
6.0	20	21	21	20	310	332	8	0	732
6.5	60	63	63	60	363	339	8	0	956
7.0	115	120	120	115	419	346	8	0	1243
7.5	183	191	191	183	478	353	8	0	1587
8.0	263	274	274	263	539	360	8	0	1981
8.5	355	370	370	355	602	366	8	0	2426
9.0	460	480	480	460	668	373	9	0	2930
9.5	575	600	600	575	735	379	9	0	3473
1870.0	700	730	730	700	805	385	9	15	4075
1870.5	835	873	873	835	877	392	9	80	4774
1871.0	978	1022	1022	978	952	398	9	205	5564

REFER TO PAGES: 5, 6, 7, and 8

PAY, SPOFFORD & THORNDIKE, INC. ENGINEERS BOSTON

PROJECT EN-006 (3)

FILE NUMBER EN-006
SHEET NUMBER 5
DATE 8/25/78
COMPUTED BY GGL
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
COMPOSITE DISCHARGE RATING CURVE

FLOW THROUGH WASTE SLUICE (4'x5'):

ASSUME STAGE-DISCHARGE RELATIONSHIP IS SIMILAR TO ORIFICE

$$Q = C_c C_v A_o \sqrt{2gh}$$

Q = DISCHARGE IN CFS
C_c = COEF. OF CONTRACTION = 0.61
C_v = COEF OF VELOCITY = 1.00
A_o = AREA OF OPENING = 4' x 5' = 20 Sq. FT.
g = ACC. OF GRAVITY = 32.2 FT/SEC²
h = DISTANCE FROM W.L. TO CENTERLINE OF GATE

SILL ELEV. OF GATE = 1852 ∴ ℄ = 1854.5

ELEV.	h(FT)	Q (CFS)	ELEV.	h(FT)	Q CFS
1863.5	11.0	325	161.5	7	259
64.0	11.5	332	2.0	7.5	268
64.5	12.0	339	2.5	8.0	277
65.0	12.5	346	3.0	8.5	285
65.5	13.0	353	3.5	9.0	294
66.0	13.5	360	4.0	9.5	302
66.5	14.0	366	4.5	10.0	310
67.0	14.5	373	5.0	10.5	317
67.5	15.0	379			
68.0	15.5	385			
68.5	16.0	392			
69.0	16.5	398			

FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS BOSTON

PROJECT EN-006

FILE NUMBER EN-006
SHEET NUMBER 1
DATE 8/24/18
COMPUTED BY GGL
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
COMPOSITE DISCHARGE RATING TABLE

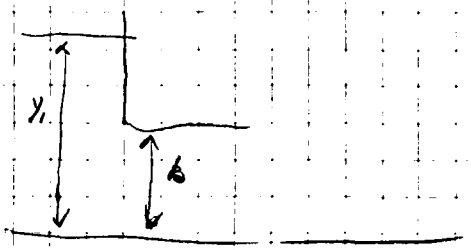
FLOW THROUGH LOGWAY:

DETERMINE FLOW THROUGH LOGWAY WITH LOGS REMOVED)
ASSUME STAGE DISCHARGE RELATIONSHIP IS SIMILAR TO

1) BROAD CRESTED WEIR
$Q = 3Bh^{3/2}$ $B = 7$ FT
$= 27 h^{3/2}$

2) SLUICE GATE WITH $b = y_1$
$Q = C_d\, b\, B \sqrt{2g y_1} = .45\, 9 (64.4)^{1/2} y_1^{3/2}$
$= 32.5\, y_1^{3/2}$

$b = y_1$
$B = 9$ FT
$C_d = 0.45$



$b = y_1$ $\therefore$ $b/y_1 = 1$ $\therefore$ $C_d = 0.45$
SEE PAGE 537 in ENGG HYDRAULICS (ROUSE)

ELEV	$h \sim y_1$	$Q = 3Bh^{3/2}$	$Q = C_d b B \sqrt{2g y_1}$
161.5	0 FT	0 CFS	0 CFS
162.0	0.5	10	11
2.5	1.0	27	33
3.0	1.5	50	60
3.5	2.0	76	92
4.0	2.5	107	128
4.5	3.0	140	169
5.0	3.5	177	213
5.5	4.0	216	260
6.0	4.5	258	310
6.5	5.0	302	363

(CONTD)

FAY SPOFFORD & THORNDIKE INC
ENGINEERS
BOSTON

PROJECT EN-006

FILE NUMBER FA1-006
SHEET NUMBER 7
DATE 8/24/78
COMPUTED BY GGL
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
COMPOSITE DISCHARGE RATING TABLE

CONT. ELEV	h or Y_1	$Q = 3Lh^{3/2}$	$Q = C_d L \sqrt{2g} Y_1^{3/2}$
1620	5.5 FT	348 CFS	419 CFS
7.5	6.0	397	478
8.0	6.5	447	539
8.5	7.0	500	602
9.0	7.5	555	668
9.5	8.0	611	735
1620.0	8.5	669	805
170.5	9.0	729	877
171.0	9.5	791	952

FORM 668 27 COMPANY

Second Conn. Lake REPORT DATE 7/15/78

SCHEDULE PAGE NO 8

SUBJECT Discharge rating SCHEDULE NO

Regarding Dam Break waterway in natural state LINE NO

PREPARED BY CHECKED BY REVIEWED COLUMN

Consider that there is no attendant, therefore gate not operated

	Elev	Spillway Bay 1	Bay 2	Bay 3	Bay 4	Stop? Crest 150	Fish Pipe	Sluice	Total with sluice
Top Bdrs	1869.5	0	0	0	0	0	9	0	9
	69.8	12	13	13	12	0	9	4	63
B.F	70.0	27	28	28	27	15	9	9	143
A.F	70.0	27	28	730	27	15	9	9	845
B.F	70.4	66	68	843	66	64	9	24	1180
A.F	70.4	66	843	843	66	64	9	24	1915
B.F	71.0	138	1022	892	138	205	9	54	2458
A.F	71.0	978	1022	1022	978	205	9	54	4268
	71.5	1128	1178	1178	1128	392	9	84	5097
	72.0	1282	1340	1340	1282	645	9	117	6015
	72.5	1451	1516	1516	1451	990	9	152	7085
	73.0	1623	1698	1698	1623	1600	9	191	8442
	73.5	1800	1882	1882	1800	2290	9	232	9615
	74.0	1980	2070 (?)	2070 (?)	1980	3170	9	276	11575
	74.5	2175	2270	2270	2175	4360	9	323	13582
	75.0	2365	2480	2480	2365	4730	10	371	14801
	76.0	2780	2908	2908	2780	5360	10	422	17168
	77.0	3210	3360	3360	3210	5920	10	474	19546

Clear Crest

	Elev	Bay 1	Bay 2	Bay 3	Bay 4	Crest	Fish Pipe	Sluice	Total
Crest	1865.5	0	0	0	0	0	7	0	[illegible]
1	66.0	20	21	21	20	0	8	0	90
3	66.5	60	63	63	60	0	8	0	254
5	67.0	115	120	120	115	0	8	0	478
9	67.5	183	191	191	183	0	8	0	[illegible]
11	68.0	263	274	274	263	0	8	0	[illegible]
15	68.5	355	370	370	355	0	8	0	[illegible]
20	69.0	460	480	480	460	0	9	0	[illegible]
[illegible]	69.5	575	600	600	575	0	9	0	[illegible]
30	70.0	700	730	730	700	15	9	9	[illegible]
35	70.5	835	873	873	835	80	9	29	[illegible]
44	71.0	978	1022	1022	978	205	9	54	4268

Fay Spofford & Thorndike Inc
Engineers
Boston

PROJECT EN-006 (3)

FILE NUMBER EN-006
SHEET NUMBER 9
DATE 5/11/65
COMPUTED BY
CHECKED BY

SUBJECT SECOND CONNECTICUT LAKE DAM
STORAGE CAPACITY ABOVE ELE. 1865.5

ELEVATION	TOTAL STORAGE ACRE-FT	STORAGE ABOVE EL. 1865.5 ACRE-FT	STORAGE ABOVE EL. 1865.5 FT³
1865.5	6892	0	0
6.0	7432	540	25.5×10^6
6.5	7497	605	26.4×10^6
7.0	8567	1675	72.9×10^6
7.5	9157	2265	98.7×10^6
8.0	9750	2858	124.4×10^6
8.5	10363	3471	151.2×10^6
9.0	10978	4086	178.0×10^6
1869.5	11613	4721	205.6×10^6
1870.0	12250	5358	233.3×10^6

REFER TO TABLE ON PAGES 10, 11 and 12.

SECOND CONNECTICUT LAKE — Sheet 1 of 3
Storage above Elevation 1858.0 — D.A.=45.4 Sq.Mi.

U.S.G.S. Elev.	Acres	Acre-Feet	C.F.S. Days	Inches on 45.4 Sq.Mi.	Inches on 83.0 Sq.Mi.	Millions Cub.Ft.	KWH on Littleton to Vernon
1858.0	792	0	0	0		0	0
.1	794	81	40	.033	.019	3.5	34,300
.2	796	161	81	.066	.036	7.0	68,600
.3	798	242	122	.100	.055	10.5	103,000
.4	801	322	162	.133	.073	14.0	137,200
.5	804	403	203	.166	.091	17.5	171,600
.6	807	484	244	.200	.109	21.1	206,300
.7	810	564	284	.233	.127	24.6	241,000
.8	813	645	325	.266	.146	28.1	275,900
.9	816	725	365	.299	.164	31.6	310,600
1859.0	819	806	406	.333	.182	35.1	345,300
.1	821	889	448	.367	.201	38.7	380,500
.2	823	972	490	.401	.220	42.3	415,600
.3	825	1055	532	.436	.238	45.9	450,800
.4	828	1138	573	.470	.257	49.6	485,900
.5	831	1221	616	.504	.276	53.2	521,100
.6	834	1304	657	.539	.295	56.8	557,000
.7	837	1387	699	.573	.313	60.4	592,800
.8	840	1470	741	.607	.332	64.0	628,600
.9	843	1554	783	.642	.351	67.7	664,500
1860.0	846	1638	826	.676	.370	71.4	700,300
.1	849	1724	869	.712	.389	75.1	736,900
.2	853	1810	913	.748	.409	78.8	773,400
.3	856	1896	956	.783	.428	82.6	810,000
.4	860	1982	999	.819	.448	86.3	896,500
.5	863	2068	1043	.854	.467	90.1	883,100
.6	867	2154	1086	.890	.487	93.8	920,400
.7	870	2241	1130	.926	.506	97.6	957,700
.8	873	2328	1174	.961	.526	101.4	994,900
.9	877	2415	1218	.997	.546	105.2	1,032,300
1861.0	881	2502	1261	1.033	.565	109.0	1,069,600
.1	884	2592	1307	1.070	.586	112.9	1,107,700
.2	887	2682	1352	1.108	.606	116.8	1,145,700
.3	891	2772	1398	1.145	.626	120.7	1,183,900
.4	895	2862	1443	1.182	.647	124.7	1,222,000
.5	899	2952	1488	1.219	.667	128.6	1,260,000
.6	903	3042	1534	1.256	.687	132.5	1,299,300
.7	907	3132	1579	1.294	.708	136.4	1,337,800
.8	911	3222	1624	1.331	.728	140.3	1,376,700
.9	915	3312	1670	1.368	.748	144.3	1,415,500
1862.0	919	3402	1715	1.405	.769	148.2	1,454,400

2

SECOND CONNECTICUT LAKE — Sheet 2 of 3

Storage above Elevation 1858.0

U.S.G.S.	Acres	Acre-Feet	C.F.S. Days	Inches on 45.4 Sq.Mi.	Inches on 83.0 Sq.Mi.	Millions Cub.Ft.	KWH on Littleton to Vernon
1862.0	919	3402	1715	1.405	.769	148.2	1,454,400
.1	923	3496	1763	1.444	.790	152.3	1,494,100
.2	927	3590	1810	1.483	.811	156.4	1,533,700
.3	931	3684	1857	1.521	.832	160.4	1,573,400
.4	935	3778	1905	1.560	.853	164.6	1,613,000
.5	939	3872	1952	1.599	.875	168.7	1,652,700
.6	943	3966	2000	1.638	.896	172.8	1,693,200
.7	947	4060	2047	1.677	.917	176.9	1,733,800
.8	951	4154	2094	1.716	.938	180.9	1,774,300
.9	955	4248	2142	1.754	.960	185.0	1,814,800
1863.0	960	4342	2189	1.793	.981	189.1	1,855,400
.1	964	4440	2239	1.834	1.003	193.4	1,896,800
.2	968	4538	2288	1.874	1.025	197.7	1,938,200
.3	972	4636	2339	1.915	1.047	201.9	1,979,700
.4	976	4734	2387	1.955	1.069	206.2	2,021,100
.5	980	4832	2436	1.996	1.092	210.5	2,062,500
.6	985	4930	2486	2.036	1.114	214.8	2,104,000
.7	990	5028	2535	2.077	1.136	219.0	2,147,300
.8	995	4126	2584	2.117	1.158	223.3	2,189,800
.9	1000	5225	2634	2.158	1.180	227.6	2,232,200
1864.0	1005	5324	2684	2.199	1.203	232.0	2,274,600
.1	1009	5426	2736	2.241	1.226	236.4	2,318,000
.2	1013	5528	2787	2.283	1.249	240.8	2,361,500
.3	1017	5631	2839	2.326	1.272	245.3	2,405,000
.4	1022	5734	2891	2.368	1.295	249.8	2,448,500
.5	1027	5837	2943	2.411	1.319	254.3	2,491,900
.6	1032	5940	2995	2.453	1.342	258.7	2,536,500
.7	1037	6043	3047	2.496	1.365	263.2	2,581,100
.8	1042	6147	3099	2.539	1.389	267.7	2,625,600
.9	1047	6249	3151	2.581	1.412	272.2	2,670,200
1865.0	1052	6352	3203	2.623	1.435	276.7	2,714,700
.1	1057	6460	3257	2.668	1.459	281.4	2,760,400
.2	1062	6568	3311	2.713	1.484	286.1	2,806,100
.3	1067	6676	3366	2.757	1.508	290.8	2,851,700
.4	1073	6784	3420	2.802	1.533	295.5	2,897,500
.5	1079	6892	3475	2.846	1.557	300.2	2,943,100
.6	1085	7000	3529	2.891	1.581	304.9	2,989,000
.7	1091	7108	3584	2.936	1.606	309.6	3,036,700
.8	1097	7216	3638	2,980	1.630	314.3	3,083,400
.9	1103	7324	3693	3.025	1.654	319.0	3,130,200
1866.0	1109	7432	3747	3.069	1.679	323.7	3,177,000

SECOND CONNECTICUT LAKE — Sheet 3 of 3

Storage above Elevation 1858.0

U.S.G.S. Elev.	Acres	Acre-Feet	C.F.S. Days	Inches on 45.4 Sq.Mi.	Inches on 83.0 Sq.Mi.	Millions Cub.Ft.	KWH on Littleton to Vernon
1866.0	1109	7432	3747	3.069	1.679	323.7	3,175,500
.2	1115	7545	3804	3.116	1.704	328.7	3,224,900
.2	1120	7658	3861	3.163	1.730	333.6	3,272,700
.3	1125	7771	3918	3.209	1.755	338.5	3,320,700
.4	1130	7884	3975	3.256	1.781	343.4	3,368,500
.5	1135	7997	4032	3.303	1.807	348.3	3,416,300
.6	1140	8111	4089	3.350	1.832	353.3	3,465,300
.7	1145	8225	4147	3.397	1.858	358.3	3,514,300
.8	1150	8339	4205	3.444	1.884	363.2	3,563,300
.9	1155	8453	4262	3.491	1.910	368.2	3,612,200
1867.0	1160	8567	4319	3.538	1.935	373.2	3,661,200
.1	1165	8685	4379	3.587	1.962	378.3	3,711,100
.2	1170	8803	4438	3.636	1.989	383.4	3,761,100
.3	1175	8921	4498	3.684	2.015	388.6	3,811,200
.4	1180	9039	4557	3.733	2.042	393.7	3,861,200
.5	1185	9157	4617	3.782	2.069	398.9	3,911,200
.6	1190	9275	4676	3.831	2.095	404.1	3,962,200
.7	1194	9393	4736	3.879	2.122	409.2	4,013,100
.8	1198	9512	4796	3.928	2.149	414.3	4,064,100
.9	1202	9631	4856	3.978	2.176	419.5	4,115,100
1868.0	1206	9750	4916	4.027	2.203	424.7	4,166,100
.1	1210	9872	4977	4.077	2.230	430.0	4,218,100
.2	1215	9994	5039	4.128	2.258	435.3	4,270,100
.3	1219	10117	5101	4.178	2.085	440.7	4,322,200
.4	1224	10240	5163	4.229	2.313	446.0	4,374,200
.5	1228	10363	5225	4.280	2.341	451.4	4,426,200
.6	1232	10486	5287	4.331	2.369	456.8	4,479,300
.7	1237	10609	5349	4.382	2.397	462.1	4,531,300
.8	1241	10732	5411	4.432	2.424	467.4	4,584,300
.9	1246	10855	5473	4.483	2.452	472.7	4,637,800
1869.0	1250	10978	5535	4.534	2.480	478.2	4,690,700
.1	1254	11105	5599	4.586	2.509	483.7	4,744,400
.2	1259	11232	5663	4.639	2.537	489.3	4,798,200
.3	1263	11359	5727	4.691	2.566	494.8	4,851,900
.4	1268	11486	5791	4.744	2.595	500.3	4,905,700
.5	1272	11613	5855	4.796	2.623	505.9	4,959,400
.6	1276	11740	5919	4.849	3.652	511.4	5,013,200
.7	1281	11867	5983	4.901	2.681	516.9	5,068,500
.8	1285	11994	6047	4.954	2.709	522.5	5,123,100
.9	1290	12122	6112	5.006	2.738	528.0	5,177,600
1870.0	1294	12250	6176	5.059	2.767	533.6	5,232,200

N.E.P.S.CO. C. E. Dept., L.D.P. 2/1/56

PAY BRADFORD & THORNDIKE INC ENGINEERS BOSTON

PROJECT EN-666(3)

FILE NUMBER EN-666

SUBJECT SECOND CONNECTICUT LAKE DAM

SHEET NUMBER 12

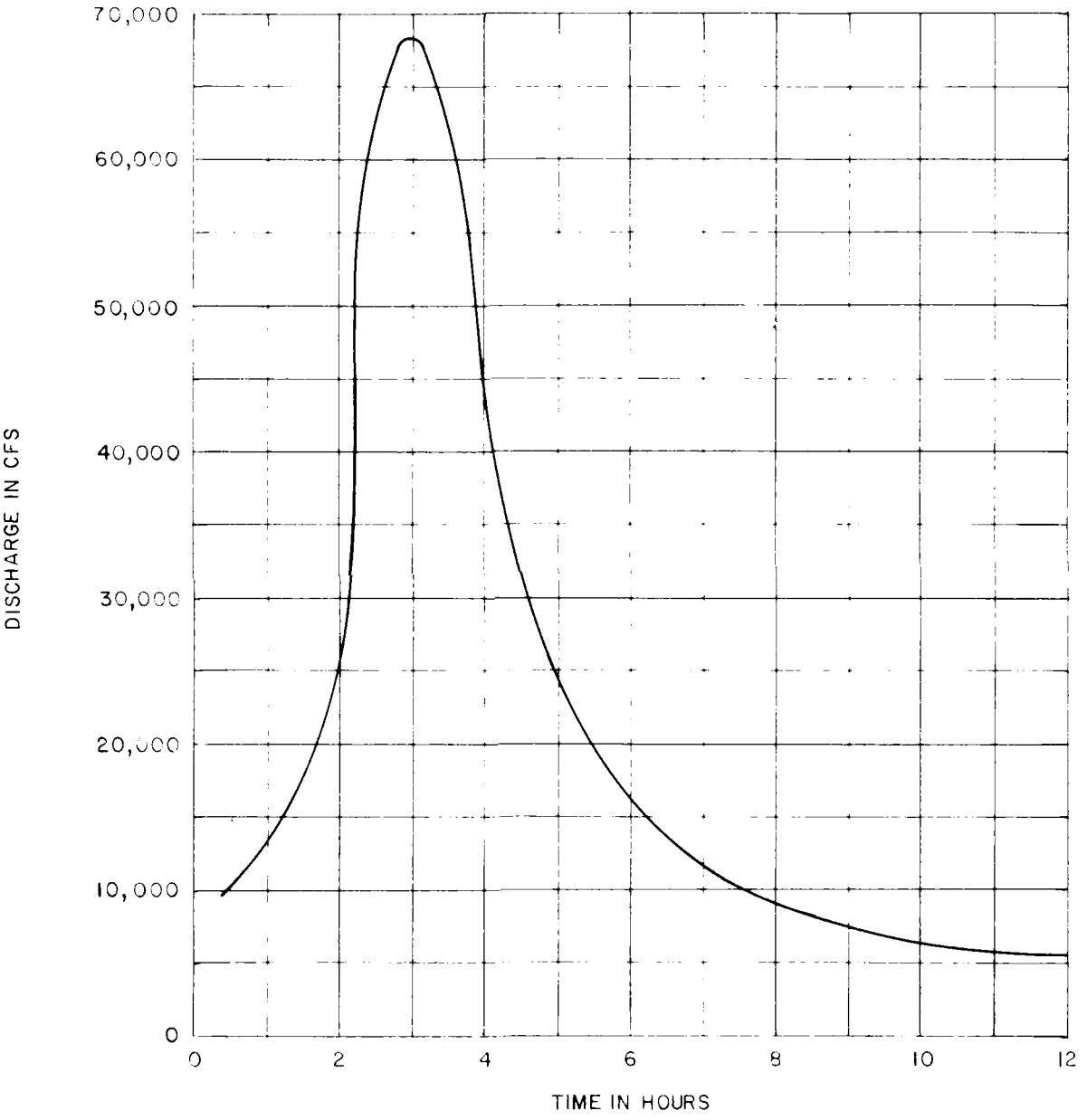
DATE 6/24/63

COMPUTED BY GGL

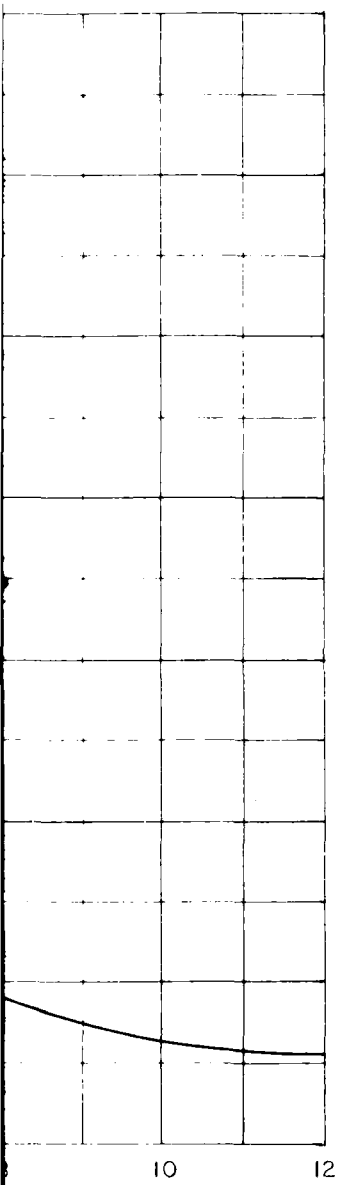
CHECKED BY

FLOOD ROUTING COMPUTATIONS

STEP	TIME INTERVAL Hrs	INFLOW I_1 (BEGINNING OF INTERVAL) CFS	INFLOW I_2 (END OF INTERVAL) CFS	INFLOW STORAGE $\frac{I_1+I_2}{2} \times \Delta T$ FT^3	OUTFLOW O_1 (BEGINNING OF INTERVAL) CFS	OUTFLOW O_2 (END OF INTERVAL) CFS	OUTFLOW STORAGE $\frac{O_1+O_2}{2} \times \Delta T$ FT^3	STORAGE IN THE RESERVOIR IN INTERVAL FT^3	TOTAL STORAGE AT THE END OF INTERVAL FT^3	RESERVOIR LEVEL ASSUMED	ELEVATION ACTUAL
1	2	3	4	5	6	7	8	9	10	11	12
1	0-1	0	8,250	1.49×10^7	592	700	0.23×10^7	1.26×10^7	1.26×10^7	1865.8	1865.8
2	1-2	8,250	21,500	5.35×10^7	700	1050	0.32×10^7	5.04×10^7	6.30×10^7	1866.7	1866.8
3	2-3	21,500	63,560	15.31×10^7	1050	3450	0.81×10^7	14.50×10^7	20.80×10^7	1869.5	1869.6
4	3-4	63,560	38,250	18.22×10^7	3450	8400	2.13×10^7	16.19×10^7	36.99×10^7	1872.6	1872.6
5	4-5	38,250	19,500	10.40×10^7	8400	10800	3.46×10^7	6.94×10^7	43.93×10^7	1873.9	1873.9
6	5-6	19,500	10,805	5.46×10^7	10800	11000	3.92×10^7	1.54×10^7	45.47×10^7	1874.0	1874.0
7	6-7	10,805	6,500	3.11×10^7	11000	11000	3.90×10^7	-0.85×10^7	44.62×10^7	1874.0	1874.0
8	7-8	6,500	4,200	1.93×10^7	11000	10,100	3.80×10^7	-1.87×10^7	42.75×10^7	1873.5	1873.6
9	8-9	4,200	2,700	1.24×10^7	10,100	9,500	3.53×10^7	-2.29×10^7	40.46×10^7	1873.2	1873.2
10	9-10	2,700	1,600	0.77×10^7	9,500	8,800	3.29×10^7	-2.52×10^7	37.94×10^7	1872.8	1872.8
11	10-11	1,600	636	0.40×10^7	8,800	7,800	2.99×10^7	-2.59×10^7	35.35×10^7	1872.3	1872.3
12	11-12	636	0	0.11×10^7	7,800	6,700	2.61×10^7	-2.50×10^7	32.85×10^7	1871.7	1871.8
13	12-13	0	0	0	6,700	6,000	2.29×10^7	-2.29×10^7	30.56×10^7	1871.3	1871.3
14	13-14	0	0	0	6,000	5,500	2.07×10^7	-2.07×10^7	28.47×10^7	1871.0	1871.0
15	14-15	0	0	0	5,500	5,000	1.89×10^7	-1.89×10^7	26.60×10^7	1870.7	1870.6



SPILLWAY TEST FLOOD INFLOW HYDROGRAPH



YDROGRAPH

FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS BOSTON, MASS	U S ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

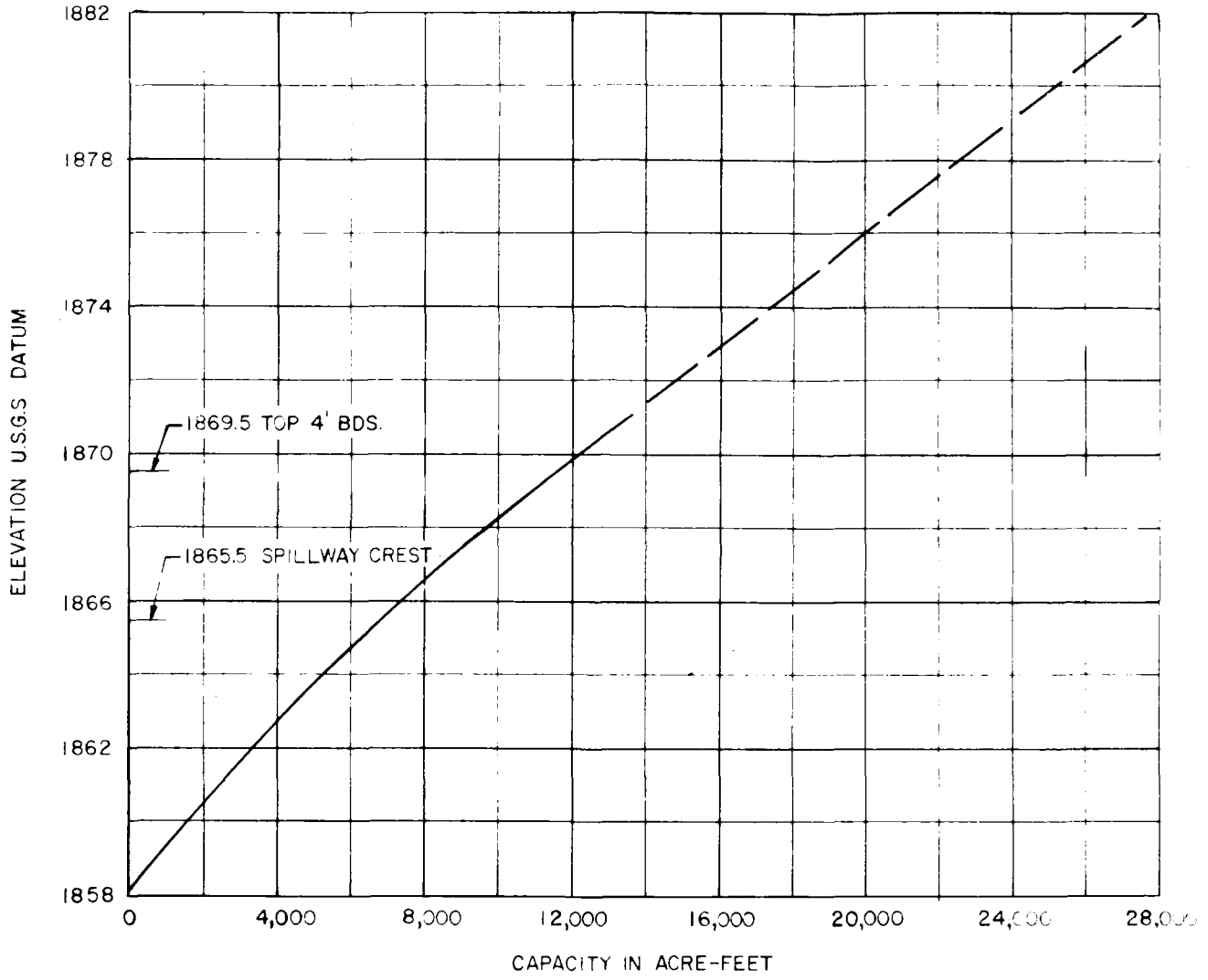
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

SECOND CONNECTICUT LAKE DAM

CONNECTICUT RIVER — NEW HAMPSHIRE

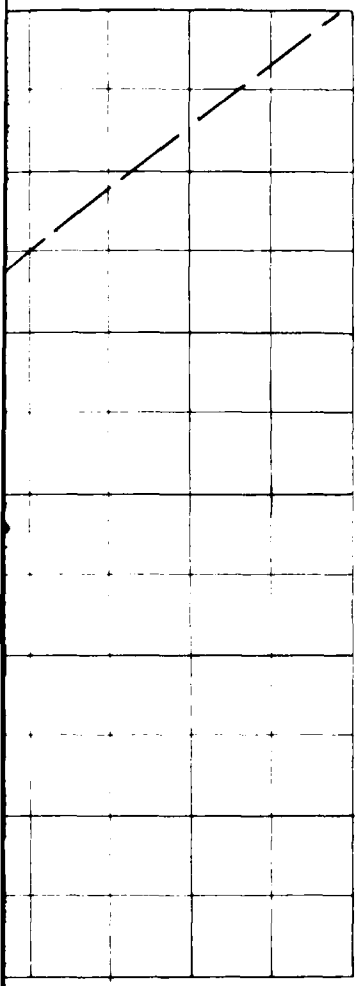
SCALE	AS SHOWN
DATE	AUGUST, 1978

D-14



STORAGE CAPACITY – ELEVATION CURVE

106.5 (LOCAL DATUM) = 825 USGS (ESTIMATED)



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FAY, SPOFFORD & THORNDIKE, INC ENGINEERS BOSTON, MASS.	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

SECOND CONNECTICUT LAKE DAM

CONNECTICUT RIVER — NEW HAMPSHIRE

SCALE	AS SHOWN
DATE	AUGUST, 1978

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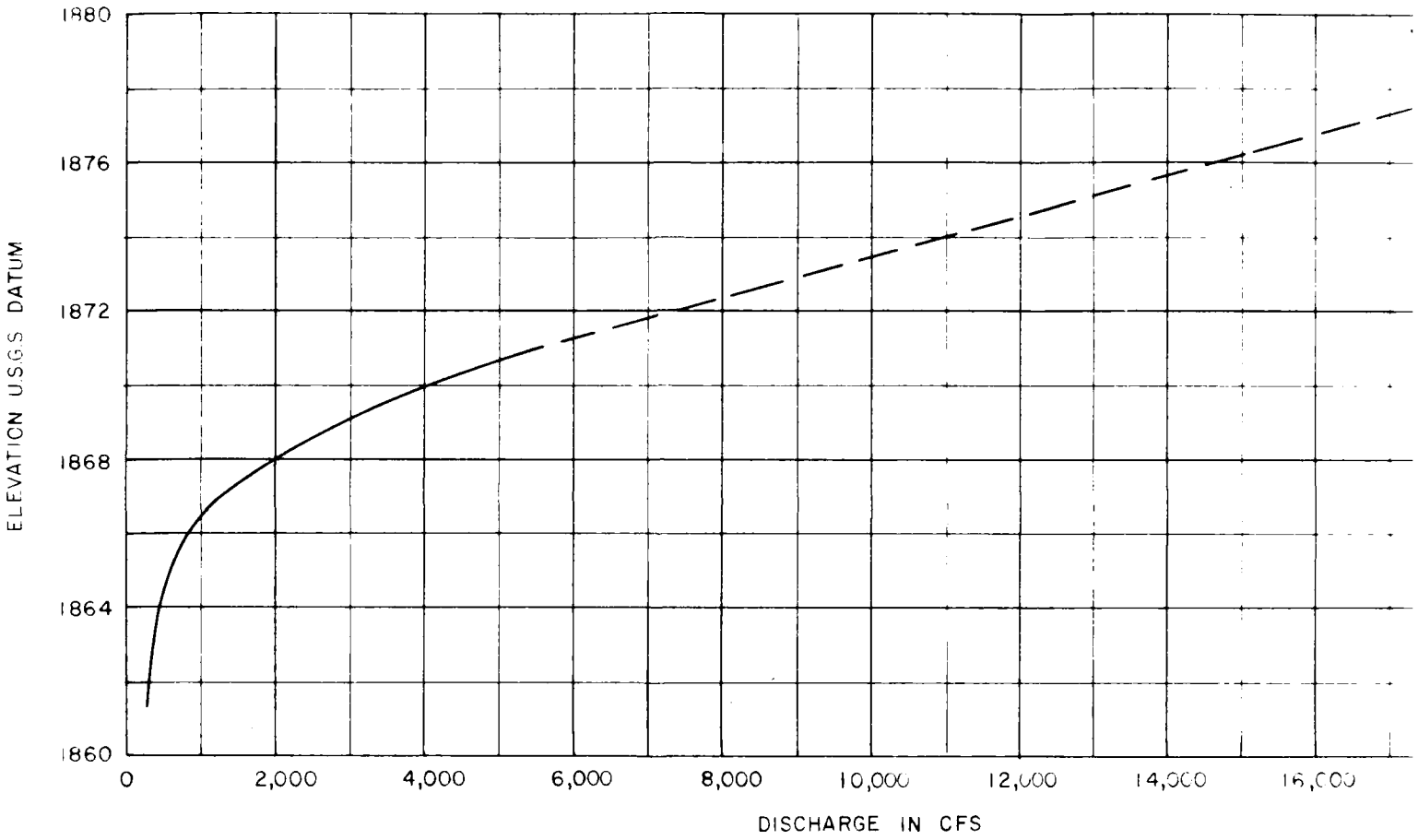
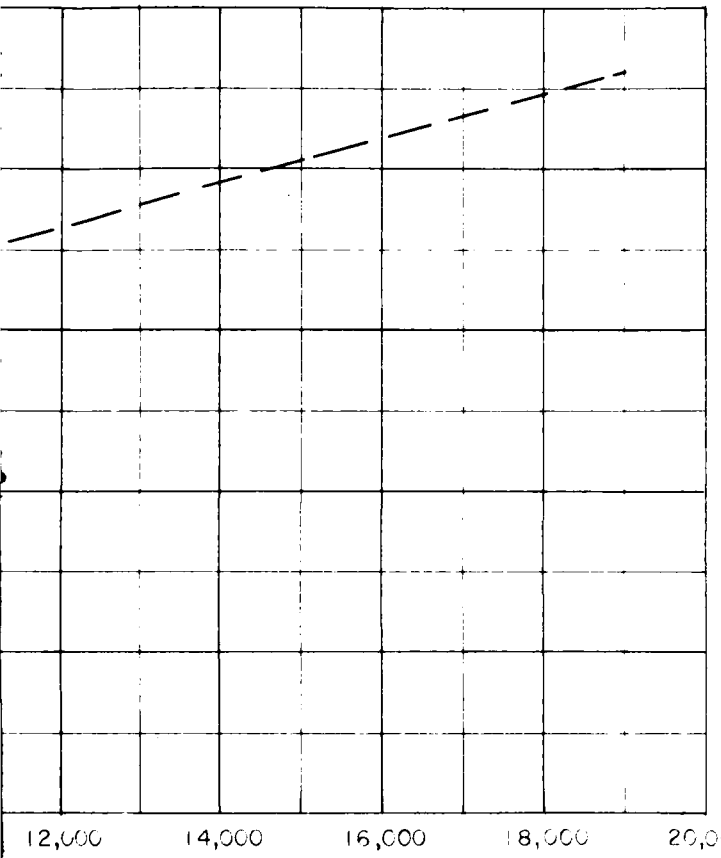


RATING CURVE FOR SPILLWAY AND DAM

106.5 (LOCAL DATUM) = 825 USGS (ESTIMATED)



S

AY AND DAM

S (ESTIMATED)

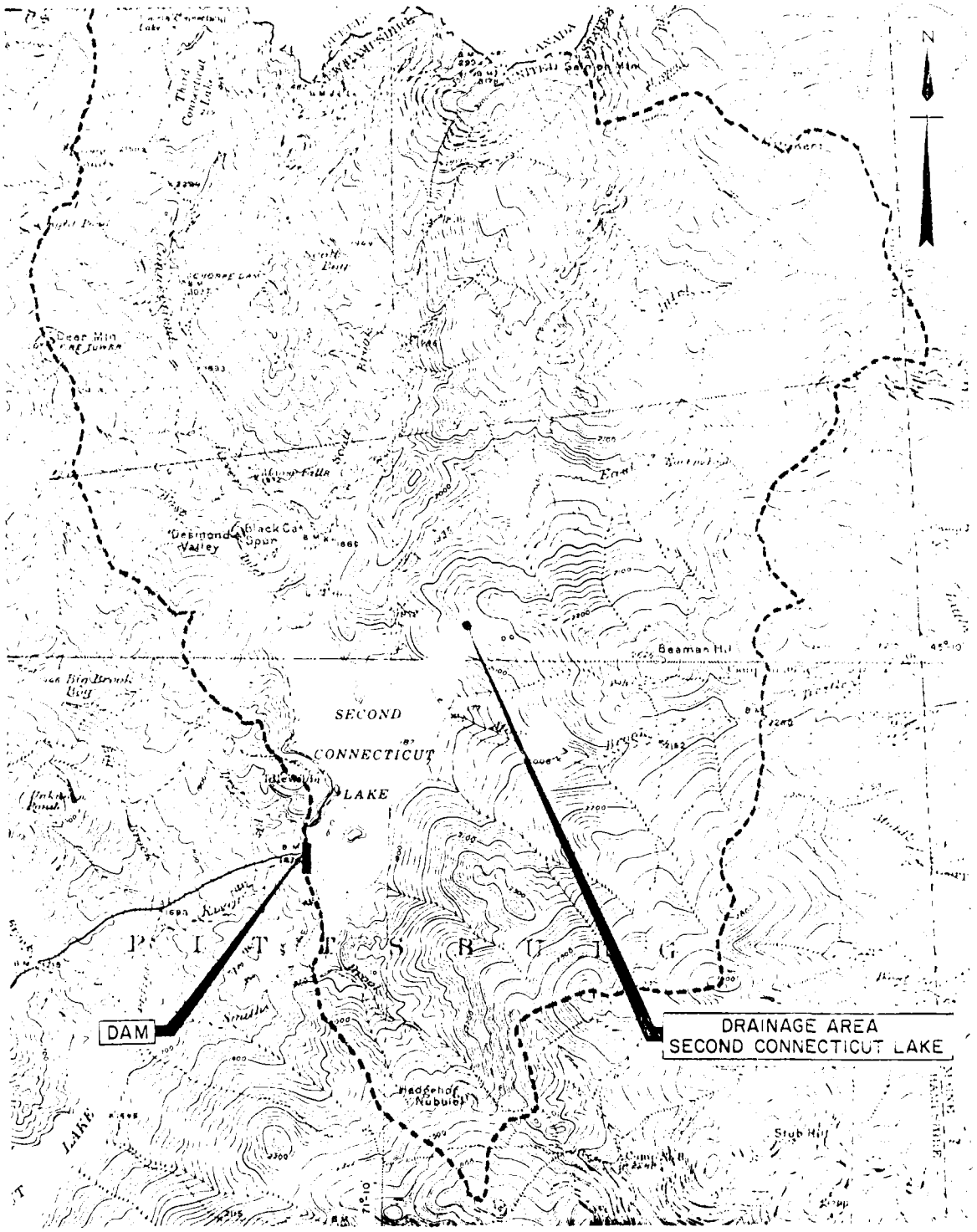
FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS BOSTON, MASS	U.S. ARMY ENGINEER DIV NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

SECOND CONNECTICUT LAKE DAM

CONNECTICUT RIVER — NEW HAMPSHIRE

SCALE	AS SHOWN
DATE	AUGUST, 1978



SCALE 1:62500 (ACTUAL)

UNITED STATES
DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY

NEW HAMPSHIRE-MAINE
SECOND CONNECTICUT LAKE
QUADRANGLE 1927

APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

INVENTORY OF DAMS IN THE UNITED STATES

STATE	NUMBER	STATE	COUNTY	CONG DIST	STATE	COUNTY	CONG DIST	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REVISED DATE DAY	MO	YR
NH	107	NED	NH	007	02			SECOND CONNECTICUT LAKE DAM	45DP.5	7110.9	05	SEP	78

POPULAR NAME	NAME OF IMPOUNDMENT
	SECOND CONNECTICUT LAKE

RIVER BASIN	RIVER OR STREAM	NEAREST DOWNSTREAM CITY–TOWN–VILLAGE	DIST FROM DAM (MI)	POPULATION
01	CONNECTICUT RIVER	PITTSBURG	15	726

TYPE OF DAM	YEAR COMPLETED	PURPOSES	STRUC TURAL HEIGHT (FT)	HYDRAU LIC HEIGHT (FT)	IMPOUNDING CAPACITIES MAXIMUM (ACRE-FT)	IMPOUNDING CAPACITIES NORMAL (ACRE-FT)	DIST	OWN	FED R	PRV/FED	SCS A	VER/DATE
EARTHFILL	1955	SCR	28	25	12500	11650	NED	N	N	N	N	15SEP78

REMARKS

DAMS IN SYSTEM	SPILLWAY TYPE	SPILLWAY WIDTH (FT)	SPILLWAY GATES	MAXIMUM DISCHARGE (CFS)	VOLUME OF DAM (CY)	POWER CAPACITY INSTALLED (MW)	POWER CAPACITY PLANNED (MW)	NAVIGATION LOCKS	LENGTH (FT)	WIDTH (FT)	LENGTH (FT)	WIDTH (FT)	LENGTH (FT)	WIDTH (FT)
1	FOM	6	97	11000										

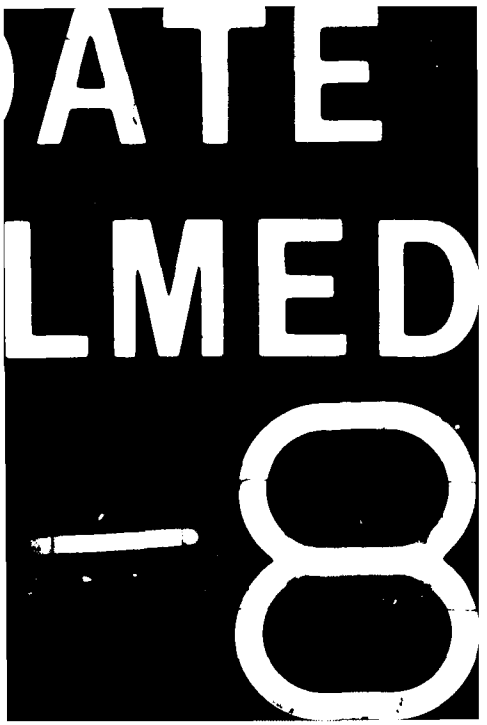
OWNER	ENGINEERING BY	CONSTRUCTION BY
NEW ENGLAND POWER CO	OWNER	OWNER

REGULATORY AGENCY

DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
NH WATER RES BD	NH WATER RES BD	NH WATER RES BD	NH WATER RES BD

INSPECTION BY	INSPECTION DATE DAY	MO	YR	AUTHORITY FOR INSPECTION
FAY SPOFFORD & THORNDIKE, INC.	27	OCT	78	PL92-367

REMARKS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