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SCANTIC RIVER BASIN  
SCITICO, CONNECTICUT

SCITICO DAM  
CT 00529

PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION PROGRAM

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

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| REPORT DOCUMENTATION PAGE   |                                    | READ INSTRUCTIONS<br>BEFORE COMPLETING FORM                 |
|---|------------------------------------|---|
| 1. REPORT NUMBER<br>CT 00529  | 2. GOVT ACCESSION NO.<br>A 1441143 | 3. RECIPIENT'S CATALOG NUMBER                               |
| 4. TITLE (and Subtitle)<br>Scitico Dam<br><br>NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS   |                                    | 5. TYPE OF REPORT & PERIOD COVERED<br>INSPECTION REPORT     |
| 7. AUTHOR(s)<br>U.S. ARMY CORPS OF ENGINEERS<br>NEW ENGLAND DIVISION  |                                    | 6. 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<br>DEPT. OF THE ARMY, CORPS OF ENGINEERS<br>NEW ENGLAND DIVISION, NEDED<br>424 TRAPELO ROAD, WALTHAM, MA. 02254   |                                    | 12. REPORT DATE<br>April 1980                               |
|   |                                    | 13. NUMBER OF PAGES<br>50                                   |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)   |                                    | 15. SECURITY CLASS. (of this report)<br><br>UNCLASSIFIED    |
|   |                                    | 16a. DECLASSIFICATION/DOWNGRADING SCHEDULE                  |
| 16. DISTRIBUTION STATEMENT (of this Report)<br><br>APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED  |                                    |   |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  |                                    |   |
| 18. SUPPLEMENTARY NOTES<br>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)<br>DAMS, INSPECTION, DAM SAFETY,<br>Scantic River Basin<br>Scitico, Connecticut  |                                    |   |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>Scitico Dam is a run-of-the-river composite structure about 76 feet long and 22 feet high. The dam consists of a block masonry structure about 15 feet high capped with a rockfilled timber crib structure. The dam appears to be in fair condition. Scitico Dam has a maximum storage capacity of about 51 acre-feet and a maximum height of about 22 feet. Therefore, the dam is classified in the "Small" size category. The recommended range for the test flood for a "Small" size, "High" hazard dam is from 1/2 of the PMF to the full PMF. |                                    |   |



SCITICO DAM  
CT 00529

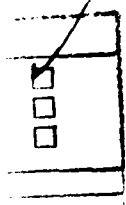
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PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION PROGRAM



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## NATIONAL DAM INSPECTION PROGRAM

|                     |                       |
|---------------------|-----------------------|
| Identification No:  | CT 00529              |
| Name of Dam:        | Scitico Dam           |
| Town:               | Enfield               |
| County and State:   | Hartford, Connecticut |
| Stream:             | Scantic River         |
| Date of Inspection: | November 14, 1979     |

### BRIEF ASSESSMENT

Scitico Dam is a run-of-the-river composite structure about 76 feet long and 22 feet high. The dam consists of a block masonry structure about 15 feet high capped with a rockfilled timber crib structure. The dam crest, the width of which is not known, is covered with planking. A large mill building, presently used as an industrial laboratory, is adjacent to the right abutment wall of the dam. An abandoned hydropower facility at this site includes a penstock with a gated intake located a few feet to the right of the dam. The masonry section of the dam was constructed about 1890 and the cribbing was added in the late 1920's. The dam currently serves no useful purpose.

The dam appears to be in fair condition. No structural deficiencies were observed which would be indicative of an unsafe dam. However, a partial wash-out of the timber crib occurred in 1955 which suggests that the dam cannot withstand high river discharges. There is no functioning low-level outlet at this site although the hydropower penstock could possibly be used for partial reservoir drawdown.


Scitico Dam has a maximum storage capacity of about 51 acre-feet and a maximum height of about 22 feet. Therefore, the dam is classified in the "Small" size category. A large industrial building is located adjacent to the dam. A failure of Scitico Dam could cause flood waters to be directed into this building causing appreciable property damage and the possible loss of more than a few lives. Therefore, the dam is classified in the "High" hazard category. The recommended range for the test flood for a "Small" size, "High" hazard dam is from one-half of the Probable Maximum Flood (PMF) to the full PMF. The selected test flood for this structure is one-half of the PMF.

The test flood peak inflow to Scitico Dam was computed as 19,280 cfs. The routed test flood outflow of 19,070 cfs overtops the right abutment wall by 12.8 feet. The spillway is capable of discharging 3,350 cfs prior to overtopping of the right abutment wall (Elev. 144), which is about 18 percent of the routed test flood outflow.

Within one year after receipt of this Phase 1 inspection report, the Owner, Springbarn Lab Inc., should retain the services of a qualified registered professional engineer, experienced in the design and construction of dams, for the following purposes: 1) perform detailed hydrologic and hydraulic analyses in conjunction with structural stability analyses to assess the ability of the structure to withstand high flood flows; 2) study the suitability of the hydropower facilities as an outlet works and determine if additional outlet works should be provided; and 3) perform a detailed inspection of the dam during dry weather either with a low river discharge flowing over the dam or with the discharge diverted through the hydropower penstock.

In addition, the Owner should implement the following operational and maintenance procedures: 1) the operating condition of the sluice gate for the hydropower facility should be determined and the gate repaired, if necessary; 2) the branches and other debris hanging on the dam crest should be removed; 3) a program of annual technical inspection should be instituted; and 4) the formal surveillance plan, including round-the-clock monitoring during heavy precipitation, should be developed.

O'BRIEN & GERE ENGINEERS, INC.

  
John J. Williams  
Vice President  
New York  
Professional Engineer No. 050794

Date 30 April 1980

## 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 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 condition 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.

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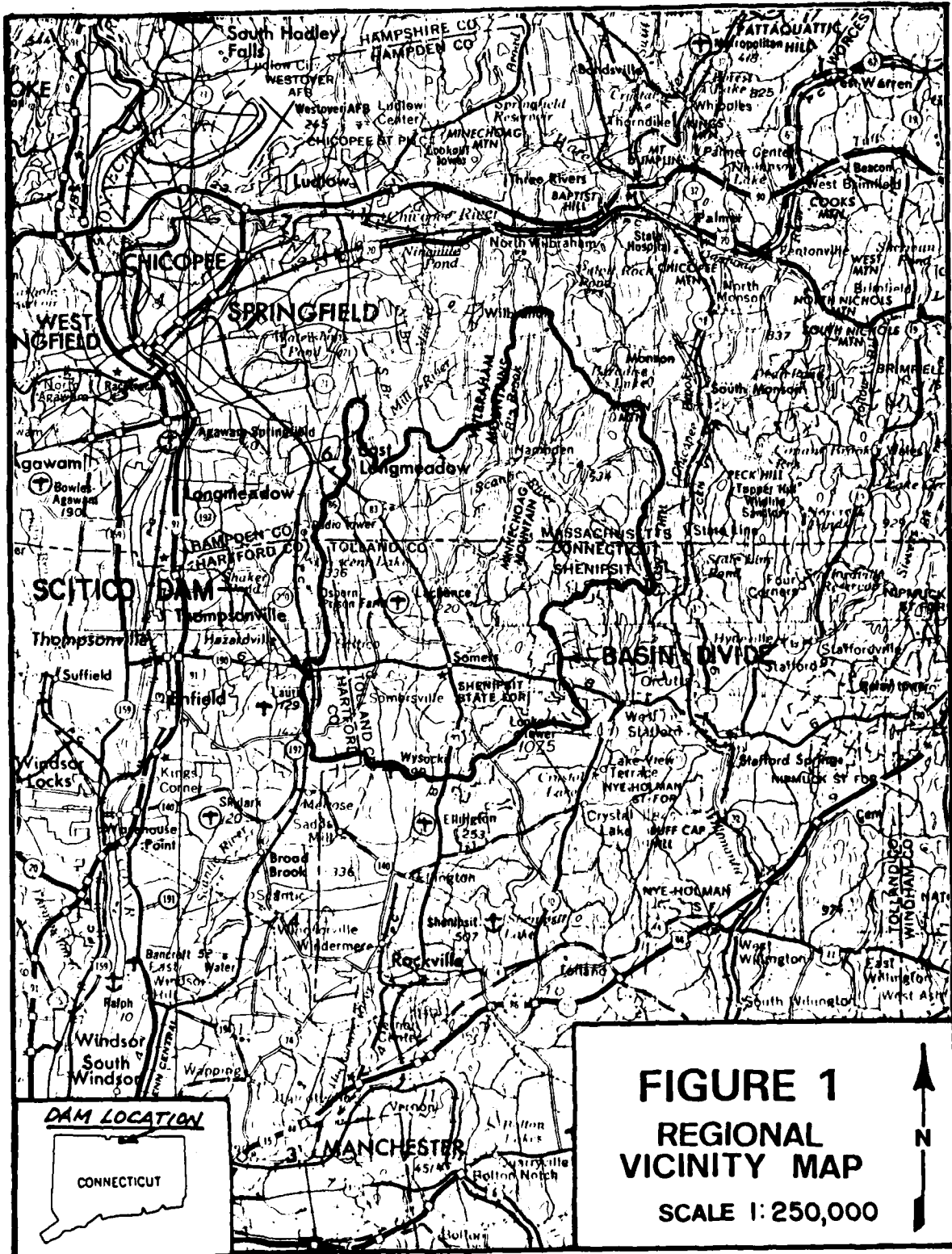
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SCITICO DAM AS OBSERVED FROM IMMEDIATELY DOWNSTREAM. (11/14/79)



NATIONAL DAM INSPECTION PROGRAM  
PHASE I INSPECTION REPORT  
SCITICO DAM

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority. Public Law 92-367, passed by Congress on August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate the National Program of Dam Inspections 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. O'Brien & Gere Engineers, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to O'Brien & Gere Engineers, Inc. by a letter from the Corps of Engineers dated November 6, 1979 and signed by Colonel William E. Hodgson, Jr. Contract No. DACW33-80-C-0014 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection. The purpose of performing technical inspection and evaluation of non-federal dams is to:

1. Identify conditions which threaten public safety and make the Owner aware of any deficiencies to permit him to correct them in a timely manner.
2. Encourage and prepare the states to initiate effective dam safety programs for non-federal dams.
3. Update, verify, and complete the National Inventory of Dams.

1.2 Description of Project. (Information for this dam was obtained from the State of Connecticut, Department of Environmental Protection (DEP) and Springborn Lab, Inc.)

a. Location. Scitico Dam is located on the Scantic River in the Town of Enfield, Connecticut. An industrial laboratory located in a mill building adjacent to the right side of the dam is considered to be the major damage center. The Scantic River discharges into the Connecticut River about 11 miles downstream of the damsite. The dam is shown on the USGS Quadrangle entitled "Enfield, Conn." at coordinates N41°58.9', W72°31.1'. A regional location plan of Scitico Dam is enclosed as Figure 1, pg. vi.

b. Description of Dam and Appurtenances. Scitico Dam is a run-of-the-river composite structure about 76 feet long which is slightly arched in the upstream direction. The dam is about 22 feet high and consists of a 15-foot high block masonry base capped with a rock-filled timber crib structure. The dam crest appears to be covered with boards which have about a 5H:1V batter rising to the downstream face of the dam. The horizontal members of the timber cribbing are keyed into brick masonry abutment walls. The left abutment is a nearly vertical rock face rising about 30 feet above the dam crest. The right abutment forms part of the block masonry foundation for the two-story brick industrial building. The top of the abutment wall is about six feet above the dam crest, is tied into the building wall, and is estimated to be about 3.5 feet thick. (Refer to Page B-2).

An eight-foot wide intake structure with a wood gate is located between the right abutment wall and the mill building foundation. The intake is connected to a short 36-inch diameter penstock which conveys water to a small abandoned hydro-power turbine equipped with a mechanical power takeoff. The turbine has a vertical draft tube which directs flow into a tailrace downstream of the dam.

c. Size Classification. Scitico Dam has a maximum storage capacity of approximately 51 acre-feet and a maximum height of about 22 feet. The criteria for the "Small" size category includes dams which have between 50 and 1,000 acre-feet of storage capacity and are less than 40 feet high. Scitico Dam is therefore classified as a "Small" size dam.

d. Hazard Classification. Scitico Dam is located adjacent to a large, two-story building currently used as an industrial laboratory. The masonry foundation walls of this building function as river discharge training walls both upstream and downstream of the dam along the right side. It is evident that floodwaters resulting from a failure of Scitico Dam could cause excessive damage to the building and more than a few lives could possibly be lost. The dam is therefore classified as "High" hazard.

e. Ownership. The dam is owned by Springborn Lab Inc., Water Street, Enfield, CT 06082. Telephone: (203) 749-8371.

f. Operator. Mr. Ronald Miller of Springborn Lab Inc. is in charge of the dam and its appurtenances.

g. Purpose of Dam. The dam was constructed originally for industrial hydropower but currently has no useful purpose.

h. Design and Construction History. According to records provided by the DEP, the stone masonry section of Scitico Dam was constructed about 1890. The rockfilled timber crib was added in the late 1920's.

The State records indicate that a portion of the timber cribbing was washed out during the Hurricane Diane flood in August 1955. The damage was inspected by State officials and subsequently the owners contacted a registered professional engineer to design and supervise remedial repairs. The repairs consisted of replacing the washed out section of the timber cribbing, placing anchored reinforced concrete on a portion

of the masonry facing, repairing the crib anchor wall and facing and replacing fill in the cribbing. The work was completed in November 1955 and approved by State officials in April 1956.

i. Normal Operating Procedures. According to the Owner's representative, Mr. Ronald Miller, the sluice gate controlling discharge into the hydropower penstock is always closed. All river discharges are directed over the spillway portion of the dam.

### 1.3 Pertinent Data

a. Drainage Area. The drainage area for Scitico Dam encompasses approximately 64 square miles to the east-northeast of the site in Hartford and Tolland Counties in Connecticut and Hampden County in Massachusetts. Somersville Pond Dam, which impounds 40-acre Somerville Pond, located about 2.0 miles upstream, has a drainage area of about 60 square miles.

b. Discharge at Damsite.

1) Outlet Works. There is no functioning outlet facility at this site. If repaired, the hydropower penstock possibly could be used for partial reservoir drawdown.

2) Maximum Known Flood at Damsite. No flood records are maintained for the site; however, Hurricane Diane of August 1955 caused extensive damage to the dam. A flow of 15,400 cfs was recorded during August of 1955 at the community of Scitico, located immediately upstream of the dam.

3) Ungated Spillway Capacity at Top of Dam. The spillway capacity with reservoir level at the top of the right abutment wall, Elev. 144.0, is approximately 3,350 cfs.

4) Ungated Spillway Capacity at Test Flood Elevation. The spillway capacity with reservoir at test flood Elev. 156.8 is about 18,600 cfs.

5) Gated Spillway Capacity at Normal Pool. Not applicable.

6) Gated Spillway Capacity at Test Flood Elevation. Not applicable.

7) Total Spillway Capacity at Test Flood Elevation. Same as 4) above.

8) Total Project Discharge at Top of Dam. Same as 3) above.

9) Total Project Discharge at Test Flood. The combined discharge capacity of the flow over and around the dam at test flood Elev. 156.8 is about 19,070 cfs.

c. Elevation.(NGVD)

1. Streambed at Toe of Dam
2. Bottom of Cutoff

116.0±  
NA

|  |   |
|--|---|
| 3. Maximum Tailwater                       | Unknown   |
| 4. Normal Pool                             | 138.0 <sup>+</sup>  |
| 5. Full Flood Control Pool                 | NA  |
| 6. Spillway Crest                          | 138.0 <sup>+</sup>  |
| 7. Design Surcharge (Original Design)      | Unknown   |
| 8. Top of Dam                              | 138.0 <sup>+</sup>  |
| 9. Test Flood Surcharge                    | 165.2 <sup>+</sup>  |
| <br>                                       |   |
| d. <u>Reservoir Length. (feet)</u>         |   |
| 1. Normal Pool                             | 3,000   |
| 2. Flood Control Pool                      | NA  |
| 3. Spillway Crest Pool                     | 3,000   |
| 4. Top of Dam                              | 3,000   |
| 5. Test Flood Pool                         | 12,000  |
| <br>                                       |   |
| e. <u>Storage. (Acre-feet)</u>             |   |
| 1. Normal Pool                             | 51  |
| 2. Flood Control Pool                      | NA  |
| 3. Spillway Crest Pool                     | 51  |
| 4. Top of Dam                              | 51  |
| 5. Test Flood Pool                         | 2,626   |
| <br>                                       |   |
| f. <u>Reservoir Surface. (Acres)</u>       |   |
| 1. Normal Pool                             | 7   |
| 2. Flood Control Pool                      | NA  |
| 3. Spillway Crest                          | 7   |
| 4. Top of Dam                              | 7   |
| 5. Test Flood Pool                         | 202   |
| <br>                                       |   |
| g. <u>Dam.</u>                             |   |
| 1. Type                                    | Composite block masonry capped with a rock filled timber crib |
| 2. Length                                  | 76 feet   |
| 3. Height                                  | 22 feet   |
| 4. Top Width                               | Unknown   |
| 5. Side Slopes (upstream)                  | Unknown   |
| (downstream)                               | Vertical  |
| 6. Zoning                                  | Unknown   |
| 7. Impervious Core                         | Unknown   |
| 8. Cutoff                                  | Unknown   |
| 9. Grout Curtain                           | Unknown   |
| <br>                                       |   |
| h. <u>Diversion and Regulating Tunnel.</u> | Not Applicable  |

i. Spillway. (The dam is an overflow structure and is not provided with additional spillway capacity.)

|                       |                           |
|-----------------------|---------------------------|
| 1. Type               | Broad-crested timber weir |
| 2. Length             | 76 feet                   |
| 3. Crest Elevation    | 138.0 <sup>+</sup>        |
| 4. Gates              | None                      |
| 5. Upstream Channel   | Scantic River             |
| 6. Downstream Channel | Scantic River             |

j. Regulating Outlets. There are no functioning regulating outlets at this site. If repaired, the hydropower penstock possibly could be used for partial reservoir drawdown.

SECTION 2  
ENGINEERING DATA

2.1 Design

Design data is unavailable for review of Scitico Dam. The principal design features for this dam are shown on the sketches enclosed in Appendix B.

2.2 Construction

No information is available concerning construction at Scitico Dam other than that the gravity section was built about 1890 and the cribbing was added in the 1920's. Remedial repairs performed in 1955 are described in Section 1.2.h.

2.3 Operation

Operational data is unavailable for this site.

2.4 Evaluation

a. Availability. The information made available was obtained from the current Owner, Springborn Lab Inc., and DEP.

b. Adequacy. Information obtained during the field investigation and from conversations with the Owner's representative, combined with information from the DEP, is considered adequate for a Phase I assessment.

c. Validity. The information provided by the Owner's representative and the DEP appears to be valid.

SECTION 3  
VISUAL INSPECTION

3.1 Findings

a. General. The field inspection of Scitico Dam was performed on November 14, 1979. At the time of inspection, the reservoir water surface was about 2 inches above the dam crest. No underwater areas were inspected.

The observations and comments of the field inspection team are in the checklist which is Appendix A of this report.

b. Dam. The dam is considered to be in fair condition. River discharge at the time of inspection severely limited visual observations. Access to the right dam abutment is through a second-story window of the adjacent mill building. The dam crest boards were in-place and there was uniform flow over the dam crest. Tree branches and other debris were hanging on the dam crest (refer to Page C-1). There was no observable evidence of displacement of the timber cribbing, the rock fill or the stone blocks on the downstream face. The stone block masonry wall on the right side of the dam appeared to be in good condition with some minor loss of mortar between individual blocks. The brick masonry timber crib key wall was submerged at time of inspection. The nearly vertical rock abutment on the left side of the dam appears to be sound.

c. Appurtenant Structures. The wooden sluice gate, adjacent to the abutment on the right side of the dam which controls discharge to the hydropower penstock, was not operated during the inspection. The gate was completely submerged and could not be inspected. The wooden gate frame and steel operating mechanism appeared to be serviceable (refer to Page C-2).

Seepage estimated to be 15 gpm was discharging from around the penstock where it passes through the powerhouse foundation wall. The seepage spills onto the floor of the powerhouse and flows back into the river by way of the tailrace channel (refer to Page C-2). Inspection of the interior of the powerhouse was limited to the use of a flashlight since none of the light fixtures worked. It could not be determined if there was discharge from the draft tube.

d. Reservoir Area. The area surrounding the pond consists of moderate to steep, tree-covered slopes with numerous bedrock outcrops which rise 20 to 30 feet above normal pool elevation. A railroad bridge and highway bridge span the reservoir about 200 feet and 650 feet upstream of the dam, respectively.

e. Downstream Channel. The river channel is a steep narrow gorge no more than 200 feet wide for about 700 feet downstream of the dam beyond which the flood plain widens to about 0.2 miles. The channel is on an estimated one percent slope with heavily wooded banks.

### 3.2 Evaluation

The dam is considered to be in fair condition. The branches and other debris hanging on the dam crest should be removed. Further inspection of the dam is recommended during a period of low flow or with the discharge diverted through the hydropower penstock.

The sluice gate controlling flow to the hydropower penstock has never been operated by the current owners. If operable, it is the only means available for partial reservoir drawdown. Access to the sluice gate and dam is limited to a window in the adjacent mill building.

## SECTION 4

### OPERATIONAL AND MAINTENANCE PROCEDURES

#### 4.1 Operational Procedures.

a. General. Based on conversations with the Owner's representative, Mr. Ronald Miller, there are no operating procedures established for Scitico Dam.

b. Description of Any Warning System in Effect. According to Mr. Miller, no flood warning system is in effect at this site.

#### 4.2 Maintenance Procedures

a. General. According to Mr. Miller, there is no maintenance performed on the dam.

b. Operating Facilities. According to Mr. Miller, the hydropower penstock has not been used by Springborn Lab, Inc.

#### 4.3 Evaluation

There are no operational or maintenance procedures in effect at this site. Recommendations for improving these conditions are given in Section 7.3.

## SECTION 5

### EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

#### 5.1 General

The Scantic River upstream of Scitico Dam has an elongated watershed about 12 miles long and 5 miles wide. The eastern half of the basin is composed of forested, mountainous terrain. The western half of the watershed lies within the broad Connecticut River Valley. The topography consists of low-lying hills interspersed with marshes and swamps. The region is devoted to agriculture and contains a number of small towns and villages. Somersville Pond Dam is located on the Scantic River about 2.0 miles upstream of the Scitico Dam. The normal pool storage capacity and surface area of this reservoir are estimated to be 320 acre-feet and 40 acres, respectively.

#### 5.2 Design Data

Neither hydraulic nor hydrologic design data are available for Scitico Dam.

#### 5.3 Experience Data

There are no records of high reservoir pools or river discharges at this site. A portion of the timber cribbing was washed-out during hurricane Diane in August 1955. River discharges associated with this event are not available.

#### 5.4 Test Flood Analysis

The recommended test flood range for a "Small" size, "High" hazard dam is from one-half of the Probable Maximum Flood (PMF) to the full PMF. Due to the non-residential nature of the hazard area and the possibility that no lives would be lost during a breach flood, the selected test flood is one-half of the PMF.

Hydrologic and hydraulic calculations were performed with assistance of the HEC-1-DB computer program. The flood hydrographs were constructed from the Snyder unit hydrographs using Snyder coefficients which reflect the terrain of the drainage area, an initial infiltration of zero, and a constant loss rate of 0.05 inches per hour. The Hop Brook Adjustment Factor was used to reduce the Probable Maximum Precipitation based on the drainage area. Stage vs. discharge and stage vs. storage relationships were developed. The routing sequence consisted of dividing the watershed into a sub basin for each significant impoundment and routing the inflow hydrographs through each reservoir. The impoundments were assumed to be at their respective spillway crest elevations at the beginning of the storm event.

The test flood peak inflow to Scitico Reservoir was computed as 19,280 cfs. The routed test flood outflow of 19,070 cfs overtops the right abutment wall by 12.8 feet. The spillway is capable of discharging approximately 3,350 cfs prior to overtopping of the right abutment wall, which is about 18 percent of the routed test flood outflow.

## 5.5 Dam Failure Analysis

The primary hazard area is the Springborn Lab, Inc. building immediately adjacent to the right abutment of Scitico Dam. It is evident that a full or partial failure of the dam would direct breach discharges against the building, possibly causing excessive damage. More than a few lives could possibly be lost in the building. The first residential area is a single-family dwelling located about 1,350 feet downstream of the dam.

A failure of the dam was simulated by the HEC-1-DB computer program assuming a 76-foot wide by 22-foot deep breach with vertical side slopes developing within 30 minutes. The failure is assumed to occur with the reservoir surface at the top of the dam. The assumed breach would direct a flow of 2,250 cfs against the laboratory building. The breach flood was also routed to the first residential area and a flood water depth of 3.4 feet was computed at this location. A flood of this depth would be contained within the channel banks.

SECTION 6  
STRUCTURAL STABILITY

6.1 Visual Observations

There were no deficiencies observed during this visual inspection which suggest an unstable condition at Scitico Dam.

6.2 Design and Construction Data

No information is available concerning the dam design or construction.

6.3 Post Construction Changes

The remedial repairs performed on the dam following a partial wash-out of the timber cribbing in August 1955 during Hurricane Diane are described in Section 1.2.h. It is apparent, from the information describing this incident (available from the Connecticut DEP), that the dam probably cannot withstand very high river discharges.

6.4 Seismic Stability

Scitico Dam is located in Seismic Zone 1 on the "Seismic Zone Map of Contiguous States". A dam located in Seismic Zone 1 need not be evaluated for seismic stability, according to the Recommended Guidelines for Phase I Dam Inspections.

## SECTION 7

### ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

#### 7.1 Dam Assessment

a. Condition. The visual observations and review of the available information indicate that Scitico Dam is in fair condition. No structural deficiencies could be observed during the visual inspection which would render an unsafe assessment. However, a partial wash-out of the timber crib, during the Hurricane Diane flood in August 1955, suggests that the dam cannot withstand high river discharges. There is no functioning low level outlet provided at this site; although, the hydropower penstock if operable could be used for partial reservoir drawdown. The operating condition of the sluice gate controlling discharge into the penstock is unknown. Even if operable, the discharge capacity of the facility as an emergency outlet is restricted since flows must pass through the abandoned turbine.

b. Adequacy of Information. Information obtained during the field investigation and from conversations with the Owner's representative, combined with information from the DEP, is considered adequate for a Phase I assessment.

c. Urgency. Further investigations and remedial measures should be implemented within one year of receipt of this Phase I Inspection Report.

#### 7.2 Recommendations

It is recommended that the Owner, Springborn Lab, Inc., retain the services of a qualified, registered professional engineer for the following purposes:

1. Perform detailed hydrologic and hydraulic analyses in conjunction with structural stability analyses to assess the ability of the structure to withstand high flood flows.

2. Study the suitability of the hydropower facilities as an outlet works and determine if additional outlet works should be provided.

3. Perform a detailed inspection of the dam during dry weather either with a low river discharge flowing over the dam or with the discharge diverted through the hydropower penstock.

#### 7.3 Remedial Measures

a. Operation and Maintenance Procedures. The Owner should also implement the following operation and maintenance measures :

1. The operating condition of the hydropower penstock sluice gate should be determined and the gate repaired, if necessary. The tailrace should be cleared of any restrictions to flow.

2. The branches and other debris hanging on the dam crest should be removed.
3. A program of annual technical inspection should be instituted.
4. A formal surveillance plan, including round-the-clock monitoring during heavy precipitation, should be developed.

#### 7.4 Alternatives

As an alternative to the above recommendations and remedial measures, the dam could be breached and the impoundment drained.

APPENDIX A  
INSPECTION CHECKLIST

VISUAL INSPECTION CHECK LIST  
INSPECTION TEAM ORGANIZATION

Project: SCITICO DAM  
National I.D. #: CT 00529  
Location: Enfield, CT  
Type of Dam: Composite - masonry and timber crib  
Inspection Date(s): November 14, 1979  
Weather: Overcast, 40°  
Pool Elevation: 138.2 ± MSL

Inspection Team

|                |                     |                         |
|----------------|---------------------|-------------------------|
| Leonard Beck   | O'Brien & Gere      | Structures              |
| Steven Snider  | O'Brien & Gere      | Foundations & Materials |
| Alan Hanscom   | O'Brien & Gere      | Structures              |
| Rodney Georges | Bryant & Associates | Hydrology/Hydraulics    |

\*Mr. John J. Williams, Vice-President, O'Brien & Gere has visited the site but not necessarily in conjunction with the inspection team.

Owner's Representative

Mr. Ronald Miller

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1975

| AREA EVALUATED                    | CONDITIONS   |
|-----------------------------------|--|
| <u>CONCRETE/MASONRY DAM</u>       |  |
| Crest Elevation                   | Timber Crib - 138.0  |
| Current Pool Elevation            | 138.2 ±  |
| Maximum Impoundment to Date       | Unknown.   |
| Any Noticeable Seepage            | Obscured by over-flow.   |
| Conditions of Abutment            | Left abutment is a rock slope. Masonry on right abutment showed some minor loss of joint material. |
| Drains                            | None.  |
| Water Passages                    | None.  |
| Foundation                        | Submerged. Assumed to be bedrock.  |
| Masonry/Concrete Surface Cracks   | None.  |
| Structural Cracking               | None.  |
| Vertical and Horizontal Alignment | Good.  |
| Monolith Joints                   | Obscured by over-flow.   |
| Construction Joints               | Obscured by over-flow.   |
| Upstream Embankment               | None.  |
| Instrumentation System            | None.  |
| Inspection Galleries              | None.  |

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1979

| AREA EVALUATED   | CONDITIONS   |
|--|--|
| <p><u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u></p>  |  |
| <p>a. Approach Channel</p> <p>General Condition</p> <p>Loose Rock Overhanging Channel</p> <p>Trees Overhanging Channel</p> <p>Floor of Approach Channel</p>  | <p>Timber crest planks appear to slope up to downstream dam crest</p> <p>None.</p> <p>None.</p> <p>Scantic River bottom.</p>                     |
| <p>b. Weir and Training Walls</p> <p>General Condition of Concrete</p> <p>Rust or Staining</p> <p>Spalling</p> <p>Any Visible Reinforcing</p> <p>Any Seepage or Efflorescence</p> <p>Drain Holes</p> | <p>Masonry foundation walls of adjacent bldg. in fair condition.</p> <p>None.</p> <p>Some loss of mortar.</p> <p>N/A</p> <p>N/A</p> <p>None.</p> |
| <p>c. Discharge Channel</p> <p>General Condition</p>   | <p>Good. Appeared to be some scour of river bed at toe of dam.</p> <p>A-3</p>  |

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1979

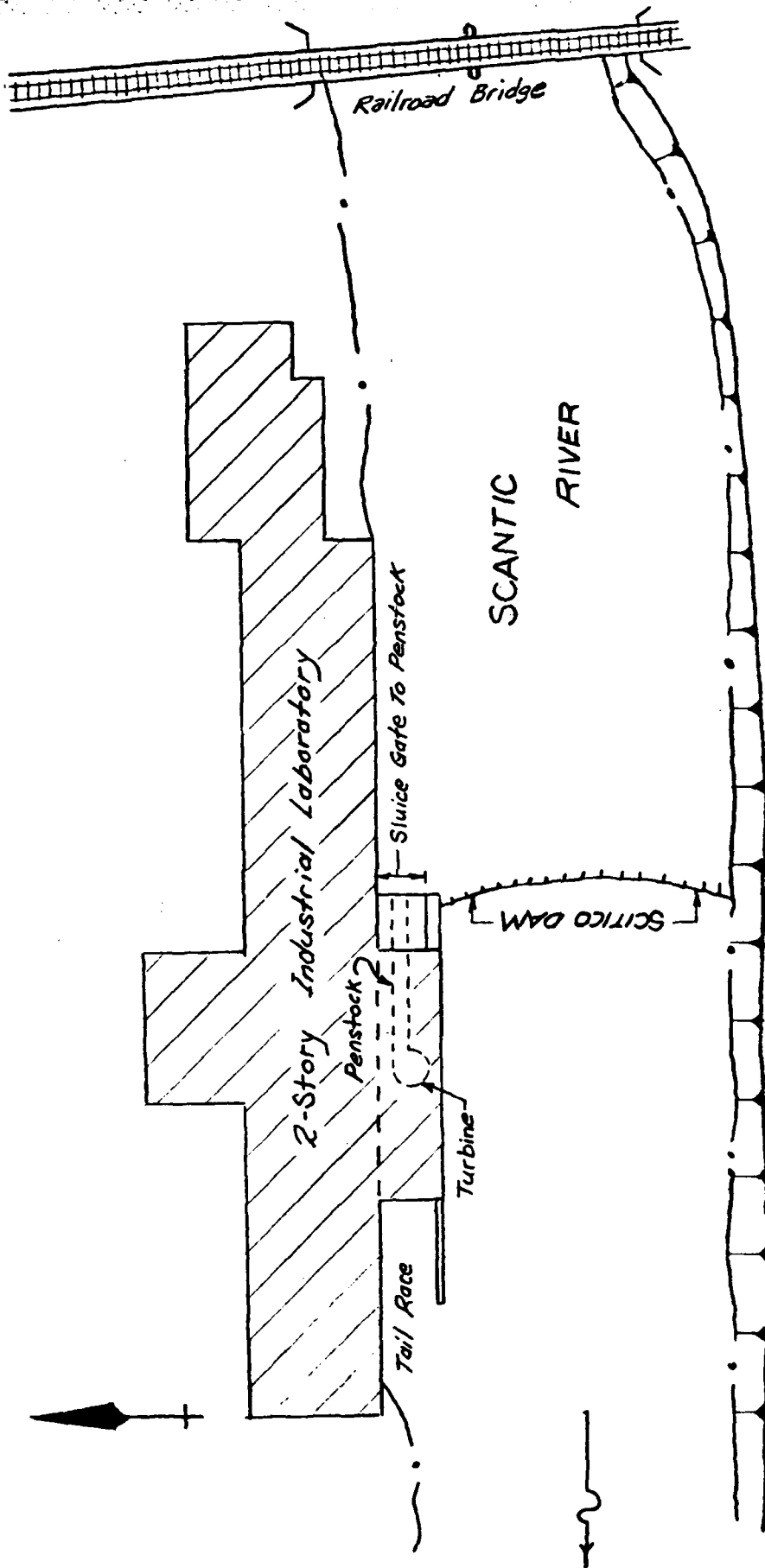
| AREA EVALUATED   | CONDITIONS  |
|--|---|
| <p><u>HYDROPOWER FACILITIES -</u></p> <p>Approach Channel</p> <p>Training Walls</p> <p>Intake Structure</p> <p>Penstock</p> <p>Turbine(s)</p> <p>Power house</p> <p>Tailrace</p> | <p>Scantic River</p> <p>Industrial building masonry foundation wall.</p> <p>Wood frame sluice gate - 8 ft. wide. Gate has been closed since current owner's acquisition of property.</p> <p>~36" <math>\phi</math> Steel or cast iron. Seepage of about 15 gpm. flowing from around conduit where it passes through wall.</p> <p>One horizontal-blade turbine equipped with mechanical take-off. Heavily corroded and not in use.</p> <p>Inspection performed with flashlight. Floor carrying seepage discharge.</p> <p>Sheet steel doors over exit portals. One door open to release seepage. Channel invert clogged with debris. Training wall in fair condition.</p> |

APPENDIX B  
ENGINEERING DATA

|                               |       |    |      |        |
|-------------------------------|-------|----|------|--------|
| SUBJECT<br><i>SCITICO DAM</i> | SHEET | BY | DATE | JOB NO |
|-------------------------------|-------|----|------|--------|

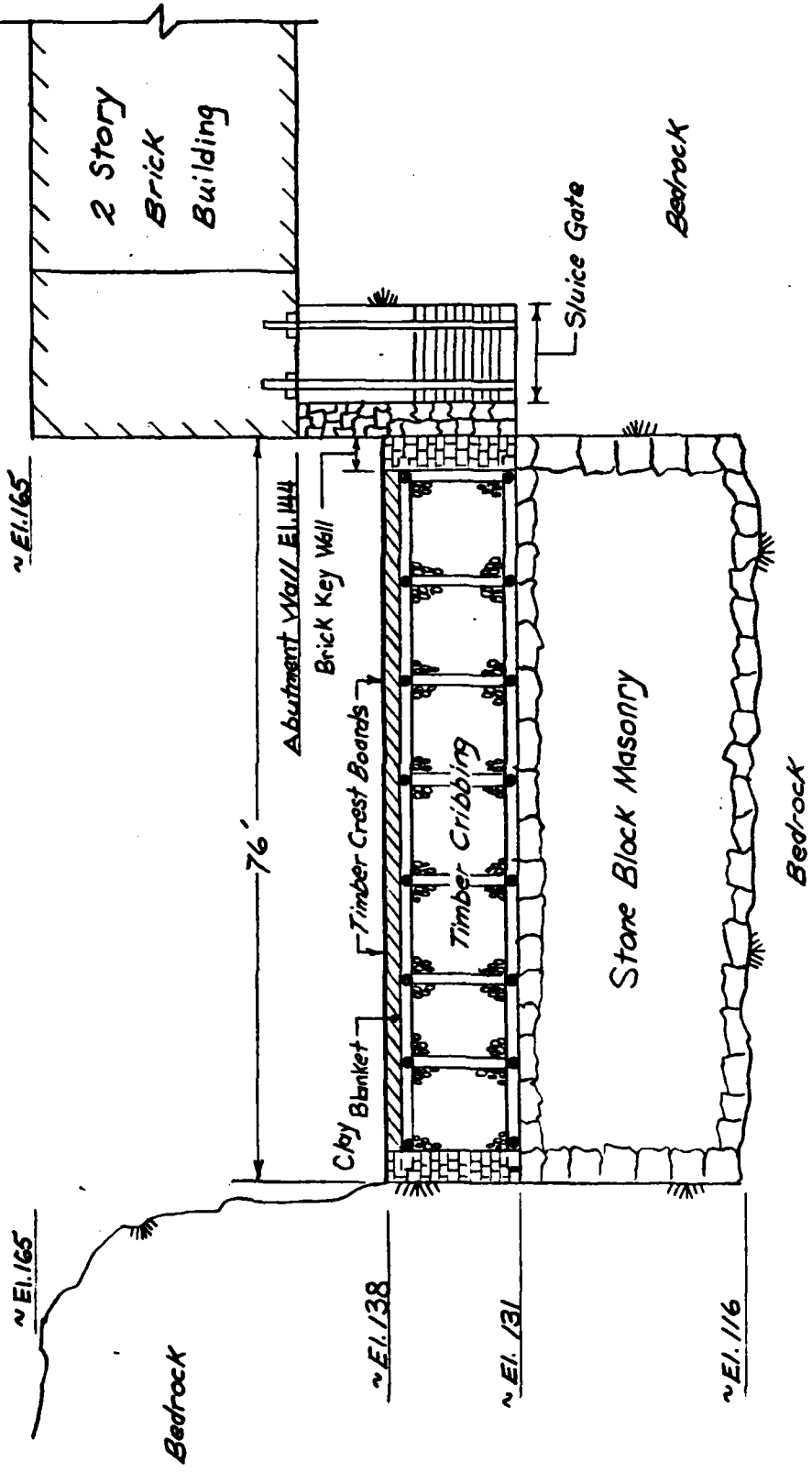
APPENDIX B  
ENGINEERING DATA  
TABLE OF CONTENTS

|                         |                           |
|-------------------------|---------------------------|
| <i>SITE PLAN</i>        | <u>PAGE</u><br><i>B-1</i> |
| <i>UPSTREAM PROFILE</i> | <i>B-2</i>                |



SITE PLAN  
SCITICO DAM

CT 00529



UPSTREAM PROFILE  
SCITICO DAM

CT 00529

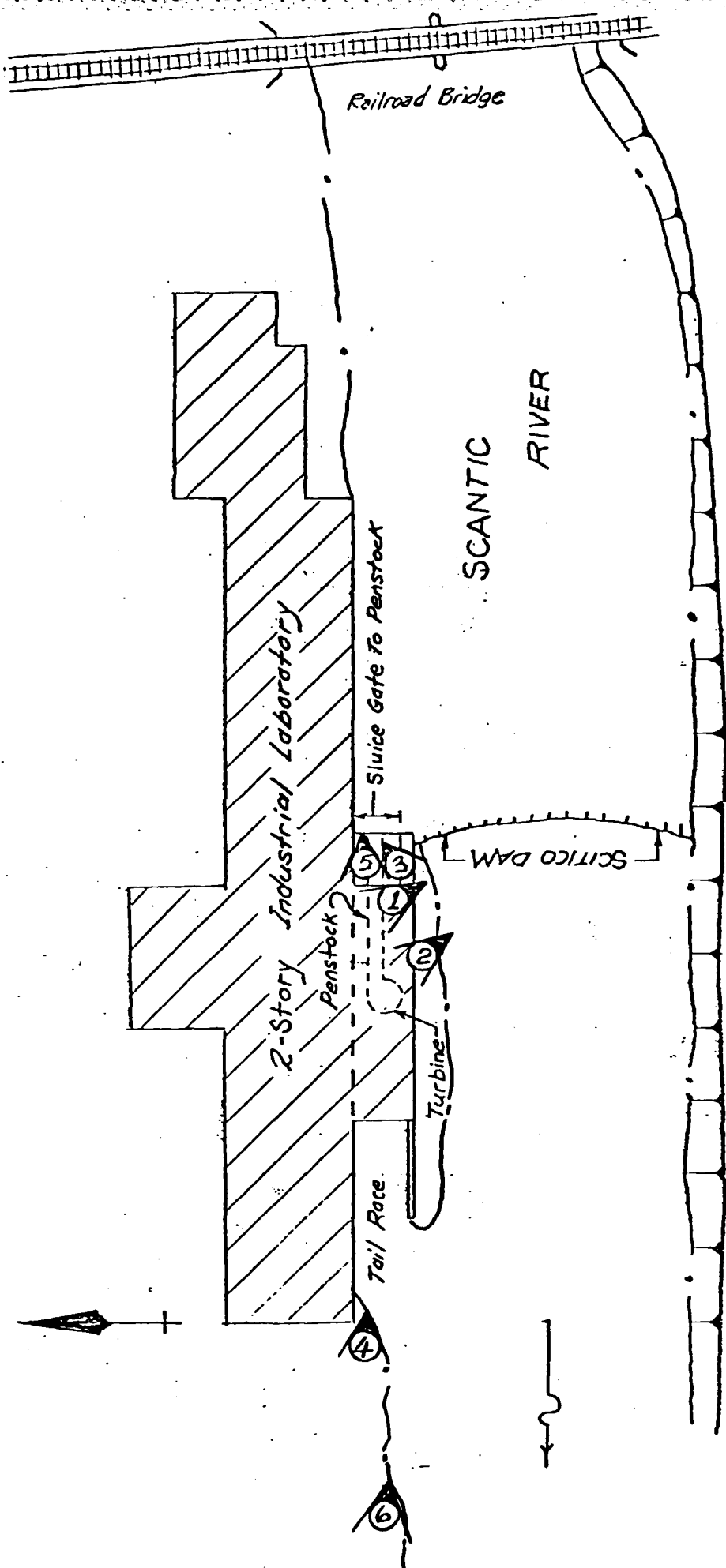
Note: Sketch prepared from visual inspection and recorded observations made during remedial repairs in 1955.

APPENDIX C

PHOTOGRAPHS

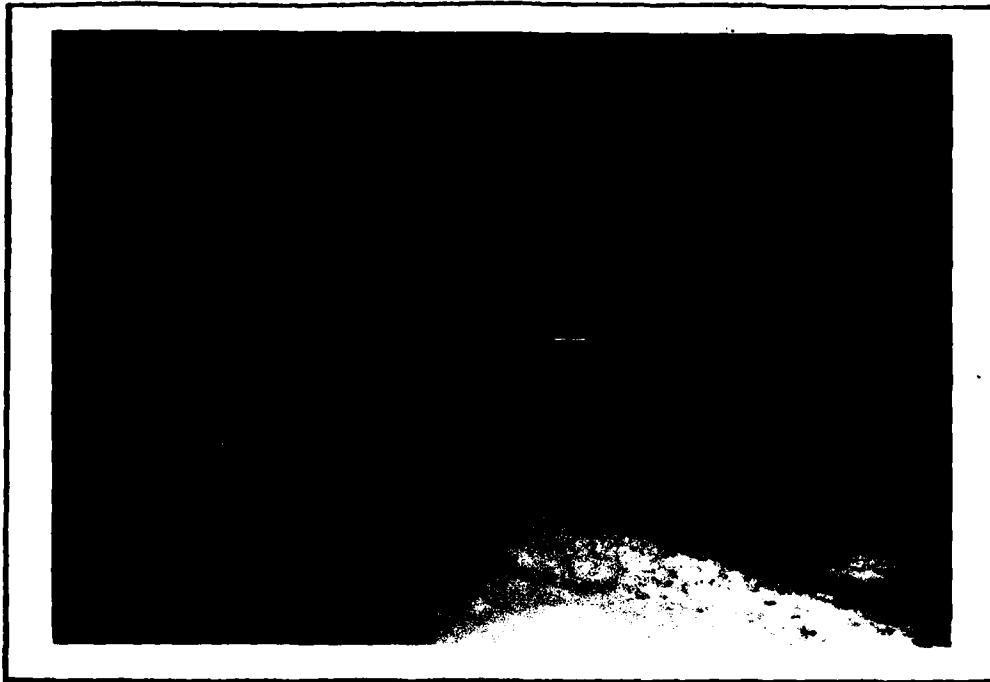
APPENDIX C  
SELECTED PHOTOGRAPHS OF PROJECT

| <u>LOCATION PLAN</u>   |  | <u>Page No.</u> |
|------------------------|--|-----------------|
| Site Plan              |  | A               |
| <br><u>PHOTOGRAPHS</u> |  |                 |
| <u>No.</u>             |  | <u>Page No.</u> |
| 1.                     | Left abutment of the dam which is nearly vertical exposed bedrock.   | 1               |
| 2.                     | Vertical rock abutment immediately downstream of the dam.  | 1               |
| 3.                     | Hoisting mechanism for the slice gate which controls flow to the penstock leading to a turbine which has been out of service for many years. | 2               |
| 4.                     | Tailrace for the out of service turbine.   | 2               |
| 5.                     | Impoundment immediately upstream of the dam.   | 3               |
| 6.                     | River conditions immediately downstream of the dam.  | 3               |



PLAN  
SCITICO DAM

CT 00529



1. LEFT ABUTMENT OF THE DAM WHICH IS NEARLY VERTICAL EXPOSED BEDROCK. (11/14/79)



2. VERTICAL ROCK ABUTMENT IMMEDIATELY DOWNSTREAM OF THE DAM. (11/14/79)



3. HOISTING MECHANISM FOR THE SLUICE GATE WHICH CONTROLS FLOW TO THE PENSTOCK LEADING TO A TURBINE WHICH HAS BEEN OUT OF SERVICE FOR MANY YEARS. (11/14/79)



4. TAILRACE FOR THE OUT OF SERVICE TURBINE. (11/14/79)



5. IMPOUNDMENT IMMEDIATELY UPSTREAM OF THE DAM. (11/14/79)



6. RIVER CONDITIONS IMMEDIATELY DOWNSTREAM OF THE DAM. (11/14/79)

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

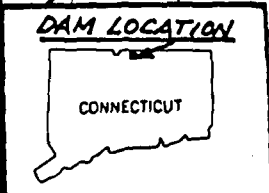
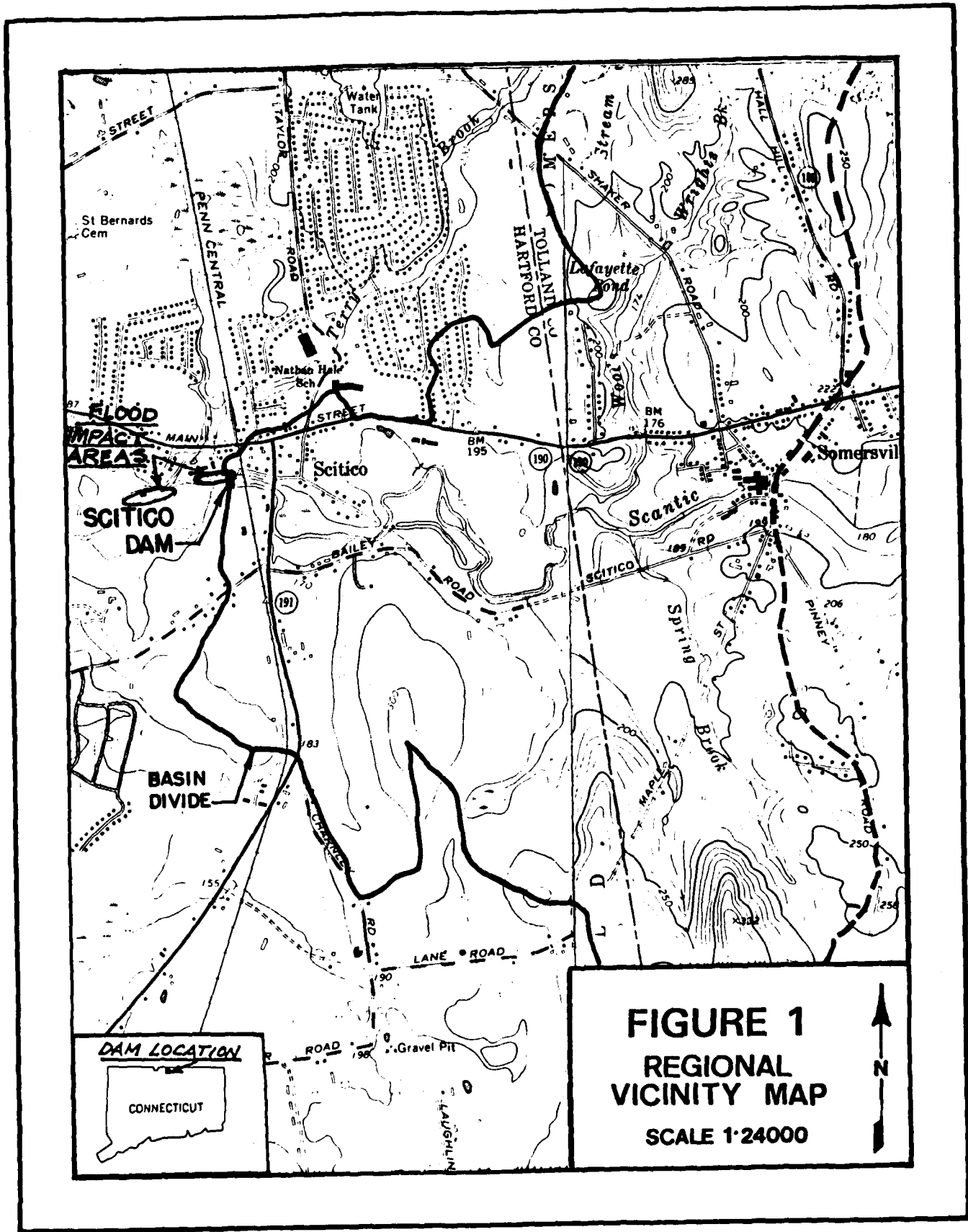
|             |       |    |      |        |
|-------------|-------|----|------|--------|
| SUBJECT     | SHEET | BY | DATE | JOB NO |
| SCITICO DAM |       |    |      |        |

APPENDIX D

HYDROLOGIC & HYDRAULIC COMPUTATIONS

TABLE OF CONTENTS

|   | <u>PAGE</u>  |
|---|--------------|
| REGIONAL VICINITY MAP, FIGURE 1                                 | D-1          |
| SURFACE AREA DATA, PMP DATA, $T_p$ COMPUTATIONS SCITICO DAM     | D-2          |
| $T_p$ COMPUTATIONS SOMERVILLE POND, SPWY. & DAM PROFILE SCITICO | D-3          |
| SPWY. & DAM PROFILE SOMERVILLE PD., STAGE-DISCHARGE SCITICO DAM | D-4          |
| STAGE-DISCHARGE & STAGE-STORAGE SCITICO DAM                     | D-5          |
| STAGE-DISCHARGE SOMERVILLE PD., SECTION PROFILE HAZARD AREA     | D-6          |
| HEC-1 DAM SAFETY VERSION COMPUTER OUTPUT NO BREACH              | D-7 to D-13  |
| HEC-1 DAM SAFETY VERSION COMPUTER OUTPUT COMPLETE BREACH        | D-14 to D-17 |



**FIGURE 1**  
**REGIONAL VICINITY MAP**  
 SCALE 1:24000

A north arrow pointing upwards, labeled with 'N' at the tip and 'N' at the base.

|                   |       |     |        |          |
|-------------------|-------|-----|--------|----------|
| SUBJECT           | SHEET | BY  | DATE   | JOB NO.  |
| SCITICO DAM - H&H | D-2   | SHS | 3/3/80 | 2060-001 |

HYDROLOGIC & HYDRAULIC CALCULATIONS

Total Drainage Area : 64 sq.mi.

Somersville Pond Sub-basin Area: 60 sq.mi. (.20 miles ups of Scitico Dam)

Scitico Dam Subdrainage Area : 4 sq.mi.

SCITICO RESERVOIR AREA @ EL. 116 (BOTTOM OF DAM) = 0 ACRES

Scitico Res. Area @ Top of Dam El. 138 = 7 acres (Normal Pool)

Scitico Res. Area @ El. 140 = 28 acres

Scitico Res. Area @ El. 150 = 77 acres

Scitico Res. Area @ El. 160 = 153 acres

SCITICO RES. AREA @ EL. 170 = 248 ACRES

Somersville Pond Area @ El. 180 = 40 acres (Normal Pool)

Somersville Pond Area @ El. 190 = 440 acres

SOMERSVILLE POND AREA @ EL. 200 = 1,550 ACRES

PMP DATA

The 24 hr., 200 sq.mi. Index Rainfall is 21.1 inches

Ref: HMS Report #33

6 hr. % = 89%

12 hr. % = 105%

24 hr. % = 113%

48 hr. % = 120%

$T_p$  Computations - Scitico Dam

Snyder Coefficients:

$$T_p = C_t (L L_{ca})^{0.3}$$

$$C_t = 2.5$$

$$L = 4.9 \text{ miles}$$

$$C_p = 0.5$$

$$L_{ca} = 1.5 \text{ miles}$$

$$T_p = 2.5 (4.9 \times 1.5)^{0.3} \approx 4.5 \text{ hours}$$

| SUBJECT           | SHEET | BY  | DATE   | JOB NO.  |
|-------------------|-------|-----|--------|----------|
| SCITICO DAM - H&H | D-3   | SHS | 3/3/80 | 2060-001 |

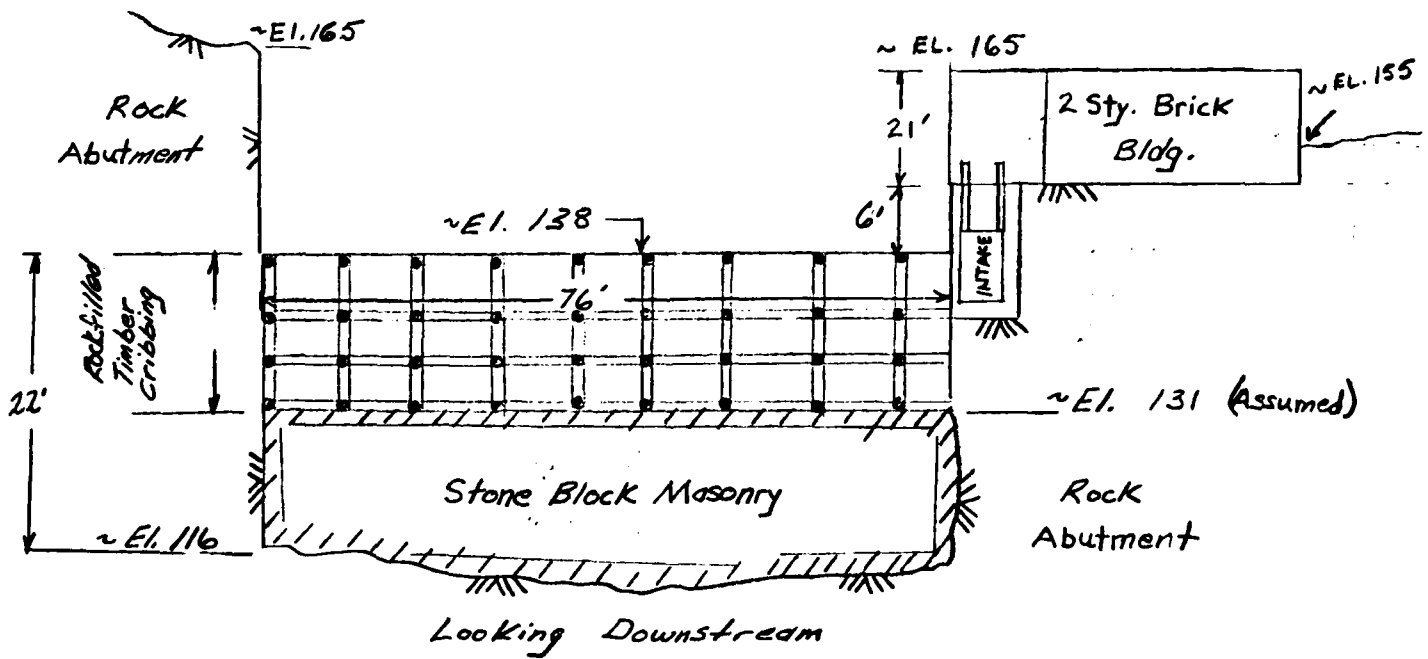
Tp Computations - Somersville Pond

$C_c = 3.0$   
 $C_p = 0.5$

$L = 12.9$  miles  
 $L_{ca} = 3.5$  miles

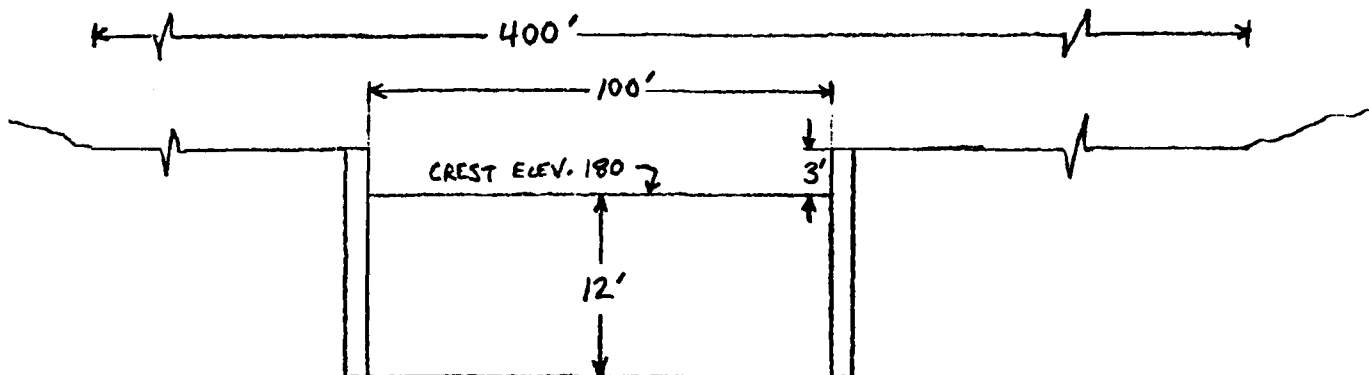
$T_p = 3.0 (12.9 \times 3.5)^{0.3} \approx 9.4$  hours

Spillway & Dam Profile: Scitico



|                     |       |     |         |          |
|---------------------|-------|-----|---------|----------|
| SUBJECT             | SHEET | BY  | DATE    | JOB NO.  |
| SCITICO DAM - H & H | D-4   | SHS | 3/20/80 | 2060-001 |

SPILLWAY & DAM PROFILE : SOMERSVILLE POND

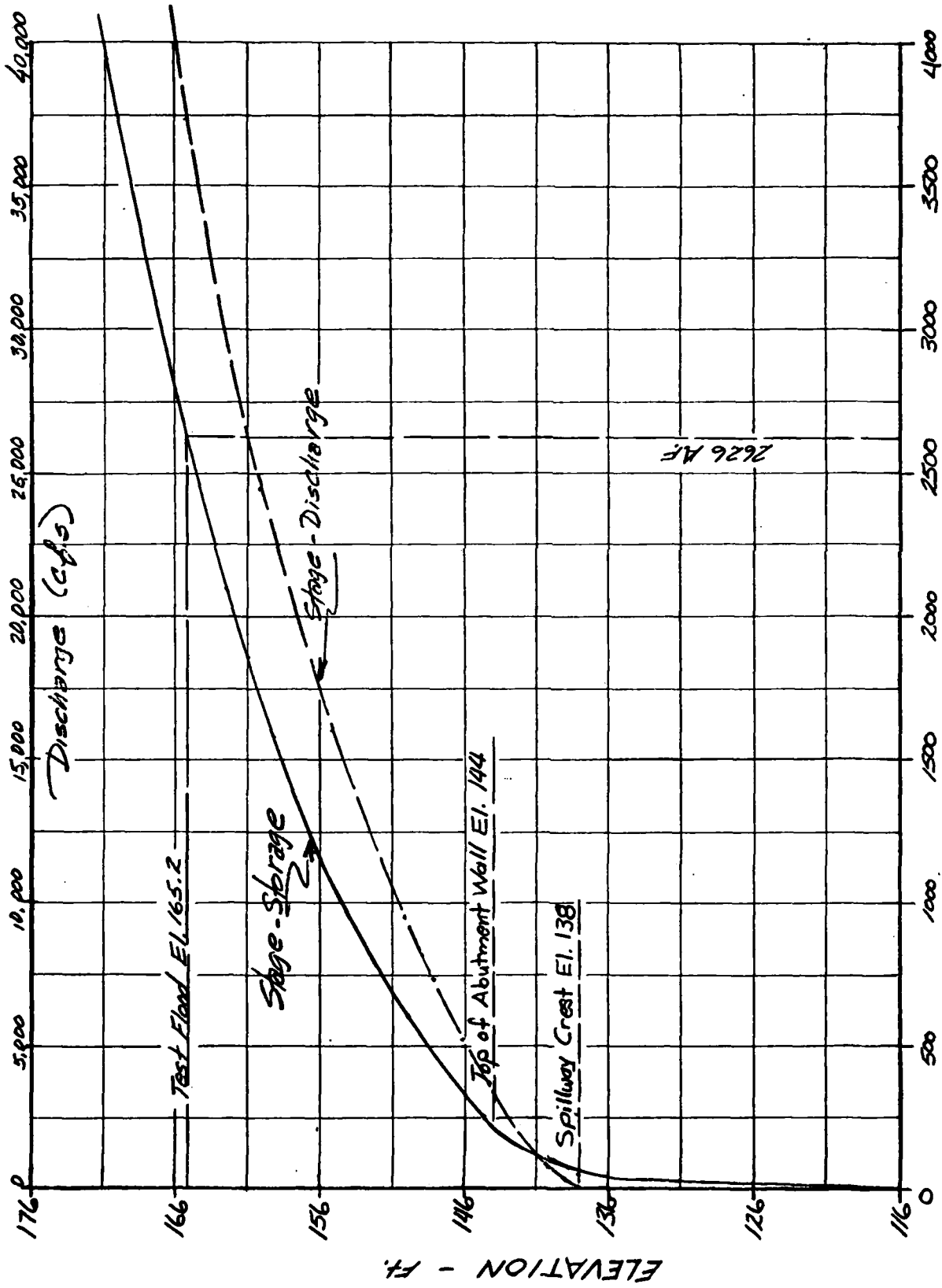


STAGE-DISCHARGE → SCITICO DAM

$Q = CLH^{3/2} \rightarrow C_{DAM} = 3.0, L_{DAM} = 76 \text{ FT.}; C = 2.8 \text{ (AROUND BUILDING, OVER BUILDING, OVER ABUTMENTS)}$

| ELEV. | OVER DAM   |            | AROUND BUILDING |                            |            | OVER BUILDING |            |            | OVER ROCK ABUTMENT |                            |            | Q <sub>TOTAL</sub> |
|-------|------------|------------|-----------------|----------------------------|------------|---------------|------------|------------|--------------------|----------------------------|------------|--------------------|
|       | H<br>(FT.) | Q<br>(CFS) | H<br>(FT.)      | L <sub>EFF.</sub><br>(FT.) | Q<br>(CFS) | H<br>(FT.)    | L<br>(FT.) | Q<br>(CFS) | H<br>(FT.)         | L <sub>EFF.</sub><br>(FT.) | Q<br>(CFS) |                    |
| 138   | 0          | 0          |                 |                            |            |               |            |            |                    |                            |            | 0                  |
| 139   | 1          | 228        |                 |                            |            |               |            |            |                    |                            |            | 228                |
| 140   | 2          | 645        |                 |                            |            |               |            |            |                    |                            |            | 645                |
| 142   | 4          | 1,824      |                 |                            |            |               |            |            |                    |                            |            | 1,824              |
| 144   |            | 3,351      |                 |                            |            |               |            |            |                    |                            |            | 3,351              |
| 146   | 8          | 5,159      |                 |                            |            |               |            |            |                    |                            |            | 5,159              |
| 148   | 10         | 7,210      |                 |                            |            |               |            |            |                    |                            |            | 7,210              |
| 150   | 12         | 9,478      |                 |                            |            |               |            |            |                    |                            |            | 9,478              |
| 155   | 17         | 15,981     | 0               | 0                          | 0          |               |            |            |                    |                            |            | 15,981             |
| 160   | 22         | 23,527     | 5               | 30                         | 939        |               |            |            |                    |                            |            | 24,466             |
| 165   | 27         | 31,987     | 10              | 60                         | 5,313      | 0             | 60         | 0          | 0                  | 0                          | 0          | 37,300             |
| 170   | 32         | 41,272     | 15              | 90                         | 14,640     | 5             | 60         | 1,878      | 5                  | 20                         | 626        | 58,416             |

|                   |       |     |         |          |
|-------------------|-------|-----|---------|----------|
| SUBJECT           | SHEET | BY  | DATE    | JOB NO   |
| SCITICO DAM - H&H | D-5   | SHS | 3/27/80 | 2060-001 |



STORAGE - A.F.

|                   |       |     |         |          |
|-------------------|-------|-----|---------|----------|
| SUBJECT           | SHEET | BY  | DATE    | JOB NO   |
| SCITICO DAM - H&H | D-6   | SHS | 3/20/80 | 2060-001 |

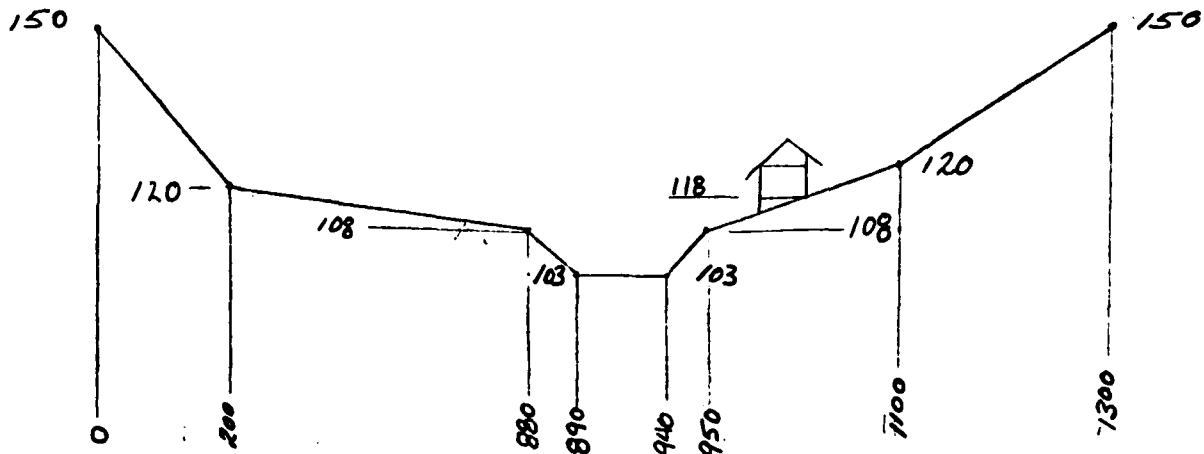
STAGE-DISCHARGE → SOMERSVILLE POND DAM

$Q = CLH^{3/2} \rightarrow C_{SPWY.} = 3.1, L = 100 \text{ FT.}; C_{DAM} = 2.9, L \text{ VARIES} - \text{BASE } L = 300 \text{ FT.}$

| ELEVATION<br>NGVD  | HEAD<br>(Spillway)<br>ft. | Q<br>(Spillway)<br>(C=3.1) | H<br>(DAM)<br>FT. | EFFECTIVE<br>LENGTH<br>OF<br>DAM<br>FT. | Q<br>(Dam)<br>(C=2.9) | TOTAL<br>DISCHARGE<br>CFS |
|--------------------|---------------------------|----------------------------|-------------------|---|-----------------------|---------------------------|
| 180 Spillway Crest | 0                         | 0                          | -                 | 300                                     | -                     | 0                         |
| 181                | 1                         | 310                        | -                 | 300                                     | -                     | 310                       |
| 182                | 2                         | 877                        | -                 | 300                                     | -                     | 877                       |
| 183 Dam Crest      | 3                         | 1611                       | 0                 | 300                                     | -                     | 1611                      |
| 184                | 4                         | 2480                       | 1                 | 325                                     | 943                   | 3423                      |
| 185                | 5                         | 3466                       | 2                 | 350                                     | 2871                  | 6337                      |
| 190                | 10                        | 9803                       | 7                 | 475                                     | 25,512                | 35,315                    |
| 200                | 20                        | 27,727                     | 17                | 800                                     | 162,615               | 190,342                   |

HAZARD AREA - 1,350 feet Downstream

SECTION PROFILE



MANNING'S COEFFICIENTS: RIVER - 0.030  
OVERBANKS - 0.060

River Slope = 0.01 ft/ft

D-6



FLUWID HYDROGRAPH PACKAGE (HEC-1)  
 DAY SAFETY VERSION JULY 1978

DATE 03-27-78  
 TIME 12.20.42.

HYDROLOGIC ANALYSIS OF SCIFFO DAM  
 NEW ENGLAND DIVISION - CORPS OF ENGINEERS

JOB SPECIFICATION  
 NO NHH IMIN IDAY IMW IMIN METRC IPLT IPRT NSTAN  
 300 0 30 0 0 0 0 0 0 0  
 \*\*\*\*\*

MULTI-PLAN ANALYSES TO BE PERFORMED

PLAN= 1 NR1IN= 9 LR1IO= 1  
 \*\*\*\*\*

PERCENTAGES OF RME

SUB AREA TUNOFF COMPUTATION

INFLOW TO SOWERSVILLE POND

ISTAI ICUM IFCOI ITAPE JPLT JPRT INAME IASTG IAUTO  
 50-ERS 0 0 0 0 0 0 1 0 0

HYDROGRAPH DATA

IMVIG IUMG IAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL  
 0.00 21.10 89.00 105.00 113.00 120.00 0.00 0.00 0.00

PRECIP DATA

TRSPC COMPUTED BY THE PROGRAM IS .856  
 \*\*\*\*\*

LOSS DATA

LRPRT STAKK ULFKM MLIOL FPAIR STOKS RTIOK STRTL CHSTL ALSMK RTIMP  
 0 0.00 0.00 1.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00

UNIT HYDROGRAPH DATA

\*\*\*\*\*

RECESSION DATA

\*\*\*\*\*

UNIT HYDROGRAPH 100 END-OF-PERIOD ORDINATES LAG= 9.39 HOURS, CP= .50 VOL= .97

|       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1421. | 1540. | 1719. | 1840. | 1941. | 2023. | 2083. | 2120. | 2130. | 2100. | 1244. |
| 1737. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 2100. |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1428. |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 965.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 652.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 458.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 309.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 201.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 141.  |
| 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 1770. | 95.   |

UNITED STATES COMPUTING SYSTEMS, INC.

END-OF-PERIOD FLOW

\*\*\*\*\*

SUM= 21.67-19.01-1.77-1512457.  
 ( 551.1 ( 506.1 ( 45.1 ( 42420.01)

HYDROGRAPH ROUTING  
 SOMERSVILLE DAM SOMERSVILLE POND

ROUTING DATA  
 IRES ISAME IOPT IPMP LSTR  
 NSIPS NSTDL LAG ANSKK X TSK STORA ISPRAT

STAGE - DISCHARGE DATA FOR SOMERSVILLE POND

|       |        |        |        |         |         |         |          |           |
|-------|--------|--------|--------|---------|---------|---------|----------|-----------|
| STAGE | 180.00 | 181.00 | 182.00 | 183.00  | 184.00  | 185.00  | 190.00   | 200.00    |
| FLOW  | 0.00   | 313.00 | 877.00 | 1611.00 | 3423.00 | 6337.00 | 35315.00 | 190342.00 |

STAGE-STORAGE DATA FOR SOMERSVILLE POND

|           |      |       |        |
|-----------|------|-------|--------|
| CAPACITY  | 0.   | 2042. | 11424. |
| ELEVATION | 180. | 190.  | 200.   |

SPILLWAY CREST ELEVATION → 190.0  
 TOPEL C001 EXPD DAMDID 0.0 0.0 0.0

TOP OF DAM ELEVATION → 163.0

| PMF     | PEAK OUTFLOW IS | AT TIME | MINIMS |
|---------|-----------------|---------|--------|
| 0.1 PMF | 3600.           | 49.00   | MINIMS |
| 0.2 PMF | 7266.           | 49.00   | MINIMS |
| 0.3 PMF | 10842.          | 49.00   | MINIMS |
| 0.4 PMF | 14473.          | 49.00   | MINIMS |
| 0.5 PMF | 18074.          | 49.00   | MINIMS |
| 0.6 PMF | 21663.          | 49.00   | MINIMS |
| 0.7 PMF | 25236.          | 49.00   | MINIMS |
| 0.8 PMF | 28791.          | 49.00   | MINIMS |
| PMF     | 32327.          | 49.00   | MINIMS |

UNITED COMPUTING SYSTEMS, INC.

LOCAL RUNOFF TO SCITICO DAM

SUB-AREA PUNOFF COMPUTATION

INFLOW TO SCITICO LESS SOMERSVILL

ISTAU ICOMP IECOM ITAPE JPLT JPT INAME ISTATE IAUTO  
 CITICO 0 0 0 0 0 0 1 0 0

HYDROGRAPH DATA

IHYDG IUNG IAREA SNAP TRSDA TRSPC RATIO TSNOW ISAME LOCAL  
 1 1 4.00 0.00 64.00 0.00 0.000 0 1 1 0

PRECIP DATA

SPFE PMS R6 R12 R24 H48 R72 R96  
 0.00 21.70 0.00 105.00 113.00 120.00 0.00 0.00

TRSPC COMPUTED BY THE PROGRAM IS .0156

LOSS DATA

LHPT STRKR OLTKR RTIOL EMAIN STRKS RTIOK STRIL CNSTL ALSHA RTIMP  
 0 0.00 0.00 1.00 0.00 0.00 1.00 0.00 .05 0.00 0.00

UNIT HYDROGRAPH DATA

TP= 4.50 CP= .50 NTA= 0

RECESSION DATA

SFINO= -1.70 ORCSM= -.10 RTIOR= 2.00

UNIT HYDROGRAPH TO END-OF-PERIOD UNINITIATES, LAG= 4.54 HOURS, CP= .50 VOL= 1.00

|      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| 10.  | 36.  | 73.  | 117. | 212. | 250. | 277. | 291. | 289. |
| 270. | 230. | 212. | 195. | 180. | 166. | 141. | 130. | 130. |
| 110. | 101. | 93.  | 86.  | 79.  | 73.  | 67.  | 62.  | 57.  |
| 53.  | 48.  | 41.  | 38.  | 35.  | 32.  | 30.  | 27.  | 25.  |
| 23.  | 21.  | 18.  | 17.  | 15.  | 13.  | 12.  | 11.  | 11.  |
| 4.   | 4.   | 4.   | 3.   | 3.   | 3.   | 3.   | 2.   | 2.   |

END-OF-PERIOD FLOW

| NO. DA | HR. MN | PERIOD | RAIN | EXCS    | LOSS | COMP Q | PERIOD | RAIN | EXCS | LOSS | COMP Q |
|--------|--------|--------|------|---------|------|--------|--------|------|------|------|--------|
| SUM    | 21.67  | 19.91  | 1.77 | 103743. |      |        |        |      |      |      |        |
|        |        |        |      |         |      |        |        |      |      |      |        |

COMBINING SOMERSVILLE POND ROUTED OUTFLOW AND SCITICO DAM RUNOFF

CUMULINE HYDROGRAPHS

ISTAU ICOMP IECOM ITAPE JPLT JPT INAME ISTATE IAUTO  
 TOTAL 2 0 0 0 0 0 1 0 0



PEAK FLOW AND STORAGE (END OF PULSE) SUMMARY FOR MULTIPLE PLAN-RATIO-PERMANENT COMPUTATIONS  
 FLOWS IN CURIC FEET PER SECOND (CURIC METERS PER SECOND)  
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

| OPERATION            | AREA               | PLAN | RATIO 1            | RATIO 2            | RATIO 3             | RATIO 4             | RATIO 5             | RATIO 6             | RATIO 7             | RATIO 8             | RATIO 9              |
|----------------------|--------------------|------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
|                      |                    |      | .10                | .20                | .30                 | .40                 | .50                 | .60                 | .70                 | .80                 | 1.00                 |
| HYDROGRAPH AT SOMEYS | 60.00<br>( 155.40) | 1    | 3636.<br>( 102.40) | 7266.<br>( 205.81) | 10902.<br>( 308.71) | 14536.<br>( 411.62) | 18170.<br>( 514.52) | 21804.<br>( 617.42) | 25439.<br>( 720.33) | 29072.<br>( 823.23) | 36340.<br>( 1029.04) |
| ROUTED TO POND       | 60.00<br>( 155.40) | 1    | 3600.<br>( 101.43) | 7244.<br>( 205.14) | 10862.<br>( 307.57) | 14473.<br>( 409.82) | 18074.<br>( 511.80) | 21663.<br>( 613.43) | 25234.<br>( 714.81) | 28791.<br>( 815.27) | 36152.<br>( 1023.72) |
| HYDROGRAPH AT CITICO | 4.00<br>( 10.36)   | 1    | 430.<br>( 12.16)   | 859.<br>( 24.32)   | 1289.<br>( 36.49)   | 1718.<br>( 48.65)   | 2148.<br>( 60.81)   | 2577.<br>( 72.97)   | 3007.<br>( 85.14)   | 3436.<br>( 97.30)   | 4295.<br>( 121.62)   |
| 2 COMBINED TOTAL     | 64.00<br>( 165.76) | 1    | 3836.<br>( 108.58) | 7745.<br>( 219.30) | 11603.<br>( 328.57) | 15448.<br>( 437.43) | 19276.<br>( 545.44) | 23085.<br>( 653.69) | 26879.<br>( 761.13) | 30668.<br>( 868.43) | 38492.<br>( 1090.17) |
| ROUTED TO SCITIC     | 64.00<br>( 165.76) | 1    | 3805.<br>( 107.75) | 7667.<br>( 217.11) | 11490.<br>( 325.36) | 15245.<br>( 431.69) | 19066.<br>( 539.89) | 22773.<br>( 644.87) | 26455.<br>( 754.79) | 30395.<br>( 860.69) | 38035.<br>( 1077.02) |

TEST FLOOD PEAK INFLOW

ROUTED TEST FLOOD OUTFLOW

LOCAL RUNOFF TO  
 SOMEYSVILLE POND  
 ROUTED OUTFLOW FROM  
 SOMEYSVILLE POND  
 LOCAL RUNOFF TO  
 SCITIC RESERVOIR  
 TOTAL INFLOW TO SCITICO RES.  
 ROUTED OUTFLOW FROM  
 SCITICO RESERVOIR



SUMMARY OF DAM SAFETY ANALYSIS

FLOOD RESULTS AT SOMESVILLE POND DAM

PLANNED INITIAL VALUE SPILLWAY CREST TOP OF DAM  
 ELEVATION 180.00 180.00 183.00  
 STORAGE 0. 0. 223.  
 INFLOW 0. 0. 1611.

| RATIO OF INFLOW | MAXIMUM RESERVOIR W.S. ELEV | MAXIMUM DEPTH OVER DAM | MAXIMUM STORAGE AC-FT | MAXIMUM OUTFLOW CFS | DURATION OVER TOP HOURS | TIME OF MAX OUTFLOW HOURS | TIME OF FAILURE HOURS |
|-----------------|-----------------------------|------------------------|-----------------------|---------------------|-------------------------|---------------------------|-----------------------|
| .10             | 184.06                      | 1.06                   | 363.                  | 3600.               | 17.50                   | 49.00                     | 0.00                  |
| .20             | 185.16                      | 2.16                   | 551.                  | 7244.               | 28.50                   | 49.00                     | 0.00                  |
| .30             | 185.79                      | 2.79                   | 679.                  | 10462.              | 35.50                   | 49.00                     | 0.00                  |
| .40             | 186.40                      | 3.40                   | 824.                  | 14473.              | 40.00                   | 49.00                     | 0.00                  |
| .50             | 187.03                      | 4.03                   | 986.                  | 18074.              | 43.50                   | 49.00                     | 0.00                  |
| .60             | 187.64                      | 4.64                   | 1167.                 | 21663.              | 46.50                   | 49.00                     | 0.00                  |
| .70             | 188.26                      | 5.26                   | 1366.                 | 25236.              | 49.00                   | 49.00                     | 0.00                  |
| .80             | 188.87                      | 5.87                   | 1585.                 | 28791.              | 50.50                   | 49.00                     | 0.00                  |
| 1.00            | 189.89                      | 7.89                   | 2066.                 | 36152.              | 54.00                   | 49.00                     | 0.00                  |

TEST FLOOD ELEVATION FOR SOMESVILLE POND

TEST FLOOD ROUTED OUTFLOW FROM SOMESVILLE POND

SUMMARY OF DAM SAFETY ANALYSIS

TEST FLOOD RESULTS AT SCITIGO DAM

PLANNED INITIAL VALUE SPILLWAY CREST TOP OF DAM  
 ELEVATION 138.00 138.00 138.00  
 STORAGE 51. 51. 51.  
 INFLOW 0. 0. 0.

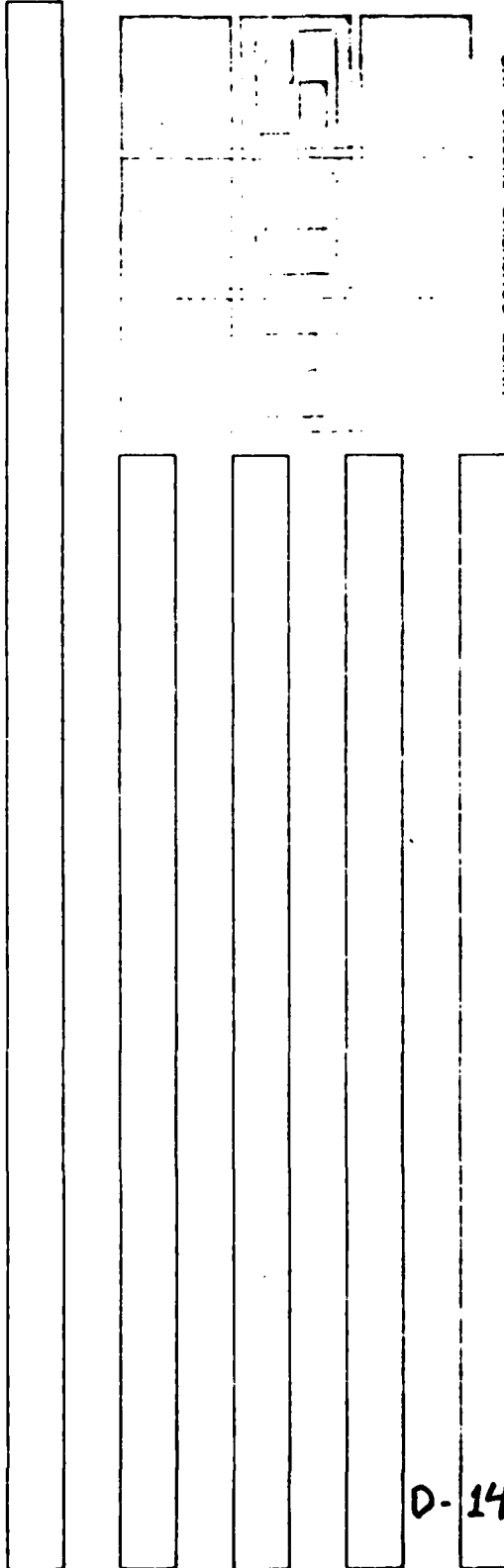
| RATIO OF INFLOW | MAXIMUM RESERVOIR W.S. ELEV | MAXIMUM DEPTH OVER DAM | MAXIMUM STORAGE AC-FT | MAXIMUM OUTFLOW CFS | DURATION OVER TOP HOURS | TIME OF MAX OUTFLOW HOURS | TIME OF FAILURE HOURS |
|-----------------|-----------------------------|------------------------|-----------------------|---------------------|-------------------------|---------------------------|-----------------------|
| .10             | 144.50                      | 6.50                   | 251.                  | 3805.               | 150.00                  | 49.50                     | 0.00                  |
| .20             | 146.40                      | 10.40                  | 473.                  | 7667.               | 150.00                  | 49.50                     | 0.00                  |
| .30             | 147.75                      | 13.75                  | 716.                  | 11490.              | 150.00                  | 49.50                     | 0.00                  |
| .40             | 148.43                      | 14.43                  | 906.                  | 15245.              | 150.00                  | 49.50                     | 0.00                  |
| .50             | 149.42                      | 14.42                  | 1274.                 | 19046.              | 150.00                  | 49.50                     | 0.00                  |
| .60             | 149.88                      | 14.88                  | 1566.                 | 22773.              | 150.00                  | 49.50                     | 0.00                  |
| .70             | 150.45                      | 22.85                  | 1851.                 | 26655.              | 150.00                  | 49.50                     | 0.00                  |
| .80             | 152.11                      | 24.31                  | 2093.                 | 30395.              | 150.00                  | 49.50                     | 0.00                  |
| 1.00            | 154.17                      | 27.17                  | 2466.                 | 36075.              | 150.00                  | 49.50                     | 0.00                  |

TEST FLOOD ELEVATION

TEST FLOOD ROUTED OUTFLOW

FLOOD HYDROGRAPH PACKAGE (MFC-1)  
 DAM SAFETY VERIFICATION JULY 1976  
 SCITICO DAM BREACH OUTFLOW TO SECONDARY DAMAGE CENTER  
 INPUT

| LINE | DESCRIPTION                               | UNIT | VALUE | UNIT | VALUE | UNIT | VALUE |
|------|---|------|-------|------|-------|------|-------|
| 1    | NEW ENGLAND DIVISION - CORPS OF ENGINEERS |      | 0     |      | 0     |      | 0     |
| 2    | SCITICO DAM                               |      | 1     |      | 1     |      | 1     |
| 3    | ROUTED OUTFLOW FROM SCITICO DAM           |      | 130   |      | 146   |      | 150   |
| 4    | HAZARD AREA                               |      | 103   |      | 940   |      | 15901 |
| 5    | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 6    | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 7    | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 8    | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 9    | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 10   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 11   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 12   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 13   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 14   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 15   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 16   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 17   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 18   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 19   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 20   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 21   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 22   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 23   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 24   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 25   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 26   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |
| 27   | SCITICO DAM BREACH TO HAZARD AREA         |      | 130   |      | 130   |      | 130   |
| 28   | HAZARD AREA                               |      | 103   |      | 103   |      | 103   |



D-14

FLOOD HYDROGRAPH PACKAGE (HEC-1)  
 DAM SAFETY VERSION JULY 1978  
 LAST MODIFICATION 7-26-78

RUN DATE 03-27-79  
 TIME 12.31.53.

HYDROLOGIC ANALYSIS OF SCITICO DAM  
 NATIONAL DAM SAFETY PROGRAM  
 NEW ENGLAND DIVISION - CORPS OF ENGINEERS

JOB SPECIFICATION  
 NO NHFD →

MULTI-PLAN ANALYSIS TO BE PERFORMED  
 PLAN 1 NR10= 1 LRTIO= 1

PRINTED OUTFLOW FROM SCITICO DAM

STAGE DISCHARGE DATA FOR SCITICO DAM

SURFACE AREA 7. 28. 77. 153. 248. 3703. 3703. 170.

FLOW 134.00 139.00 165.00 228.00 5941.00 142.00 144.00 146.00 149.00 150.00 155.00 160.00 160.00 24466.00

FLOODING DATA  
 JPLT IPMT IPMB LSTR  
 0 0 0 0

DAM DATA  
 TOPEL COORD FAPI DAMWID  
 134.0 0.0 0.0 0.0

DAM REACH DATA  
 BRNCH DATA - FAILURE BEGINS IMMEDIATELY WITH RESERVOIR SURFACE AT SPILLWAY CREST  
 SRVVID 76. 01 114.00 .50 138.00 138.00

PEAK OUTFLOW IS 2727 AT TIME 277 MINIMS  
 PEAK BEHIND DISCHARGE

UNITED COMPUTING SYSTEMS, INC.

**BREACH FLOOD ROUTED  
TO DAMAGE CENTER**

SCITICU DAM BREACH TO MAZARI AREA

IFCON IYAPE JPLT JPR1 INAME ISTAGE IAUTO  
MAZARI 1 0 0 0 1 0 0

AVG IPMP LSTR  
0.00 0.000 0.00 1 0 0

MSIPS MSTDL LAG APSKK X TSK STORA ISPRAT  
1 0 0 0.000 0.000 0.000 0.000 -1. 0

FLMVA MLEVA SFL CHANNEL CHARACTERISTICS AT  
100.00 150.00 1350.00 (0.1000) DOWNSTREAM DAMAGE CENTER

**STREAMBED ELEVATION AT SECONDARY  
DAMAGE CENTER**

0.00 150.00 200.00 400.00 100.00 890.00 103.00 940.00 103.00  
950.00 100.00 110.00 120.00 1300.00 150.00

|         |        |        |        |        |        |        |        |         |         |
|---------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| STORAGE | 0.00   | 4.21   | 9.14   | 20.83  | 65.59  | 134.47 | 194.50 | 269.08  | 342.20  |
|         | 417.84 | 439.01 | 576.71 | 654.93 | 745.69 | 833.97 | 924.79 | 1014.00 | 1212.40 |

|         |           |           |           |           |           |           |           |           |           |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| OUTFLOW | 11.00     | 1150.00   | 3775.24   | 6582.65   | 17422.74  | 31449.25  | 52134.34  | 81057.29  | 122117.13 |
|         | 227214.53 | 270727.23 | 341344.54 | 434447.42 | 523422.34 | 615198.29 | 713719.76 | 819195.44 | 931645.63 |

|       |        |        |        |        |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| STAGE | 103.00 | 105.47 | 107.95 | 110.42 | 112.89 | 115.37 | 117.84 | 120.32 | 122.79 |
|       | 127.74 | 130.21 | 132.68 | 135.16 | 137.63 | 140.11 | 142.58 | 145.05 | 147.53 |

|      |           |           |           |           |           |           |           |           |           |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| FLOW | 0.00      | 1150.00   | 3775.24   | 6582.65   | 17422.74  | 31449.25  | 52134.34  | 81057.29  | 122117.13 |
|      | 227214.53 | 270727.23 | 341344.54 | 434447.42 | 523422.34 | 615198.29 | 713719.76 | 819195.44 | 931645.63 |

MAXIMUM STAGE IS 106.6

ELEVATION OF BREACH FLOODWATERS AT SECONDARY DAMAGE CENTER

**SCITCO DAM BREACH  
FLOOD RESULTS**

SUMMARY OF DAM SAFETY ANALYSIS

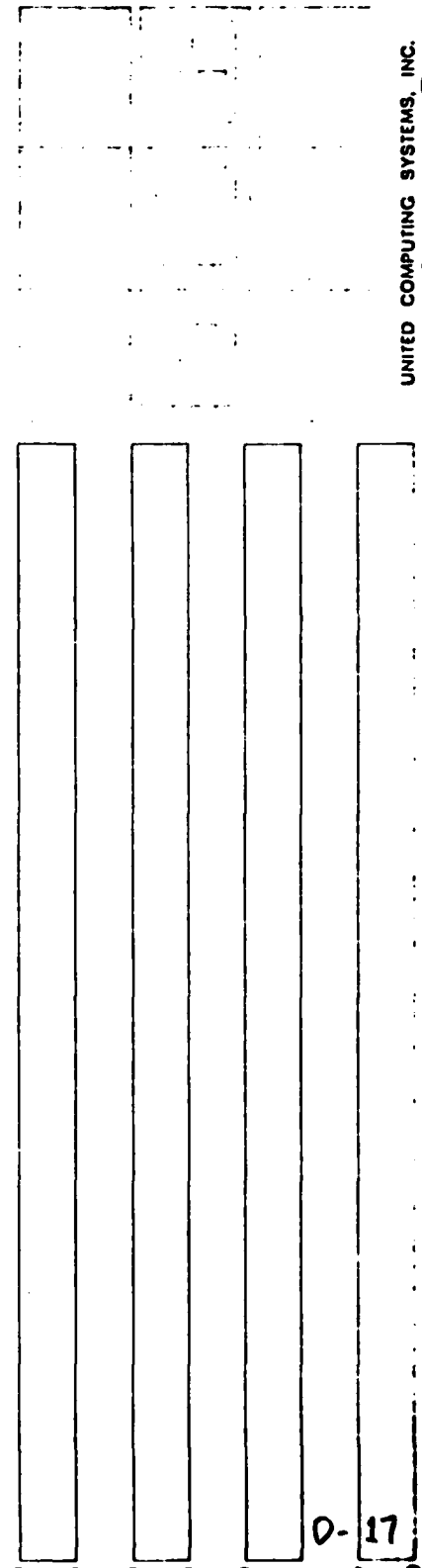
PLAN 1  
 ELEVATION STORAGE 138.00  
 INITIAL VALUE 51.00  
 SPILLWAY CREST 138.00  
 TOP OF DAM 138.00  
 STORAGE 51.00  
 0.00

RATIO OF PAF 0.00  
 MAXIMUM DEPTH OVER DAM 0.00  
 MAXIMUM STOPAGE AC-FT 51.00  
 MAXIMUM OUTFLOW CFS 2247.00  
 DURATION OVER TOP 0.00  
 TIME OF FAILURE 0.00  
 TIME OF MAX OUTFLOW 0.22  
 TIME OF FAILURE 0.00  
**PEAK BREACH OUTFLOW**

PLAN 1 STATION HAZARD

RATIO 0.00  
 MAXIMUM FLOW CFS 2000.00  
 MAXIMUM STAGE FT 106.00  
 TIME 1.17

**PEAK BREACH  
FLOW AT DAMAGE CENTER**



APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

**END**

**FILMED**

**9-84**

**DTIC**