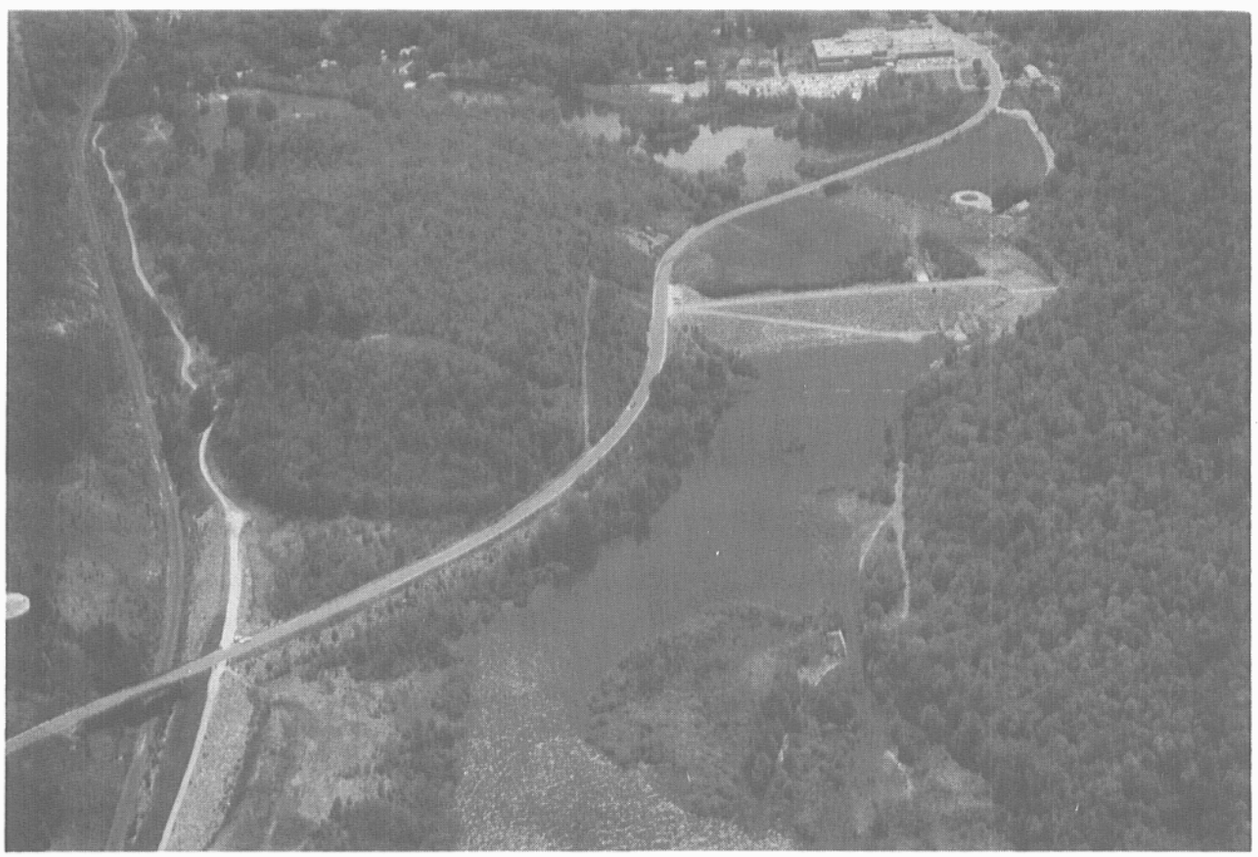
FLOOD EMERGENCY PLAN

Hancock Brook Lake



US Army Corps
of Engineers
New England Division

APRIL 1986

FLOOD EMERGENCY PLAN

FOR

HANCOCK BROOK LAKE

Prepared By:

KASPER ASSOCIATES
Engineers • Surveyors • Planners

For:

US Army Corps
of Engineers
New England Division

SYLLABUS

This emergency plan outlines procedures to be used as a guide in the event that critical conditions develop which may lead to failure of the dam at Hancock Brook Lake or an uncontrolled release of water resulting in downstream damage. The plan directs responsibilities of Corps of Engineers personnel to take necessary and immediate remedial action to prevent or minimize loss of life and property damage.

HANCOCK BROOK LAKE

FLOOD EMERGENCY PLAN

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FLOOD EMERGENCY PLAN

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1. INTRODUCTION

a. Purpose - This plan provides a guide for actions to identify and mitigate or respond to various types of emergencies which, while rare, could occur in the operation of the Hancock Brook Lake project. The resulting actions are intended to protect the public from possible property damage or loss of life from the particular emergency situation.

b. Applicability - The emergency plan is applicable to all Corps elements and field offices involved with the operation of Hancock Brook Lake.

c. References -

1. Flood Emergency Plans, June 1980, Hydrologic Engineering Center.

2. Federal Guidelines for Dam Safety, June 1979, Federal Coordinating Council for Science, Engineering and Technology.

3. Natural Disaster Procedures, December 1983, U.S. Army Corps of Engineers.

4. Earthquake Design and Analysis for Corps of Engineers Dams, August 1980, Department of Army, New England Division.

5. Liquification and Cyclic Mobility Potential, Phase I, September 1980, Department of Army, New England Division.

6. Liquification and Cyclic Mobility Potential, February 1981, Department of Army, New England Division.

7. ER-1130-2-419, Dam Operations Management Policy, May 18, 1978, Department of Army, U.S. Army Corps of Engineers.

8. ER-1110-2-101, Reporting of Evidence of Distress of Civil Works Projects, Department of Army, U.S. Army Corps of Engineers.

9. Design Memorandum No. 9A, Hancock Brook Dam & Reservoir, December 1962, Department of Army, New England Division.

10. Periodic Inspection Report No. 1, Hancock Brook Lake, March 1972, Department of Army, New England Division.

11. Dam-Break Flood Analysis, Hancock Brook Lake, September 1985, Department of Army, New England Division.

11a. Per Inspection Report No. 2, Hancock Brook Lake, May, 1981.

11b. Intermediate Inspection Report 2-1, April 12, 1983.

12. Design Memorandum No. 3, Hancock Brook Lake, March 1962, Department of Army, New England Division.

13. Operation and Maintenance Manual, Hancock Brook Lake, June 1972, Department of Army, New England Division.

14. Master Water Control Manual, Housatonic River Basin, October 1976

d. Scope - This plan covers identification of impending or existing emergencies, notification of other parties concerning impending or existing emergencies, and repair operations and repairs. It addresses emergencies related to reservoir water levels above spillway crest and/or the rapid release of large volumes of water past the dam.

This flood emergency plan presently includes the following three subplans:

1. EMERGENCY IDENTIFICATION SUBPLAN - SECTION 5

2. EMERGENCY OPERATIONS AND REPAIR SUBPLAN - SECTION 6

3. NOTIFICATION SUBPLAN - SECTION 7

THE EVACUATION SUBPLAN WILL BE PREPARED BY STATE AND/OR LOCAL CIVIL PREPAREDNESS OFFICIALS AT A LATER DATE.

2. DESCRIPTION OF PROJECT AREA

a. Location - The Hancock Brook Lake project is located on Hancock Brook, a tributary of the Naugatuck River, entirely within the town of Plymouth in west central Connecticut on the easterly side of the Naugatuck River basin. The site of the dam is located about 3.4 miles upstream of the confluence of Hancock Brook and Naugatuck River and about 4.5 miles north of the town of Waterbury, Connecticut. See Plate 2-1 for location of Hancock Brook.

The Naugatuck River Watershed, the largest subbasin of the Housatonic River Basin, is located in western Connecticut, primarily within the confines of Litchfield and New Haven Counties. It extends from Derby, Connecticut, 50 miles northerly to the towns of Norfolk and Winchester with a maximum width of 12 miles.

b. Topography - The project is located in the Western Connecticut highlands, an area of plateau remnants sloping gently to the southeast with narrow steep-sided valleys controlled by hard pretriassic crystalline rocks. The topography of the site presents a moderate relief of approximately 400 feet. Glacial till mantles the lower slopes of the valleys and is overlain by waterlain deposits along the margins of the valleys.

c. Geology/Soils - Hancock Brook at the dam site flows on alluvial deposits of gravels, sands and silts in a restricted channel approximately 175 feet wide. The left abutment of the dam is formed by a smoothly contoured, outwash mantled, drumloidal shaped hill which is separated from the easterly side of the valley by a sharp, indicated fault controlled defile presently containing Greystone Road. Bedrock outcrops infrequently on the right abutment through a thin mantle of glacial outwash.

Overburden in the valley bottom consists of highly variable stratified water deposited sands and gravels with thicknesses of up to 30 feet. Exposed bedrock on the right abutment consists of complexly folded and crumpled micacsous schist with quartzite intrusions.

Overburden in the dike area consists of from 1 to 15 feet of glacial outwash sands and gravels overlying from 14 to over 40 feet of glacial till.

d. Seismicity - The dam is located in Seismic Zone 2 which has a seismic coefficient of 0.10.

e. Climate - The mean annual precipitation over the Housatonic River basin is about 46 inches. The average annual precipitation varies over the basin due to orographic influences, from less than 42 inches in an area east of Candlewood Lake to more than 56 inches at higher elevations along the eastern boundary.

Distribution of the mean precipitation is approximately uniform throughout the year; however, the monthly extremes range from a high of more than 23 inches in August 1955 to less than

0.20 inch on several occasions.

The average annual temperature of the Housatonic River basin is about 47 degrees F. Within the basin average annual temperatures range from about 50 degrees near the coast to about 44 degrees F. in the higher elevations of northern portions. Average monthly temperatures vary widely throughout the year, ranging between 65 degrees and 73 degrees over the basin in July and August, and between 20 degrees and 30 degrees in January and February. Extremes in temperature range from occasional highs just over 100 degrees F. to lows in the minus teens in the southern part of the basin and minus twenties in the northern areas. Freezing temperatures may be expected from the latter part of October until late in April.

The average annual snowfall over the Housatonic River basin varies from about 35 inches near the coast to over 80 inches in the higher elevations of Massachusetts and northern Connecticut.

f. Project Features - Hancock Brook Lake is primarily a flood control reservoir with some water-based recreational activities. The project is self-regulating and stores excessive Hancock Brook floodwaters. The project was built by the Corps of Engineers and placed in operation in August 1966. Hancock Brook Lake is maintained by the Corps and is one of seven Corps reservoir projects operated to reduce downstream flood stages along the Naugatuck River. See Plate 2-2 for Reservoir Map.

Hancock Brook dam is a rolled earth fill embankment, with rock slope protection, 630 feet in length and a maximum height of 57 feet above the streambed. The spillway is located adjacent to the right abutment of the dam and is an uncontrolled chute type, 100 feet long with a crest elevation of 484 feet, NGVD. The outlet works are located on the right bank and consist of an inlet channel, a U-shaped concrete weir to control the permanent pool, a 3'0" by 4'6" high rectangular conduit 250 feet in length, and an outlet channel. The lake contains a flood control storage capacity, at spillway crest, of 3,900 acre-feet equivalent to 6.13 inches of runoff from the 12.0 square mile drainage area. Pertinent data on Hancock Brook Lake is listed in Table 1.

g. Project Lands - Hancock Brook Lake Dam, which consists of 721 acres (707 acres in fee, and 14 acres in easement) provides hunting and fishing as recreational activities. The State of Connecticut leases the lands and stocks the project with fish and game. Plate 2-3 shows the general plan of the dam, with Plate 2-4 showing a public use plan.

h. Instrumentation -

1. General - Instrumentation at Hancock Brook enables monitoring of various hydrologic and geotechnical events.

2. Hydrologic Instrumentation - Reservoir Level Recorder - This gage enables the pool depths to be monitored and recorded.

DIVISION NOTIFICATION LIST/EMERGENCY RESPONSE TEAM (cont'd)

POB Representative - Bernie Manor	Office:	(617) 647-8331
	Home:	(603) 882-4180
Alternate POB Representative - Ruth Kitowicz	Office:	(617) 647-8291
	Home:	(617) 897-2690

Optional

Photographic Specialist - Ann Wright	Office:	(617) 647-7488
	Home:	(617) 628-5251
EOC Representative - Jack Caffrey	Office:	(617) 647-8270
	Home:	(617) 391-2836
Alternate EOC Representative - Tom Rosato	Office:	(617) 647-8272
	Home:	(617) 668-5130
Chief, Security & Law Enforcement - Lt. Col. William R. Cunningham	Office:	(617) 647-8225
	Home:	(617) 772-2338

CONTACT EOC FOR A SUBSTITUTION OR ERT MEMBER, DIVISION PERSONNEL, AND/OR PHONE NO.

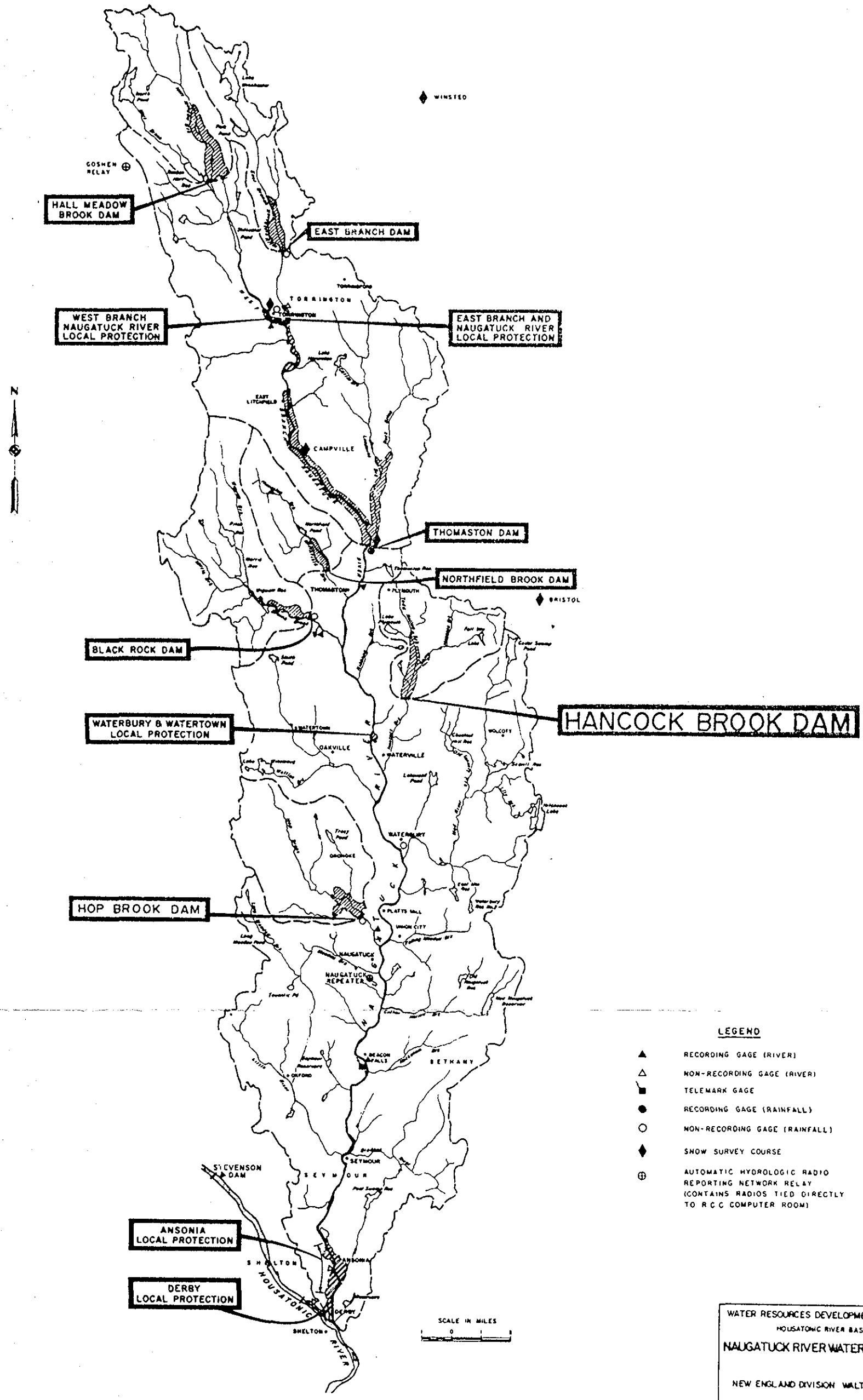
3. Geotechnical Instrumentation. Crest monumentation was installed in 1985, enabling monitoring of Crest movement. See Plate 2-6. Note: Plate 2-5 shows locations of dams with strong motion instrumentation.

i. Downstream Communities & Dams - The Hancock Brook Dam and Reservoir is one of a system of 7 dams and reservoirs that have been constructed to provide flood control on the Naugatuck River Watershed in the State of Connecticut.

The river channel reach downstream of Hancock Brook Lake flows through four central Connecticut communities: Watertown, Waterbury, Naugatuck, and Beacon Falls in downstream order.

Hancock Brook is relatively steep, falling about 180 feet in about 3.1 miles from Hancock Brook Dam to the confluence with the Naugatuck River for an average gradient of about 58 feet per mile. The Naugatuck River has a lesser slope and falls uniformly about 180 feet in 14.9 miles from the mouth of Hancock Brook to downstream of the USGS gage in Beacon Falls for an average gradient of about 12 feet per mile. The flood plain reaches a maximum width of about 3,000 feet in Waterbury.

There are 26 bridges crossing over Hancock Brook and the Naugatuck River within the study reach including one crossing of a limited access type highway, 5 state highways, 4 railroads, and 16 local roads. In addition, there are five dams throughout the Naugatuck River Basin. They are a Railroad Embankment, two unnamed dams in Naugatuck, the Tingue Mills Dam in Seymour and Kinneytown Dam in Ansonia. Local protection projects are in Ansonia and Derby.



WATER RESOURCES DEVELOPMENT PROJECT

HOUSATONIC RIVER BASIN

NAUGATUCK RIVER WATERSHED MAP

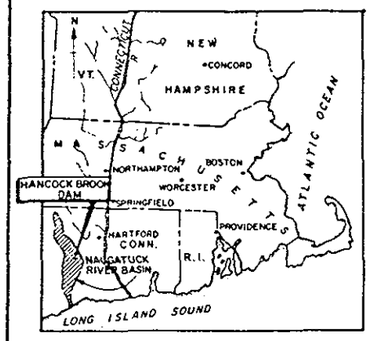
NEW ENGLAND DIVISION WALTHAM, MASS

SEPTEMBER 1976

Plate 2-1

CORPS OF ENGINEERS

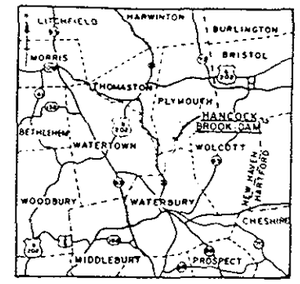
U S ARMY



LOCATION MAP

SCALE IN MILES

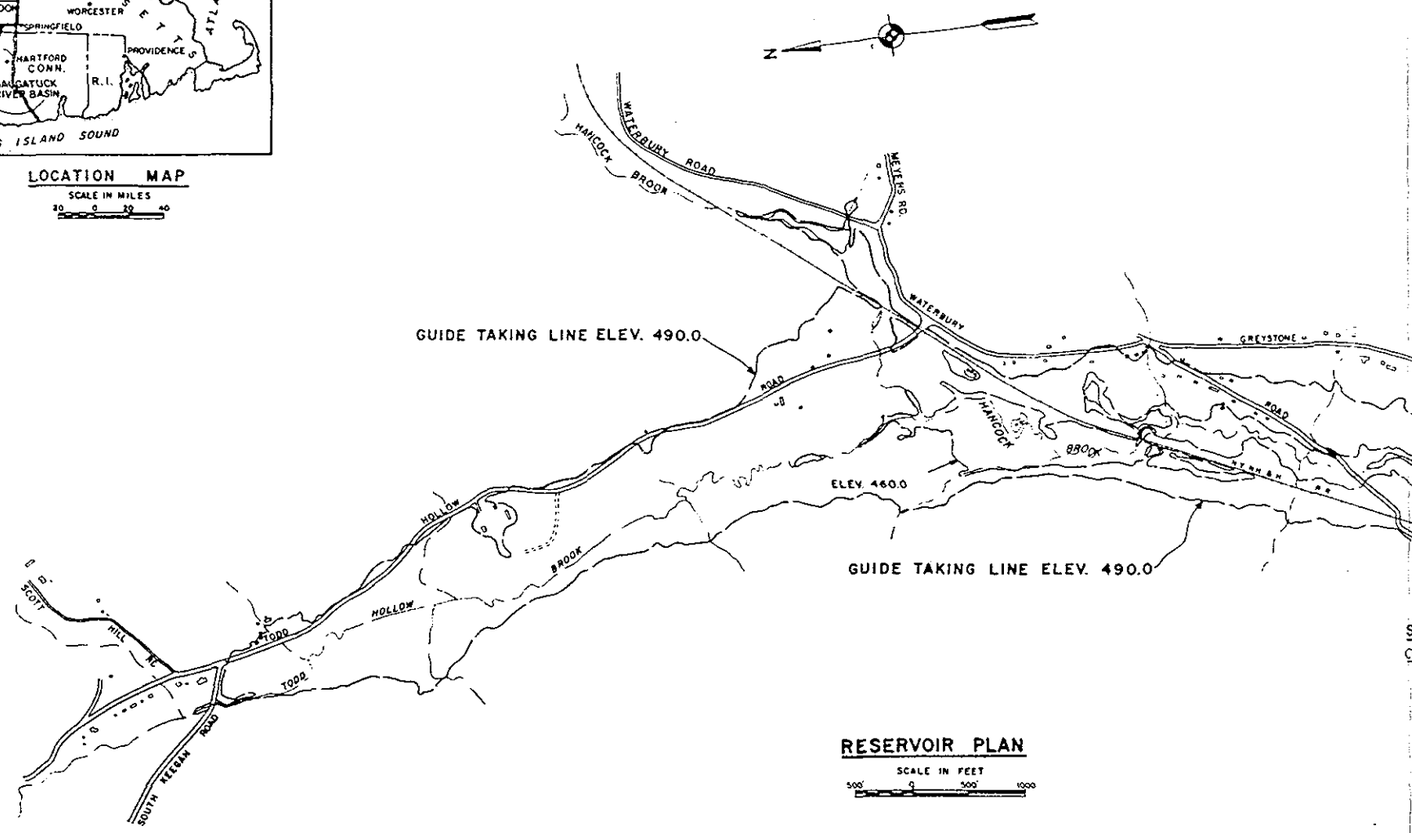
20 0 20 40



VICINITY MAP

SCALE IN MILES

0 10



RESERVOIR PLAN

SCALE IN FEET

500' 0 500' 1000

REVISION	DATE	DESCRIPTION	BY

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

DR. BY	TO BY MWB	CK. BY
PROJECT ENGINEER		
CHIEF SECTION		
SUBMITTED BY	APPROVED	DATE DEC. 1961
CHIEF, PLANS & SPECS BRANCH	CHIEF, ENGINEERING DIV.	

HOUSATONIC RIVER FLOOD CONTROL

HANCOCK BROOK DAM

RESERVOIR MAP

HANCOCK BROOK CONNECTICUT

SCALE

SPEC. NO. CIV ENG-19-016

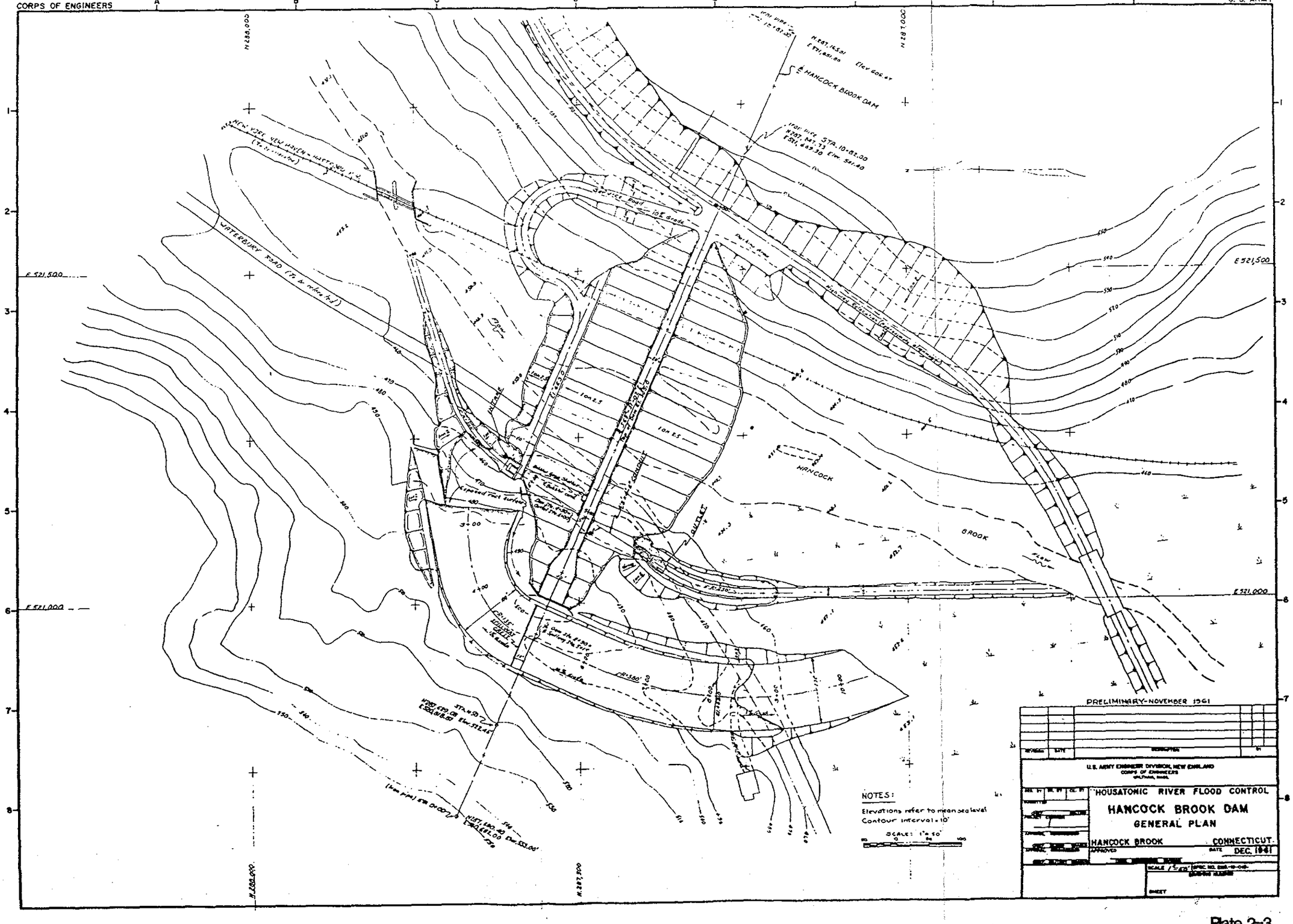
DRAWING NUMBER

SHEET

Plate 2-2

CORPS OF ENGINEERS

U. S. ARMY



PRELIMINARY - NOVEMBER 1961

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

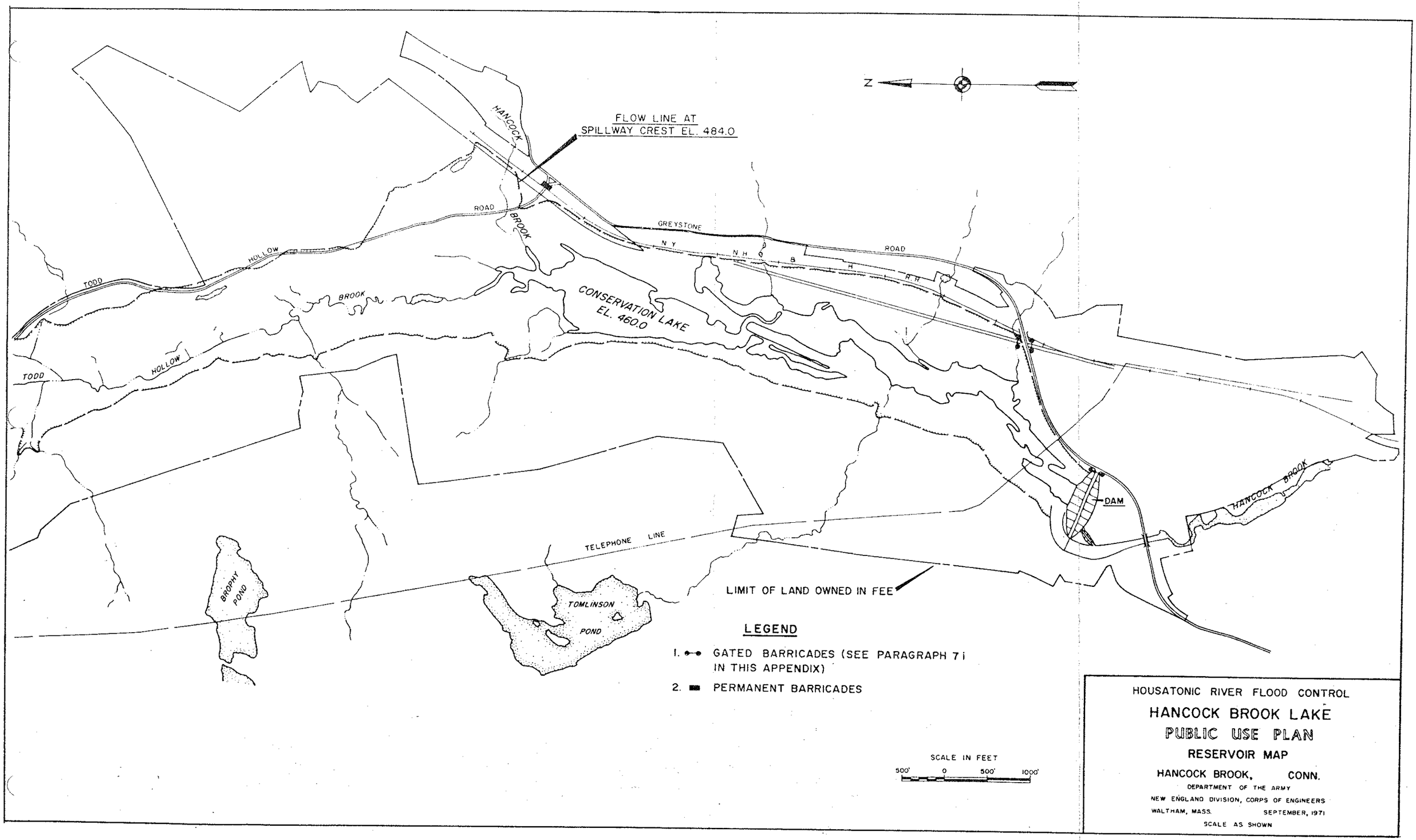
HOUSATONIC RIVER FLOOD CONTROL

HANCOCK BROOK DAM
GENERAL PLAN

HANCOCK BROOK CONNECTICUT.

APPROVED DATE DEC. 1961

Plate 2-3



HOUSATONIC RIVER FLOOD CONTROL

HANCOCK BROOK LAKE

PUBLIC USE PLAN

RESERVOIR MAP

HANCOCK BROOK, CONN.

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. SEPTEMBER, 1971
SCALE AS SHOWN

Plate 2-4

LOCATION OF STRONG MOTION INSTRUMENTATION

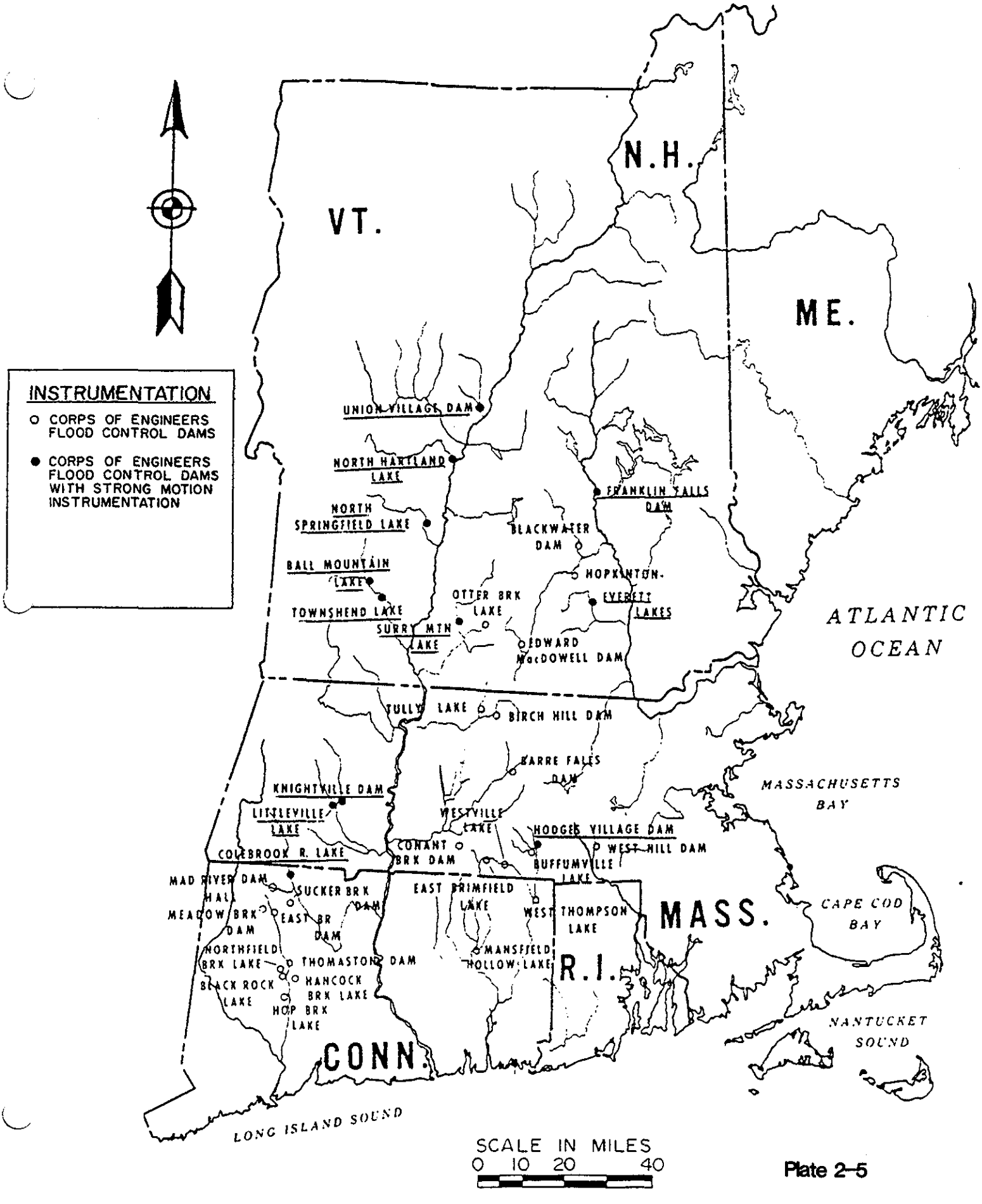


Plate 2-5

3. PROJECT STAFF

Hancock Brook Lake Dam is an unmanned dam, with its operation and maintenance handled by the staff at Thomaston Dam. In case of absence by the staff at Thomaston, assistance could be provided by the Project Manager and/or his assistants at Black Rock Dam. Hancock Brook Lake Dam is one of seven projects located in the Naugatuck River Basin. The Basin Manager is located in Middlebury, Connecticut which is approximately 10 miles distant. Future reference to "Project Manager" in this report means the designated Project Manager or an individual in charge (i.e. Assistant Project Manager, Seasonal Maintenance Worker, or other designated representative) of the Corps project.

4. COMMUNICATIONS

a. Reports From Corps Projects - The New England Division radio network consists of a link from Division headquarters in Waltham to various transmitters and relay facilities, which transmit voice signals to and from staffed reservoirs.

In addition to those base station radios, Corps projects are equipped with mobile radios to permit contact with Waltham Headquarters by field personnel during reconnaissance activities. Likewise, headquarters is also equipped with mobile radios.

Voice communications between Project Managers and Reservoir Control Center are normally made via the Division radio network during normal work hours or whenever headquarters is staffed. Whenever the radio network is inoperative or during non-work hours, reports and instructions are issued via telephone. In the event of failure of the radio network and telephone service, emergency communications will be attempted through State Police or Civil Preparedness radio facilities (see Plates 7-7a and 7-7b).

In the event of complete communication failure with Reservoir Control Center, the Project Manager can perform limited operations as referenced in Master Water Control Manual, Appendix A, paragraph 8.

b. Cooperation with Downstream Communities and Water Users - It is the policy of the Corps of Engineers to cooperate with downstream water users and other interested parties or agencies. The project manager may be requested by downstream users to deviate from normal regulation for short periods of time. Whenever a request for such modification is received, the manager shall ascertain the validity of the request and require the user to obtain assurance from others downstream that they are in agreement with the proposed operation. The manager will then relay the information to RCC for consideration. A minimum release from all projects for downstream fish life shall be maintained during periods of regulation.

c. Precipitation Reporting Network - Reports of precipitation data from the Housatonic River basin are used primarily for the purpose of alerting regulation personnel and providing a basis for appraising the severity of the storm.

The Reservoir Control Center periodically reviews network arrangements to insure than an adequate reporting network is maintained. The River Forecast Center in Bloomfield, Connecticut receives precipitation reports from observers in and near the Housatonic River basin, which are available to RCC upon request. In addition, cooperative reporting procedures from all Corps dams have been established with the River Forecast Center and have been detailed in separate memos to each project manager.

d. River Reporting Network - There is no River Reporting Network directly involved with the operation of Hancock Brook Lake Dam. The method of data collection for Hancock Brook Lake is contained in Section 5E.

e. Automatic Data Collection - The effective regulation of 35 flood control dams in the New England Division requires a rapid method of collecting and coordinating hydrologic data by the Reservoir Control Center (RCC). Consistent with this requirement, RCC maintains an Automatic Data Collection and Reporting Network (NEDSAT). NEDSAT presently consists of 43 remote reporting stations and one ground receive station at New England Division headquarters. The remote reporting stations are situated at selected USGS and NWS gages monitoring streamflow and precipitation data. This information is transmitted to NOAA's Geostationary Operational Environmental Satellite (GOES) and then retransmitted to the ground receive station in Waltham.

During normal conditions, data transmission from the stations will occur about 2 to 5 times a day. However, the frequency of data transmission increases as hydrologic conditions worsen, occurring as often as several times an hour for severe conditions. Data collection platforms (DCP's) at the reporting stations contain uninterruptible power supplies (UPS). The UPS allows the station to continue to operate after the normal power supply is interrupted, as in the case of major storms or hurricanes. Batteries used in the UPS are charged by commercial AC power thermoelectric generators or solar panels and can provide sufficient energy to operate up to 3 weeks, depending on system activities.

5. EMERGENCY IDENTIFICATION SUBPLAN

a. General - The object of this subplan is to describe procedures and means for assuring reliable identification and evaluation of existing or potential emergencies.

The failure of Teton Dam and other non-Corps dams has demonstrated the short period of time it takes for a dam to breach, the destructive potential of the uncontrolled release of water, and the importance of an effective and expeditious notification of the public to minimize loss of life and/or property. The Corps is committed to a program of dam safety, which includes the preparation of Flood Emergency Plans for our completed dam projects.

b. Possible Causes of Emergencies and Recent Studies - Various emergency situations may occur which adversely affect the dams' primary function of impounding water. As suggested by the 1980 Hydrologic Engineering Center guidelines on Flood Emergency Plans, these emergencies may be caused by one or a combination of the following events:

1. Earthquake
2. Landslide
3. Extreme Storm
4. Piping
5. Equipment Malfunction
6. Structural Damage
7. Foundation Failure
8. Sabotage or Enemy Attack

Hancock Brook Lake Dam received a periodic inspection in 1985, but no results have been published prior to the publication of this Flood Emergency Plan.

1. Structural Stability of Concrete Structures - Additional structural stability analysis for the principal concrete features at Hancock Brook Lake, which was completed in June 1966, has not been performed since the original design computations were made. To date, no schedule has been established for performing an analysis to determine whether the principal concrete structures satisfy current criteria.

2. Embankment Stability Re-evaluation - The embankment stability of the dam has not been re-evaluated based upon current criteria as contained in EM 1110-2-1902, dated April 1, 1974.

3. Seismic Stability - A preliminary seismic stability analysis was completed in August 1980 for the dam. This effort consisted of a pseudo-static earthquake stability analysis using three seismic coefficients based on the seismic risk map in ER 1110-2-1806, 1977 edition. The seismic coefficient of .025 assigned for the seismic risk map zone 1, in which in which the dam is located resulted in a minimum factor of safety of 1.40. For the seismic coefficient of .05 assigned for the next higher risk zone, a computed factor of safety of 1.3 was determined. Lastly, for a predicted peak acceleration of 0.25, which was based on historical epicenter data, resulted in a factor of safety of 0.82.

Since the completion of this preliminary seismic stability, the engineering regulation (ER 1110-2-1806) on earthquake analysis has been revised. The new regulation states that the pseudo-static method used in the preliminary seismic stability is no longer regarded as being appropriate for analysis of embankment of foundation response to seismic loading and therefore should be discontinued. However, at this time no further earthquake analysis is planned for the Hancock Brook Lake project.

4. Periodic Inspection - As previously stated, Hancock Brook Lake Dam received a periodic inspection during 1985, but no results have been published prior to the publicaiton of this Flood Emergency Plan.

c. Surveillance and Inspection -

1. Inspection of Floods - A condition which is of minor importance with relatively low reservoir levels may assume serious proportions with increasing pool levels, and the Project Manager must be constantly alert to note and report even minor failures or changes in the conditions of the embankment.

The Operations and Maintenance Manual for Hancock Brook Lake in chapter 2, paragraph 2, states the Inspection During Floods requirement. The manual states that when the reservoir is filling or storing water, the Project Manager will inspect the exposed faces of the dam, dike and dam abutments, particularly the downstream faces, for sloughs and springs. When the reservoir is being drawn down, the Project Manager will inspect the exposed faces of the dam, dike and dam abutments, particularly the upstream faces for slides. During any subsequent filling, storage and drawdown periods, inspection of the embankments shall be performed. Inspections shall be performed at least once a day when the pool is above elevation 469 feet NGVD. In addition, the Operation and Maintenance Manual requires that each time the reservoir is filling to a higher level than previously experienced (pool of record, elevation 477.4 feet NGVD, 58 percent full, June 1982), inspection of the downstream faces of the dam and dike shall be conducted at least twice daily during storage and at least three times weekly during drawdown until two weeks after completion of drawdown.

A practice is established within the Division whereby the experiencing of a certain pool elevation at a project will require that a reconnaissance of the project be performed by the geotechnical engineering staff of New England Division. Plate 5-1 shows the pool elevations requiring a reconnaissance inspection for all 35 New England Division projects. The pool elevation for Hancock Brook Lake is 477 feet NGVD.

2. Unusual Events Other Than Floods - Inspections should be made after the occurrence of an unusual event, such as, but not limited to, earthquake, sabotage, equipment malfunction, and other emergency conditions. However, often times the creation of the condition may at the time be unknown, and, therefore, it is important to recognize signs of distress and the necessary action to be implemented.

3. Guidance on Inspection Action - Plates 5-2a through 5-2g entitled "Signs of Distress" are to be used as a guide by the Project Manager for various types of observed conditions. Unless the dam is in imminent danger of failure, the Project Manager must coordinate all actions and notification with the Emergency Operations Center staff. Notification should follow procedures as outlined in the NOTIFICATION SUBPLAN (Section 7) of this report.

Plates 5-3a through 5-3d are an Inspection Checklist to be utilized by the predesignated technical Emergency Response Team which would inspect the dam for the emergency condition experienced. Due to the severity of a specific emergency condition, the Project Manager could be directed by Emergency Operations Center to complete this Inspection Checklist.

Plate 5-4 entitled "Description of Characteristic Effects for Earthquakes" is included to supplement the Inspection Checklist for descriptive categories on reporting an earthquake. Strong motion instruments which measure events greater than the triggering acceleration of 0.01g are available at Colebrook River Dam, Colebrook, Connecticut (approximately 35 miles distant). See Plate 2-5 for the location of these and other strong motion instruments in New England.

FLOOD CONTROL STUDIES - DATA SHEET

DATE_____

Reservoir	Placed in Operation	PREVIOUS HIGHEST RESERVOIR LEVELS								SELECTED RECONNAISANCE LEVEL			PRESENT LEVEL			
		Event	Elevation (ft,msl)	Stage (ft)	% Full	Event	Elevation (ft,msl)	Stage (ft)	% Full	Elevation (ft,msl)	Stage (ft)	% Full	Elevation (ft,msl)	Stage (ft)	% Full	Tendency
Union Village	1950	Apr 1969	534.2	114.2	53	Jun 1984	523.8	103.8	40	533	114	53				
North Hartland	1961	Apr 1969	518.2	128.2	64	Jun 1984	508.9	118.9	55	519	129	64				
North Springfield	1960	Apr 1969	530.8	78.8	69	Jul 1973	529.5	77.5	66	520	68*	50				
Ball Mountain	1961	Apr 1969	1003.3	197.8	82	Jun 1984	998.6	193.1	75	980	175*	82				
Townshend	1961	Feb 1981	539	82	70	Jun 1984	538.8	81.8	69	529	72*	50				
Surry Mountain	1941	Jun 1984	546.4	61.4	89	Mar 1948	542.6	57.6	78	542	57	78				
Otter Brook	1958	Jun 1984	771.7	88.7	82	Apr 1969	765.6	82.6	71	765	82	71				
Birch Hill	1941	Jun 1984	845.6	30.6	64	Mar 1979	841.6	26.6	46	840	25	40				
Tully	1949	Jun 1984	660.0	35.0	61	Apr 1960	657.3	32.3	50	657	32	50				
Barre Falls	1958	Jun 1984	799.7	-	64	Apr 1960	797.9	-	55	797	-	55				
Knightville	1941	Jan 1949	610.2	130.2	100+	Jun 1984	609.0	129.0	98	605	125	90				
Littleville	1965	Jun 1984	568.9	-	83	Mar 1980	551.8	-	51	549	-	46				
Colebrook River	1969	Jun 1984	757.5	-	90	Apr 1983	747.1	-	68	739	-	53				
Franklin Falls	1943	Mar 1953	375.7	75.7	76	Jun 1984	373.6	73.6	73	375	75	76				
Blackwater	1941	Apr 1969	561.6	46.6	74	Mar 1953	560	45	66	561	46	74				
Hopkinton	1962	Jun 1984	407.5	41.5)	59	Apr 1969	405.0	39.0)	44	405	39)	44				
Everett	1961	Jun 1984	405.5	80.5)		Apr 1969	397.1	72.1)		397	72)					
Edward MacDowell	1950	Jun 1984	943.2	39.2	85	Mar 1979	938.0	34.0	65	935	31	58				
Thomaston	1960	Jun 1984	467.2	87.2	50	Jun 1982	455.4	75.4	35	456	76*	35				
Black Rock	1970	Jun 1984	503.4	93.4	65	Jun 1982	494.5	84.5	50	490	80	42				
Hop Brook	1968	Jun 1982	349.9	57.9	53	Jun 1984	347.4	55.4	47	322	30*	47				
Hancock Brook	1966	Jun 1982	477.4	23.4	58	Mar 1980	473.0	19.0	36	477	23	56				
Northfield Brook	1965	Jun 1984	547.9	67.4	40	Jun 1982	540.4	59.9	30	537	57	26				
Hall Meadow Brook	1962	Jun 1984	873.5	23.5	24	Mar 1979	870.6	20.6	18	870	21	18				
East Branch	1964	Jun 1984	836.8	38.8	29	Sep 1975	836.1	38.1	27	836	38	27				
East Brimfield	1960	Jun 1984	645.1	26.1	47	Jun 1982	643.2	24.2	37	644	25	41				
Westville	1962	Jun 1984	565.5	50.5	56	Mar 1968	564.0	49.0	48	564	49	48				
West Thompson	1965	Jun 1984	330.9	38.9	53	Mar 1968	329.5	37.5	48	329	37	48				
Hodges Village	1959	Mar 1968	488.9	23.4	43	Jan 1979	488.0	22.5	40	485	19*	29				
Buffumville	1958	Mar 1968	509.9	28.4	44	Jan 1979	508.7	27.2	40	509	28	44				
Mansfield Hollow	1952	Jun 1982	247.6	52.6	66	Aug 1955	246.8	51.8	65	245	50*	59				
West Hill	1961	Mar 1968	258.3	24.3	60	Jan 1979	258.2	24.2	59	254	20*	38				
Conant Brook	1966	Jun 1984	720.0	27.0	16	Jun 1982	717.5	24.5	13	720	27	16				
Sucker Brook	1970	Dec 1973	906.2	25.2	24	Mar 1979	904.8	23.8	22	906	25	24				
Mad River	1963	Jun 1984	929.6	74.6	25	Mar 1980	922.3	67.3	19	922	67	19				

February 1986 — Prepared by Geotechnical Engineering Branch and Water Control Branch

* Prior Seepage Problem

Plate 5-1

SIGNS OF DISTRESS

ACTION ON REPAIRS SHOULD ONLY BE INITIATED IF TIME IS OF ESSENCE DUE TO OBSERVED DISTRESS NOTIFICATION SUBPLAN

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
1. SEEPAGE				
a. Wet area on embankment slope or any other area downstream of the embankment, with very little or no surface water, or minor seeps.	This may be caused by infiltration of rain water which is not serious, or may be the start of a serious problem, which would be indicated by a quick change to one of the conditions below.	None required.	Size and location of seepage area and approximate time condition is noted and quantity of surface water.	Observe periodically until sure that seepage does not change into one of the conditions noted below.
b. Same wet area as above, with moderate seeps of clear or relatively clear	Not serious - Clear seep water and rate of flow not increasing.	Try to measure rate of flow, inspect all downstream areas, and report any new seeps.	Size and location of seepage areas and time condition noted and approximate time flow rate. Notify Emergency Operations Center (EOC).	When project is not storing flood waters and is acting as a dry reservoir, failure of the dam is very remote. During flood stages, the seepage area must be periodically watched for critical developments.
	Could lead to failure relatively clear seep water, but rate of flow increasing.	Same as above.	Size and location of seepage area, time condition noted, and approximate flow rate. Notify EOC.	Same as above. During stages, observe condition periodically, until otherwise notified.
c. Piping (Seepage with removal of material from foundation or embankment),	Could lead to failure. Cloudy to muddy water and rate of flow is increasing.	Same as above. Place Inverted Filter over seepage area. If needed, use larger stones on top of filter. Use filter cloth at bottom if available. (Don't try to plug or stop the flow of water.) Also, consider lowering pool.	Size and location of seepage area, time that condition was noted and approximate rate of flow. Notify EOC.	Observe problem periodically until otherwise notified.
	Failure imminent - If along with piping there is an upstream swirl (whirlpool)	Same as above. If discharge tends to displace filter material, use larger stones to	Size and location of seepage area, time condition was noted and approximate flow	Observe periodically.

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
c. Piping (Cont'd)	caused by water entering at the abutments or through the embankment.	control velocity; then place filter material and top with larger stones. Plugging of the upstream entrance of the pipe should be attempted (See Observed Condition 3 below.) Also, consider lowering the pool.	rate; and location and approximate site of whirlpool. Notify EOC and if failure is in progress, notify local officials and downstream residents.	
d. Boils - Soil particles deposited around water forming a cone. (Boils can vary from a few inches in diameter spaced 2 to 3 feet apart to isolated boils several feet in diameter.)	Not Serious - Emerging water in developed cone is clear and rate of flow is not increasing.	Check all downstream areas, other boils or seeps, and report to EOC.	Size and location of seepage area, time condition was noted and approximate flow rate.	Observe periodically until otherwise notified.
	Could lead to failure - If emerging water is muddy and rate of flow is increasing.	Consider lowering the pool. Temporarily control the seepage by ringing the area with a sandbag dike. (See Plate 6-3 for schematic of ringing a boil.) The dike should be constructed to provide sufficient flow reduction to prevent loss of material at surface. A low place must be left on the dike for a spillway on the side toward natural drainage. If boils become so large that it is not practical to dike around them, place an inverted filter over the area, but do not stop the flow of water. ERT to consider installing well points or other system to relieve below ground pressures.	Size and location of seepage area, time condition was noted and approximate flow rate. Notify EOC.	Observe constantly until otherwise notified.

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
d. Boils (Cont'd)	Failure Imminent - If emerging water is muddy, rate of flow increasing, and if there is an upstream swirl (whirlpool) caused by water entering at the abutments or through the embankment.	Same as above. Plugging of the upstream entrance of the pipe should be attempted. (See observed condition 5 below.) Lower the pool.	Size and location of seepage area, time condition was noted and approximate flow rate; and location and approximate size of whirlpool. Notify EOC and if failure is in progress, notify local officials.	Observe constantly.
2. SINKHOLES				
a. Above piping tunnel in foundation or embankment.	Could lead to failure - If problem occurs in conjunction with piping or boils problem.	If in conjunction with boils problem, place inverted filter material in sinkhole. (See 1.c and 1.d above.) Check area for other sinkholes or seeps, and report to EOC.	Size and location of sinkhole and seepage area and approximate flow rate. Notify EOC.	Observe periodically until otherwise notified.
b. Above outlet works conduit.	Could lead to failure - If conduit cracks or structural damage.	Check conduit for cracks or damage and repair as soon as possible in coordination with guidance provided by Emergency Response Team (ERT).	Same as above plus description and size of cracks or damage and seepage into conduit.	Observe periodically.
3. RESERVOIR/ WHIRLPOOLS	Usually caused by water flowing through a piping tunnel through the embankment or abutment.	Open outlet gates to lower the pool after contacting EOC. An attempt should be made to plug the entrance with large rocks or anything else that is available.	Time condition noted, location noted, location, and approximate size of whirlpool and the exit area downstream.	Observe constantly for changes in the reservoir and/or the exit area.
	Note: During high pools when completely submerged, debris may come together above the intake, due to intake flow, and move in a rotating motion. If there is no evident downstream	Use Rip-Rap from the face of the dam, or any large rock, or other large material. If the large material placed in the hole appears to have reduced the flow, follow with progressively smaller material.	Notify EOC and if failure is in progress, notify local officials and downstream residents.	

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
3. RESERVOIR/ WHIRLPOOLS (Cont'd)	exit of piping, and the rotating debris is over the intake structure, then it can be assumed there is no	When flow is sufficiently reduced, place inverted filter over the downstream outlet of piping as noted in problem 1.c, Piping. Search abutments dam, and downstream of dam for seepage areas, sinkholes, boils, etc.		
4. SLIDES - Upstream or downstream slope of embankment for dams and dikes.	Not serious - If slide does not obstruct normal flow or intersect the crest and does not extend into the embankment more than five feet (measured perpendicular to the slope).	Coordinate any necessary work with Emergency Response Team (ERT).	Location, time first noticed, subsidence or bulging, whether water is emerging from slope, whether any movement can be visually detected and pool elevation.	Observe periodically.
	Could lead to failure - If slide passes through the crest, and water surface is more than 10 feet below the lowered crest.	Coordinate with EOC or ERT as to the proper remedial action. Start lowering pool by coordinating with RCC.	Report same data as above. Notify EOC.	Observe periodically until necessary repairs are completed.
	Failure Imminent - If 1) the slide passes the crest; and 2) the water surface is at or near (less than 10 feet	Start lowering the pool. Use every means possible to armor the crest and to restore loose freeboard.	Location, time first noticed, whether water is emerging from slope, whether any movement can be visually detected and pool elevation. Notify EOC and if failure is in progress, notify local officials and downstream residents.	Same as above.
5. CRACKS				
a. Embankment	Not Serious - If minor longitudinal crack in crest. If crack does not extend completely through the dam and lake water is more than ten feet below the base of the cracks.	Coordinate repair work with ERT.	Location, width, length and pattern (horizontal, vertical or in some intermediate direction), pool elevation.	Observe periodically until repair work is complete. NOTE: Although cracks can develop anywhere in the embankment, the most likely location is in the area over the valley abutment contact zone.

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
a. Embankment (Cont'd)	Could cause failure - If crack extends completely through the dam and lake water is at or near (less than 10 feet) the base of the crack.	Coordinate with ERT. Backfilling or other means of filling the crack will be be required after the extent of the crack is determined.	Same as above. Notify EOC.	Observe periodically until repair work is completed.
	Failure Imminent - If crack extends completely through the dam and water is entering the crack and emerging on the downstream side.	Plug the crack on the upstream side to the extent possible using spalls and gravel before adding bentonite or impervious material. This procedure will help prevent the washing out of the finer materials through the crack. The work should be started nearest the water surface on the upstream side. If the crack cannot be plugged from the upstream side, then plugging should be attempted from the downstream side with an inverted filter to prevent erosion of embankment materials. Start lowering the pool if 1) the water is less than 10 feet below the base of the crack or 2) if the water is entering the crack and emerging on the downstream side.	Location, width, lengths and pattern of crack; also flow rate at downstream exit. Notify EOC and if failure in progress, notify local officials and downstream residents.	Same as above.
b. Concrete Structures	Not serious - If cracks in conduit are 1/8 inch or less and are not changing. Seepage is constant and water clear.	Coordinate any necessary repair work with ERT.	Location, width, length and seepage conditions. Notify EOC.	Observe periodically.
	Could lead to failure - If width of crack or hole is	Crack should be plugged with oakum or other suitable ma-	Report same as above along with an estimate of the ma-	Observe periodically until flow is controlled.

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
b. Concrete Structures (Cont'd)	changing, seepage is increasing and water carrying material.	terials until final repairs can be made.	terial being carried. Notify EOC.	
	Failure Imminent - Width of crack is increasing. Seepage is increasing and water carrying embankment material.	Plug the crack to the extent possible. Initial material should be larger than the crack width. Lower the pool as soon as possible.	Location, when noticed, estimate of water flow and material being carried. Possible sources of material and if water inlet is visible in pool area and pool elevation. Notify EOC and if failure is in progress, notify local officials and downstream residents.	Same as above.
6. RIP-RAP OR OTHER SLOPE PROTECTION FAILURE	Not serious - If erosion is minor and pool is at a low level.	Repair work to be coordinated with ERT.	Elevation of damage; length of damage, in feet; pool elevation when damage occurred.	Observe daily until repair is completed.
	Could lead to failure - If erosion at low or high pool level is severe.	Repair using Rip-Rap. Rip-Rap may be dumped directly into the erosion scarp. The smaller stones will tend to settle to the lower portion of the stone mass, essentially creating a protective filter over the embankment soil. Coordinate repair with ERT. Temporary Repair Using Sandbags- If Rip-Rap is depleted, sandbags may be placed in the scarped area. Each bag should be filled with sand and tied to prevent loss of material. Placements should be by hand, sling or other methods that would prevent tearing of the bags. Bags filled with clay silts may be used only if sand is not readily available and other methods of repair cannot be implemented.	Same as above, except notify EOC.	Same as above.

SIGNS OF DISTRESS

Observed Conditions	How to Evaluate Severity of Condition	Guide For Action	Data to be Reported in Situation Report	Remarks
7. GATE FAILURE FOR OUTLET WORKS	No electrical power is available at Hancock Brook. Self-operated dewatering gates limit amount of outflow due to the gate size.	Coordinate any necessary repair work with Emergency Response Team (ERT).	Cause of failure and condition of gate. Notify EOC.	Observe periodically until repairs are completed.
8. EARTHQUAKE	Consult Plate 5-4 for characteristic effects of various earthquakes. Utilize Checklist provided in Plates 5-3a through 5-3d.	Check other problem areas cited.	Notify EOC with checklist results. If failure is in progress, notify local officials and downstream residents.	Observe continuously.

HANCOCK BROOK LAKE

INSPECTION CHECKLIST

Inspectors _____ Date _____ Time _____

_____

_____

_____

Pool Elevation _____ Tailwater Elevation _____

Item	Yes	No	Description	Insp. Init.
1. Dam				
A. Crest				
(1) Misalignment				
(2) Settlement				
(3) Heaving				
(4) Cracks				
B. Upstream Face				
(1) Misalignment				
(2) Cracks				
(3) Reservoir Surface Disturbance (eddy, vortex, etc.)				
C. Downstream Face				
(1) Misalignment				
(2) Cracks				
(3) Seepage*				
(a) Location				
(b) Quantity				
(c) Clear or Turbid				

HANCOCK BROOK LAKE

INSPECTION CHECKLIST

Item	Yes	No	Description	Insp. Init.
2. Gaging Building, Conduit and Outlet Structure				
A. Gaging Building				
(1) Misalignment				
(2) Settlement				
(3) Heaving				
(4) Joints				
(a) Offsets				
(b) Cracks				
(5) Cracks				
(6) Exposed Reinforcement				
B. Conduit, Outlet Structure				
(1) Misalignment				
(2) Joints				
(a) Offsets				
(b) Cracks				
(3) Cracks				
(4) Exposed Reinforcement				

HANCOCK BROOK LAKE

INSPECTION CHECKLIST

Item	Yes	No	Description	Insp. Init.
3. Dike				
A. Misalignment				
B. Settlement				
C. Heaving				
D. Cracks				
E. Seepage*				
(1) Location				
(2) Quantity				
(3) Clear or Turbid				
4. Spillway				
A. Misalignment				
B. Cracks				
C. Exposed Reinforcement				
5. Instrumentation Monitoring				
A. Monitor and Record				
(1) Reservoir Level Recorder				
(2) Crest Monumentation				
6. Downstream Left and Right Valley Slopes & Outlet Channel				
A. Slides				
B. Cracks				
C. Signs of Movement				

HANCOCK BROOK LAKE

INSPECTION CHECKLIST

Item	Yes	No	Description	Insp. Init.
7. Dam Access Roads and Parking Areas				
A. Signs of Movement				
B. Cracks				
8. Reservoir Surveillance (signs of new sliding, fresh fallen trees, cracking, etc.) and Inlet Channel				
9. Mechanical				
A. Stoplogs				

*Since it may take time for a seepage condition(s) to occur, visually inspect for seepage immediately after an earthquake. If no seepage or if no new or increased seepage (relative to condition(s) prior to earthquake) are detected, reinspect for seepage within 2-4 hours, 6-8 hours, 18-24 hours, and 48 hours after the earthquake unless otherwise instructed by Division. If a new or increased seepage condition(s) is detected during an inspection after the earthquake, monitor and record seepage hourly until instructed otherwise by Division.

DESCRIPTION OF CHARACTERISTIC EFFECTS FOR EARTHQUAKES

Instrumental	Detected only by seismography.
Feeble	Noticed only by sensitive people.
Slight	Like the vibrations due to a passing truck, felt by people at rest, especially on upper floors.
Moderate	Felt by people while walking; rocking of loose objects, including standing vehicles.
Rather Strong	Felt generally, most sleepers are wakened and bells ring.
Strong	Trees sway and all suspended objects swing; damage by overturning and falling of loose objects.
Very Strong	General alarm; walls crack; plaster falls.
Destructive	Car drivers seriously disturbed; masonry fissured; chimneys fall; poorly constructed buildings damaged.
Ruinous	Some houses collapse where ground begins to crack, and pipes break open.
Disastrous	Ground cracks badly; many buildings destroyed and railway lines bent; landslides on steep slopes.
Very Disastrous	Few buildings remain standing; bridges destroyed; all services (railway, pipes and cables) out of action; great landslides and floods.
Catastrophic	Total destruction; objects thrown into air; ground rises and falls in waves.

6. EMERGENCY OPERATIONS AND REPAIR SUBPLAN

a. General - This subplan provides guidance for emergency operations and repairs to deal with impending and existing emergencies affecting the operation and safety of the Hancock Brook Lake project.

b. Responsibilities - The Project Manager is designated as the responsible Corps of Engineers staff member to report the nature and magnitude of a specific problem. Minor remedial repairs will be handled through normal operating procedures. However, should an emergency situation occur at the site, the Project Manager should furnish information for the Situation Report as described in the NOTIFICATION SUBPLAN of this report.

Where sufficient notification time exists, technical guidance will be furnished to the Project Manager by the predesignated Emergency Response Team for emergency repairs. The team leader and/or members will normally provide on-site guidance during the initial stages of repair work. An emergency condition such as the resulting effects from an earthquake might preclude this on-site presence by the Emergency Response Team due to other hazardous conditions that prevent travelling to the site. The Emergency Response Team leader and/or members will be on site during the final inspection to insure that all work has been satisfactorily completed and remain in contact with the Project Manager through the follow-up monitoring stage.

When an emergency situation exists or is impending where sufficient notification time does not exist, Emergency Operations Center may direct a temporary emergency measure to be implemented by the Project Manager. As noted in the following Notification Subplan, when failure is in progress or is imminent, action will be taken by the Project Manager utilizing government resources at his disposal to try to save human life, prevent immediate human suffering, or mitigate major property damage or destruction.

Reservoir regulation changes due to emergency conditions will be directed to the Project Manager by the Reservoir Control Center.

c. Safety of Personnel and Equipment - Utmost care should be given to the safety of the personnel engaged in all remedial activities. When it is evident that failure is at hand and that the failure cannot be effectively delayed, all personnel will be ordered from the unsafe area at the discretion of the Emergency Response Team leader or the Project Manager if the Emergency Response Team has not arrived. Equipment should be moved to a safe area, but only to the degree practical as safety to personnel and time allows.

d. Inventory of Equipment, Materials and Suppliers -In order that various emergency situations can be addressed, it is necessary to preplan resources, such as equipment and material that may be required. Plates 6-1a through 6-1e are a list indicating where the following resources are available:

-Equipment and Materials Available at the Site

-Sources of Sand, Gravel, Stone and Concrete
-Contractors and Equipment
-Grouting Suppliers
-Drilling Equipment Contractors and Suppliers
-Military Construction Support
-Aircraft Support

e. Emergency Contract Authority - In an emergency situation, the Division Commander can activate emergency contracting authority for the following persons in the listed amounts (excluding architect-engineer work):

NAME	CAPACITY	AMOUNT
James E. Leonard	Resident Engineer Construction Division Office: (413) 593-6791/6792/6793) Home: (413) 739-9373	$100,000
Cornelius T. Morin	Chief, S&I Branch Construction Division Office: (617) 647-8478 Home: (603) 432-5529	$100,000
James C. Wong	Chief, Project Operations Branch, Operations Division Office: (617) 647-8411 Home: (617) 875-1555	$100,000

If additional equipment, contractual support, or supplies are needed, contract procedures and staff support shall be administered by the Division Procurement and Supply Office.

f. Dewatering - Releases by the Project Manager must be coordinated with the Reservoir Control Center. For Hancock Brook Lake the maximum nondamaging channel capacity immediately downstream is about 350 cfs.

Hancock Brook Lake Dam is a self-operated project in the fact that the outlet works are ungated; therefore releases and dewatering plans are not applicable. The 2'x 2' outlet is self-regulating since the flow is limited due to their constrictive size. Any impoundment that backs up at Hancock Brook can only be alleviated through the constant flow of this outlet works. The following plates are included to determine the amount of time needed to achieve natural dewatering of impoundments:

Plate 6-2a - Capacity Curve
Plate 6-2b - Capacity Table
Plate 6-2c - Percent Full Curve
Plate 6-2d - Spillway Rating Curve
Plate 6-2e - Outlet Rating Curve
Plate 6-2f - Inflow Curves

g. Guide For Repair/Response to Distress. The Hancock Brook Lake project was designed and constructed to withstand possible conditions that it may be subject to in the future. It is unlikely that an emergency condition would develop resulting in

distress which would seriously threaten the project and ultimately endanger life and/or property downstream. For the distress experienced at the project, excluding significant downstream releases, the Project Manager is to provide a SITUATION REPORT as described in the NOTIFICATION SUBPLAN. The degree of the distress and estimate of response time before catastrophe could occur dictates the type and quality of repair and/or temporary solution to be implemented.

Preferably, the technical assistance of the Emergency Response Team members or direction from Division Staff should be utilized to address the specific distress. With the specific distress resulting from one of the possible events cited in the Emergency Identification Subplan, many variables would be involved which would affect the nature of the repair or solution. The following paragraphs suggest emergency actions and/or treatments to be considered and supplement information in the matrix entitled "Signs of Distress" (Plates 5-2a through 5-2g) in the Emergency Identification Subplan. These are meant as a guide only.

1. Ringing a Boil or Use of a Granular Blanket -Seepage on the face of the embankment, large amounts of seepage, and seepage carrying fines are especially serious signs of distress. Excess seepage problems are most likely to occur when the lake water level is at higher than normal elevations. Thus, a driving force for this unusual seepage is the head of water imposed by the reservoir. To alleviate the above, consideration should be given to implement the guide to dewatering as discussed in Section 6-f to decrease the head.

Individual boils or small areas of seepage can be controlled on a temporary basis by ringing them with sandbags or other materials. See Plate 6-3 for a schematic of ringing a boil. Technical directions for ringing boils are as follows:

-The entire base of the sack ring is cleared of debris, in order to provide a watertight bond between the natural ground and the sack ring. Multiple nearby boils or soft areas in vicinity of the boil should be included within the sandbag ring.

-The base of the sandbag ring should be at least one and one-half times the contemplated height. The sacks are laid in a ring around the boil with joints staggered.

-The ring should be built only high enough to slow water flow to a point that no fines are carried. Do not shut flow of seepage completely off. The ring shall be of sufficient size to permit sacking operations to keep ahead of the flow of water.

-As shown on Plate 6-3, a low point of emergency spillway is provided on the top of the ring to carry off the water.

Longer term control and control of large areas of seepage can be effected by covering the area with a deep granular blanket graded from coarse sands at the bottom to coarse gravels at the top.

2. Overtopping - Although the spillway was designed to accommodate a Probable Maximum Flood, it is remotely possible for the discharge capacity to be exceeded under certain circumstances.

Despite the conservative efforts by designers to eliminate the danger of overtopping, certain unpredictable events, such as a landslide or earthquake could cause enough disturbance in the reservoir for overtopping of the dam to occur. Since landslides have not been experienced in the project's life (placed in operation in 1966), occurrence of this event is remote. If the earthquake's magnitude was high enough, a "large wave" could be created in the reservoir which could send water over the top of the dam. Also, a large landslide could displace enough water to raise the level of the reservoir in a short timeframe by a wave.

However, the dam was constructed with a rock-fill downstream face, which would make it somewhat resistant to erosion due to overtopping. Certainly, a corrective action, if the gates are operable, is to increase releases and consult the dewatering plan. If erosion to the slope has occurred due to overtopping, consideration should be given to filling the areas with rip-rap, sandbags, or a granular blanket. The preferred method depends on materials and labor available and the urgency of action. When the situation permits, the Emergency Response Team will provide direction on the type of repair.

3. Operator Absence or Disablement - As discussed in Section 3, Hancock Brook Lake is an unmanned project, with operation and maintenance performed by the staff at Thomaston Dam. Should the staff at Thomaston Dam be unavailable, the Project Manager and/or Assistant Project Manager, or the staff at Black Rock could assist to operate the project. The Naugatuck River Basin Manager will designate the individual who will assume control at the project.

4. Sabotage - Sabotage threatens are to be taken seriously. Should a threat occur, the staff member receiving the call should attempt to obtain information similar to that acquired for a BOMB THREAT (Plate 6-4). The information should be reported to Emergency Operations Center and the Division Chief of Security & Law Enforcement.

An actual act of sabotage may range from minor disruptions to quasi-military attacks by knowledgeable and well-equipped professionals. The effects of sabotage fall into one of three categories: a) not affecting safety of the dam; b) posing a minor or future safety problem; and c) posing an immediate, serious safety problem. All threats or acts of sabotage will be reported immediately to Emergency Operations Center and the Division Chief of Security and Law Enforcement.

Depending on the severity of the sabotage act and the resulting urgency of action, remedial repair work could be directed by the Emergency Response Team or alternately dependent

on information provided in the SITUATION REPORT, the Project Manager may be directed to initiate some temporary remedial action.

INVENTORY OF EQUIPMENT, MATERIALS & SUPPLIERS

1. Materials Available at Hancock Brook Lake

NO EQUIPMENT AVAILABLE AT HANCOCK BROOK; all equipment will be brought from Thomaston Dam including:

1 Pick-up Truck
1 Dump Truck
1 Tractor/Front End Loader
1 Payloader/Backhoe (Black Rock Dam)
1 Brush Chipper

In addition, Crisafalli Pumps are also located at the following Corps of Engineers Projects:

1 - Tully Lake, Athol, MA
1 - Franklin Falls Dam, Franklin, NH
1 - Buffumville Lake Dam, Oxford, MA
2 - NED Headquarters, Waltham, MA
2,000 sandbags available at Naugatuck River Basin Office, Middlebury, CT. 2,000 bags also to be stockpiled at Thomaston Dam.

1-12 inch Crisafalli Pump - Pumping capacity is 5000 gal/min. at 10 foot head or 3750 gal/min. at 20 foot head. A power take-off is required from a farm tractor or similar equipment for operating the pump. The tractor must have a minimum of 50 PTO horsepower.

2. Sources of Sand, Gravel, Stone, and Concrete

A) On Project Sources

Location (Tract No.)	Silt, Sand (for sand bags)
300	Sand

B) Off Project Sources

Iffland Lumber Co. Torrington, CT	(203) 489-9218
O & G Industries Torrington, CT (Materials at Bogue Road & Burlington)	(203) 489-9261
Innes Bros. Thomaston, CT	(203) 283-4377

CONCRETE

Concrete Pumping Service

Di-El Concrete Pumping Pleasantville, CT	(203) 628-4871
ECAP Construction Co. Fairfield, CT	(203) 374-5925
Modern Concrete Pumping Inc. Newington, CT	(203) 233-6362
New England Pumpco Inc. Wallingford, CT	(203) 265-5209
Waterbury Foundation Co., Inc. Waterbury, CT	(203) 575-0757

Concrete - Ready Mixed

City Ready Mix Concrete Co. Waterbury, CT	(203) 754-9073
F & F Concrete Corp. Pleasantville, CT	(203) 628-9674
Iffland Lumber Co. Torrington, CT	(203) 489-9218
McCleary Bros. Inc. Watertown, CT	(203) 274-8824
McCleary Bros. Inc. Waterbury, CT	(203) 753-1778
McCutcheon Concrete Inc. Bristol, CT	(203) 589-3929
Monroe Ready-Mix Concrete Inc. Newtown, CT	(203) 426-9900
O & G Industries Inc. Harwinton, CT	1-800-822-4953

3. Contractors and Equipment

The following can supply bulldozers, loaders, cranes, backhoes, shovels, gradalls, rollers, graders, dump trucks, etc.

INVENTORY OF EQUIPMENT, MATERIALS & SUPPLIERS (cont'd)

Bob's Construction Thomaston, CT	OR	(203) 283-8123 (203) 283-5704
Pratt Bros. Contractors Plymouth, CT		(203) 283-4936
Innes Bros. Contractors, Inc. Thomaston, CT		(203) 283-4377
O & G Industries Inc. Torrington, CT		(203) 489-9261
Stanley J. Dziedzic Torrington, CT		(203) 482-6344
Frederick Pesce Harwinton, CT		(203) 482-0242

4. Grouting Suppliers

U.S. Grout Corporation Fairfield, CT	(203) 336-7900
Ware-Cote Corporation West Haven, CT	(203) 933-7167

5. Drilling Equipment Contractors & Suppliers

Nelson Precision Drilling Company Glastonbury, CT	(203) 633-6837
John F. Sima Well Drilling Southington, CT	(203) 628-7415
Soiltesting Inc. Oxford, CT	(203) 888-4531
Clarence Welti Associates Inc. Glastonbury, CT	(203) 633-4623
Amer Sawing & Drilling Co. Inc. East Granby, CT	(203) 658-0486
Conn. Test Borings Inc. Seymour, CT	(203) 888-5777
East Coast Drilling Inc. Wallingford, CT	(203) 269-9160

Loren Indorak Drilling Inc. (203) 762-0027
Wilton, CT

6. Military Construction Support

Fort Devens, MA, 39th Engineer Battalion (Combat). This unit's military operations include building roads and bridges, installing mine fields, destroying enemy barriers, and fighting as an infantry.

Point of Contact

Post Commander, M.G. Joseph J. Skaff (617) 797-2601/2605
Commander 39th Engr. Battalion
Lt. Col. David R. Ruf (617) 796-2080/2008

642nd Engineer Equipment Co. (CSE). This unit maintains and operates construction equipment and serves as construction unit for installation.

Point of Contact

Post Commander, M.G. Joseph J. Skaff (617) 796-2126/3923
Company Commander 642nd
Captain Lynell E. Terway (617) 796-3623/3117

7. Aircraft Support

Military

Contact Flight Operations Officer at
Moore Army Airfield, Ft. Devens, MA (617) 796-3261/3130

Utility helicopters (8-9 persons) or observation helicopters (2 persons) are located at airfield.

Private

Air Cobra (203) 239-1223
New Haven, CT

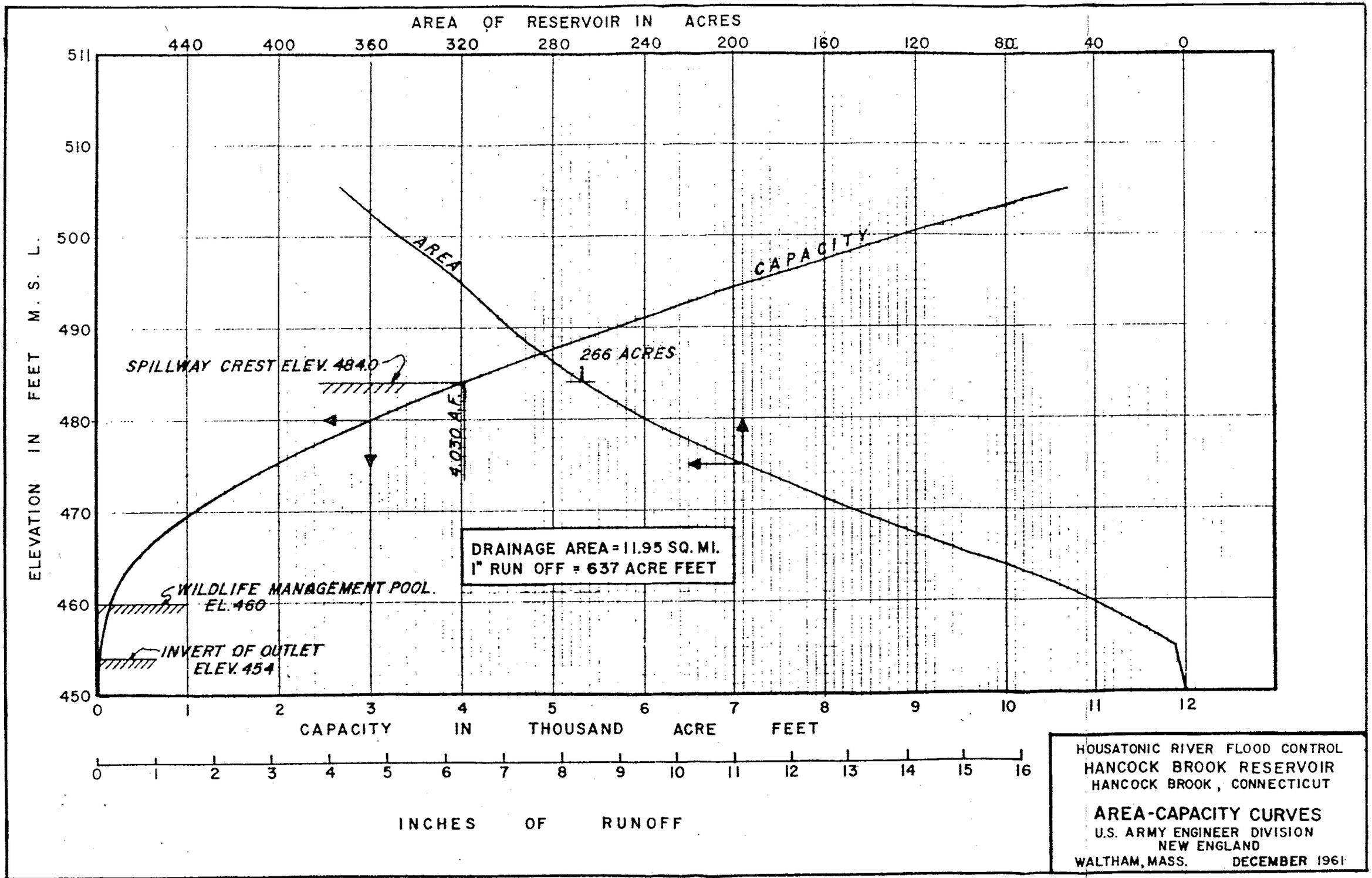
Waterbury Airport (203) 283-5819
Waterbury, CT

Air Travel (203) 489-2700
Torrington, CT

Beechcraft East (516) 752-0770
Farmingdale, NY

INVENTORY OF EQUIPMENT, MATERIALS & SUPPLIERS (cont'd)

Corporate Jet Aviation Southbury, CT	(203) 264-2500
Danbury Airways Danbury, CT	(203) 792-0100
Interstate Aviation Plainville, CT	(203) 747-5519
New Haven Airways Haven, CT	(203) 469-2364 New
Transtate Aviation Oxford, CT	(203) 264-6525



HOUSATONIC RIVER FLOOD CONTROL
HANCOCK BROOK RESERVOIR
HANCOCK BROOK, CONNECTICUT

AREA-CAPACITY CURVES

U.S. ARMY ENGINEER DIVISION
NEW ENGLAND
WALTHAM, MASS. DECEMBER 1961

Plate 6-2a

HANCOCK BROOK LAKE
AREA-CAPACITY TABLE
DRAINAGE AREA = 12.0 SQUARE MILES

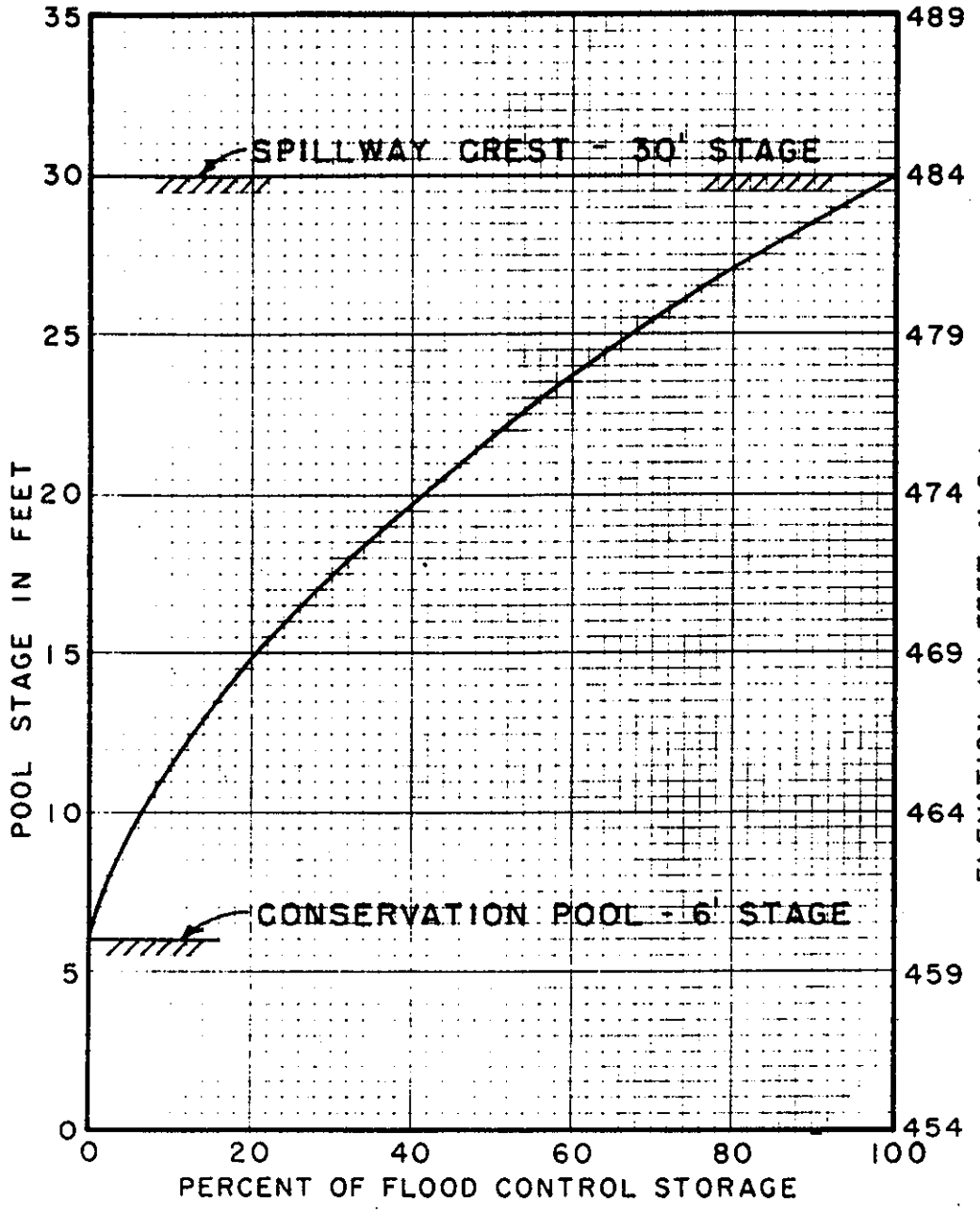
Stage (ft)	Elev. (msl)	Area (acres)	Capacity (ac/ft)	Capacity (inches)
0	454	0	0	0
1	455	7	6	0.01
2	456	10	14	0.02
3	457	18	28	0.04
4	458	26	50	0.08
5	459	34	80	0.13
6*	460	40	130	0.19
6	460	40	0	0
7	461	51	47	0.07
8	462	60	102	0.16
9	463	70	167	0.26
10	464	80	242	0.38
11	465	92	328	0.51
12	466	104	426	0.66
13	467	115	536	0.84
14	468	126	656	1.03
15	469	137	788	1.23
16	470	148	930	1.46
17	471	158	1,083	1.70
18	472	168	1,246	1.95
19	473	177	1,419	2.22
20	474	186	1,600	2.51
21	475	195	1,791	2.81
22	476	204	1,990	3.12
23	477	213	2,199	3.45
24	478	222	2,416	3.79
25	479	231	2,643	4.14
26	480	240	2,878	4.51
27	481	247	3,122	4.90
28	482	253	3,371	5.29
29	483	259	3,627	5.69
30	484	266	3,900	6.10

(Spillway Crest)

*Conservation Pool

(REV. 12/78)

PLATE 6-2b



NOTES:

1. DRAINAGE AREA - 12.0 SQ. MI.
2. FLOOD CONTROL STORAGE - 3900 ACRE FEET - 6.1 INCHES.
3. CONSERVATION STORAGE - 130 Ac. Ft. - 0.2 INCHES.
4. 1 INCH RUNOFF = 640 Ac. Ft.

WATER RESOURCES DEVELOPMENT PROJECT

HOUSATONIC RIVER BASIN

HANCOCK BROOK LAKE

PERCENT FULL CURVE

NEW ENGLAND DIVISION, WALTHAM, MA.

SEPTEMBER 1976

PLATE 6-2c

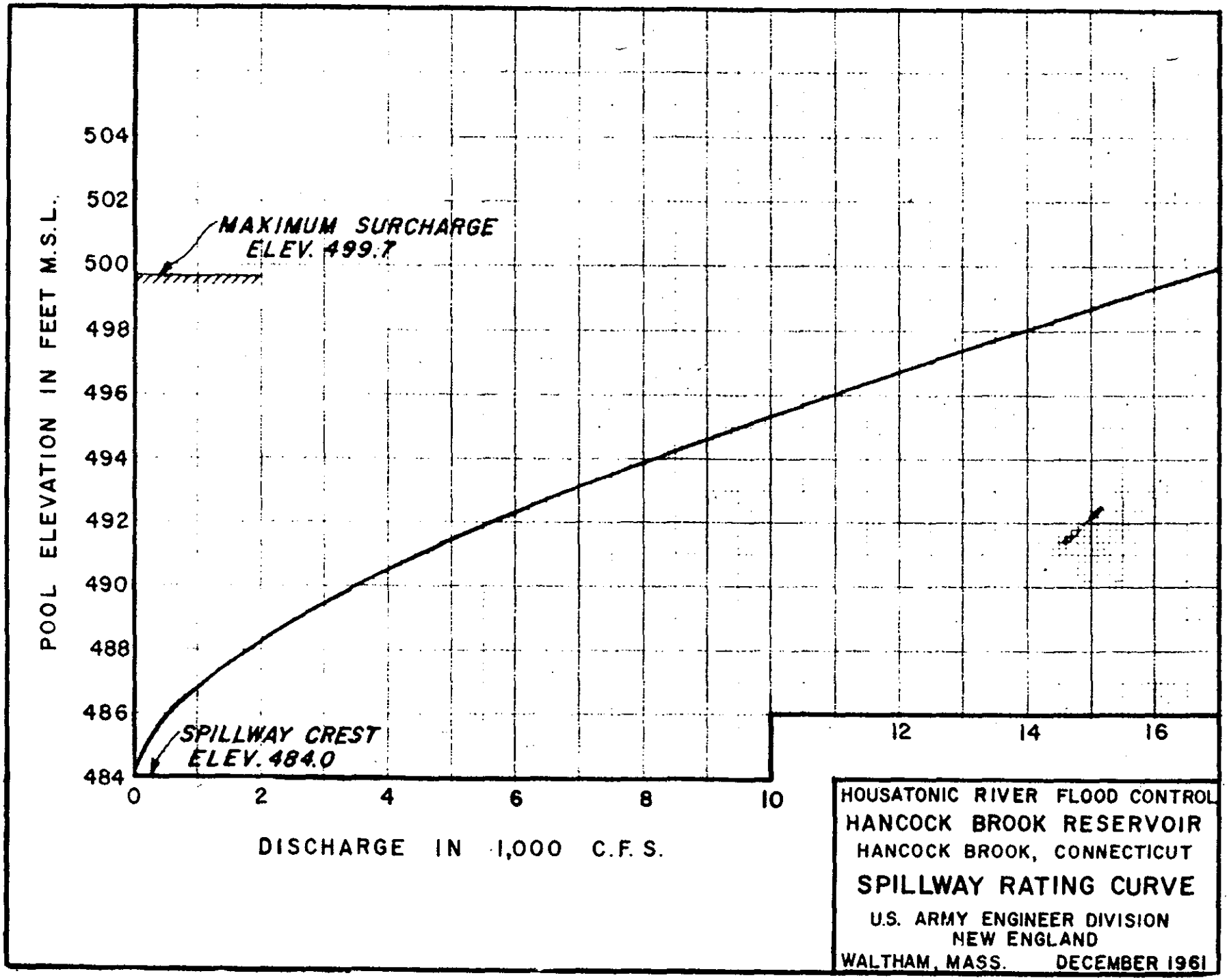
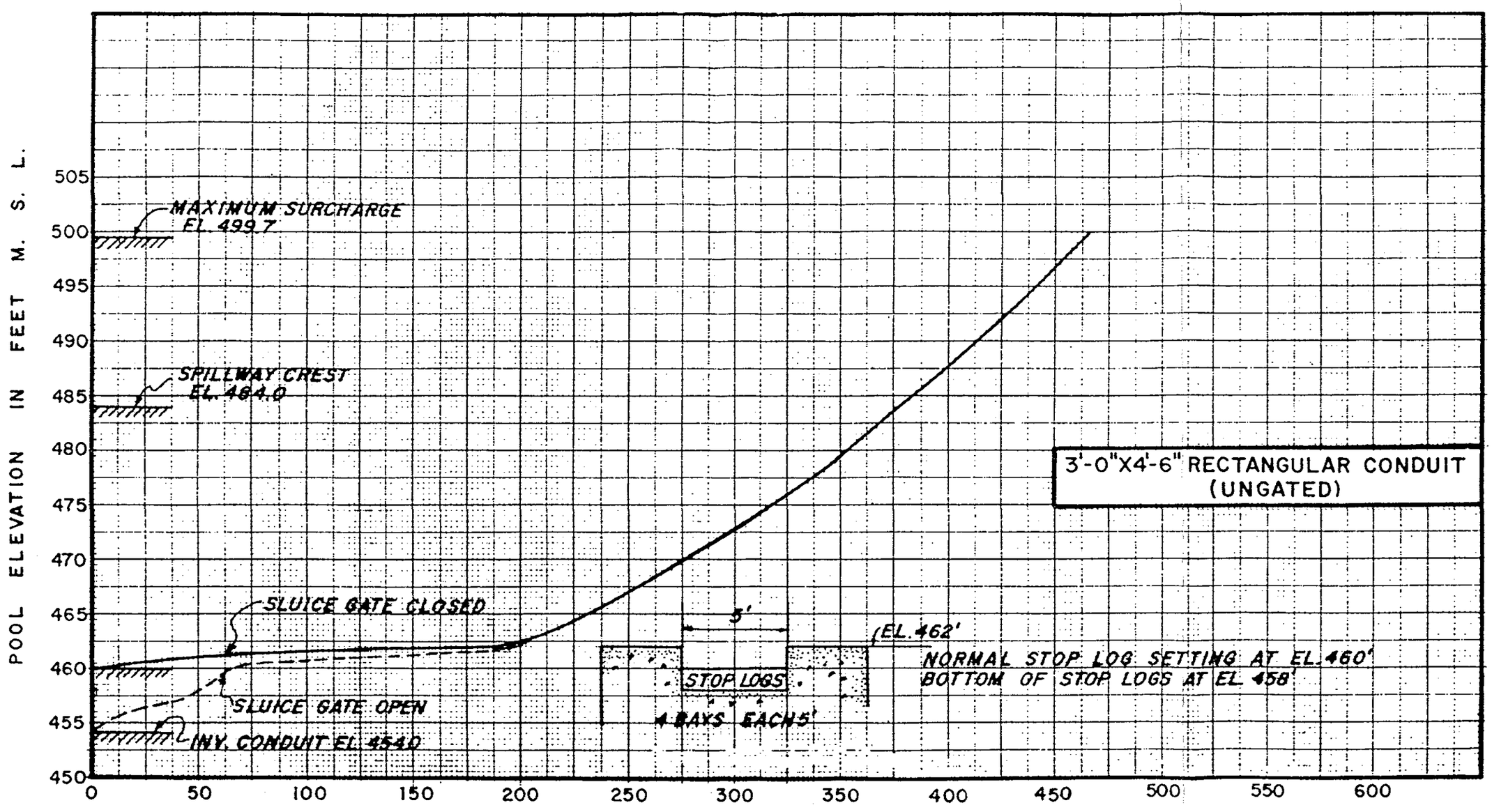
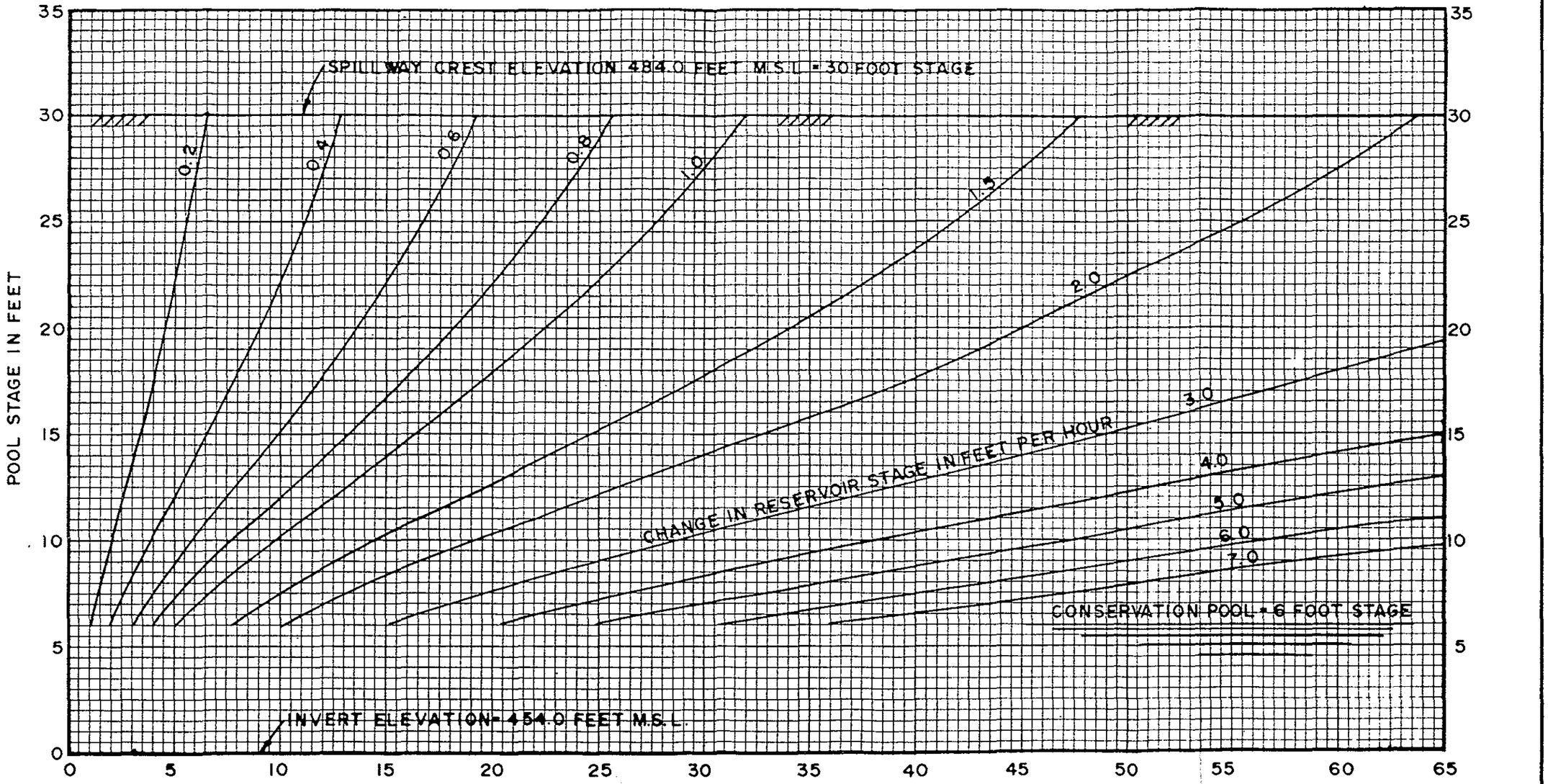

504
502
500
498
496
494
492
490
488
486
484
POOL ELEVATION IN FEET M.S.L.
MAXIMUM SURCHARGE
ELEV. 499.7
SPILLWAY CREST
ELEV. 484.0
0
2
4
6
8
10
12
14
16
DISCHARGE IN 1,000 C.F.S.
HOUSATONIC RIVER FLOOD CONTROL
HANCOCK BROOK RESERVOIR
HANCOCK BROOK, CONNECTICUT
SPILLWAY RATING CURVE
U.S. ARMY ENGINEER DIVISION
NEW ENGLAND
WALTHAM, MASS. DECEMBER 1961

PLATE 6-2d



HOUSATONIC RIVER FLOOD CONTROL
HANCOCK BROOK RESERVOIR
HANCOCK BROOK, CONNECTICUT
OUTLET RATING CURVE
U.S. ARMY ENGINEER DIVISION
NEW ENGLAND
WALTHAM, MASS DECEMBER 1961

Plate 6-2e



WATER RESOURCES DEVELOPMENT PROJECT

HOUSATONIC RIVER BASIN

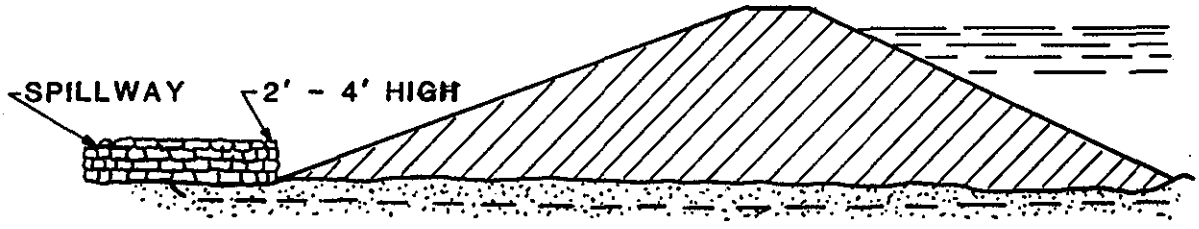
HANCOCK BROOK LAKE

INFLOW CURVES

NEW ENGLAND DIVISION, WALTHAM, MASS.

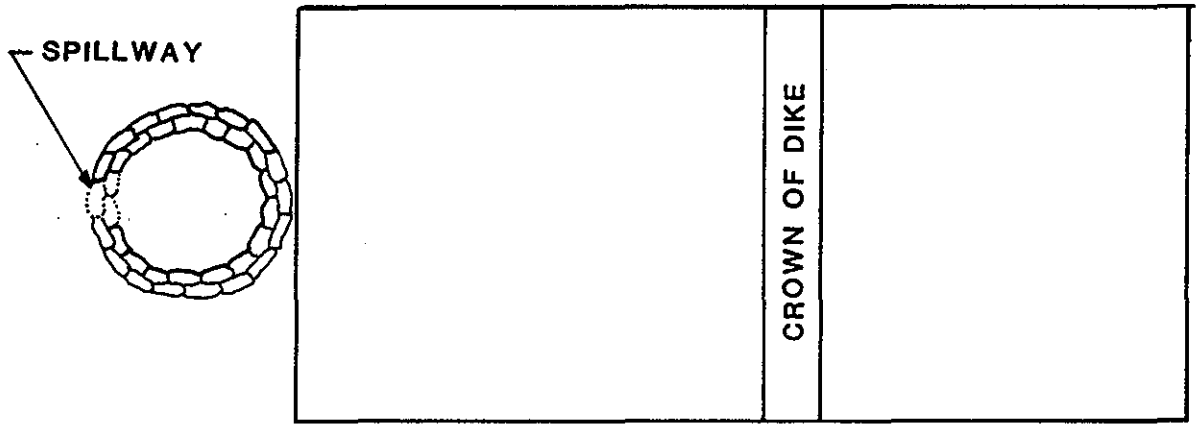
SEPTEMBER 1976

Plate 6-2f



ELEVATION

WALL SHOULD BE BUILT ON FIRM FOUNDATION, WITH WIDTH OF BASE AT LEAST 11/2 TIMES THE HEIGHT. BE SURE TO PLACE SACKS ON GROUND CLEAR OF SAND DISCHARGE. TIE INTO DIKE IF BOIL IS NEAR TOE.



PLAN

DO NOT SACK BOIL WHICH DOES NOT PUT OUT MATERIAL. HEIGHT OF SACK LOOP OR RING SHOULD BE ONLY SUFFICIENT TO CREATE ENOUGH HEAD TO SLOW DOWN FLOW THROUGH BOIL SO THAT NO MORE MATERIAL IS DISPLACED AND BOIL RUNS CLEAR. DO NOT TRY TO STOP FULLY, FLOW THROUGH BOIL.

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

RINGING A BOIL

MAINTENANCE INSTRUCTIONS

6-136 (Rev. 7-27-77)

FBI BOMB DATA CENTER

PLACE THIS CARD UNDER YOUR TELEPHONE

QUESTIONS TO ASK:

1. When is bomb going to explode?
2. Where is it right now?
3. What does it look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

EXACT WORDING OF THE THREAT:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sex of caller: _____ Race: _____

Age: _____ Length of call: _____

Number at which call is received:

_____

Time: _____ Date: __/__/__ FBI/DOJ

BOMB THREAT

CALLER'S VOICE:

____ Calm	____ Nasal
____ Angry	____ Stutter
____ Excited	____ Lisp
____ Slow	____ Raspy
____ Rapid	____ Deep
____ Soft	____ Ragged
____ Loud	____ Clearing throat
____ Laughter	____ Deep breathing
____ Crying	____ Cracking voice
____ Normal	____ Disguised
____ Distinct	____ Accent
____ Slurred	____ Familiar

____ Whispered

If voice is familiar, who did it sound like?

_____

_____

BACKGROUND SOUNDS:

____ Street noises	____ Factory machinery
____ Crockery	____ Animal noises
____ Voices	____ Clear
____ PA System	____ Static
____ Music	____ Local
____ House noises	____ Long distance
____ Motor	____ Booth
____ Office machinery	Other _____

THREAT LANGUAGE:

____ Well spoken (educated)	____ Incoherent
____ Foul	____ Taped
____ Irrational	____ Message read by threat maker

REMARKS: _____

_____

_____

_____

Report call immediately to:

_____

Phone number _____

Date __/__/__

Name _____

Position _____

Phone number _____

DO NOT DISCUSS CLASSIFIED INFORMATION ON THE TELEPHONE

Plate 6-4

7. NOTIFICATION SUBPLAN

a. General - The objective of this subplan is to describe the procedures and means for prompt notification of parties concerning an existing or potential emergency at the project. Prompt notification is essential for minimizing hazards to life and property.

Notification will consist of but not be limited to the following:

1. Internal Corps of Engineers notification
2. State and local officials and other federal agencies
3. Downstream officials
4. Media

To assure timely notification, it is mandatory to minimize its complexity in order to assure prompt action. Thus, three notification subplans (Plates 7-1, 7-2, 7-3) are selected to cover a wide range of eventualities which could cause the possible emergency. These three emergency situations are: (1) rapidly developing condition, (2) significant reservoir releases and or impoundment above spillway crest, and (3) dam failure in progress.

b. Rapidly Developing Condition - This situation is one in which the dam has not failed, but the project has experienced an emergency condition such as, but not limited to the following: sabotage, earthquake, landslide, foundation or abutment failure, slope failure or equipment failure.

The method of notification, as depicted on Plate 7-1, is dependent upon whether the situation report by the on-site Project Manager allows sufficient notification time before there is a hazard to life or significant property damage downstream. The Emergency Operations Center reviews the data in the Situation Report and decides whether to notify: (1) internal Corps elements, or (2) State Civil Preparedness and local officials. The Project Manager is defined as the on-site Corps staff member responsible for operation and maintenance of the project. In order for Emergency Operations Center to assess the intensity and magnitude of the emergency, the PROJECT MANAGER will expeditiously furnish information in the SITUATION REPORT to Emergency Operations Center. If Emergency Operations Center cannot be readily contacted, the PROJECT MANAGER will contact the CHIEF, Project Operations Branch - Plate 7-4 suggests information to be furnished in the Situation Report. Use of photographs is encouraged. A more detailed assessment of the emergency condition will normally be made by the Emergency Response Team completing the Inspection Checklist (Plates 5-3a through 5-3d).

The time available for action is one of the most critical elements to be considered and will generally govern the procedural notification scheme selected by Emergency Operations Center in accordance with Plate 7-1.

1. Rapidly Developing Condition (Sufficient Notification Time) - A rapidly developing condition with sufficient notification time is one in which the occurrence of a significant hazard to life and/or property is possible unless

timely repairs and/or modifications to operational procedures can be conducted to prevent dam failure. Based on the situation report furnished by the Project Manager, sufficient notification time exists such that Emergency Operations Center can contact the Emergency Response Team Leader. The Emergency Response Team is a predesignated interdisciplinary team responsible for assessing the emergency situation and recommending the next course of action. The Emergency Response Team Leader will mobilize those team members needed and expeditiously proceed either to the project site or the Division Office. The selected initial point of destination will be decided by the Team Leader by considering the safety of the team in traveling and the specific emergency condition being experienced at the project site. The designated team member and alternates with their respective office and home phone numbers are found on Plates 7-5a and 7-5b.

The procedural notification chain illustrated on Plate 7-1 indicates the Emergency Operations Center will also contact: (a) Chief, Project Operations Branch, (b) the Division Engineer, (c) Chief, Engineering Division, (d) Chief, Construction Division, and (e) the Public Affairs Officer. Since timely notification is of the essence, the Emergency Operations Center will proceed to contact the next party to be notified in the chain, should a designated contact point not be readily reached. The Division Notification List, consisting of the Emergency Response Team and the Division Personnel, is found on Plates 7-5a, 7-5b, 7-6a and 7-6b. The Office of the Chief of Engineers Notification List is found on Plate 7-8. The selected notification chain is designed for the adverse circumstances which could prevail in the middle of the night or on a weekend.

The Chief, Engineering Division, is the designated DAM SAFETY OFFICER.

2. Rapidly Developing Condition (Insufficient Notification Time) - Based upon the Project Manager's situation report, the time available to correct the emergency is very limited under this condition. Thus, the potential threat to downstream residents and/or property damage is heightened. Emergency Operations Center decides that with this limited notification time, the situation warrants that the State Civil Preparedness be contacted directly. Following notification of the State Civil Preparedness as indicated on Plate 7-1, internal Corps notification is initiated. Telephone numbers for non-Corps points of contact are listed on Plates 7-7a and 7-7b.

c. Large Reservoir Releases and/or Reservoir Impoundment - The Reservoir Control Center is designated as the element responsible for the initiation and coordination of this subplan. This plan applies to either impoundments above spillway crest elevation 484 feet NGVD which would result in uncontrolled releases or controlled releases by gates that exceed downstream channel capacity. Reservoir regulation procedures are described in Master Water Control Manual, Housatonic Water Basin. For either situation depicted in Plate 7-2, considerable judgement and experience would be used to vary the regulation in accordance with the amount of residual reservoir storage at Hancock Brook Lake, River stages and anticipated runoff in the watershed and weather forecasts.

For reservoir impoundments, expected to exceed spillway crest elevation 484 feet NGVD, Reservoir Control Center will contact Emergency Operations Center (Plate 7-2) and subsequent State and local officials will be notified by Emergency Operations Center. Alternatively, if sufficient time does not exist, the Project Manager at the direction of the Reservoir Control Center may contact directly the appropriate officials, (i.e., Police Chief of Waterville and Waterbury, and the Bethany barracks. (See Plates 7-7a and 7-7b.)

Similarly, for conduit releases that exceed downstream channel capacity, Reservoir Control Center will contact Emergency Operations Center.

In turn, Emergency Operations Center will contact the State Civil Preparedness and the local police chiefs. If sufficient notification time is not available, the Project Manager at the direction of Reservoir Control Center will contact directly the Police Chiefs in the downstream communities of Waterville, Waterbury, Harwinton, Watertown, Plymouth, Thomaston, Naugatuck, Beacon Falls and Seymour, and the State Police at the Bethany barracks.

d. Dam Failure in Progress - When dam failure is in progress or imminently about to occur, action will be taken by the Project Manager utilizing government resources at his disposal to save human life, prevent immediate human suffering, or mitigate major property damage or destruction.

When failure has occurred or is imminent, the Project Managers's first action should be to notify the Emergency Operations Center who in turn will notify the local officials (Plate 7-3). As depicted on Plates 7-12a and 7-12b, the blue shaded areas indicate areas which could be inundated, assuming a hypothetical dam break at Hancock Brook Lake with pool full to spillway crest. Since a dam break and the ensuing events are a highly unpredictable happening to precisely quantify, the plates are presented to provide information for emergency planning of potential areas to be evacuated. The map reflects conditions of an extreme nature with a very small probability of occurring and does not reflect in any way upon the integrity of the dam.

For details on the development of the dam-break analysis, which quantified the flood potential based on certain assumptions, see "Hancock Brook Lake-Dam Break Flood Analysis", dated September, 1985. Full size mylar drawings (30"x42") of the inundation mapping are located at the New England Division, Corps of Engineers (Engineering Division-Water Control Branch, Building 115N).

e. Notification of the Corps, Office of the Chief of Engineers (OCE) - In accordance with ER 110-2-101, "Reporting of Evidence of Distress of Civil Works Projects" dated 31 January 1984, the Chief, Engineering Division will immediately report conditions to Office of the Chief of Engineers, whereby an engineering evaluation of the evidence of distress indicates the need for immediate remedial action or the potential of failure. The Chief, Engineering Division will report such conditions

through command channels to the HQUSACE Dam Safety Officer. If the Dam Safety Officer cannot be contacted, the Division will follow the notification sequence as outlined on Plate 7-8.

f. Inquiries and Press Releases - Division personnel should refer all inquiries from the news media and general public regarding an "emergency condition" to the Division Public Affairs Office, (617-647-8778). The Division Public Affairs Office will be responsible for responding to these inquiries. Examples of press releases for both emergency conditions are presented in Plates 7-9a and 7-9b for information only. A notification list of radio and television stations serving the communities in the vicinity of Hancock Brook Lake Dam is also included in Plate 7-10 for notification by Public Affairs Office.

NOTIFICATION SUBPLAN

RAPIDLY DEVELOPING CONDITION

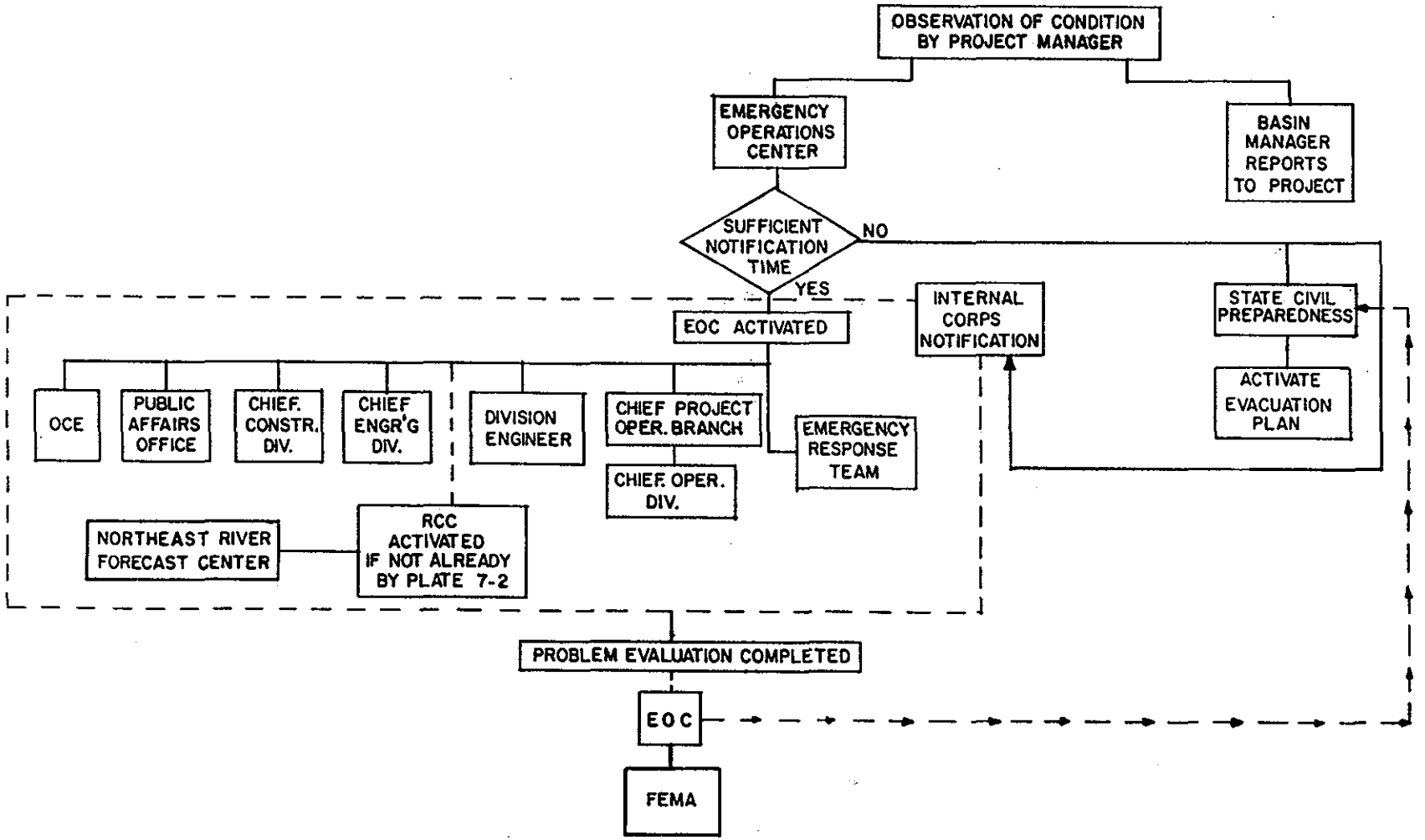


Plate 7-1

NOTIFICATION SUBPLAN

ANTICIPATED LARGE RESERVOIR RELEASES AND/OR RESERVOIR IMPOUNDMENT ABOVE SPWY CREST (EL.484)

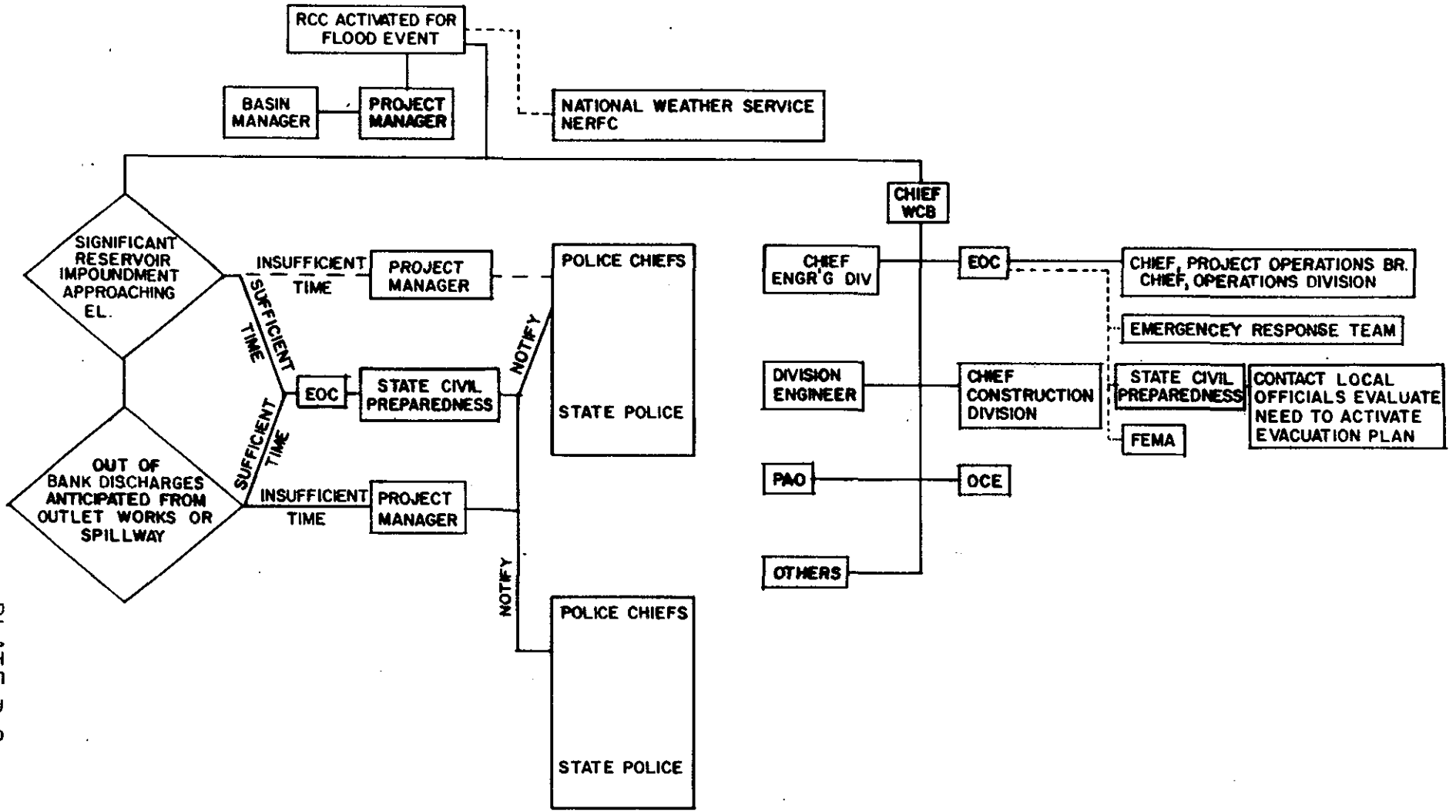
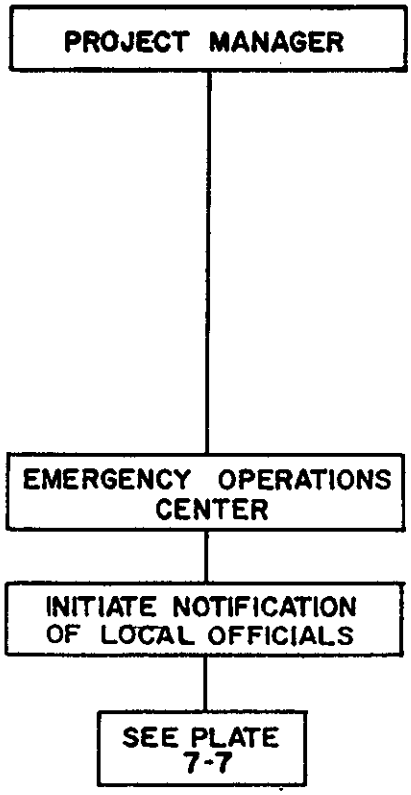


PLATE 7-2

NOTIFICATION SUBPLAN

DAM FAILURE IN PROGRESS



GUIDELINE FOR SITUATION REPORT

1. Project Location:

2. Name and Position:

3. Telephone Where You Can Be Reached:

4. Alternate Source of Communication:

5. Nature and Severity of Problem - Use Photographs

   a. Physical Dimensions (e.g., current dimensions, rate of flow, etc.)

   b. Time and Progression of Problem

   c. Probable Cause

   d. Current and Predicted Reservoir Condition

6. Remedial Action: (if applicable)

   a. Type of Corrective Action Initiated

   b. Possible and Proposed Action (noting available sources, equipment, etc.)

7. Staff at Dam Site:

8. Are Authorities or Private Citizens Aware of Problem?

DIVISION NOTIFICATION LIST/EMERGENCY RESPONSE TEAM

HANCOCK BROOK LAKE

Based upon the information provided in the Situation Report, Emergency Operations Center will decide whether to activate the Emergency Response Team to proceed to the project. Emergency Operations Center will contact the designated Team leader or alternate listed below in order to activate the team. The Team leader will be responsible for notifying the other team members or alternates inasmuch as the urgency of the "emergency condition" permits.

Geotechnical Representative,- Team Leader - John C. Hart	Office:	(617) 647-8597
	Home:	(617) 877-2870
Alternate Geotechnical Representative - Paul L'Heureux	Office:	(617) 647-8669
	Home:	(617) 673-1474
Hydrology/Hydraulics Representative - Townsend Barker	Office:	(617) 647-8631
	Home:	(617) 969-3065
Alternate Hydrology/Hydraulics Representative - Donald Wood	Office:	(617) 647-8601
	Home:	(617) 369-4537
Structural Representative - William Holtham	Office:	(617) 647-8204
	Home:	(603) 893-9438
Alternate Structural Representative - Dave Descoteaux	Office:	(617) 647-8204
	Home:	(603) 342-0287
Construction Representative - Connie Morin	Office:	(617) 647-8262
	Home:	(603) 432-5529
Alternate Construction Representative - Maurice Beaudoin	Office:	(617) 647-8263
	Home:	(617) 823-5422
Mechanical Representative - Anthony Mackus	Office:	(617) 647-8489
	Home:	(617) 275-2317
Alternate Mechanical Representative - Larry Young	Office:	(617) 647-8466
	Home:	(617) 472-4176
Electrical Representative - Frank Turner	Office:	(617) 647-8466
	Home:	(617) 597-2915
Alternate Electrical Representative - George Danek, Jr.	Office:	(617) 647-8489
	Home:	(617) 665-5434

DIVISION NOTIFICATION LIST/EMERGENCY RESPONSE TEAM (cont'd)

POB Representative - Bernie Manor	Office:	(617) 647-8331
	Home:	(603) 882-4180
Alternate POB Representative - Ruth Kitowicz	Office:	(617) 647-8291
	Home:	(617) 897-2690

Optional

Photographic Specialist - Ann Wright	Office:	(617) 647-7488
	Home:	(617) 628-5251
EOC Representative - Jack Caffrey	Office:	(617) 647-8270
	Home:	(617) 391-2836
Alternate EOC Representative - Tom Rosato	Office:	(617) 647-8272
	Home:	(617) 668-5130
Chief, Security & Law Enforcement - Lt. Col. William R. Cunningham	Office:	(617) 647-8225
	Home:	(617) 772-2338

CONTACT EOC FOR A SUBSTITUTION OR ERT MEMBER, DIVISION PERSONNEL, AND/OR PHONE NO.

DIVISION NOTIFICATION LIST/DIVISION PERSONNEL

HANCOCK BROOK LAKE

Commander Colonel Thomas A. Rhen	Office: (617) 647-8220 Home: (617) 772-4906
Deputy Commander Lt. Col. Edward D. Hammond	Office: (617) 647-8222 Home: (617) 944-6698
Chief, Operations Division Mr. Vyto Andreliunas	Office: (617) 647-8320 Home: (617) 249-7341
Chief, Project Operations Branch Mr. James Wong	Office: (617) 647-8478 Home: (617) 875-1555
Chief, Engineering Division Mr. Richard Reardon	Office: (617) 647-8500 Home: (617) 533-6271
Assistant Chief, Engineering Division Mr. Malcolm Givens	Office: (617) 647-8722 Home: (617) 355-4254
Chief, Construction Division Mr. Richard Carlson	Office: (617) 647-8260 Home: (617) 238-4191
Assistant Chief, Construction Division Mr. Peter Huie	Office: (617) 647-8260 Home: (617) 632-7539
Chief, Public Affairs Office Mr. Warren Nordman	Office: (617) 647-8778 Home: (617) 434-2397
Chief, Water Control Branch Mr. Lawrence Bergen	Office: (617) 647-8627 Home: (617) 376-5584
Chief, Reservoir Control Center Mr. Joseph Finegan	Office: (617) 647-8630 Home: (617) 535-0586
Chief, Emergency Operations Center Mr. John Caffrey	Office: (617) 647-8270 Home: (617) 391-2836
Natural Disaster Manager Mr. Thomas Rosato	Office: (617) 647-8272 Home: (617) 668-5130
Security Police for Waltham Federal Center	Office: (617) 647-8430
Chief, Procurement & Supply Division Louis Sylvain	Office: (617) 647-8415

DIVISION NOTIFICATION LIST/DIVISION PERSONNEL

Basin Manager Reese Morgan	Office: (617) 758-1723 Home: (617) 274-1627
Dam Project Manager* Allen Hoffman	Office: (203) 283-5540 Home: (203) 283-0656
Assistant Dam Project Manager* Roy Howe	Office: (203) 283-5540 Home: (203) 283-8443
Seasonal, Dam Operator Helper* Rich Gugliotti	Office: (203) 283-5540 Home: (203) 574-0618

*Located at Thomaston Dam

NOTIFICATION LIST FOR LOCAL AND STATE OFFICIALS AND OTHER FEDERAL AGENCIES

HANCOCK BROOK LAKE

Local Officials

Beacon Falls, CT

Police Department	(203) 729-3313
Fire Department	(203) 729-5323
Board of Selectmen	(203) 729-4340

Naugatuck, CT

Police & Emergency Medical Services	(203) 729-5221
Fire Department	(203) 729-2233
Civil Defense	(203) 729-8291
Town Hall	(203) 729-4571

Plymouth, CT (Bristol Numbers)

Police & Emergency Medical Services	(203) 589-7779
Fire Department	(203) 582-3248
Civil Defense	(203) 582-2434
Mayor's Office	(203) 589-8074

Oxford, CT

Police & Emergency Medical Services	(203) 888-7373
Fire Department	(203) 888-4411
Town Hall	(203) 888-2543

Seymour, CT

Police Department	(203) 888-3828
Fire & Emergency Medical Services	(203) 888-3821 & (203) 888-6144
Civil Defense	(203) 888-4212
Selectman's Office	(203) 888-2511

Waterville & Waterbury, Ct

Police & Emergency Medical Services	(203) 574-6911
Fire Department	(203) 753-3131
Civil Preparedness	(203) 574-6727
Mayor's Office	(203) 574-6712

NOTIFICATION LIST FOR LOCAL AND STATE OFFICIALS AND OTHER FEDERAL AGENCIES (Cont'd)

HANCOCK BROOK LAKE

Watertown, CT

Police & Emergency Medical Services	(203) 274-2533
Fire Department	(203) 274-2521
Town Hall	(203) 274-5411

Harwinton, CT

Police Department	(203) 482-7263
Fire Department	(203) 482-6531
Emergency Medical Services	(203) 482-6531
Town Hall	(203) 485-9612

State Officials

State Police - Southbury	(203) 755-0171
Connecticut - Litchfield	(203) 582-8143
(If busy, call) Bethany	(203) 756-8069
New Haven	(203) 789-7720
Civil Preparedness	
Connecticut - Hartford Office	(203) 566-3180
Dam Safety Official	
Connecticut - Hartford Office	(203) 566-7245

Federal Agencies

Northeast River Forecast Center	(203) 722-2014
Bloomfield, CT	(203) 722-2178
FEMA	(617) 223-1839
Region I - Boston	(617) 223-1840
	(617) 223-1841

HQUSACE CIVIL WORKS PROJECT

DISTRESS NOTIFICATION LIST

Lloyd A. Duscha	HQUSACE Dam Safety Officer and Chairman of Dam Safety Committee Office: (202) 272-0382 Home: (703) 860-1319
William N. McCormick	Chief of Engineering Division DAEN-ECE Office: (202) 272-0397 Home: (703) 569-4323
Jack R. Thompson	Assistant Chief of Engineering Division DAEN-ECE Office: (202) 272-0215 Home: (703) 978-5627
*Edward C. Prichett	Chief Geotechnical Branch DAEN-ECE-G Office: (202) 272-0207 Home: (301) 865-5876
*Cecil G. Goad	Chief Operations and Readiness Division DAEN-CWO Office: (202) 272-0196 Home: (703) 573-2704
Earl E. Eiker	Acting Chief Hydraulics and Hydrology Division DAEN-CWH Office: (202) 272-8509 Home: (301) 465-2120

* Members of HQUSACE Dam Safety Committee

Note:

For notification, the Corps, New England Division, Dam Safety Officer or his designee will contact the HQUSACE Dam Safety Officer who will notify the Director of Engineering and Construction, the Director of Civil Works and the Chief of Engineers. In the event that the reporting field office is unable to contact the HQUSACE Dam Safety Officer, the field officer will continue down the list until a contact is made with HQUSACE. The HQUSACE contact will then be responsible for notifying the Directors and the Chief of Engineers.

NEWS RELEASE FOR RAPIDLY DEVELOPING CONDITION

HANCOCK BROOK LAKE

_____ has been detected at Hancock Brook Lake
(Problem)
by the U.S. Army Corps of Engineers, New England Division.

A team of engineers from the Corps' New England Division will be investigating the _____ and evaluating
(Problem)
corrective measures to be taken.

The team will continue to monitor the situation and will be keeping officials in downstream communities apprised of developments. Evacuation plans would be implemented only if there was a likelihood for serious downstream damage from a failure of the dam at Hancock Brook Lake.

Based on available data concerning the _____
(Problem)
the situation is _____.

Further information will be made available as developments occur.

Plate 7-9(a)

NEWS RELEASE

FOR SIGNIFICANT RESERVOIR RELEASES AND/OR IMPOUNDMENT ABOVE SPILLWAY CREST

HANCOCK BROOK LAKE

Flooding along the Naugatuck River is occurring as a result of uncontrolled releases from Hancock Brook Lake according to the U.S. Army Corps of Engineers, New England Division. These releases are caused by _____.

--OR--

Due to _____, flooding is
(nature of problem causing impoundment)
being experienced in the communities of Plymouth, Waterbury, Watertown, Naugatuck, and Beacon Falls according to the U.S. Army Corps of Engineers, New England Division.

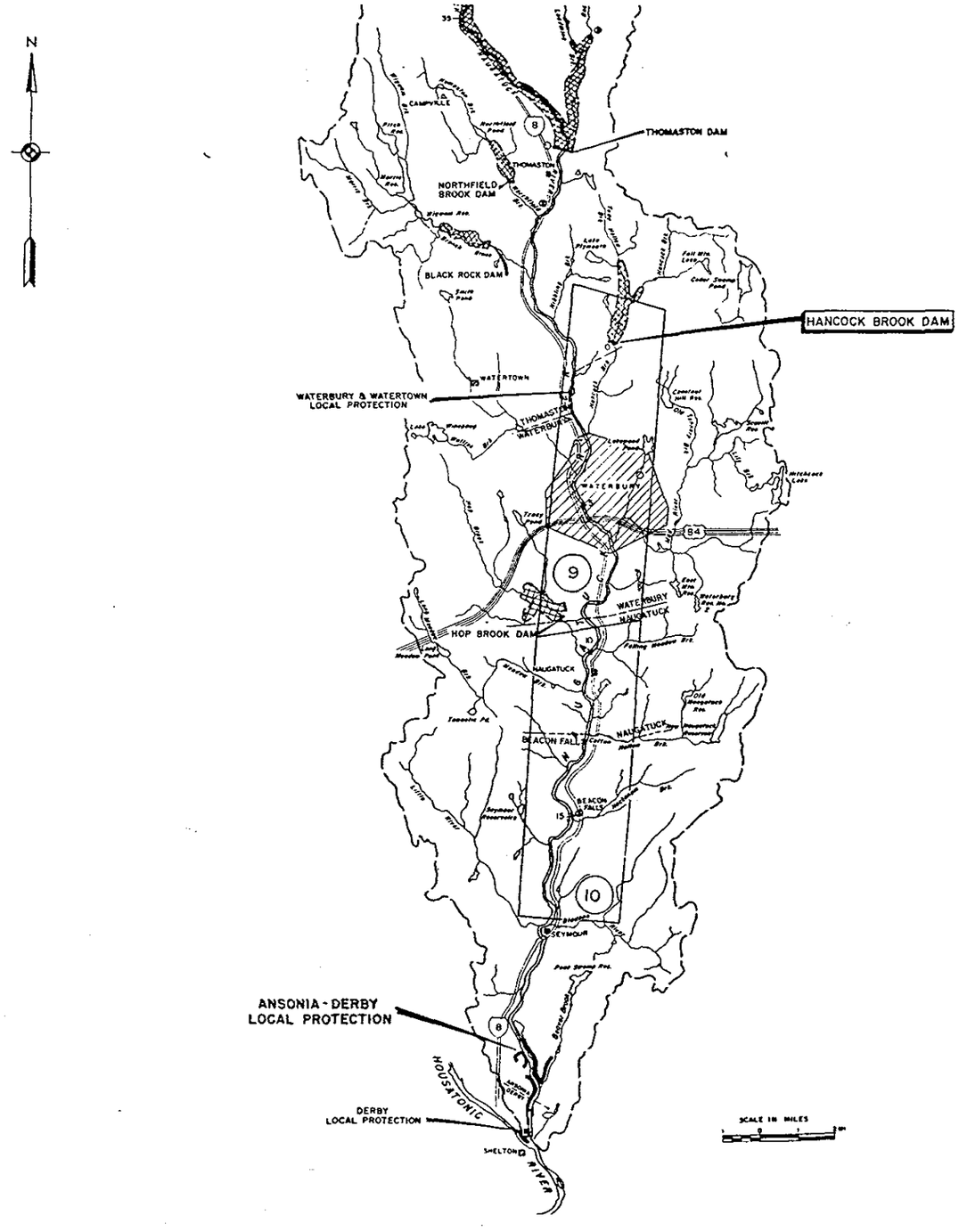
The Army Engineers continue to monitor the situation and will provide further information.

Plate 7-9(b)

HANCOCK BROOK LAKE

Media Notification List

Newspapers	Location	Telephone
AP	Boston, MA	(617) 357-8100
UPI	Boston, MA	(617) 227-4000
Radio Stations		
WSNG	Torrington, CT	(203) 489-4181
WPLT	Newington, CT	(203) 278-2775
WTIC	Hartford, CT	(203) 522-1080
WICC	Bridgeport, CT	(203) 366-9383
WADS	Ansonia, CT	(203) 735-4606
WATR	Naugatuck, CT	(203) 755-1121
WIOF	Prospect, CT	(203) 758-4459
W104FM	Prospect, CT	(203) 758-4459
WNVR	Naugatuck, CT	(203) 729-2291
WWYZ	Naugatuck, CT	(203) 755-3111
WQQW	Naugatuck, CT	(203) 753-2121
WDRC-AM	Hartford, CT	(203) 243-1115
Television Stations		
WVIT - Channel 30	Hartford, CT	(203) 521-3030
WETG - Channel 61	Hartford, CT	(203) 527-6161
WFSB - Channel 3	Hartford, CT	(203) 728-3333
WTXX - Channel 20	Waterbury, CT	(203) 575-2020
WWLP - Channel 22	Springfield, MA	(617) 786-2200
WHCT - Channel 18	Avon, CT	(203) 677-2281
WTNH - Channel 8	New Haven, CT	(203) 784-8888



CROSS SECTION DATA

PLATE NO.	SECTION NO.	RIVER MILE	DIST. D/S FROM DAM (MI.)	DAM BREACH FLOOD ARRIVAL TIME (HOURS)	DAM BREACH FLOOD PEAK TIME * (HOURS)	DAM BREACH FLOOD PEAK EL. (FT.-NGVD)
8	0.90	0.90	0.90	0.10	1.02	397.8
8	2.22	2.22	2.22	0.20	1.05	308.2
8	3.70	3.70	3.70	0.60	1.40	286.3
8	5.73	5.73	5.73	1.00	2.00	270.5
8	8.35	8.35	8.35	1.20	2.55	230.7
9	9.50	9.50	9.50	1.40	3.00	214.2
9	12.57	12.57	12.57	1.80	3.75	272.8
9	15.39	15.39	15.39	2.10	4.45	126.7
9	17.91	17.91	17.91	2.50	4.85	96.4

* FROM START OF BREACH FORMATION

LEGEND

- ⊘ U.S. GEOLOGICAL SURVEY GAGING STATION
- ■ CITIES
- ▬ FLOOD CONTROL DAM SITES
- +10 RIVER MILES DOWNSTREAM FROM HANCOCK BROOK DAM
- INUNDATION MAP PLATE (9) LOCATION OF MAP PANELS

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

HOUSATONIC RIVER BASIN
NAUGATUCK RIVER WATERSHED

HANCOCK BROOK DAM BREACH FLOOD

INDEX MAP

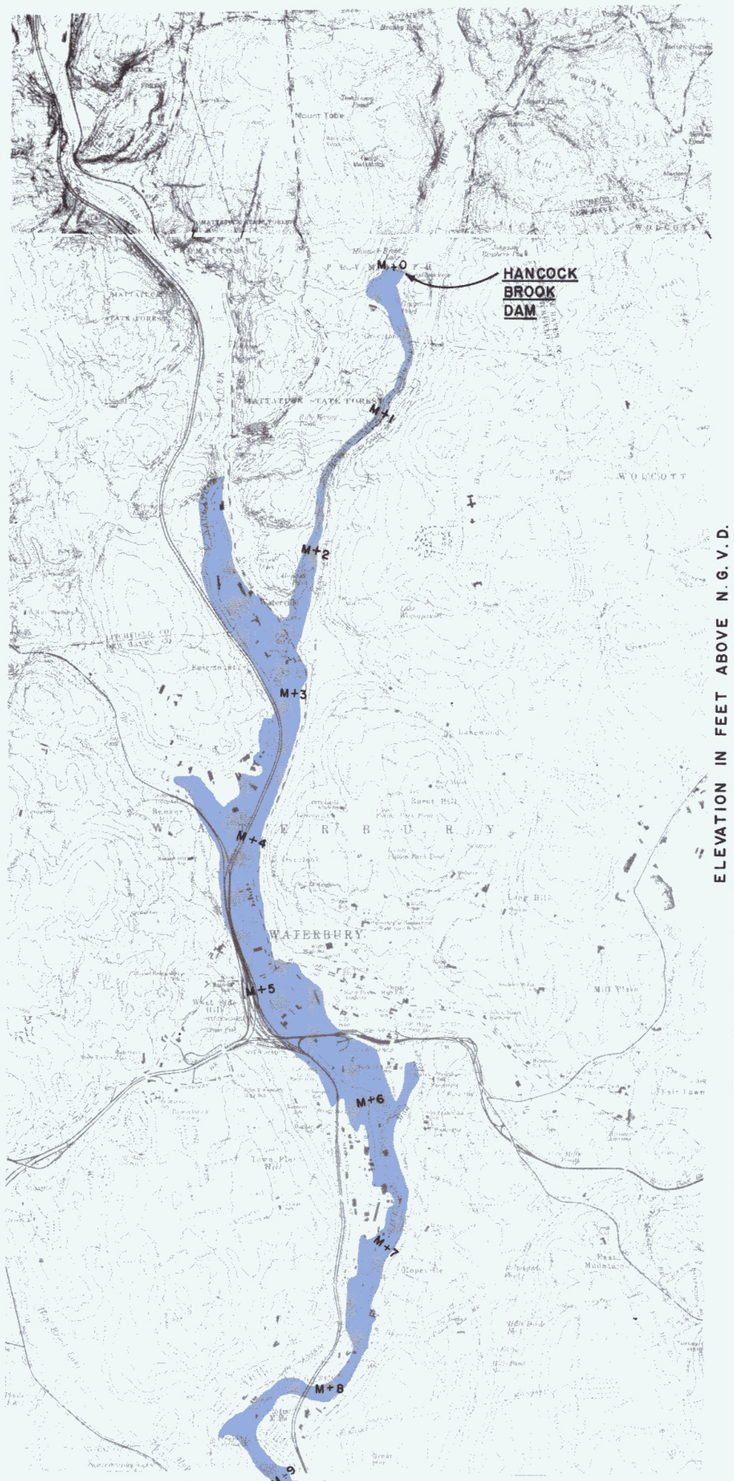
NAUGATUCK RIVER CONNECTICUT

HYDRO. ENGR. SECT. 1985

Plate 7-11

CORPS OF ENGINEERS

U. S. ARMY

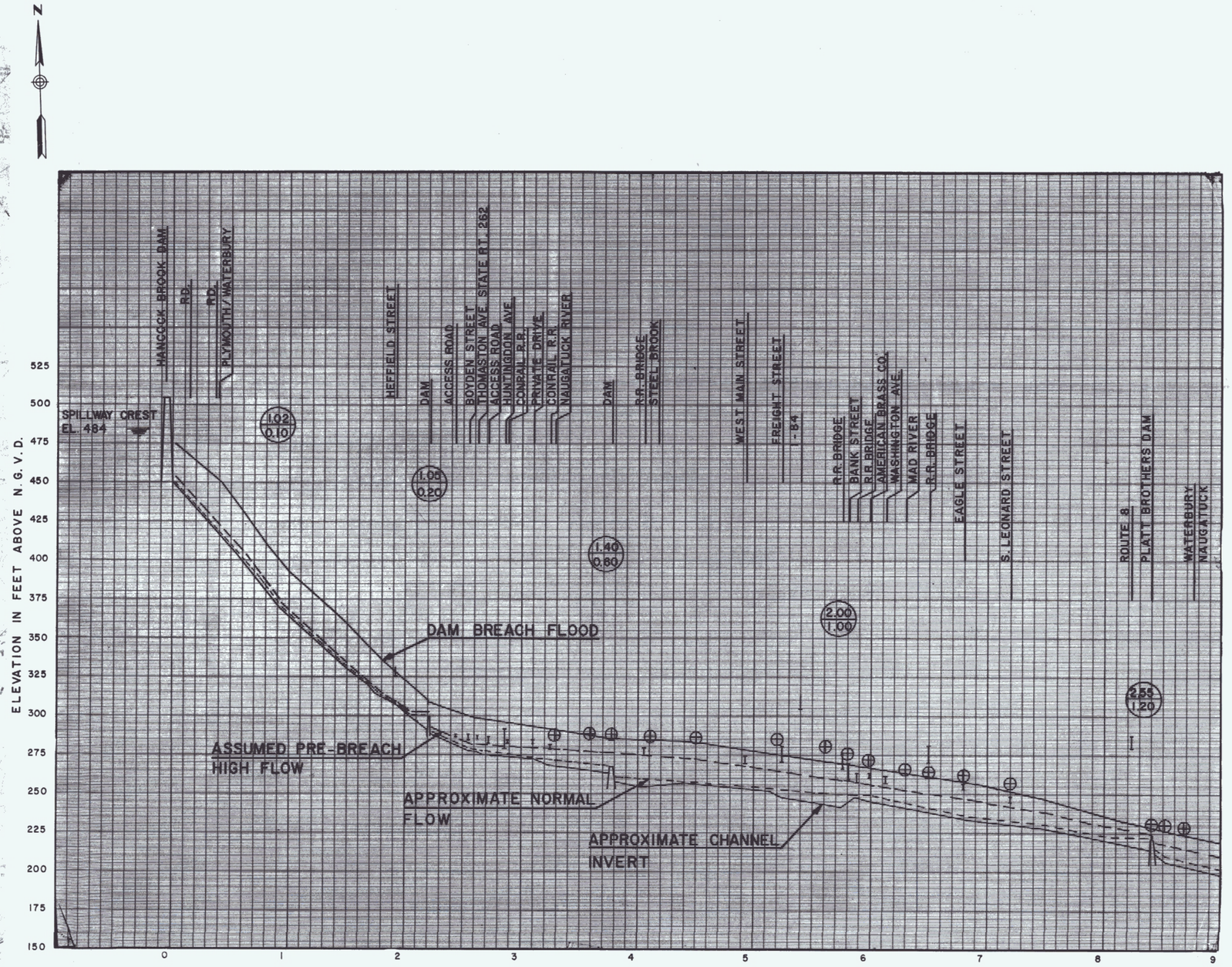


PLAN

SCALE: = 1" = 2000'

2000' 0 2000' 4000'

FEET



DISTANCE IN RIVER MILES DOWNSTREAM FROM HANCOCK BROOK DAM

LEGEND

- ⊕ EXPERIENCED AUGUST 1955 FLOOD ELEVATIONS
- 1.05 / 0.20 — HOURS FROM START OF FAILURE / HOURS TO INITIAL RIVER RISE
- LIMITS OF BREACH FLOOD

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

HOUSATONIC RIVER BASIN
NAUGATUCK RIVER WATERSHED

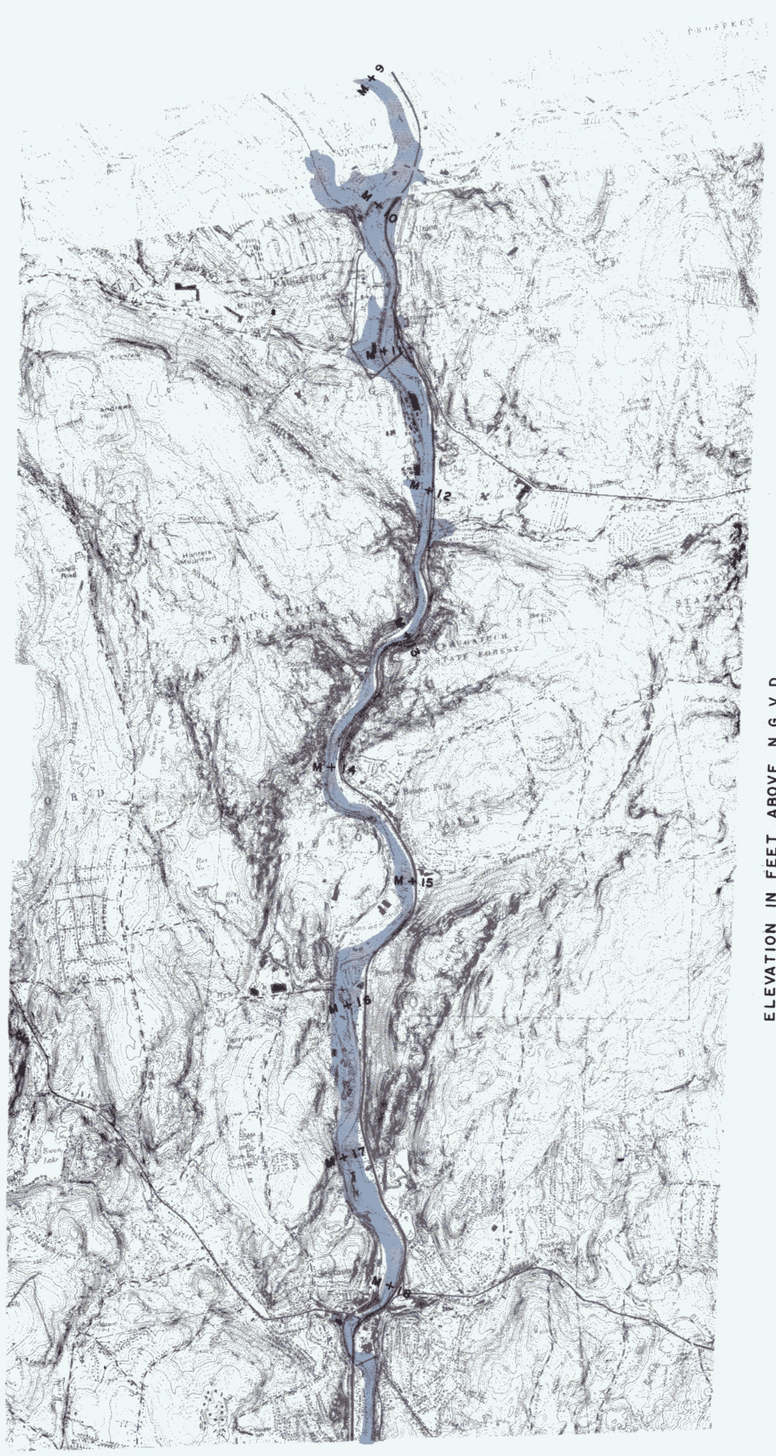
HANCOCK BROOK DAM BREACH FLOOD
PLAN & PROFILE #1

NAUGATUCK RIVER — CONNECTICUT

HYDRO. ENGR. SECT. — 1985

Plate 7-12a

CORPS OF ENGINEERS — U. S. ARMY

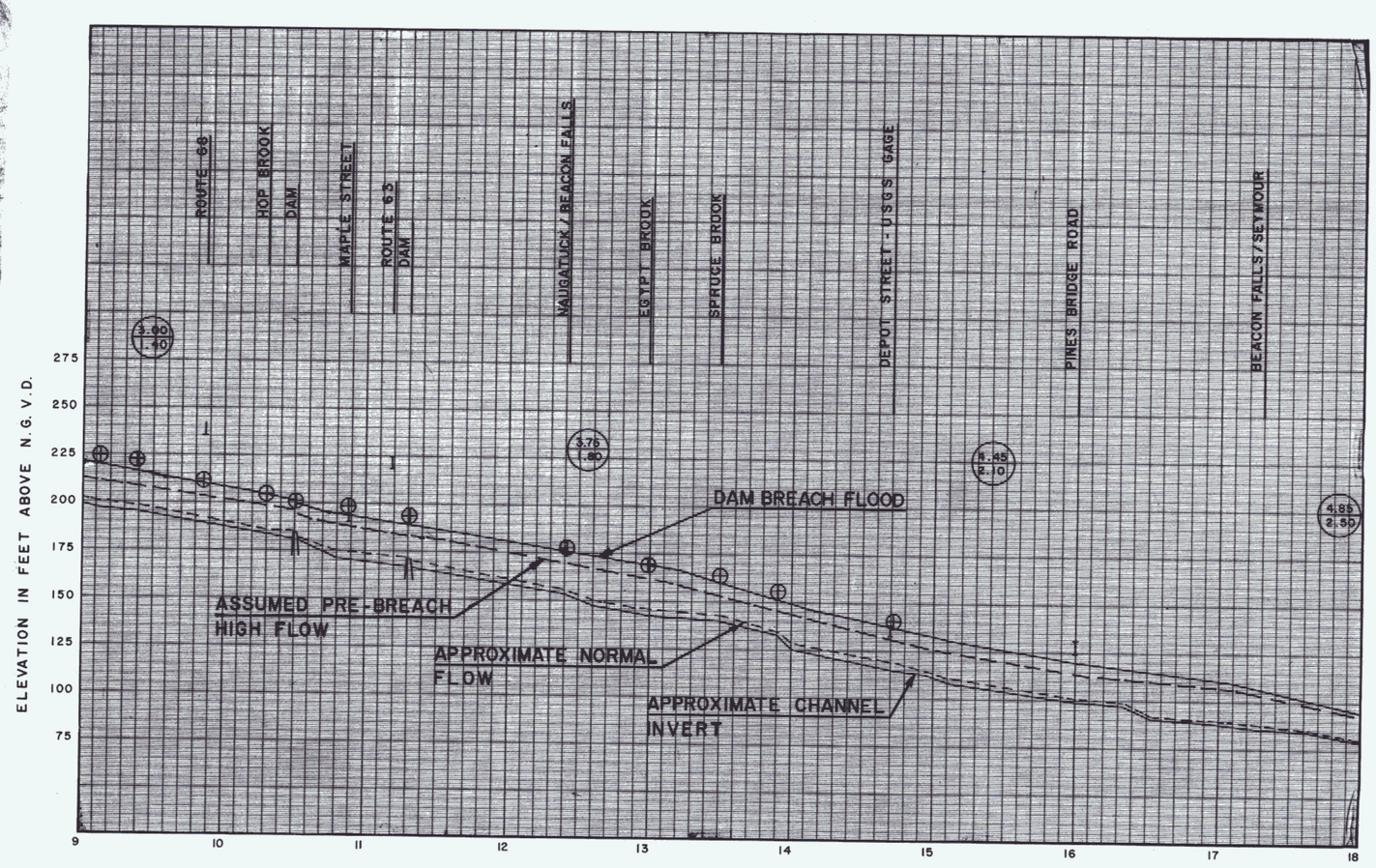


PLAN

SCALE: = 1" = 2000'

2000' 0 2000' 4000'

FEET



DISTANCE IN RIVER MILES DOWNSTREAM FROM HANCOCK BROOK DAM

LEGEND

- ⊕ EXPERIENCED AUGUST 1955 FLOOD ELEVATIONS
- 3.75 / 1.80 HOURS FROM START OF FAILURE / HOURS TO INITIAL RIVER RISE
- LIMITS OF BREACH FLOOD

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

HOUSATONIC RIVER BASIN
NAUGATUCK RIVER WATERSHED

HANCOCK BROOK DAM BREACH FLOOD
PLAN & PROFILE #2

NAUGATUCK RIVER — CONNECTICUT

HYDRO. ENGR. SECT. — 1985

Plate 7-12b

8. PERIODIC REVIEW AND UPDATE

In accordance with ER 1130-2-419, the notification and reporting reporting procedures prescribed in this Flood Emergency Plan should be reviewed at least annually with local, state and federal agencies at the field level with update as required.

In addition, the COE will periodically review and update this Flood Emergency Plan to keep it current. The MINIMUM specific items to be reviewed and updated are:

Section 1. INTRODUCTION

c. References

Section 2. DESCRIPTION OF PROJECT AREA

h. Instrumentation

Section 4. COMMUNICATIONS

e. Automatic Data Collection

Section 5. EMERGENCY IDENTIFICATION SUBPLAN

b. General

(1) Structural Stability of Concrete Structures
(2) Embankment Stability Re-evaluation
(3) Seismic Stability
(4) Periodic Inspection

c. Surveillance and Inspection

(1) Inspection of Floods

Section 6. EMERGENCY OPERATIONS AND REPAIR SUBPLAN

e. Emergency Contract Authority

Section 7. NOTIFICATION SUBPLAN

f. Inquiries and Press Releases

Plates	Titles
5-1	Required Reconnaissance Inspection for Predetermined Elevations at 35 Dams
6-1a through 6-1e	Inventory of Equipment, Materials and Suppliers
7-5a & 7-5b	Division Notification List/Emergency Response Team
7-6a & 7-6b	Division Notification List/Division Personnel

9. EVACUATION SUBPLAN

Evacuation plans are to be prepared by state and/or local Civil Preparedness officials. Upon completion, these plans will be included in this subplan.

The plans should include the following elements or any other appropriate element, as required:

a. Delineation of areas to be evacuated
b. Warning dissemination
c. Routes to be used
d. Traffic control measures
e. Shelters to be activated for the care of the evacuees
f. Methods for the movement of people without their own transportation
g. Identification of particular areas or facilities within the flood zones which will not require evacuation because of their location on high ground or similar circumstances.
h. Identification and development of special procedures for the evacuation and care of people from institutions, such as hospitals, nursing homes, and prisons.
i. Procedure for the perimeter and interior security of the area, including such things as passes, identification requirements and anti-looting patrols.
j. Procedures for the lifting of the evacuation and re-entry of the area.
k. Details indicating which organizations are responsible for specific functions and for furnishing the material, equipment, and personnel resources required.

The local jurisdiction should consider requesting the assistance of local Civil Preparedness Personnel, if available who may have experience in emergency work. State and local law enforcement agencies usually will be responsible for the execution of much of the plan and should be represented in the planning effort. State and local laws and ordinances may require that other state, county and local government agencies will have a role in the preparation, review, approval or execution of the plan. Before finalization, a copy of the plan should be furnished to the Corps for information and comment.