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NEW JERSEY DEPT OF ENVIRONMENTAL PROTECTION TRENTON
NATIONAL DAM SAFETY PROGRAM. FRANKLINVILLE LAKE (NJ-00442) DELA--ETC(U)
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DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT CORPS OF ENGINEERS
CUSTOM HOUSE - 2 D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO
NAPEN-N

13 JUN 1980

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, New Jersey 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for Franklinville Lake Dam in Gloucester County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, Franklinville Lake Dam, a high hazard potential structure, is judged to be in good overall condition and the spillway is considered adequate. To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. Within one year from the date of approval of this report, the following remedial actions should be undertaken:

(1) The central zone of the embankment crest should be rebuilt with a berm of uniform width and elevation.

(2) Dead trees should be removed from the upstream slopes and the disturbed areas regraded and seeded.

(3) The sluice gate should be repaired and its wheel located and stored for protection.

(4) Large stone riprap should be dumped in the stilling basin just below the spillway to preclude future undercutting of the sheetpiling toe.

b. Within three months from the date of approval of this report the owner should develop an emergency action plan and warning system in order to lessen downstream effects of an emergency at the dam.

NAPEN-N

Honorable Brendan T. Byrne

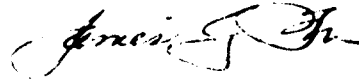
c. Within one year from the date of approval of this report, the owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam.

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman Florio of the First District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of this letter for NTIS to have copies of the report available.

An important aspect of the Dam Inspection Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,



1 Incl
As stated

JAMES G. TON
Colonel, Corps of Engineers
District Engineer

Copies furnished:
Mr. Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

Mr. John O'Dowd, Acting Chief
Bureau of Flood Plain Management
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

ACCESSION for		
NTIS	White Section	<input checked="" type="checkbox"/>
DDC	Buff Section	<input type="checkbox"/>
UNANNOUNCED		<input type="checkbox"/>
JUSTIFICATION _____		
BY _____		
DISTRIBUTION/AVAILABILITY CODES		
Dist.	AVAIL.	and/or SPECIAL
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FRANKLINVILLE LAKE DAM (NJ00442)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 4 December 1979 by Louis Berger and Associates, Inc., under contract to the State of New Jersey. The State, under agreement with the U.S. Army Engineer District, Philadelphia, had this inspection performed in accordance with the National Dam Inspection Act, Public Law 92-367.

Franklinville Lake Dam, a high hazard potential structure, is judged to be in good overall condition and the spillway is considered adequate. To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. Within one year from the date of approval of this report, the following remedial actions should be undertaken:

(1) The central zone of the embankment crest should be rebuilt with a berm of uniform width and elevation.

(2) Dead trees should be removed from the upstream slopes and the disturbed areas regraded and seeded.

(3) The sluice gate should be repaired and its wheel located and stored for protection.

(4) Large stone riprap should be dumped in the stilling basin just below the spillway to preclude future undercutting of the sheetpiling toe.

b. Within three months from the date of approval of this report the owner should develop an emergency action plan and warning system in order to lessen downstream effects of an emergency at the dam.

c. Within one year from the date of approval of this report, the owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam.

APPROVED: James G. Ton

JAMES G. TON
Colonel, Corps of Engineers
District Engineer

DATE: 6 Jan 1980

PHASE I REPORT

NATIONAL DAM INSPECTION PROGRAM

Name of Dam: Franklinville Lake Dam Fed ID# 00442

County Located Gloucester County
Coordinates Lat. 3937.1 - Long. 7504.3
Stream Little Ease Run of Maurice River
Date of Inspection 4 December 1979

ASSESSMENT OF
GENERAL CONDITIONS

The Franklinville Lake Dam is assessed to be in a good overall condition and has adequate spillway capacity to accommodate design floods. No detrimental findings were uncovered to warrant further study. Remedial actions to be undertaken in the future include 1) regrade the center portion of the crest, 2) remove dead trees and root systems, 3) repair the sluiceway, and 4) place riprap in the spillway stilling basin.

11



Rudolph Wrubel
Vice President
Louis Berger & Associates, Inc.



OVERVIEW OF FRANKLINVILLE DAM

December, 1979

TABLE OF CONTENTS

	<u>Page</u>
Assessment of General Conditions	
Overall View of Dam	
Table of Contents	
Preface.	
Section 1 - Project Information	1-4
Section 2 - Engineering Data	5-6
Section 3 - Visual Inspection	7-8
Section 4 - Operational Procedures	9
Section 5 - Hydraulic/Hydrologic	10-11
Section 6 - Structural Stability	12-13
Section 7 - Assessments/Recommendations/ Remedial Measures	14-15

FIGURES

- Figure 1 - Regional Vicinity Map
- Figure 2 - Location Plan
- Figure 3 - General Plan

APPENDIX

- Check List - Visual Inspection
 - Check List - Engineering Data
 - Photographs
 - Check List - Hydrologic and Hydraulic Data
Computations
- A1-A15

PREFACE

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

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
NAME OF DAM: FRANKLINVILLE LAKE DAM FED I.D. #NJ 00442

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

This report is authorized by the Dam Inspection Act, Public Law 92-367, and has been prepared in accordance with Contract FPM-36 between Louis Beger & Associates, Inc. and the State of New Jersey and its Department of Environmental Protection, Division of Water Resources. The State, in turn, is under agreement with the U.S. Army Corps of Engineers, Philadelphia to have this inspection performed.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the structural and hydraulic condition of the Franklinville Lake Dam and appurtenant structures, and to determine if the dam constitutes a hazard to human life or property.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Franklinville Lake Dam is an irregular 800 foot long earth embankment with a semi-circular steel sheet piling arch weir 70 feet in length. Most of the embankment has no discernable backslope. There is one 27"x43" low level sluiceway at the left abutment of the spillway. The dam has a maximum height of eight feet and a very uneven crest elevation which roughly matches the parkland property which lies below the left abutment.

b. Location

The dam is located on the Little Ease Run branch of the Maurice River in Franklin Township, Gloucester County, New Jersey and lies 500 feet east of the

intersection of Route 47 and County Highway #538 (Cole Mill Road) which passes just south of the dam.

c. Size Classification

The dam at Franklinville Lake has a maximum height of 8 feet and a maximum storage capacity of 480 acre-feet. Accordingly, this dam is in the small size category as defined by the criteria in the Recommended Guidelines for Safety Inspection of Dams (maximum impoundment less than 1,000 acre-feet and height less than 40 feet).

d. Hazard Classification

Based on Corps of Engineers criteria and the fact that in the event of a failure, excessive damage could occur to downstream properties together with the potential for loss of more than a few lives, the dam is classified as a high hazard. Immediately downstream lie two heavily travelled roadways, County Road #538 and Route 47 (Delsea Drive). Both are important in the local road network and contain bridge structures which carry utilities. Further downstream the Run crosses a railroad line.

e. Ownership

The dam is owned and maintained by Franklin Township, Gloucester County, New Jersey. Mr. Allan G. Leary P.E. of Woodbury is the Township Engineer.

f. Purpose of Dam

The dam impounds a recreational lake.

g. Design and construction History

Little information is available pertaining to the history of the dam. Division of Water Resources reference data indicates that the dam which was constructed in the early part of this century (prior to 1925) was seriously breached in September 1940. It was not until April, 1955 that reconstruction plans were prepared by Mr. William Conover, Township Engineer, to repair the dam. These repairs were completed in April, 1957 and filed with Dam Application No. 486. The remnants of an earlier timber raceway exist in the downstream stilling basin.

h. Normal Operating Procedures

Personnel of the Township normally attend to the operating facilities and conduct maintenance (see Section 4).

1.3 PERTINENT DATA

a. Drainage Area

Franklinville Lake Dam has a drainage area of 11.7 square miles.

b. Total spillway capacity at top of dam elevation - 2,000 cfs.

c. Elevations (ft. above M.S.L.)

Top of dam - +100.5
Recreation pool - +96
Streambed at centerline of dam - +92.6

d. Reservoir

Length of maximum pool (top of dam) - 3,700 feet
Length of recreation pool (spillway crest)
- 2,500 feet

e. Storage (acre-feet)

Top of dam - 480
Recreation pool - 52

f. Reservoir Surface (acres)

Top of dam - 159
Recreation pool - 31

g. Dam

Type - earth embankment with semicircular weir
Length - 800+ feet
Hydraulic height - 7.5'
Structural height - 8'
Top width - Varies (8' minimum)
Side Slopes - U/S 4H:1V; D/S 3H:1V
Zoning - unknown

h. Diversion and Regulating Tunnel - none

i. Spillway

Type - sheet piling semicircular arch

Length of weir - 70 feet .

Crest elevation - +96

U/S channel - main lake reservoir

D/S channel - natural stream bed

j. Regulating Outlets - 27"x43" steel sluicgate in
steel sheeting spillway wall.

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

The only design information located for review were two sheets of the 1957 reconstruction plans for the spillway. This work was designed by Mr. William A. Conover, P.E. Franklin Township Engineer, Woodbury, New Jersey.

2.2 CONSTRUCTION

No information was available as to who accomplished the reconstruction of the dam. The general ground surface characteristics in this area are low and undulating and the lake and dam are within a wide, shallow, swampy stream area, characteristic of this region. The surficial soils are a combination of recent alluvial deposits, silt and sand, and highly organic layers. Underlying these two soils are the stratified deposits of marine origin known as Cohansey Sand. This sand is a uniform medium to coarse quartz with silty sand layers commonly interbedded. Drainage conditions immediately surrounding the lake and dam are poor but improve in the slightly higher terrain to the east. The depth to bedrock is greater than 100 feet.

2.3 OPERATION

The dam appears to have been operating satisfactorily from an engineering standpoint since its most recent reconstruction.

2.4 EVALUATION

a. Availability

In the opinion of the inspection team, sufficient engineering data is available to determine the structural adequacy of the spillway although no meaningful design computations were located. No data was acquired upon which to base an assessment with regards to the embankment composition or zoning. However, except for the zone immediately to the sides of the spillway, this is not particularly relevant as the embankment is extremely wide in relation to its height and the backslopes have been regraded to blend into the level surrounding natural terrain.

b. Adequacy

The 1957 contract plans prepared by Mr. Conover are considered adequate to assess this dam under the purview of the Phase I inspection and are acceptable without recourse to securing additional information.

c. Validity

The validity of the available design plans is not questioned and based on field observations, the dam's existing configuration conforms to the design.

SECTION 3 - VISUAL OBSERVATIONS

3.1 FINDINGS

a. General

The visual inspection was conducted on December 4, 1979 at which time several inches of normal flow was discharging over the depressed notches in the spillway crest. At this time, it was noted that the two downstream bridges at Coles Mill Road and Delsea Drive appear to be hydraulically inadequate. It was further observed that the top of dam elevation is very irregular and no distinct abutment zones or limits of the manmade embankment could be definitely established. The length of the dam was established, in part, from the early 1940 Dam Application records.

b. Dam Embankment

The embankment height of roughly eight feet only occurs at the spillway which is located near the right abutment. The remainder is very ill-defined with the upstream slopes completely modified by a small bathing beach (in the center of the dam) and a short timber bulkhead built to the immediate right of the spillway. Judging from the stand of mature trees below the left abutment zone, the maximum height of fill for a good portion of the embankment appears to be only 3 to 4 feet high and all evidence of the original 2H:1V downstream backslopes are obliterated by the parkland development immediately below the dam.

The upstream slopes are in general, much flatter than the original 3H:1V design slopes as the lake bed is heavily silted up in some areas. There are several shallow gullies in existence where the natural overland stormwater discharges into the reservoir.

c. Appurtenant Structures

The steel sheet-piled spillway has a total length of 70 feet and is built on a rather flat radius. Portions are capped with an 18"x8" concrete crest but several sections of this are missing. The steel sheeting is a ZP-27 section and records

indicate the pieces are 12 feet long in the weir section. Roughly 20 feet of return wall extend downstream below the ends where a light pedestrian handrail has been erected on top of the sheeting. A 27x43 inch vertical lift sluice gate is placed at the left end and appears to be in an inoperable condition (due to a bent riser stem) but could not be closely observed due to the high tailwater at the time of inspection. About 40 feet of an irregular timber bulkhead has more recently been backfilled.

d. Reservoir Area

Franklinville Lake is an artificial reservoir and appears to be quite heavily silted up. The banks are very low but stable and the lake is relatively free of debris. There are several dozen homes situated along both the east and west shorelines but all are at or slightly above maximum floodline according to local residents. The upstream reach reverts to the rather wide, swampy natural riverbed and extends several miles to the north in a pristine state, crossed only by a natural gas line and several small local roads.

e. Downstream Channel

The Little Ease Run is hydraulically restricted immediately downstream by a low 20 foot wide County culvert on Route 538 and a second small (25' opening) span at Route 47, about 300 feet further downstream. Both bridges were built in 1925 and due to flat channel gradient are heavily silted up. A considerable amount of concrete riprap has been dumped along the banks just below the spillway and low timber bulkheads constructed on the west bank between the two bridges to further channelize the normal flow. Further downstream, the flood plain widens out into an undeveloped marshy area. There are two or three residences relatively close to the channel which could suffer some flooding during extremely heavy storms.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

Operational procedures were not physically observed by the inspection team. Discussions were held with personnel of the Township Road Department who handle the regular maintenance of the sluice and the spillway.

4.2 MAINTENANCE OF DAM

The appurtenances are maintained by the Township in a workmanlike fashion as part of their continual road program. The spillway, fence and shorelines are maintained down to the County Road culvert which is the responsibility of Gloucester County.

4.3 MAINTENANCE OF OPERATING FACILITIES

The only operating facility is the steel sluice gate which presently is inoperable.

4.4 DESCRIPTION OF WARNING SYSTEM IN EFFECT

None exists except for monitoring by County and Local Municipal personnel during heavy storms. It appears there is little use made of the sluicgate during heavy storms to help control flooding of the downstream roadways.

4.5 EVALUATION

The present operations are deemed to be adequate in view of the height of the dam and the fact that there is marginally adequate. However, the maintenance of the spillway and shorefront along the upstream face are marginally adequate. However, the maintenance of the two downstream culverts appears to have been neglected in recent years as their openings are partially blocked up.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data

Based on the criteria in the Recommended Guidelines for Safety Inspection of Dams, Franklinville Lake is small in size and is placed in the high hazard category. Accordingly, one half the probable maximum flood (PMF) was selected as the design storm by the inspecting engineers. The inflow hydrograph was obtained utilizing precipitation data from Hydrometeorological Report #33. Inflow to, and routing through the reservoir were calculated using the HEC-1 computer program. This gave a peak inflow to the reservoir for the 1/2 PMF of 1,661 cfs and when routed through the reservoir was reduced to 1,622 cfs. The spillway has a maximum discharge capacity of 2,000 cfs before overtopping occurs and can therefore accommodate the design flood.

b. Experience Data

Records indicate that an earlier timber spillway gate was washed out in September 1940. From the photographs taken at that time, it appears a considerable portion of the embankment was also scoured out but no other isolated breaches occurred except at the spillway which apparently was situated right in the natural streambed. There are no reports of serious overtopping or breaches since 1940.

c. Visual Observations

According to residents of the adjacent houses, floodwaters have very rarely overflowed the low riverbanks although the two downstream roadway culverts appear to be hydraulically inadequate. It appears that as floodwaters reach the dam crest elevation, rather large areas to each side and immediately below the dam become inundated which forestalls any further rise.

d. Overtopping Potential

Although the spillway is theoretically adequate, there remains some potential for localized

overtopping in the vicinity of the beach area (near the center of the dam). This is due mainly to the irregularity of the present crest grade. A well-grassed, rather wide swale exists which is somewhat lower than the dam crest. Overtopping releases through here would flood the adjacent parkland and Coles Mill Road but all discharges would be diverted back into the river by the slightly higher surrounding ground.

c. Drawdown

Drawdown can be accomplished by repairing and utilizing the 10 gage vertical lift steel sluiceway located at the left end of the spillway. Assuming the 27x43 metal pipe arch is the size of the effective opening, it would take approximately 3.5 days to dewater the lake down to El. 92.5. This assumes no tailwater nor inflow at the time of dewatering.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Based upon the visual inspection, all elements of the Franklinville dam are adjudged to be in a moderately sound structural condition except for the lower, ill-defined depressed section of the crest behind the beachfront area. There is no evidence of seepage (as there are no true backslopes) but the timber bulkhead immediately to the right of the spillway is badly tilted towards the lake and there is some erosion behind the downstream row of sheeting on the opposite side of the channel. The former structure supports a suction intake pipe used by the Local Fire Department but collapse of the timber bulkhead would not seriously damage the dam. Prior erosion problems were observed along the downstream channel but sections of broken concrete riprap have been placed along the banks and effectively stabilize these zones.

b. Design and Construction Data

The review of the single source of design details of the spillway reveal that it was conservatively designed and is constructed of a sufficiently heavy section so bending stresses are very moderate. Portions of the concrete cap beam across the weir are missing but this is of no consequence. As previously stated the threaded stem of the sluiceway riser is bent but this could be easily repaired.

c. Operating Records

No records were available and the dam appears to have last been inspected in January, 1941. There are no known instances of serious overtopping.

d. Post Construction Changes

There are no records of any modifications since the spillway was rebuilt in 1957. It appears that the bathing terrace was installed more recently but except for the natural depression noted in the dam crest, this has little effect upon the structural integrity.

e. Seismic Stability

Franklinville Lake Dam is located in Zone 1 and due to embankment width vs low height has negligible potential earthquake vulnerability as it is statically stable. Experience indicates dams with adequate stability under static loads will have adequate stability under dynamic loadings.

SECTION 7 - ASSESSMENTS/RECOMMENDATIONS/ PROPOSED
REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

Subject to the inherent limitations of the Phase I visual inspection, Franklinville Lake Dam is classified as being in a good overall structural condition and the spillway is capable of passing the design flood. The embankment is built of unknown composition but due to its large width to height ratio and lack of any evidence of seepage, is believed to be of a sufficient impermeable condition to withstand normal statical loadings and maintain long-term stability. The spillway is in a good overall condition except for the low-level sluiceway which can be easily repaired.

b. Adequacy of Information

The information gathered for the Phase I inspection is deemed to be adequate regarding the structural stability analysis of the dam. No recent surveys have been made.

c. Urgency

No urgency is attached to implementing any remedial work and it is recommended that the measures enumerated below be taken under advisement in the future as part of the Township's regular maintenance program.

d. Necessity for Further Study

Because only negligible property damage and danger to loss of life is foreseen in the event of a failure, further engineering studies are believed to be unnecessary. Extensive damage could occur at the two downstream bridges but this is due to their restricted hydraulic capacity rather than the condition of the dam. These vital bridges are the reason for the hazard category.

7.2 RECOMMENDATIONS/REMEDIAL MEASURES

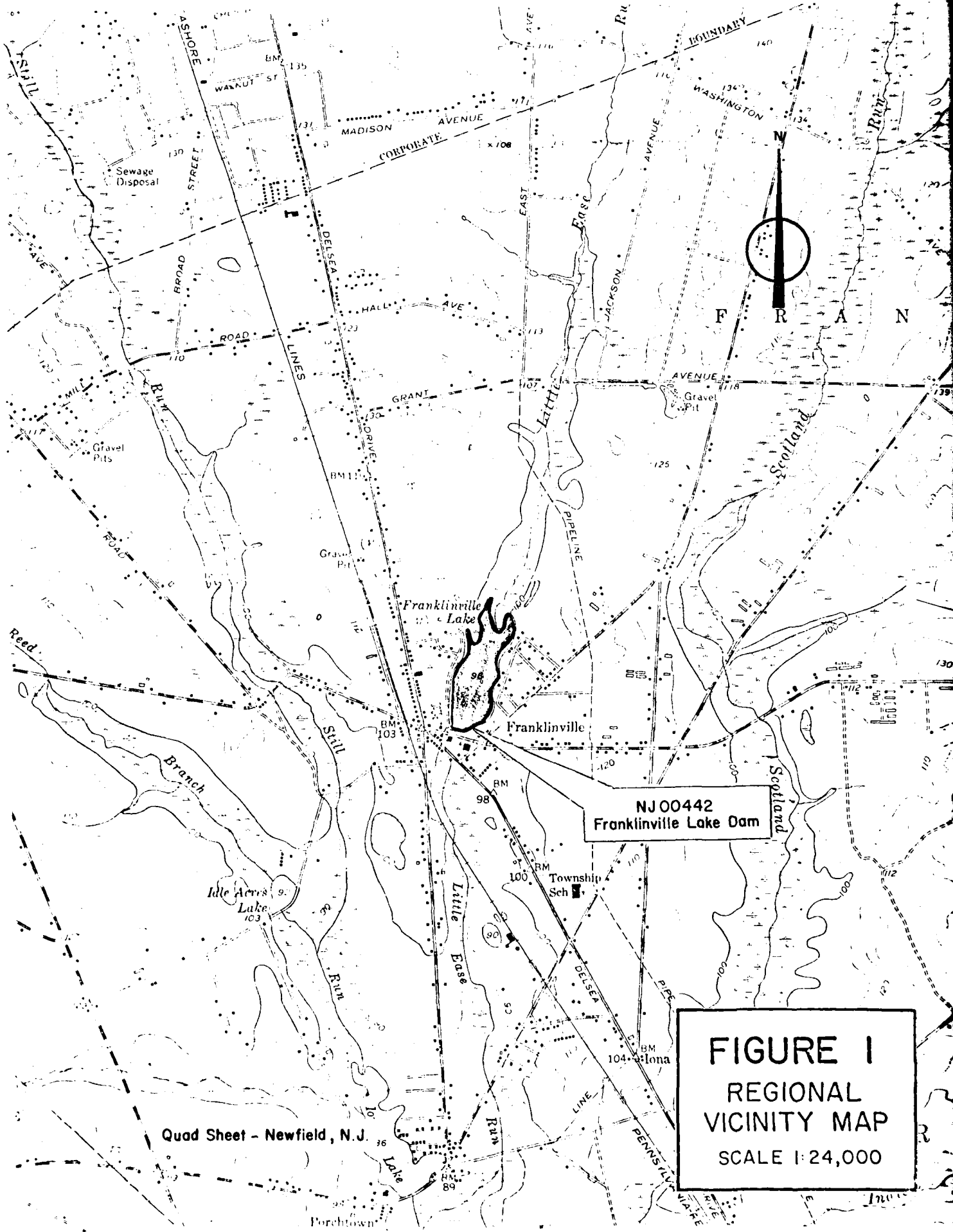
a. Recommended Measures

- The central zone of the embankment crest should be rebuilt with a berm of uniform width and elevation.

- Dead trees and root systems should be removed from the upstream slopes and the disturbed areas regarded and seeded.
- The sluiceway should be repaired and its wheel located and stored for protection.
- Large stone riprap should be dumped in the stilling basin just below the spillway to preclude future undercutting of the sheetpiling toe.

b. O&M Maintenance Procedures

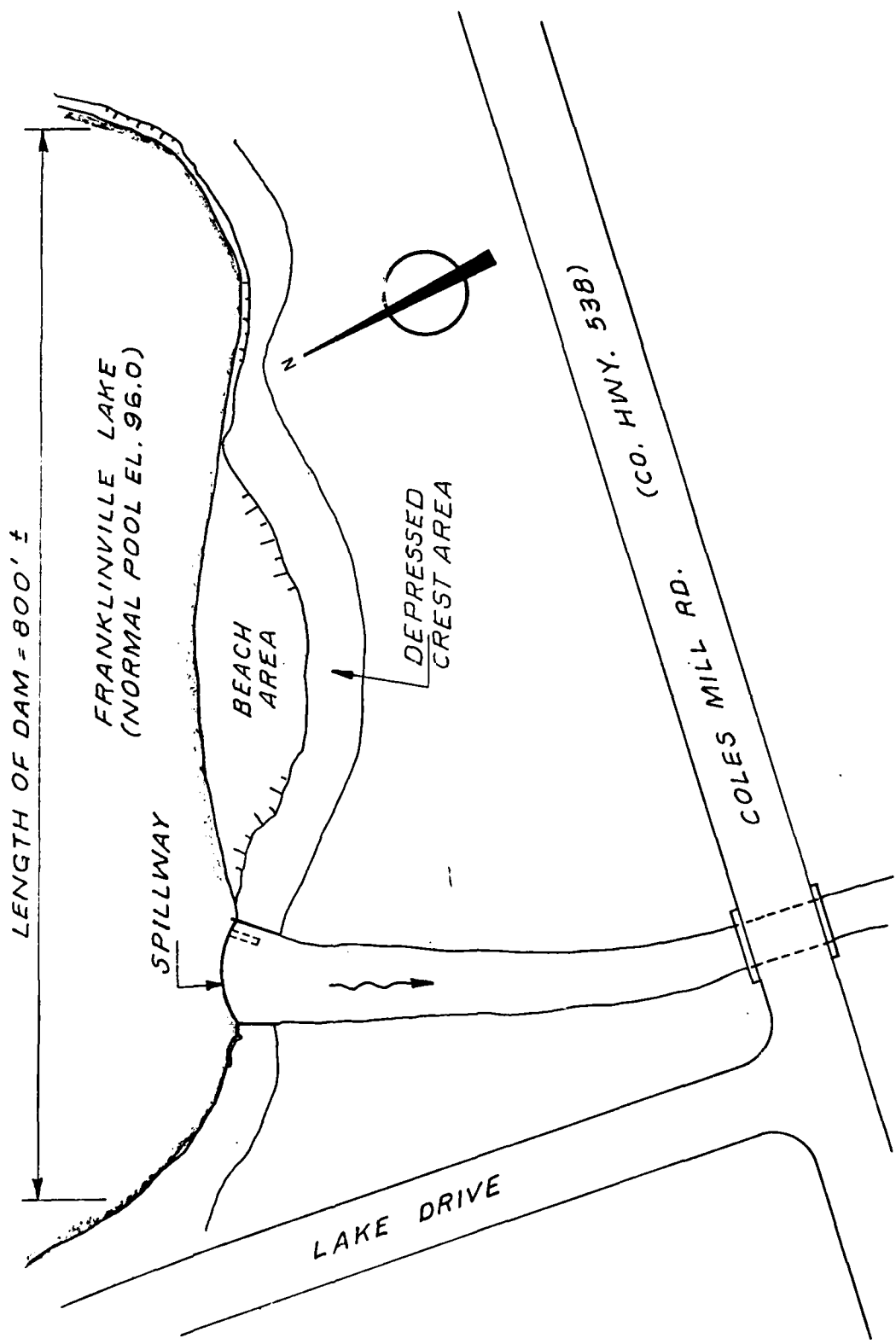
In the near future the owner should develop written operating procedures and a periodic maintenance plan to insure the safety of the dam. Also, the Township should develop an emergency action plan in order to lessen downstream effects of an emergency together with an effective warning system.



NJ00442
Franklinville Lake Dam

FIGURE 1
REGIONAL
VICINITY MAP
SCALE 1:24,000

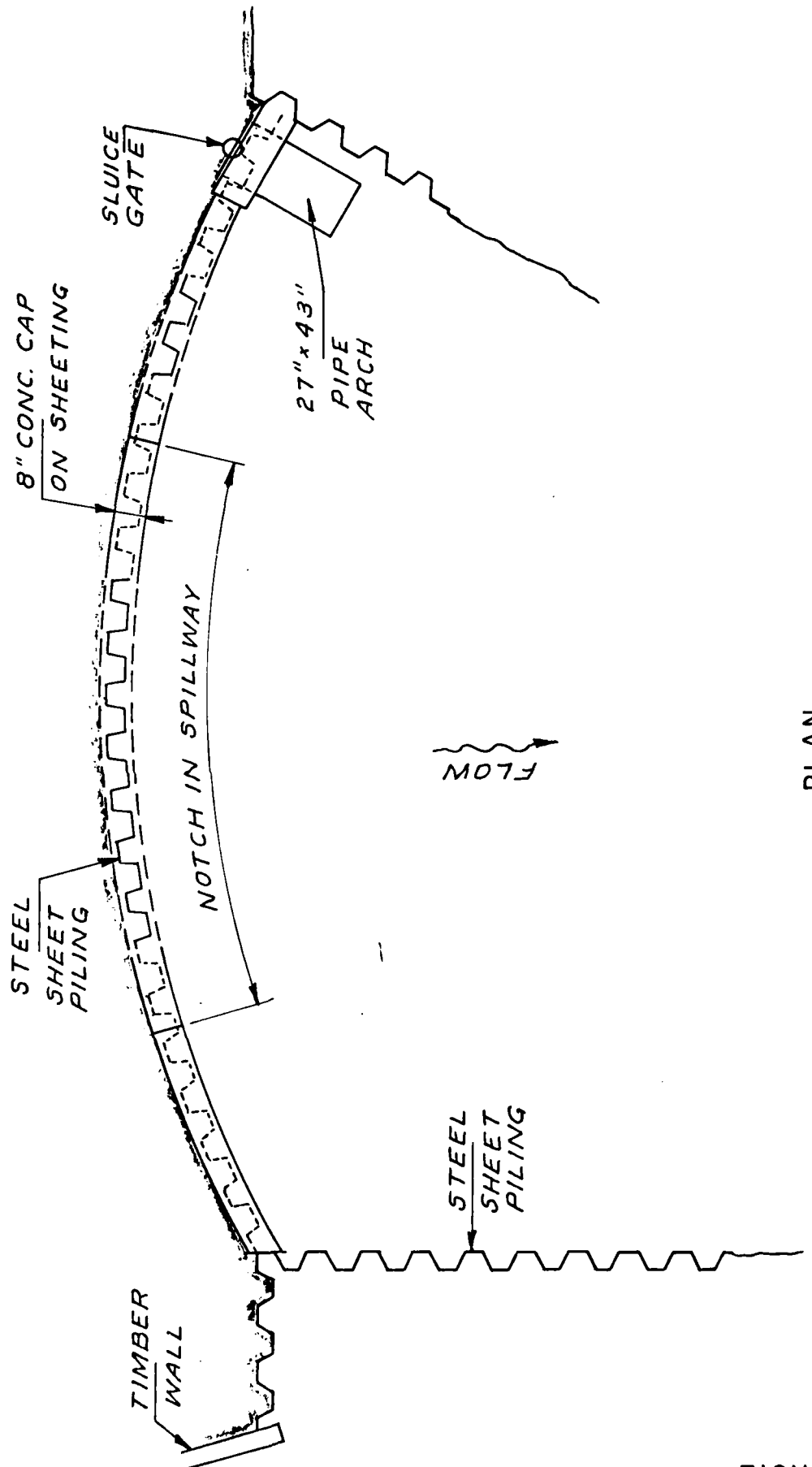
Quad Sheet - Newfield, N.J.



LOCATION PLAN
NOT TO SCALE

FIGURE 2

FRANKLINVILLE LAKE



PLAN
NOT TO SCALE

FIGURE 3

Check List
Visual Inspection
Phase I

Name Dam Franklinville Lake Dam County Gloucester State New Jersey Coordinators N.J.D.E.P.

Date(s) Inspection 12-4-79 1-10-80 Weather Cloudy Temperature 40° F.

Pool Elevation at Time of Inspection 96.0 M.S.L. Tailwater at Time of Inspection 94.5⁺ M.S.L.

Inspection Personnel:

J. Voorhees D. Lang

L. Baines K. Jolls

M. Carter

D. Lang Recorder

1 133115

EARTH DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
-----------------------	--------------	----------------------------

SEE PAGE ON LEAKAGE

STRUCTURE TO ABUTMENT/EMBANKMENT JUNCTIONS	Concrete only used in caps for sheet piling spillway and for enclosure of sluiceway.	
--	--	--

DRAINS	None	
--------	------	--

WATER PASSAGES	None	
----------------	------	--

FOUNDATION	Steel sheeting	
------------	----------------	--

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	Concrete around sluiceway in good condition.	
STRUCTURAL CRACKING	Concrete cap deteriorated in two places. One broken segment approximately 4.5 feet long.	
VERTICAL AND HORIZONTAL ALIGNMENT	Good except where deteriorated.	
MONOLITH JOINTS	None	
CONSTRUCTION JOINTS	Good	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None evident	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None, embankment is sandy with 6 - 10 trees on slopes. Toe at east end approximately 1 foot above water level.	
SLOUCHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Erosion evident behind left wingwall.	Right bank is well grassed and stable.
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	Crest irregular in elevation, beach area to left of spillway approximately 1 foot below top of sheet piling. Embankment to right side is 1 foot above piling.	
RIPRAP	Riprap placed downstream behind and below sheet piling wingwall.	Appears to be a continuing erosion problem.

④

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Fair, except for erosion behind left d/s wingwall.	
ANY NOTICEABLE SEEPAGE	None evident	
STAFF GAGE AND RECORDER	None	
DRAINS	None	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None observed	Good condition
INTAKE STRUCTURE	Circular spillway, poor condition in many places.	Steel sheeting in good align.
OUTLET STRUCTURE		2'± from water level to bridge soffit.
OUTLET CHANNEL	See downstream channel section.	County Bridge no. 9-K-2 150'± downstream.
EMERGENCY GATE	1 - 27" x 43" C.M.P.	Valve stem bent, inoperative. Gate partially raised.

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	Deteriorated in places	Needs repair
APPROACH CHANNEL	Franklinville Lake	Free and clear of debris.
DISCHARGE CHANNEL	See downstream channel section.	
BRIDGE AND PIERS	See downstream channel section.	

Pages 7 and 8 are not available for this document.

RESERVOIR

VISUAL EXAMINATION OF

OBSERVATIONS

REMARKS OR RECOMMENDATIONS

SLOPES

Mild, residences line east shore.
Local road 3-3.5 feet above water
level along west shore. Headwaters
appear marshy.

SEDIMENTATION

Some evident near spillway.

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
-----------------------	--------------	----------------------------

CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Two County bridges 9-K-2 (Cains Mill Road) 23.5' span; 20' freeboard to soffit Rt. 47 (Delsea Drive) 25' span; 1.5' freeboard to soffit Falling tree limb downstream of spillway blocking channel	
--	--	--

SLOPES	Steep, channelized, telephone pole bulkhead between two bridges on west side along private home yard.	
--------	---	--

APPROXIMATE NO. OF HOMES AND POPULATION	Numerous homes along with the Franklinville School just below dam.	
---	--	--

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	Available - NJDEP - Div. of Water Resources - Bureau of Flood Plain Management
REGIONAL VICINITY MAP	Available - U.S.G.S. Quad - Newfield, N.J.
CONSTRUCTION HISTORY	None available
TYPICAL SECTIONS OF DAM	Not available
HYDROLOGIC/HYDRAULIC DATA	None available
OUTLETS - PLAN	Available (NJDEP)
- DETAILS	None available
-CONSTRAINTS	Unknown
-DISCHARGE RATINGS	None available
RAINFALL/RESERVOIR RECORDS	None available

12

ITEM

REMARKS

SPILLWAY PLAN Available (NJDEP)

SECTIONS None available

DETAILS None available

OPERATING EQUIPMENT
PLANS & DETAILS

None available

ITEM REMARKS

DESIGN REPORTS None available

GEOLOGY REPORTS None available

DESIGN COMPUTATIONS Not available
HYDROLOGY & HYDRAULICS Not available
DAM STABILITY Not available
SEEPAGE STUDIES Not available

MATERIALS INVESTIGATIONS Not available
BORING RECORDS Not available
LABORATORY Not available
FIELD Not available

POST-CONSTRUCTION SURVEYS OF DAM Not available

BORROW SOURCES Unknown

ITEM

REMARKS

MONITORING SYSTEMS

None

MODIFICATIONS

None since 1957

HIGH POOL RECORDS

None available

POST CONSTRUCTION ENGINEERING
STUDIES AND REPORTS

None available

PRIOR ACCIDENTS OR FAILURE OF DAM
DESCRIPTION
REPORTS

September 1940
None available
None available

MAINTENANCE
OPERATION
RECORDS

None available



Franklinville Lake

December, 1979



View of Dam Looking East

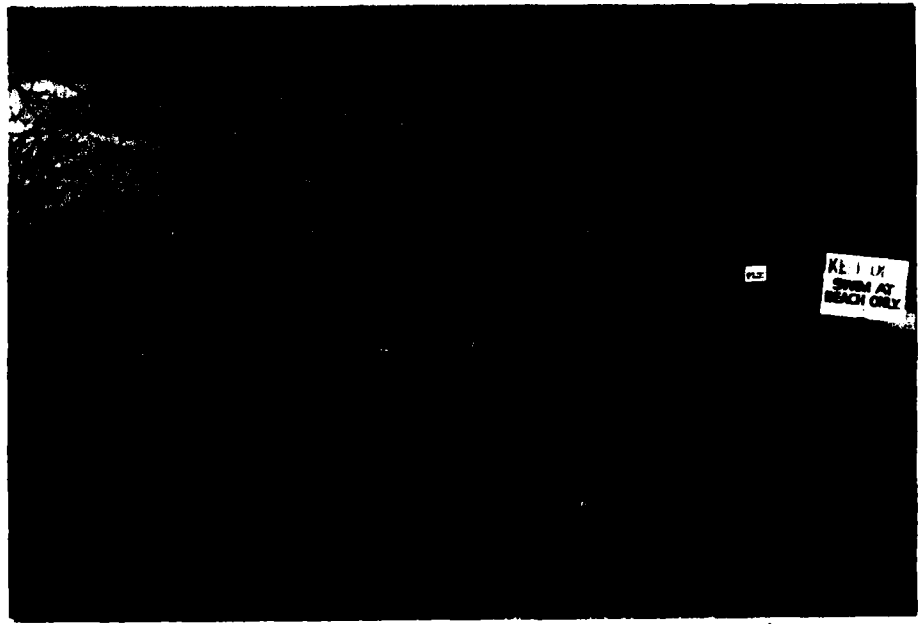
December, 1979



View of Left Abutment of Spillway December, 1979

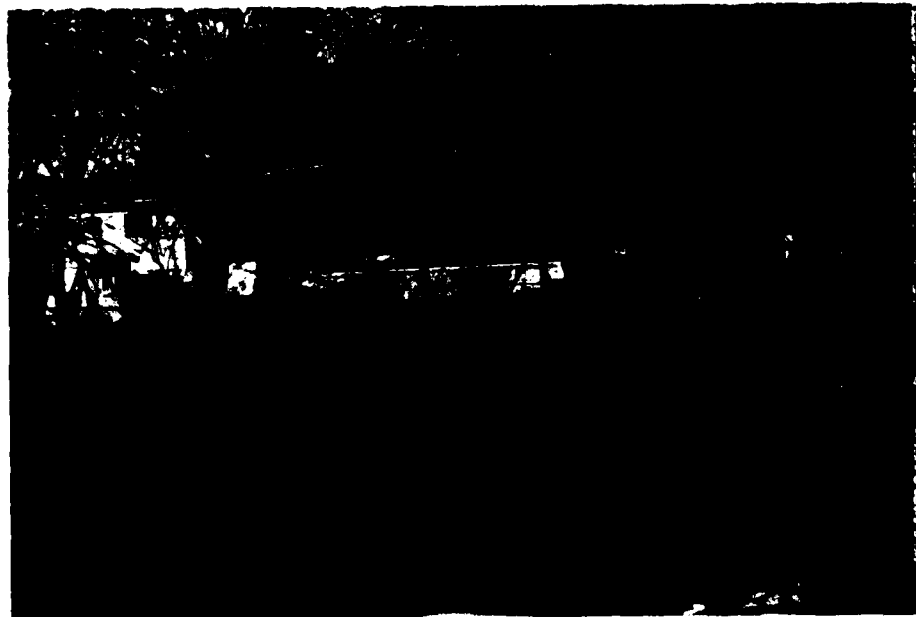


View of Right Abutment of Spillway December, 1979



December, 1979

View of Spillway



December, 1979

View of Route #538 Bridge Immediately Downstream of Dam

CHECK LIST
HYDROLOGIC AND HYDRAULIC DATA
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 11.7 square miles

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): +96.0 M.S.L. (52 acre-ft.)

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): _____

ELEVATION MAXIMUM DESIGN POOL: Unknown

ELEVATION TOP DAM: +100.5 M.S.L. (480 acre-feet)

CREST: _____

- a. Elevation +100.5 M.S.L.
- b. Type Earth embankment
- c. Width Varies (8' minimum)
- d. Length 800'+
- e. Location Spillover near right abutment
- f. Number and Type of Gates _____

OUTLET WORKS: _____

- a. Type Steel sheeting, semi-circular arch
- b. Location near right abutment
- c. Entrance inverts +96.0 M.S.L.
- d. Exit inverts +92.6
- e. Emergency draindown facilities 1 - 27" x 42" C.M.P.

HYDROMETEOROLOGICAL GAGES: None

- a. Type _____
- b. Location _____
- c. Records _____

MAXIMUM NON-DAMAGING DISCHARGE: 2000 cfs

BY RFB DATE 1-15-50 **LOUIS BERGER & ASSOCIATES INC.**
CHKD. BY _____ DATE _____ FRANKLINVILLE LAKE DAM
SUBJECT _____

SHEET NO. A1
PROJECT 246

UNITERGRAPH DATA

LENGTH OF LONGEST WATERCOURSE $L = 7.73$ MI
LENGTH TO CENTROID $L_c = 4.09$ MI

$$LL_c = 7.73 \times 4.09 = 31.62$$

USING CURVE 2 FROM COE PLATE 17 FROM SPECIAL
PROJECT MEMO. 487 : $t_p = 22.3$

USE SNYDER COEFFICIENT FURNISHED BY COE
: $C_p = 0.43$

PRECIPITATION DRAINAGE AREA = 11.7 SQ. MI.

PMF FOR 200 SQ. MI & 24 HOUR DURATION = $24''$

MAXIMUM 6 HOUR PERCENTAGE = 111%

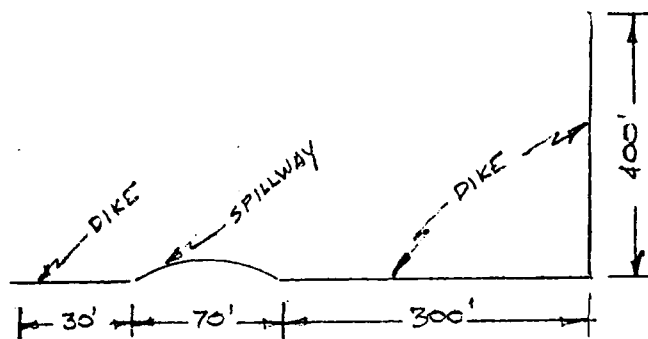
MAXIMUM 12 HOUR PERCENTAGE = 121%

MAXIMUM 24 HOUR PERCENTAGE = 130%

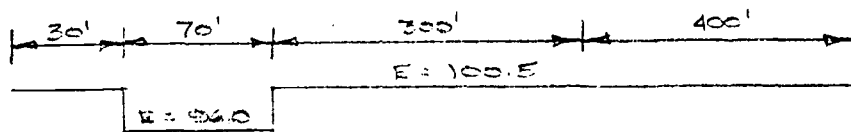
MAXIMUM 48 HOUR PERCENTAGE = 140%

BY EFE DATE 1-15-50 **LOUIS BERGER & ASSOCIATES INC.**
 CHKD. BY _____ DATE _____ FRANKLINVILLE LAKE DAM
 SUBJECT SPILLWAY CAPACITY

SHEET NO. A2 OF _____
 PROJECT _____

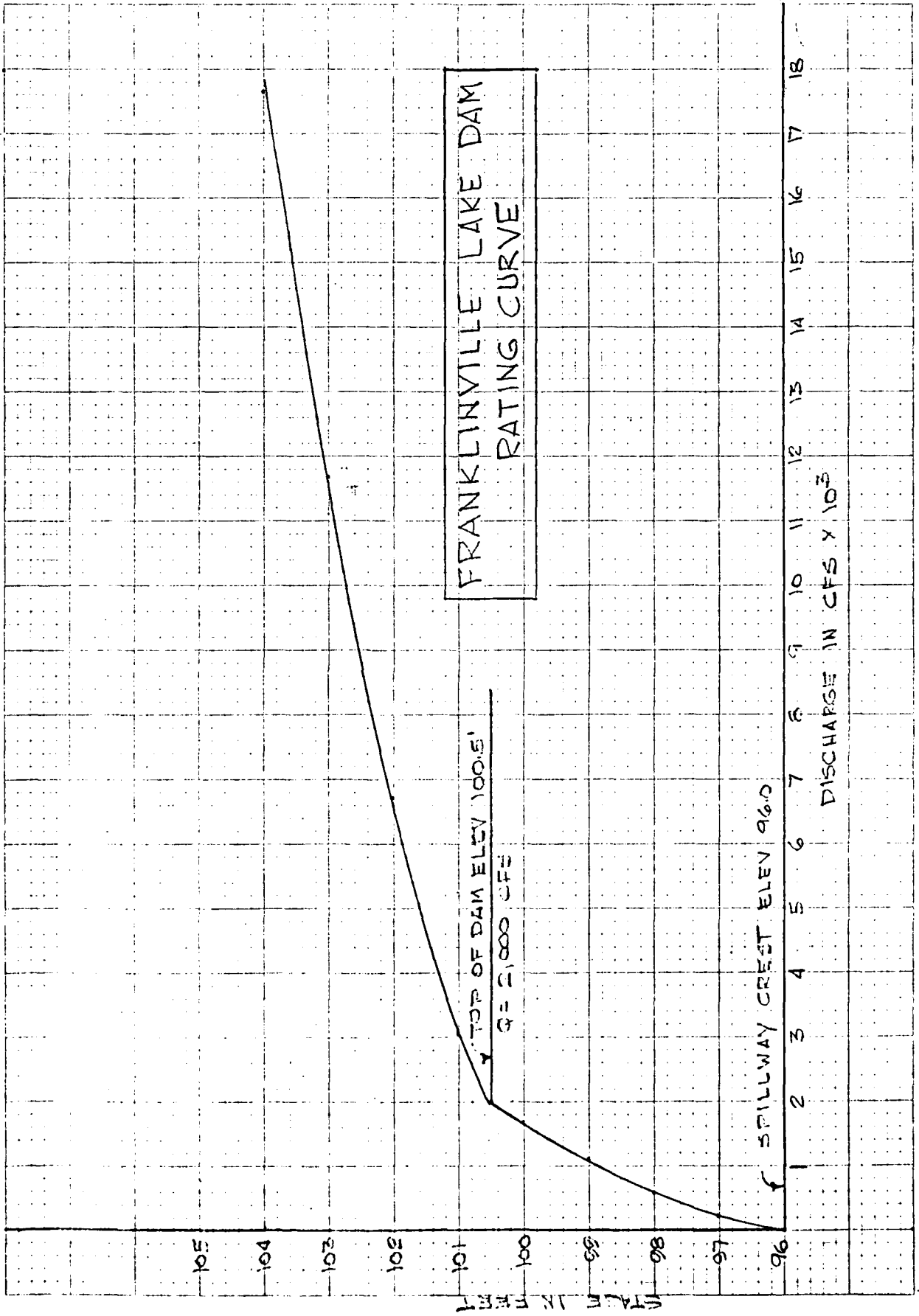


PLAN VIEW



ELEVATION VIEW

ELEV	H	C	L	Q	H	C	L	Q	Q
96	0	30	70	0	0	2.7	730	0	0
97	1	↓	↓	210	0	↓	↓	↓	210
98	2	↓	↓	594	0	↓	↓	↓	590
99	3	↓	↓	1092	0	↓	↓	↓	1090
100	4	↓	↓	1680	0	↓	↓	↓	1680
100.5	4.5	↓	↓	2005	0	↓	↓	↓	2000
101	5	↓	↓	2350	0.5	↓	↓	697	3050
102	6	↓	↓	3086	1.5	↓	↓	3621	6710
103	7	↓	↓	3870	2.5	↓	↓	7791	11650
104	8	↓	↓	4752	3.5	↓	↓	12906	17660

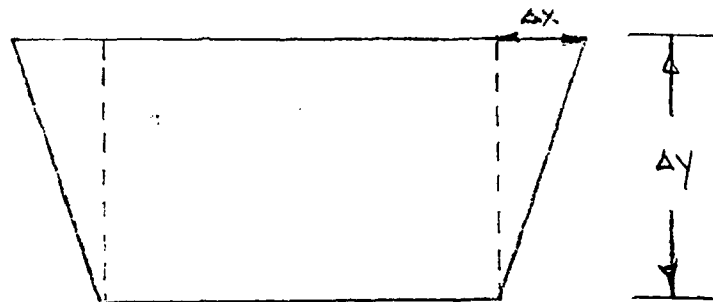


BY RFB DATE 1-15-80 **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A4 OF
 CHKD. BY DATE FRANKLINVILLE LAKE DAM PROJECT C246
 SUBJECT SURCHARGE STORAGE

AREA OF LAKE @ ELEV 96.0 = 31 ACRES

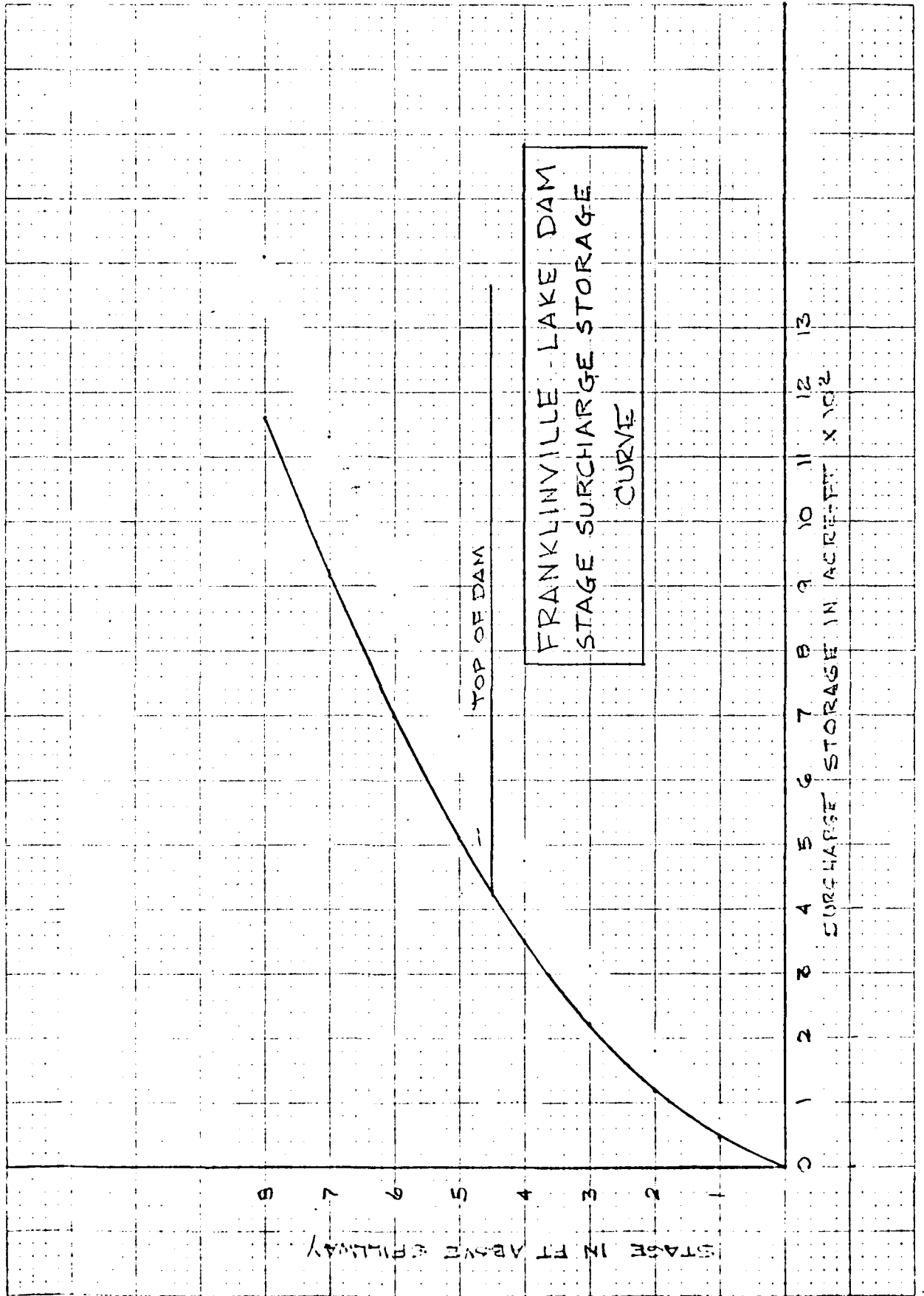
AREA OF 100FT CONTOUR = 145 ACRES

ASSUME POOL AREA ABOVE 100 FT CONTOUR PROJECTS AT SAME RATE



$$\Delta V = \Delta Y (X + \Delta X)$$

HEIGHT ABOVE SPILLWAY CREST	A ACRES	SURCHARGE STORAGE ACRES-FT
0	31.1	0
1	59.5	45
2	88	119
3	116.5	221
4	145	352
4.5	159.2	428
5	173.5	511
6	202	699
7	230.5	915
8	259	1160



BY RFB DATE 1-16-80

LOUIS BERGER & ASSOCIATES INC.

SHEET NO. A6

CHKD. BY DATE

FRANKLINVILLE LAKE DAM

PROJECT C-246

SUBJECT APPROXIMATE DRAWDOWN TIME

GATED 27" x 42" CORRUGATED METAL PIPE ARCH

ASSUME CLEAR OPENING \approx 27" x 43" ARCH

HEAD AT NORMAL POOL ELEV = 96 - 92.6 = 3.6 FT
ASSUMING NO TAILWATER.

ASSUME NO TAILWATER EFFECT, NO INFLOW, AND
INLET CONTROL GOVERNS.

FROM FHA HYDRAULIC ENGINEERING CIRCULAR No. 5

H	H _W /D	Q	D = 2.25
3.6	16	47	
3.0	12	38	
2.0	0.87	22	
1.0	0.44	8	
0.75	0.33	5	
0	0	0	

H	Q	AVE Q	VOL	Δ VOL	TIME HRS
3.6	47		52		
		42.5		9	2.6
3	38		43		
		30		14	5.6
2	22		29		
		15		15	12.1
1	8		14		
		6.5		3	5.6
0.75	5		11		
		3.5		11	53.2
0	0		0		79.1

SAY 3 1/2 DAYS

 REC-1 VERSION DATED JAN 1973
 UPDATED AUG 74
 CHANGE NO. 01

 FORTYVILLE LAKE DAM
 BY R.F. BERRY
 JANUARY, 1980

JOB SPECIFICATION
 NO HHR NMIN IDAY IHR IMIN METRC IPLT IPPI NSTAN
 150 3 0 0 0 0 0 0 0 0 0 0
 3OPER NUT
 3 0

SUB-AREA RUNOFF COMPUTATION

INFLOW HYDROGRAPH
 IS142 ICOMP ISECON IITAPE JPLT JPPT INAME
 1 0 0 0 0 0 0 1

HYDROGRAPH DATA
 THYGG IDRG TAPER SHAP TRSDA TRSFC RATIO ISHOW ISAME LOCAL
 1 11.70 0.00 0.00 11.70 0.00 0.500 0 0 0

PRECIP DATA
 SPEE PMS P6 R12 R24 R48 R72 R96
 0.00 24.00 111.00 121.00 130.00 140.00 0.00 0.00

LOSS DATA
 STKPS DUTKP RTIOL ERAIN STRUS RTICK STRTL CASTL ALSNK RTIMP
 0.00 0.00 1.00 0.00 0.00 1.00 0.50 0.10 0.00 0.00

UNIT HYDROGRAPH DATA
 TP= 22.30 CP=0.43 NTA= 0

RECESSION DATA
 STRTO= 0.00 QPCSN= 0.00 RTIOP= 1.00
 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SHYDER CP AND TP ARE TC= 7.81 AND R=12.66 INTERVALS

UNIT HYDROGRAPH 72 END-OF-PERIOD ORDINATES, LAG= 22.24 HOURS, CP= 0.43 VOL= 1.00

6	32	47	76	104	127	142	147	140	129
120	110	102	94	87	81	74	69	64	59
54	50	46	43	40	37	34	31	29	27
25	23	21	19	18	17	15	14	13	12
11	10	10	9	8	8	7	6	6	5
5	5	4	4	4	3	3	3	3	2
2	2	2	2	2	2	1	1	1	1

TIME	END-OF-PERIOD FLOW		
	RAIN	EXCS	COMP. 0
1	0.03	0.00	0.
2	0.03	0.00	0.
3	0.07	0.00	0.
4	0.07	0.00	0.
5	0.54	0.11	1.
6	1.11	0.81	8.
7	0.04	0.00	24.
8	0.04	0.00	47.
9	0.35	0.05	73.
10	0.35	0.05	100.
11	0.97	0.67	126.
12	0.97	0.67	156.
13	7.08	6.78	231.
14	14.38	14.08	465.
15	0.52	0.22	901.
16	0.52	0.22	1466.
17	0.00	0.00	2084.
18	0.00	0.00	2657.
19	0.00	0.00	3086.
20	0.00	0.00	3319.
21	0.60	0.00	3322.
22	0.00	0.00	3142.
23	0.00	0.00	2909.
24	0.00	0.00	2689.
25	0.00	0.00	2483.
26	0.00	0.00	2295.
27	0.00	0.00	2120.
28	0.00	0.00	1959.
29	0.00	0.00	1810.
30	0.00	0.00	1673.
31	0.00	0.00	1546.
32	0.00	0.00	1428.
33	0.00	0.00	1320.
34	0.00	0.00	1219.
35	0.00	0.00	1127.
36	0.00	0.00	1041.
37	0.00	0.00	962.
38	0.00	0.00	889.
39	0.00	0.00	821.
40	0.00	0.00	759.
41	0.00	0.00	701.
42	0.00	0.00	648.
43	0.00	0.00	599.
44	0.00	0.00	553.
45	0.00	0.00	511.
46	0.00	0.00	472.
47	0.00	0.00	436.
48	0.00	0.00	403.
49	0.00	0.00	373.
50	0.00	0.00	344.
51	0.00	0.00	318.
52	0.00	0.00	294.

53	0.00	0.00	0.00	272
54	0.00	0.00	0.00	251
55	0.00	0.00	0.00	232
56	0.00	0.00	0.00	214
57	0.00	0.00	0.00	198
58	0.00	0.00	0.00	182
59	0.00	0.00	0.00	169
60	0.00	0.00	0.00	156
61	0.00	0.00	0.00	144
62	0.00	0.00	0.00	133
63	0.00	0.00	0.00	123
64	0.00	0.00	0.00	114
65	0.00	0.00	0.00	105
66	0.00	0.00	0.00	97
67	0.00	0.00	0.00	90
68	0.00	0.00	0.00	83
69	0.00	0.00	0.00	77
70	0.00	0.00	0.00	71
71	0.00	0.00	0.00	65
72	0.00	0.00	0.00	61
73	0.00	0.00	0.00	56
74	0.00	0.00	0.00	52
75	0.00	0.00	0.00	48
76	0.00	0.00	0.00	44
77	0.00	0.00	0.00	41
78	0.00	0.00	0.00	37
79	0.00	0.00	0.00	34
80	0.00	0.00	0.00	31
81	0.00	0.00	0.00	29
82	0.00	0.00	0.00	27
83	0.00	0.00	0.00	24
84	0.00	0.00	0.00	22
85	0.00	0.00	0.00	14
86	0.00	0.00	0.00	0
87	0.00	0.00	0.00	0
88	0.00	0.00	0.00	0
89	0.00	0.00	0.00	0
90	0.00	0.00	0.00	0
91	0.00	0.00	0.00	0
92	0.00	0.00	0.00	0
93	0.00	0.00	0.00	0
94	0.00	0.00	0.00	0
95	0.00	0.00	0.00	0
96	0.00	0.00	0.00	0
97	0.00	0.00	0.00	0
98	0.00	0.00	0.00	0
99	0.00	0.00	0.00	0
100	0.00	0.00	0.00	0
101	0.00	0.00	0.00	0
102	0.00	0.00	0.00	0
103	0.00	0.00	0.00	0
104	0.00	0.00	0.00	0
105	0.00	0.00	0.00	0
106	0.00	0.00	0.00	0
107	0.00	0.00	0.00	0

18	221	1185	1092
19	278	1438	1338
20	318	1601	1527
21	359	1800	1622
22	398	1618	1618
23	331	1512	1542
24	359	1599	1440
25	275	1293	1334
26	253	1198	1234
27	234	1104	1141
28	213	1020	1052
29	186	942	969
30	161	871	895
31	167	805	827
32	154	743	764
33	143	687	706
34	132	635	652
35	122	587	603
36	112	542	556
37	104	501	513
38	96	463	474
39	89	428	438
40	82	395	405
41	77	365	374
42	71	337	345
43	66	312	319
44	62	288	295
45	57	266	272
46	53	246	252
47	49	227	233
48	46	210	215
49	43	194	199
50	40	179	185
51	37	166	171
52	34	153	158
53	31	141	145
54	29	131	135
55	27	121	124
56	25	112	115
57	23	103	106
58	21	95	98
59	19	88	91
60	18	81	84
61	17	75	77
62	15	69	72
63	14	64	66
64	13	59	61
65	12	55	56
66	11	51	52
67	10	47	48
68	10	43	45
69	9	40	41
70	8	37	38
71	8	34	35
72	7	31	32

73	6	29	30
74	6	27	28
75	5	25	26
76	5	23	24
77	5	21	22
78	4	19	20
79	4	18	18
80	4	16	17
81	3	15	16
82	3	14	14
83	3	13	13
84	3	11	12
85	2	9	10
86	1	4	5
87	0	0	2
88	0	0	0
89	0	0	0
90	0	0	0
91	0	0	0
92	0	0	0
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94	0	0	0
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96	0	0	0
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128	0	0	0	0	0
129	0	0	0	0	0
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133	0	0	0	0	0
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135	0	0	0	0	0
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142	0	0	0	0	0
143	0	0	0	0	0
144	0	0	0	0	0
145	0	0	0	0	0
146	0	0	0	0	0
147	0	0	0	0	0
148	0	0	0	0	0
149	0	0	0	0	0
150	0	0	0	0	0
SUM			29604		

PEAK 1622. 1620 1457. 986. 29604
 CFS 1.29 4.63 9.41 11.77
 INCHES 804. 2891. 5870 7344
 WC-FT

RUNOFF SUMMARY, AVERAGE FLOW

HYDROGRAPH AT	PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
1	1661.	1660.	1475.	988.	11.70
ROUTED TO	1622.	1620.	1457.	986.	11.70

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NJ00442	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report National Dam Safety Program Franklinville Lake Dam Gloucester County, NJ		5. TYPE OF REPORT & PERIOD COVERED FINAL
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Rudolph Wrubel, P.E.		8. CONTRACT OR GRANT NUMBER(s) DACW61-79-C-0011/
9. PERFORMING ORGANIZATION NAME AND ADDRESS Louis Berger & Associates / 100 Halstead St. East Orange, N.J. 07019		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS NJ Department of Environmental Protection Division of Water Resources P.O. Box CNO29 Trenton, NJ 08625		12. REPORT DATE March, 1980
		13. NUMBER OF PAGES 55
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U.S. Army Engineer District, Philadelphia Custom House, 2d & Chestnut Streets Philadelphia, PA 19106		15. SECURITY CLASS. (of this report) Unclassified
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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Copies are obtainable from National Technical Information Service, Springfield, Virginia 22151.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Franklinville Lake Dam, N.J. Riprap Structural analysis Embankments Visual inspection Dam Safety National Dam Safety Program		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report. ←		