DELAWARE RIVER BASIN
BRANCH OF LAKEVILLE CREEK, WAYNE COUNTY

PENNSYLVANIA

LEVEL II

CRAFT POND DAM

NDI ID NO. PA-01103
DER ID NO. 64-27

ROBERT K. AND MAY K. HOWER

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

Prepared by
GANNETT FLEMING CORDDRY AND CARPENTER, INC.
Consulting Engineers
Harrisburg, Pennsylvania 17105

For
DEPARTMENT OF THE ARMY
Baltimore District, Corps of Engineers
Baltimore, Maryland 21203

JULY 1981

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DACW31-81-C-0018

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PREFACE

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

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

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

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The spillway design 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.

CRAFT POND DAM

NDI ID No. PA-01103; DER ID No. 64-27

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

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PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

BRIEF ASSESSMENT OF GENERAL CONDITION

AND

RECOMMENDED ACTION

Name of Dam:	Craft Pond Dam NDI ID No. PA-01103 DER ID No. 64-27
Size:	Small (18.7 feet high; 157 acre-feet)
Hazard Classification:	High
Owner:	Robert K. and May K. Hower Box 148 Lakeville, PA 18438
State Located:	Pennsylvania
County Located:	Wayne
Stream:	Branch of Lakeville Creek
Date of Inspection:	3 June 1981

Based on available records, visual inspection, calculations, and past operational performance, Craft Pond Dam is judged to be unsafe, nonemergency, because the spillway capacity is rated as seriously inadequate. The recommended Spillway Design Flood (SDF) for the size and hazard classification of the dam varies between 1/2 of the Probable Maximum Flood (PMF) and the PMF. The selected SDF is the 1/2 PMF. The existing spillway will pass only about 23 percent of the Probable Maximum Flood (PMF) before overtopping of the dam occurs. It is judged that the dam could not withstand the depth and duration of overtopping that would occur for the 1/2 PMF. Failure of the dam would cause an increased hazard for loss of life downstream.

Overall, the dam is in good condition. The maintenance of the dam is considered to be good; only a few minor maintenance deficiencies were observed. The other deficiencies observed were low spillway walls and an inoperable outlet works.

The following remedial measures, listed in approximate order of priority, are recommended to be undertaken by the Owner immediately:

(1) Perform additional studies to more accurately ascertain the spillway capacity required for Craft Pond Dam as well as the nature and extent of measures required to provide adequate spillway capacity. Take appropriate action as required. If the existing spillway is to remain, remove the flashboard pins, repair scoured and cracked concrete, and ensure that the spillway walls are sufficiently high to contain the spillway discharge.

(2) Develop a suitable means of drawing down the reservoir in case of an emergency. Any pipe that is placed through the embankment should be provided with an upstream closure facility.

(3) As part of the regular maintenance program, remove the tree to the right of the spillway and fill the burrowing animal holes with impervious material.

All investigations, studies, designs, and inspection of construction should be performed by a professional engineer experienced in the design and construction of dams. Tree removal should also be under the guidance of a professional engineer.

In addition, the Owner should institute the following operational and maintenance procedures:

(1) Develop a detailed emergency operation and warning system for Craft Pond Dam. When warnings of a major storm are given by the National Weather Service, the Owner should activate the emergency operation and warning system.

(2) During periods of unusually heavy rains, provide round-the-clock surveillance of the dam.

(3) As presently required by the Commonwealth, initiate a program of formal annual inspections by a professional engineer experienced in the design and construction of dams. Utilize the inspection results to determine if remedial measures are necessary.

CRAFT POND DAM

Submitted by:

GANNETT FLEMING CORDDRY
AND CARPENTER, INC.

FREDERICK FUTCHKO
Project Manager, Dam Section

Date: 7 August 1981

Approved by:

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF
ENGINEERS

JAMES W. PECK
Colonel, Corps of Engineers
Commander and District Engineer

Date: 18 Aug 81

CRAFT POND DAM

Overview

CRAFT POND DAM

NDI ID No. PA-01103; DER ID No. 64-27

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

SECTION 1

PROJECT INFORMATION

1.1 General.

a. Authority. The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States.

b. Purpose. The purpose of the inspection is to determine if the dam constitutes a hazard to human life or property.

1.2 Description of Project.

a. Dam and Appurtenances. Craft Pond Dam is an earthfill and rockfill dam with a concrete cutoff wall along the upstream face. The dam is 18.7 feet high and its length, including the spillway, is 190 feet. A near-vertical concrete wall extends along the upstream face of the dam above normal pool elevation. The upstream slope below top of dam elevation is unknown. The earthfill on the downstream slope is warped.

The spillway is located near the middle of the dam. The concrete spillway crest is 40.3 feet long and 4.2 feet below the top of the dam. Concrete walls and a concrete apron form a chute that extends over the embankment downstream from the spillway crest. The concrete apron extends beyond the toe of the dam. The concrete walls extend almost to the toe of the dam. Dry masonry walls extend downstream from the concrete walls and along the banks of the natural stream. A timber footbridge supported by steel pipe piers extends across the spillway about 15 feet downstream from the crest.

The outlet works, which is not functional, consists of a corrugated metal pipe (CMP) protruding from the spillway apron. The outlet works is apparently permanently blocked off.

The various features of the dam are shown on the photographs in Appendix C and on the plates in Appendix E. A description of the geology is included in Appendix F.

b. Location. Craft Pond Dam is located on a Branch of Lakeville Creek in Paupack Township, Wayne County, Pennsylvania. The dam is shown on USGS Quadrangle, Lakeville, Pennsylvania, at latitude N 41° 26.1' and longitude W 75° 17.1'. The dam is 0.4 mile southwest of Lakeville, Pennsylvania. A location map is shown on Plate E-1.

c. Size Classification. Small (18.7 feet high, 157 acre-feet).

d. Hazard Classification. Downstream conditions indicate that a high hazard classification is warranted for Craft Pond Dam (Paragraphs 3.1e and 5.1c(5)).

e. Ownership. Robert K. and May K. Hower, Box 148, Lakeville, PA 18438.

f. Purpose of Dam. Recreation.

g. Design and Construction History. The dam was constructed circa 1892 to replace a wooden dam that was at the site. As originally constructed, the dam was an earthfill structure with near-vertical dry stone masonry walls on the upstream and downstream faces. In 1928, the Commonwealth ordered that repairs, including an increase in spillway capacity, be made to the dam. Plans were prepared in 1928 to repair the dam, but these repairs were never started. The plans were modified in 1931 and repairs started the same year. The repairs had not been completed by 1938 and may not have been completed by 1952, when new repairs, including another increase in spillway capacity, were ordered by the Commonwealth. During the period 1928 to 1952 the ownership of the dam changed on numerous occasions. A more complete history is in Appendix A.

Between 1952 and 1954, new owners acquired the dam. They retained C. E. Ferris, a civil engineer from Hamlin, Pennsylvania, to design the repairs that were ordered by the Commonwealth. There was some disagreement between the various parties over the required spillway capacity. The disagreements continued over much of 1954. The dam was apparently modified to its present configuration in 1954 or 1955, although no plans or permit applications for the modifications are in the files.

The present Owner acquired the dam in 1967. The Owner rents cottages immediately downstream from the dam and uses Craft Pond for recreation.

h. Normal Operational Procedure. The reservoir pool is maintained at the spillway crest level with excess inflows discharging over the spillway. The outlet works is inoperable.

1.3 Pertinent Data.

a. Drainage Area. (square miles) 3.1

b. Discharge at Damsite. (cfs)

Maximum known flood	Unknown
Outlet works at maximum pool elevation	Not Functional
Spillway capacity at maximum pool elevation	1,075

c. Elevation. (feet above msl.)

Top of dam	1329.2
Maximum pool	1329.2
Normal pool (spillway crest)	1325.0
Upstream invert outlet works	Unknown
Downstream invert outlet works	1319.4
Streambed at toe of dam	1310.5

d. Reservoir Length. (miles)

Normal pool	0.36
Maximum pool	0.44

e. Storage. (acre-feet)

Normal pool	77
Maximum pool	157

f. Reservoir Surface.

Normal pool	16
Maximum pool	22

g.	Dam.	
	Type	Earthfill and rockfill
	Length (feet)	190, including spillway
	Height (feet)	18.7
	Top Width (feet)	Varies, 21 feet min.
	Side Slopes Upstream	Near-vertical above normal pool; Unknown below normal pool
	Downstream	Varies, 1V on 3H or flatter
	Zoning	Earthfill and rockfill; rockfill is dry stone masonry of original structure
	Cutoff	Concrete wall on upstream face of dam
	Grout Curtain	None
h.	Diversion and Regulating Tunnel	None
i.	Spillway.	
	Type	Concrete Weir
	Length of Weir (feet)	40.3
	Crest Elevation (feet above msl.)	1325.0
	Upstream Channel	Reservoir

i. Spillway. (Continued)

Downstream Channel	Concrete apron extending beyond toe of dam
j. Regulating Outlets	Corrugated metal pipe estimated to be 15-inch to 24-inch diameter; Outlet works is not operational

SECTION 2

ENGINEERING DATA

2.1 Design.

a. Data Available. There is no design information for Craft Pond Dam. The only information in the files is a sketch, dated 1931, for modifications that were possibly never completed. No design calculations are available.

b. Design Features. The project is described in Paragraph 1.2a. The various features of the dam are shown on the photographs in Appendix C and on Plate E-2 in Appendix E.

c. Design Considerations. There is insufficient information to assess the design of the dam.

2.2 Construction.

a. Data Available. There is very little information concerning the original construction of the dam and subsequent modifications to it.

b. Construction Considerations. There are insufficient data to assess the construction of the dam.

2.3 Operation. There are no formal records of operation. Records of inspections performed by the Commonwealth are available for the period from 1917 to 1965. A summary of the inspection reports is included in Appendix A. The records indicate that the dam was overtopped during the flood of May 1942.

2.4 Evaluation.

a. Availability. Available data were provided by the Bureau of Dams and Waterway Management, Department of Environmental Resources, Commonwealth of Pennsylvania (PennDER). The Owner was available for information during the visual inspection.

b. Adequacy. The type and amount of available design and other engineering data are very limited. The assessment of the dam is based on the combination of available data, visual inspection, performance history, hydrologic and hydraulic assumptions, and calculations developed for this report.

c. Validity. There is no reason to question the validity of the available data.

SECTION 3

VISUAL INSPECTION

3.1 Findings.

a. General. The overall appearance of the dam and appurtenant structures is good. Noteworthy observations are described in the following paragraphs. The complete visual inspection checklist and sketch of the dam are presented in Appendix B. A profile of the top of the dam is included in Appendix D. Datum for the survey performed for this inspection was at the main spillway crest, Elevation 1325.0, as shown on USGS mapping. On the day of the inspection, the reservoir pool was at the level of the spillway crest.

b. Embankment. The embankment is in good condition. The grass covering the embankment is well maintained. There is one mature tree growing on the embankment to the right of the spillway (Photograph D). Two other mature trees are growing at the left abutment (Photograph F). As noted on Exhibit B-1, three burrowing animal holes were observed on the embankment. The Owner reported that two of these holes were dug out to remove snakes and never completely backfilled. There are several shrinkage cracks on the upstream concrete facing. Most of these cracks are repaired with mortar. There is a footing along the upstream concrete face that is sheared off at some locations (Photograph F). No seepage was observed at the dam.

c. Appurtenant Structures. The spillway is in generally good condition. Flashboard pins extend along the spillway crest. The Owner stated that flashboards were not used. There is some cracking and scour on the spillway apron (Photograph A). The Owner reported that he usually employs a mason every two years to repair the spillway concrete. The timber footbridge across the spillway is in good condition. The upstream end of the dry stone masonry spillway walls are low. The top of the left wall is 1.0 foot above the spillway apron. The top of the right wall is 2.0 feet above the apron.

The only evidence of an outlet works is a CMP that protrudes from the concrete spillway apron (Photographs A and B). The Owner stated that he was unaware of any additional appurtenances associated with the outlet works. None were evident.

d. Reservoir Area. The watershed is mostly wooded with only minor rural development. Some of the watershed is meadow and some is swamp. As noted in Appendix D, there are two dams in the watershed.

e. Downstream Conditions. As noted on Plate E-2, there are two dwellings immediately downstream from the dam. One of these dwellings is the Owner's residence. From the dam, the stream extends for 0.5 mile to PA Route 590. The stream passes under PA Route 590 via an 18-foot wide by 8-foot high bridge. Just upstream of the bridge is the community of Lakeville. There are 10 dwellings here that could be flooded by a failure of the dam.

Downstream from PA Route 590, the stream extends for 0.8 mile to Lake Wallenpaupack. There are no dwellings along this reach. It was judged that, if the dam were to fail, at least 20 lives might be lost. Accordingly, a high hazard classification has been assigned to Craft Pond Dam.

SECTION 4

OPERATIONAL PROCEDURES

4.1 Procedure. The reservoir is normally maintained at the level of the spillway crest with excess inflows discharging over the spillway.

4.2 Maintenance of Dam. There are no established procedures for maintenance of the dam. Maintenance work has generally been performed on an unscheduled basis. Although the dam is checked daily by the Owner, no formal reports are maintained.

4.3 Maintenance of Operating Facilities. There are no operating facilities to maintain.

4.4 Warning Systems in Effect. There is no emergency operation and warning system for the dam.

4.5 Evaluation of Operational Adequacy. Although the maintenance procedures are informal, the maintenance of the dam is generally good. The minor maintenance deficiencies noted in Section 3 are believed to be caused by unfamiliarity with dam maintenance requirements rather than with poor maintenance scheduling. The daily inspection program is good, but formal annual inspections by an experienced professional engineer are necessary to detect hazardous conditions before they might threaten the dam. An emergency operation and warning system is necessary to reduce the risk of dam failure should adverse conditions develop and to prevent loss of life should the dam fail.

SECTION 5

HYDROLOGY AND HYDRAULICS

5.1 Evaluation of Features.

a. Design Data. There are no hydrologic or hydraulic design calculations available for Craft Pond Dam.

b. Experience Data. The records indicate that the dam was overtopped during the flood of May 1942. There is insufficient data to estimate the flow during this storm. It is not known if the dam was damaged during the overtopping. The Owner reported that the pool rose to 27 inches above spillway crest during Tropical Storm Agnes in June 1972.

c. Visual Observations.

(1) General. The visual inspection of Craft Pond Dam, which is described in Section 3, resulted in a number of observations relevant to hydrology and hydraulics.

(2) Embankment. No deficiencies relevant to hydrology or hydraulics were observed at the embankment. The spillway capacity was determined using the existing top elevations on the embankment. The profile is shown in Appendix D.

(3) Appurtenant Structures. Flashboard pins are undesirable on the spillway crest because they have the potential to collect debris. The low dry stone masonry walls at each side of the spillway could be overtopped by spillway discharge when the reservoir is near top of dam.

Since the outlet works is not operational, there are no means at present of drawing down the pool in case of emergency.

(4) Reservoir Area. No conditions in the reservoir area were observed that might present a hazard to the dam. There are two dams in the watershed. Janoske Dam is small, and it is judged that it would have neither any significant effect on the hydrology nor present any hazard to Craft Pond Dam. A Phase I National Dam Inspection Report has previously been prepared for the other dam, Lake Ellyn Dam, which is a small, high hazard dam with a seriously inadequate spillway capacity. In the Phase I Report for Lake Ellyn Dam, it was determined that a failure of Lake Ellyn Dam would cause the overtopping of Craft Pond Dam.

(5) Downstream Conditions. A failure of Craft Pond Dam would cause flooding and probable loss of life in the community of Lakeville. During large floods a few of the dwellings might be flooded by backwater from the PA Route 590 bridge, but a failure of the dam would flood additional dwellings and increase the depth of flooding at others. A high hazard classification is warranted for Craft Pond Dam.

d. Overtopping Potential.

(1) Spillway Design Flood. According to the criteria established by the Office of the Chief of Engineers (OCE), the Spillway Design Flood (SDF) for the size (small) and hazard potential (high) of Craft Pond Dam is between one-half of the Probable Maximum Flood (PMF) and the PMF. Since the dam and reservoir are on the low end of the small size category, the 1/2 PMF was selected as the SDF. The watershed and reservoir were modeled with the U.S. Army Corps of Engineers' HEC-1DB computer program. A description of this computer program is included in Appendix D. The assessment of the hydrology and hydraulics is based on existing conditions, and the effects of future development are not considered.

(2) Summary of Results. Pertinent results are tabulated at the end of Appendix D. The analysis reveals that Craft Pond Dam can pass about 23 percent of the PMF before overtopping of the dam occurs. During the 1/2 PMF, the dam would be overtopped by 1.9 feet for 6.3 hours. This would cause failure of the dam.

(3) Spillway Adequacy. The criteria used to evaluate the spillway adequacy of a dam are described in Appendix D. Since the dam cannot pass the 1/2 PMF, which is the SDF, a further analysis was performed. Craft Pond Dam was assumed to fail during the 35 percent PMF. The assumptions used to model the failure are in Appendix D. The resulting outflows were routed downstream to Lakeville. The results indicate that a failure of Craft Pond Dam would increase the flow depth by 3.9 feet above the flow depth that would occur if the dam did not fail. A typical section at Lakeville is in Appendix D. There is an increased hazard to loss of life. The spillway capacity is rated as seriously inadequate.

It should be noted that Lake Ellyn Dam, which is upstream from Craft Pond Dam, can pass only about 10 percent of the PMF.

SECTION 6

STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability.

a. Visual Observations.

(1) General. The visual inspection of Craft Pond Dam, which is described in Section 3, resulted in a number of observations relevant to structural stability. These observations are evaluated herein for the various features.

(2) Embankment. Burrowing animal holes and the root system of trees can create seepage paths through the embankment. Because of the configuration of the embankment, only the tree to the right of the spillway and the burrowing animal holes are deemed to be of any hazard. Although no seepage was observed at the dam, it could have been flowing from beneath the dry stone masonry walls and been obscured by the spillway discharge. The shrinkage cracks on the upstream concrete face are of no concern. The footing along this face was apparently constructed for a means of access. It does not appear to have any structural significance and its condition is not of concern.

(3) Appurtenant Structures. The conditions at the spillway indicate minor repairs will soon be necessary. The Owner plans to have the repairs accomplished this summer.

b. Design and Construction Data. No stability calculations for the dam are available. The dry masonry faces of the original embankment are now just rockfill zones within the embankment. Although the extent of the upstream concrete facing is uncertain, the records indicate that the facing to the left of the spillway was extended down to a good foundation.

c. Operating Records. There are no operating records maintained for Craft Pond Dam and Reservoir. The operating procedures followed by the Owner do not indicate cause for concern relative to the structural integrity of the dam. There is no record of any stability problems at the dam.

d. Post-construction Changes. The modifications listed previously have been assessed with the dam.

e. Seismic Stability. Craft Pond Dam is located in Seismic Zone 1 where earthquake loadings are not considered to be significant for small dams with no readily apparent stability problems. Since no readily apparent stability problems were observed, the seismic stability of the dam is considered to be adequate.

SECTION 7

ASSESSMENT, RECOMMENDATIONS, AND PROPOSED REMEDIAL MEASURES

7.1 Dam Assessment.

a. Safety.

(1) Based on criteria established for these studies, Craft Pond Dam is judged to be in good condition. The recommended Spillway Design Flood (SDF) for the size and hazard classification of the dam varies between the 1/2 PMF and the PMF. The selected SDF is the 1/2 PMF. The existing spillway will pass about 23 percent of the PMF before overtopping of the dam occurs. Failure of the dam because of overtopping would cause an increased hazard to loss of life. The dam is considered to be unsafe, nonemergency, because the spillway capacity is seriously inadequate.

(2) Several deficiencies were observed. All of the maintenance deficiencies are considered to be minor.

(3) A summary of the features and observed deficiencies is as follows:

Feature	Observed Deficiency
Embankment	Burrowing animal hole; tree on embankment.
Spillway	Scour and cracking of concrete; low spillway walls.
Outlet Works	Inoperable.

b. Adequacy of Information. The information available is such that an assessment of the condition of the dam can be inferred from the combination of available data, visual inspection, past performance, and computations performed as part of this study.

c. Urgency. The recommendations in Paragraph 7.2 should be implemented immediately.

d. Necessity for Further Investigations. In order to accomplish some of the remedial measures outlined in Paragraph 7.2, further investigations by the Owner will be required.

7.2 Recommendations and Remedial Measures.

a. The following remedial measures, listed in approximate order of priority, are recommended to be undertaken by the Owner immediately.

(1) Perform additional studies to more accurately ascertain the spillway capacity required for Craft Pond Dam as well as the nature and extent of measures required to provide adequate spillway capacity. Take appropriate action as required. If the existing spillway is to remain, remove the flashboard pins, repair scoured and cracked concrete, and ensure that the spillway walls are sufficiently high to contain the spillway discharge.

(2) Develop a suitable means of drawing down the reservoir in case of an emergency. Any pipe that is placed through the embankment should be provided with an upstream closure facility.

(3) As part of the regular maintenance program, remove the tree to the right of the spillway and fill the burrowing animal holes with impervious material.

All investigations, studies, designs, and inspection of construction should be performed by a professional engineer experienced in the design and construction of dams. Tree removal should also be under the guidance of a professional engineer.

b. In addition, the Owner should institute the following operational and maintenance procedures:

(1) Develop a detailed emergency operation and warning system for Craft Pond Dam. When warnings of a major storm are given by the National Weather Service, the Owner should activate the emergency operation and warning system.

(2) During periods of unusually heavy rains, provide round-the-clock surveillance of the dam.

(3) As presently required by the Commonwealth, initiate a program of formal annual inspections by a professional engineer experienced in the design and construction of dams. Utilize the inspection results to determine if remedial measures are necessary.

APPENDIX A

CHECKLIST - ENGINEERING DATA

CHECKLIST

ENGINEERING DATA

DESIGN, CONSTRUCTION, AND OPERATION
PHASE I

NAME OF DAM: CRAFT POND

NDI ID NO.: PA-01103 DER ID NO.: 64-27

ITEM	REMARKS
AS-BUILT DRAWINGS	NONE IN FILES See PLATE E-2
REGIONAL VICINITY MAP	See PLATE E-1
CONSTRUCTION HISTORY	BUILT CIRCA 1892
TYPICAL SECTIONS OF DAM	NONE
OUTLETS: Plan Details Constraints Discharge Ratings	ONLY AVAILABLE DATA ARE ON PLATE E-2

T-4

ENGINEERING DATA

ITEM	REMARKS
RAINFALL/RESERVOIR RECORDS	NONE
DESIGN REPORTS	NONE
GEOLOGY REPORTS	NONE
DESIGN COMPUTATIONS: Hydrology and Hydraulics Dam Stability Seepage Studies	NONE
MATERIALS INVESTIGATIONS: Boring Records Laboratory Field	NONE
POSTCONSTRUCTION SURVEYS OF DAM	NONE

ENGINEERING DATA

ITEM	REMARKS
BORROW SOURCES	UNKNOWN
MONITORING SYSTEMS	NONE
MODIFICATIONS	See history AT END OF Appendix A.
HIGH POOL RECORDS	27" OVER SPILLWAY during TROPICAL STORM AGNES IN 1972. Above for period 1967 - PRESENT. No other Records AVAILABLE.
POSTCONSTRUCTION ENGINEERING STUDIES AND REPORTS	NONE
PRIOR ACCIDENTS OR FAILURE OF DAM: Description Reports	NONE

ENGINEERING DATA

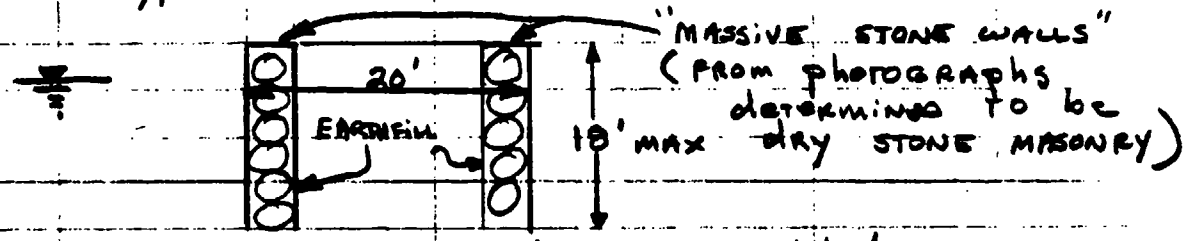
ITEM	REMARKS
MAINTENANCE AND OPERATION RECORDS	None
SPILLWAY: Plan Sections Details	See Plate E-2
OPERATING EQUIPMENT: Plans Details	None
PREVIOUS INSPECTIONS Dates Deficiencies	Attached

BY _____ DATE _____ SUBJECT History and Inspection Record Craft Pond Dam SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1917 - Examined by Pennsylvania Water Supply Commission (PWSC). Dam is 200' long

Typical cross-section:



Spillway is 6' wide by 4' deep flume

Spillway capacity ordered increased to 1600 cfs.

Owner is E.S. Alphy Estate

1920 - Inspection by Commonwealth:
Modifications ordered in 1917 not made.
Inspector did not think an increased spillway capacity was necessary

1924 - Inspection by Commonwealth:
Slight leakage at downstream toe.

1928 - Inspection by Commonwealth:
hole 6' long by 9' wide on top of dam
General leakage through base.

- Owner ordered to drawdown and repair (including increasing spillway) or to breach.

- Various correspondence trying to determine Owner.

- Owner determined to be Henry A. Waloz

- Owner responded to order and met with Representatives of Commonwealth.

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1928 (CONT.) - COMMONWEALTH PREPARED REPORT ON PROPOSED REPAIRS

(SEPT.) - PERMIT ISSUED FOR PROPOSED REPAIRS TO BE COMPLETED BY 1 JANUARY 1929.

- OWNER REQUESTED EXTENSION OF TIME

1929 - EXTENSION OF TIME GRANTED UNTIL JAN 1, 1930

(JULY) - INSPECTION by COMMONWEALTH: PREVIOUSLY NOTED HOLE FILLED IN. TIMBER WORK BADLY ROTTEN. NO WORK ON SPILLWAY. COMMONWEALTH QUERIED OWNER.

- OWNER'S LAWYER ANSWERED, REQUESTED EXTENSION OF TIME because OF OWNER'S FINANCIAL CONDITION.

- TIME EXTENDED TO 1 JANUARY 1931.

1930 (APR.) - COMMONWEALTH VISITED DAMSITE - NO WORK DONE.

- OWNER'S LAWYER RESPONDED THAT OWNER IS TRYING TO SELL DAM.

(SEPT) - COMMONWEALTH WROTE OWNER'S LAWYER REQUESTING STATUS. (No REPLY IN FILES)

1931 (MAY) - INSPECTION by COMMONWEALTH: NO REPAIRS MADE

- COMMONWEALTH WROTE OWNER'S LAWYER REQUESTING STATUS.

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1931 (CONT.) - LAWYER RESPONDED THAT NEW OWNER WAS SCRANTON MORTGAGE AND LOAN CO.

- COMMONWEALTH WROTE NEW OWNER, WHO RESPONDED THAT THE DAM HAD BEEN SOLD TO THE FORMER OWNER, MR. E.A. ALPHA.

- COMMONWEALTH CORRESPONDED WITH NEW OWNER, WHO REQUESTED ADVICE FROM THE COMMONWEALTH ON "WHAT TO DO". COMMONWEALTH RESPONDED WITH HISTORY TO DATE AND MR. WOLOZ'S PROPOSED REPAIRS.

- OWNER FILED PERMIT APPLICATION, REQUESTING CHANGES IN SPILLWAY DIMENSIONS FROM PREVIOUS PLANS.

(Aug) - COMMONWEALTH ISSUED PERMIT STIPULATING CERTAIN ADDITIONAL ITEMS. PROPOSED SPILLWAY WAS TO BE 20' LONG (CREST) BY 5' DEEP. WORK TO BE COMPLETED 1 JANUARY 1932.

NOV - INSPECTION BY COMMONWEALTH. NEW SPILLWAY CONSTRUCTED. CONCRETE CUTOFF WALL CONSTRUCTED UPSTREAM OF SPILLWAY AND ALONG UPSTREAM FACE OF DAM TO LEFT OF SPILLWAY. FLASHBOARDS ALONG SPILLWAY CREST.

- COMMONWEALTH ORDERED FLASHBOARDS REMOVED.

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1932 (JUNE) - INSPECTION by COMMONWEALTH: NO WORK DONE SINCE LAST INSPECTION. TOP OF DAM TO RIGHT OF SPILLWAY HAS YET TO BE RAISED TO DESIGN ELEVATION. 20" FLASHBOARDS ON SPILLWAY CREST.

- COMPLETION OF REPAIRS AND REMOVAL OF FLASHBOARDS ORDERED.

1933 - INSPECTOR FROM COMMONWEALTH SPOKE WITH OWNER'S WIFE, WHO STATED THAT OWNER had INSUFFICIENT FUNDS TO COMPLETE REPAIRS. INSPECTOR ORDERED EXISTING 6" FLASHBOARDS Removed.

1934 - INSPECTION by COMMONWEALTH: NO WORK DONE 12" FLASHBOARDS ON SPILLWAY CREST.

1935 - INSPECTION by COMMONWEALTH: SPILLWAY 19' LONG by 5' deep, 8" FLASHBOARDS ON SPILLWAY CREST. TOP OF DAM LOW TO RIGHT OF SPILLWAY.

- COMPLETION OF REPAIRS AND REMOVAL OF FLASHBOARDS ORDERED.

- OWNER RESPONDED THAT REPAIRS would be completed this year AND THAT THE FLASHBOARDS were A TEMPORARY MEASURE FOR CONSTRUCTION.

1937 - INSPECTION by COMMONWEALTH: DAM STILL IN UNFINISHED STATE, EMBANKMENT TO RIGHT OF SPILLWAY IS INCOMPLETE. FLASHBOARDS 2'

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1937 (CONT) - (CONTINUATION FROM PREVIOUS PAGE) high AND BRACED by 2x4 IN SPILLWAY CONCRETE FACING ON RIGHT ABUTMENT SHOWS DISINTEGRATION AND LEAKAGE.

1938 - SAME ORDER AS 1935

- INSPECTION by COMMONWEALTH: DAM STILL IN UNCOMPLETED STATE. INSPECTOR discovered THAT "The property has now reverted back to MR. GEORGE W. Heichelbeck FROM MR. ALPHA LAST FALL." MR. Heichelbeck STATED THAT he "INTENDS TO PLACE ADDITIONEL FILL ON The CREST ..... when The NEW ROAD is PUT THROUGH TO The RIGHT OF The dam, PROBABLY IN The FALL OR NEXT SPRING!"

1948 - INSPECTION by COMMONWEALTH: TOP IS SLIGHTLY LOW LEFT OF SPILLWAY. SOME DISINTEGRATION ON UPSTREAM FACE. WALL RIGHT AT SPILLWAY NEEDS BUILDING UP. SPILLWAY IS OBSTRUCTED by A POLE AND FISH SCREEN. HEAVY LEAKAGE EMERGES FROM SPILLWAY APRON JUST DOWNSTREAM FROM The WEIR. OWNER IS M.S. CRAFT, who CLAIMS FLOW IS FROM OLD WOODEN SLUICEWAY, which WAS NOT CLOSED EFFECTIVELY when dam WAS LAST REMODELLED. "MR. CRAFT PROPOSES TO ENLARGE The SPILLWAY AND CLOSE The

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1948 (CONT.) - (CONTINUED FROM PREVIOUS PAGE) OLD WOODEN SLUICEWAY." DAM WAS OVERTOPPED IN FLOOD OF 1942 AND WATER FLOWED DOWN THE HIGHWAY AT RIGHT END.

- FISH SCREENS ORDERED REMOVED.

1952 - INSPECTION BY COMMONWEALTH: LOGS OBSTRUCTING SPILLWAY APPROACH. BOTH SPILLWAY ABUTMENTS IN ADVANCED STAGES OF DETERIORATION ALLOWING WATER TO POUR FREELY THROUGH WALLS. FISH SCREENS ON TOP OF SPILLWAY CREST.

- REPAIRS ORDERED INCLUDING 2,000 CFS SPILLWAY.

- INSPECTOR DISCOVERED THAT DAM NOW OWNED BY ESTATE OF THE CRAFTS AND MRS. A. M. COFFEY WAS ADMINISTRATRIX.

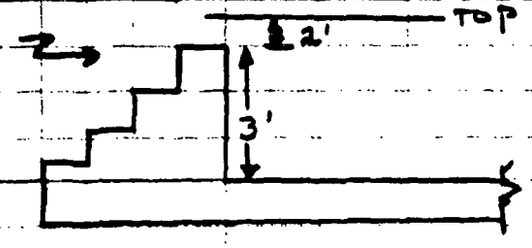
1954 - ATTORNEY FOR NEW OWNERS, WILLIAM A. JACOBS & FRANK B. LEIGH, REQUESTED COPIES OF LATEST ORDERS FROM COMMONWEALTH.

19?? - C.E. FERRIS, CIVIL ENGINEER, HAMLIN PA. RETAINED BY NEW OWNERS AND WROTE TO COMMONWEALTH TO DISCUSS SPILLWAY.

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

1954 (CONT.) - MR. FERRIS INDICATED THAT THE EXISTING SPILLWAY PROFILE WAS:



- VARIOUS CORRESPONDENCE BETWEEN OWNER, HIS ENGINEER, AND THE COMMONWEALTH CONCERNING SPILLWAY CAPACITY.

- COMMONWEALTH INFORMED OWNER THAT 600 CFS WOULD BE AN ADEQUATE SPILLWAY CAPACITY.

- OWNER WROTE TO COMMONWEALTH THAT THEY WOULD "PROCEED, WEATHER PERMITTING, AS SOON AS POSSIBLE WITH YOUR RECOMMENDATIONS, PROVIDING A MEANS OF DRAINING TO THE POND, REPLACING THE EXISTING SPILLWAY WITH ONE HAVING A 3' DEPTH. REPLACEMENT OF EXISTING SPILLWAY TO PERMIT A CAPACITY OF 600 CFS, ACCORDING TO REQUIREMENTS AUTHORIZED BY THE 1931 PERMIT."

- 1965 - INSPECTION BY THE COMMONWEALTH: NO DEFICIENCIES.

A-N

APPENDIX B

CHECKLIST - VISUAL INSPECTION

CHECKLIST

VISUAL INSPECTION

PHASE I

Name of Dam: CRAFT POND **County:** WAYNE **State:** PENNSYLVANIA

NDI ID No.: PA-01103 **DER ID No.:** 64-27

Type of Dam: EARTHFILL **Hazard Category:** HIGH

Date(s) Inspection: 3 JUNE 1981 **Weather:** MISTY-LIGHT RAIN **Temperature:** 60's °F

SOIL CONDITIONS: MOIST TO WET

Pool Elevation at Time of Inspection: 1325.0 msl/**Tailwater at Time of Inspection:** 1311 +/- msl

Inspection Personnel:

R. HOWER (OWNER)

D. WILSON (GFCC)

D. EBERSOLE (GFCC)

A. WHITMAN (GFCC) **Recorder**

B-1

EMBANKMENT

Sheet 1 of 2

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	NONE	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	NONE	
SLOUGHING OR EROSION: Embankment Slopes Abutment Slopes	NONE	
CREST ALIGNMENT: Vertical Horizontal	HORIZONTAL - OK VERTICAL - SEE PLATE E-2 & PROFILE IN APPENDIX D.	
RIPRAP FAILURES	NO RIPRAP	

EMBANKMENT

Sheet 2 of 2

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT WITH: **Abutment** **Spillway** **Other Features**	AT RIGHT SPILLWAY WALL - 2 HOLES ABOUT 1' DEEP	OWNER REPORTED DIGGING UP SNAKE PIT AT AREA. BURROWING ANIMAL HOLE AT RIGHT ABUTMENT
	1 TREE TO RIGHT OF SPILLWAY	2 TREES AT LEFT ABUTMENT PRESENT NO HAZARD.
ANY NOTICEABLE SEEPAGE	NONE	
STAFF GAGE AND RECORDER	NONE	
DRAINS	NONE	
UPSTREAM CONCRETE FACING	EXPOSED FOOTING CRACKING OFF - IS NOT OF CONSEQUENCE TO STRUCTURAL INTEGRITY.	SEVERAL SHRINKAGE CRACKS, MOSTLY REPAIRED.

B-1-N

OUTLET WORKS

Sheet 1 of 1

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	CMP ESTIMATED 15" TO 24" PROTRUDES FROM SPILLWAY CHUTE.	OWNER UNAWARE OF EXISTENCE OF OPERATING MECHANISM OR CLOSURE FACILITY.
INTAKE STRUCTURE	UNKNOWN	
OUTLET STRUCTURE	FREE OUTFALL	
OUTLET CHANNEL	SPILLWAY CHUTE	
EMERGENCY GATE	NONE observed OUTLET WORKS IS NOT OPERATIONAL	

UNGATED SPILLWAY

Sheet 1 of 1

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	FLASHBOARD PINS. ALONG CREST.	
APPROACH CHANNEL	RESERVOIR	
DISCHARGE CHANNEL	CONCRETE PAVED CHUTE. SCOUR & CRACKS IN AREAS. SEVERE SCOUR AT TWO AREAS. OWNER PLANS TO REPAIR THESE THIS SUMMER.	AT JUNCTION CONCRETE WALLS AND DRY MASONRY WALLS - DRY MASONRY WALLS ARE LOW, SEE PLATE E-2.
BRIDGE AND PIERS	PIERS ARE STEEL PIPE - 2 1/2" O.D. FOOTBRIDGE - GOOD CONDITION.	

INSTRUMENTATION

Sheet 1 of 1

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	NONE AT SITE	
OBSERVATION WELLS		
WEIRS		
PIEZOMETERS		
OTHER	NONE AT SITE	

DOWNSTREAM CHANNEL

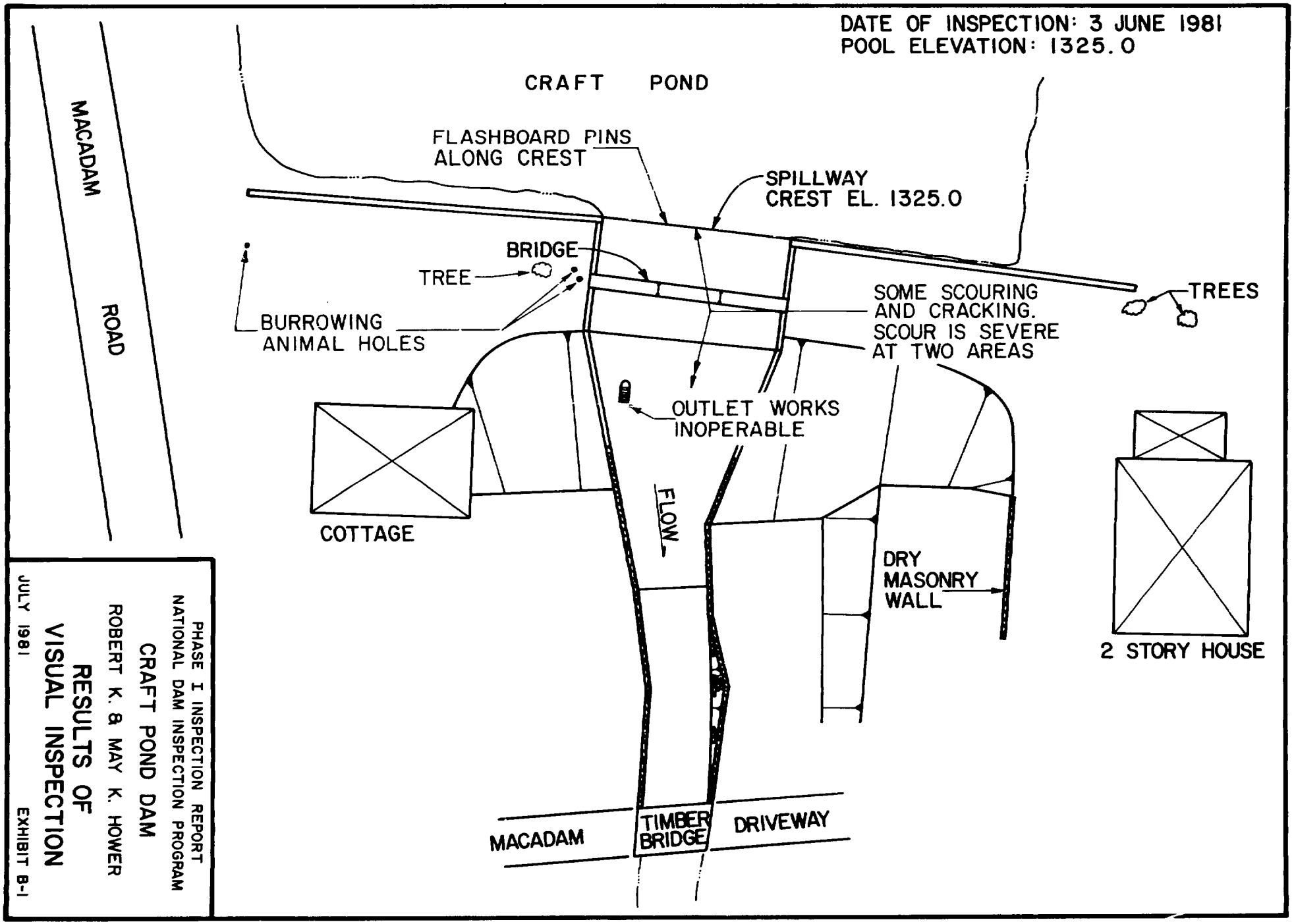
Sheet 1 of 1

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION: **Obstructions** **Debris** **Other**	AT DAMSITE: DRY MASONRY WALLS ALONG CHANNEL. SMALL VEHICLE BRIDGE DOWNSTREAM FROM 705. SEE PLATE E-2.	OFFSET dry MASONRY WALL AT LEFT BANK APPEARS TO be 'AS CONSTRUCTED'. OWNER REPORTED THAT RIGHT BANK WALL WAS REBUILT.
SLOPES	STEEP	
APPROXIMATE NUMBER OF HOMES AND POPULATION	10 dwellings AT LAKEVILLE See PLATE D-1.	

RESERVOIR AND WATERSHED

Sheet 1 of 1

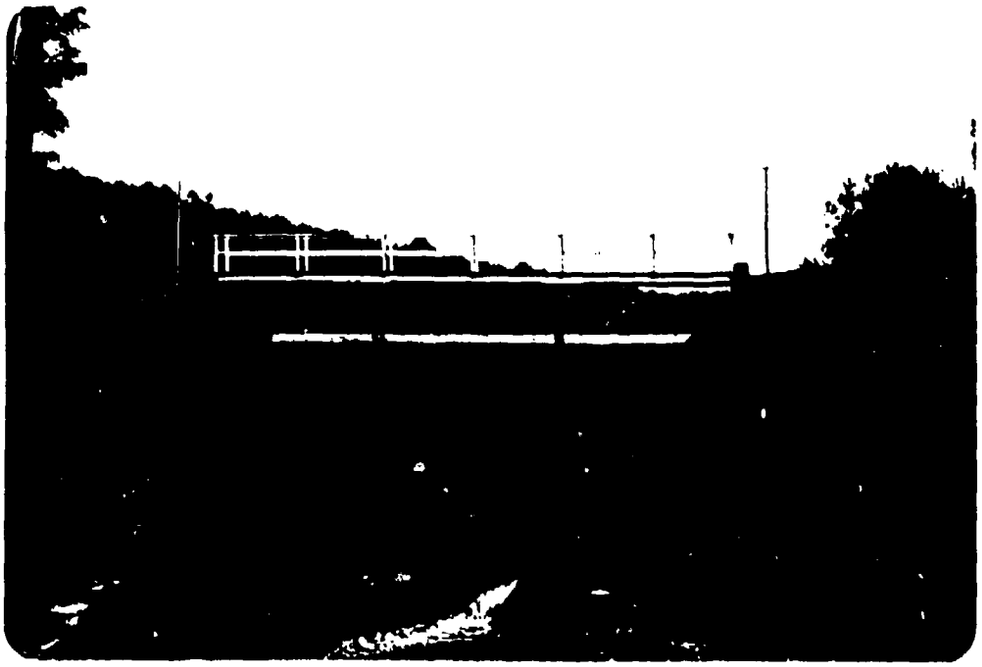
VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Generally mild some swamps in watershed.	
SEDIMENTATION	No Reported or Observed Problems.	
WATERSHED DESCRIPTION	Mostly wooded or farmfields.	2 dams in watershed. See Appendix D.


DATE OF INSPECTION: 3 JUNE 1981
POOL ELEVATION: 1325.0
CRAFT POND
FLASHBOARD PINS ALONG CREST
SPILLWAY CREST EL. 1325.0
BRIDGE
TREE
BURROWING ANIMAL HOLES
SOME SCOURING AND CRACKING. SCOUR IS SEVERE AT TWO AREAS
TREES
OUTLET WORKS INOPERABLE
COTTAGE
FLOW
DRY MASONRY WALL
2 STORY HOUSE
MACADAM ROAD
MACADAM
TIMBER BRIDGE
DRIVEWAY
PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
CRAFT POND DAM
ROBERT K. & MAY K. HOWER
RESULTS OF VISUAL INSPECTION
JULY 1981
EXHIBIT B-1

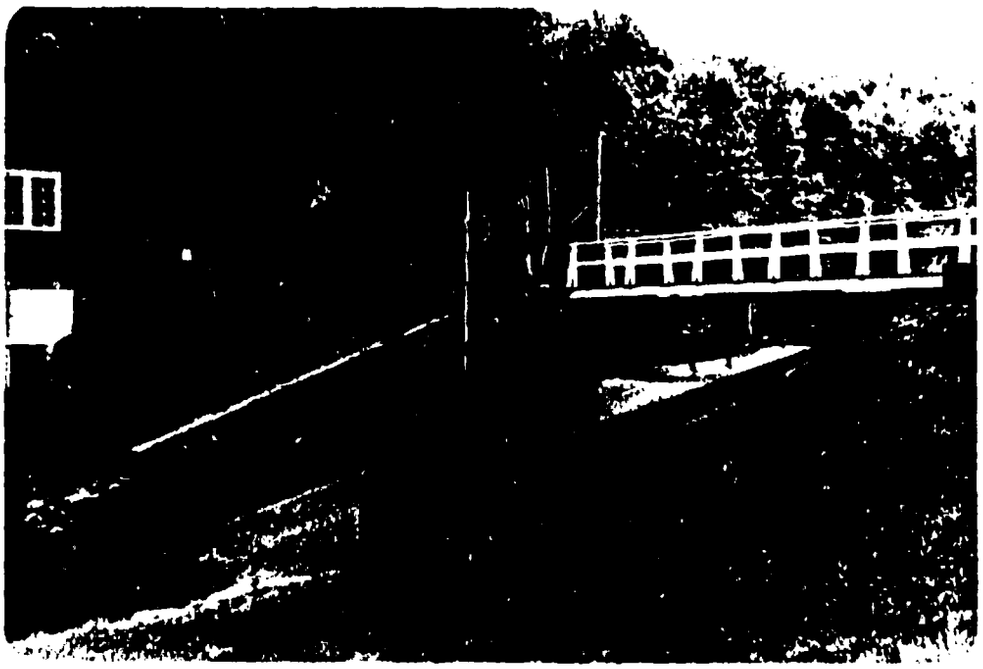
APPENDIX C

PHOTOGRAPHS

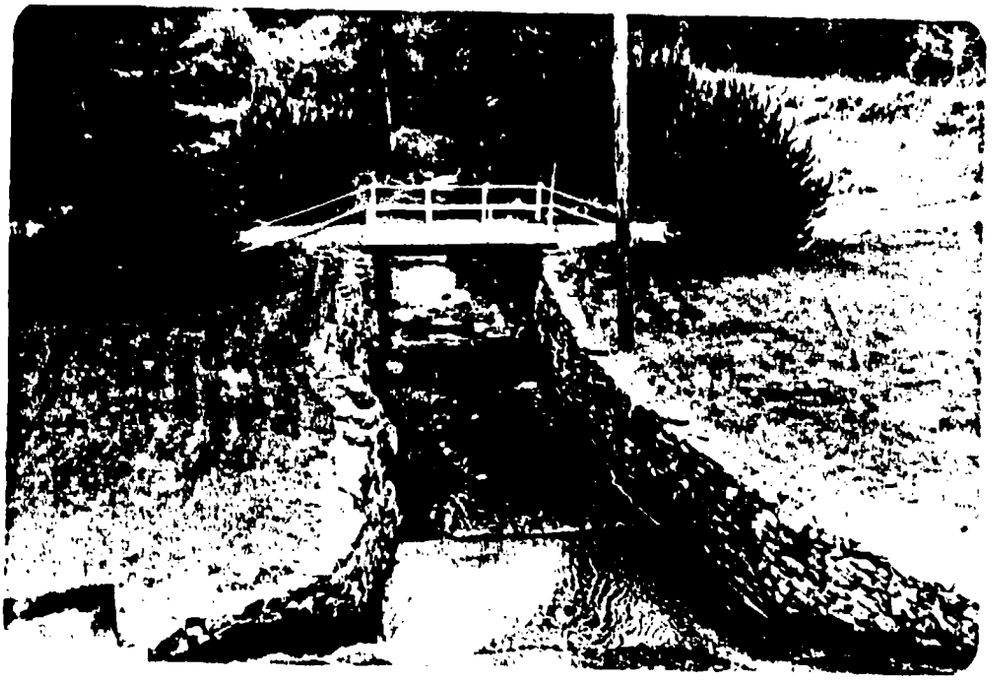
CRAFT POND DAM



A. Spillway



B. Spillway

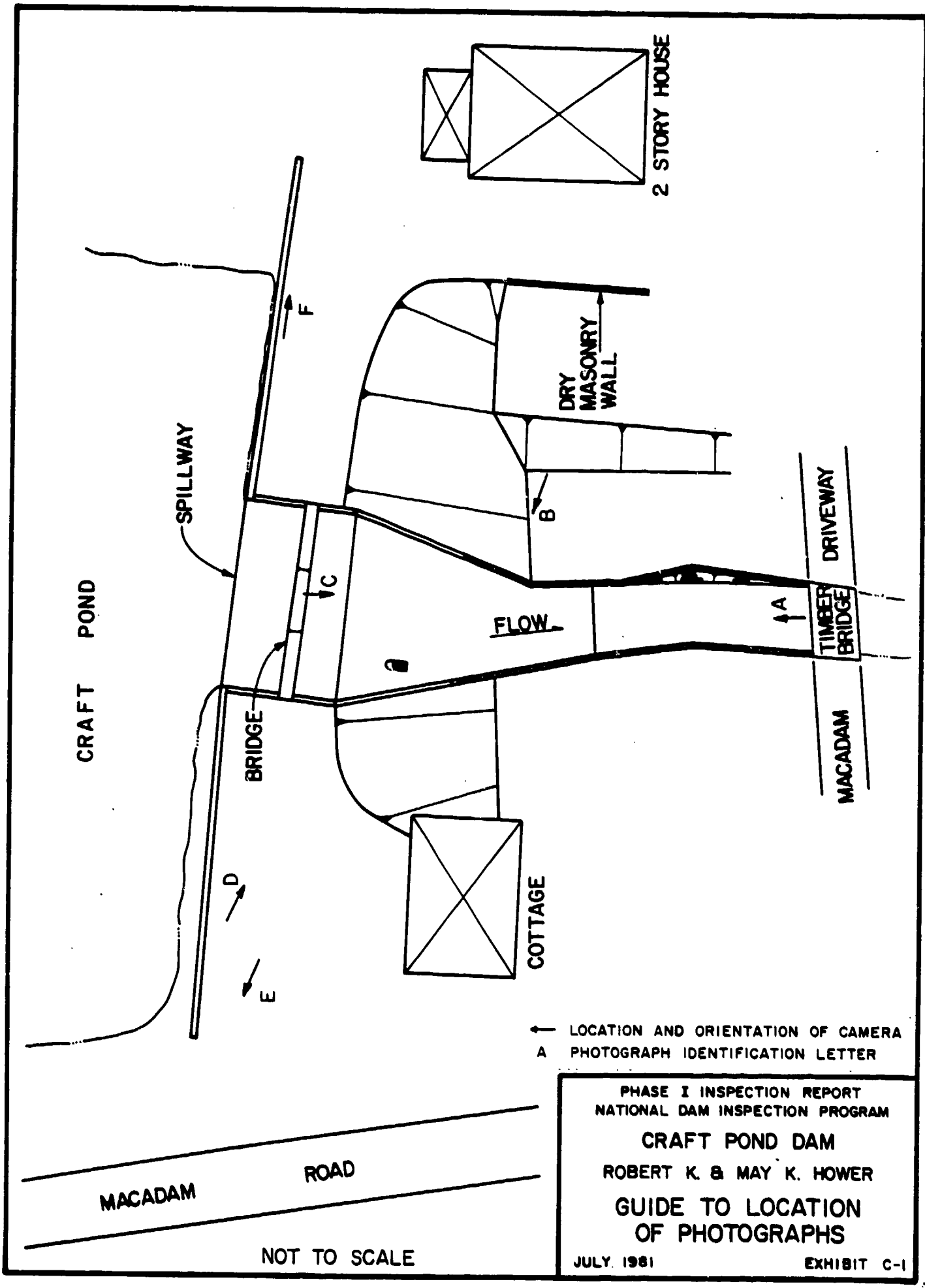


C. Spillway Channel

D. Top of Dam

E. Right Abutment

F. Left Abutment


2 STORY HOUSE
F
DRY MASONRY WALL
SPILLWAY
B
DRIVEWAY
C
CRAFT POND
FLOW
A
TIMBER BRIDGE
BRIDGE
MACADAM
D
COTTAGE
E
LOCATION AND ORIENTATION OF CAMERA
A PHOTOGRAPH IDENTIFICATION LETTER
MACADAM ROAD
NOT TO SCALE
PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
CRAFT POND DAM
ROBERT K. & MAY K. HOWER
GUIDE TO LOCATION OF PHOTOGRAPHS
JULY. 1981
EXHIBIT C-1

APPENDIX D

HYDROLOGY AND HYDRAULICS

APPENDIX D

HYDROLOGY AND HYDRAULICS

Spillway Capacity Rating:

In the recommended Guidelines for Safety Inspection of Dams, the Department of the Army, Office of the Chief of Engineers (OCE), established criteria for rating the capacity of spillways. The recommended Spillway Design Flood (SDF) for the size (small, intermediate, or large) and hazard potential (low, significant, or high) classification of a dam is selected in accordance with the criteria. The SDF for those dams in the high hazard category varies between one-half of the Probable Maximum Flood (PMF) and the PMF. If the dam and spillway are not capable of passing the SDF without overtopping failure, the spillway capacity is rated as inadequate. If the dam and spillway are capable of passing one-half of the PMF without overtopping failure, or if the dam is not in the high hazard category, the spillway capacity is not rated as seriously inadequate. A spillway capacity is rated as seriously inadequate if all of the following conditions exist:

(a) There is a high hazard to loss of life from large flows downstream of the dam.

(b) Dam failure resulting from overtopping would significantly increase the hazard to loss of life downstream from the dam from that which would exist just before overtopping failure.

(c) The dam and spillway are not capable of passing one-half of the PMF without overtopping failure.

Description of Model:

If the Owner has not developed a PMF for the dam, the watershed is modeled with the HEC-1DB computer program, which was developed by the U.S. Army Corps of Engineers. The HEC-1DB computer program calculates a PMF runoff hydrograph (and percentages thereof) and routes the flows through both reservoirs and stream sections. In addition, it has the capability to simulate an overtopping dam failure. By modifying the rainfall criteria, it is also possible to model the 100-year flood with the program.

APPENDIX D

DELAWARE River Basin
Name of Stream: BRANCH OF LAKEVILLE CREEK
Name of Dam: CRAFT POND
NDI ID No.: PA - 01102
DER ID No.: 64-27
Latitude: N 41° 26.1' Longitude: W 75° 17.1'
Top of Dam Elevation: 1329.2
Streambed Elevation: 1310.5 Height of Dam: 18.7 ft
Reservoir Storage at Top of Dam Elevation: 157 acre-ft
Size Category: SMALL
Hazard Category: HIGH (see Section 5)
Spillway Design Flood: 1/2 PMF TO PMF - USE 1/2 PMF (SEE SECTION 5)

UPSTREAM DAMS

Name	Distance from Dam (miles)	Height (ft)	Storage at top of Dam Elevation (acre-ft)	Remarks
JANOSKE★	1.0	15±	<50	DER ID 64-114
LAKE ELLYN	2.0	9	228	DER ID 64-32

DOWNSTREAM DAMS

LAKE WALLENPAUPACK	1.8	66	214,800 AT NORMAL POOL	DER ID 52-51

★ IGNORED IN ANALYSIS

DELAWARE River Basin

Name of Stream: LAKEVILLE CREEK

Name of Dam: CRAFT POND

DETERMINATION OF PMF RAINFALL & UNIT HYDROGRAPH

UNIT HYDROGRAPH DATA:

Sub-area	Drainage Area (square miles)	Cp (1)	Ct (2)	L miles (3)	L_{ca} miles (4)	L' miles (5)	Tp hours (6)	Map Area (7)	Plate (8)
A-1	1.24	0.45	1.23	1.17	0.44	–	1.01	1	A
A-2	1.83	0.45	1.23	2.60	1.16	–	1.71	1	A
Total	3.07								

(See Sketch on Sheet D-4)

(1) & (2): Snyder Unit Hydrograph coefficients supplied by Baltimore District, Corps of Engineers on maps and plates referenced in (7) & (8)

The following are measured from the outlet of the subarea:

(3): Length of main watercourse extended to divide

(4): Length of main watercourse to the centroid

The following is measured from the upstream end of the reservoir at normal pool:

(5): Length of main watercourse extended to divide

(6): $Tp=C_t \times (L \times L_{ca})^{0.3}$, except where the centroid of the subarea is located in the reservoir. Then $Tp=C_t \times (L')^{0.6}$

Initial flow is assumed at 1.5 cfs/sq. mile

Computer Data: QRCSN = -0.05 (5% of peak flow)
RTIOR = 2.0

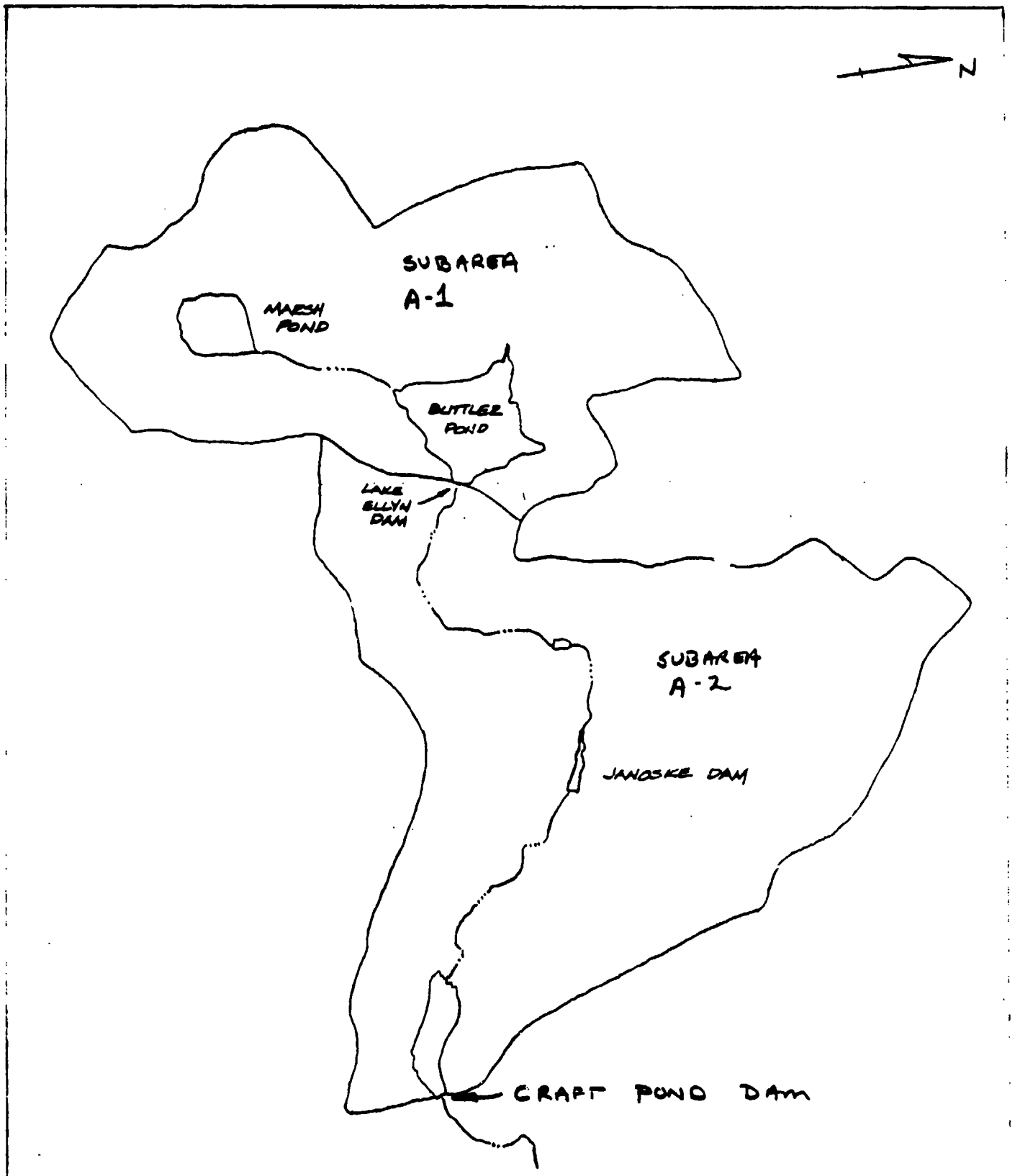
RAINFALL DATA:

PMF Rainfall Index= 21.5 in., 24 hr., 200 sq. mile

	Hydromet. 40 (Susquehanna Basin)	Hydromet. 33 (Other Basins)
Zone:	N/A	1
Geographic Adjustment Factor:		1.0
Revised Index Rainfall:		21.5

RAINFALL DISTRIBUTION (percent)

Time	Percent
6 hours	111
12 hours	123
24 hours	133
48 hours	142
72 hours	
96 hours	


N
SUBAREA
A-1
MARSH
POND
BUTTLER
POND
LAKE
ELLYN
DAM
SUBAREA
A-2
JANOSKE DAM
CRAFT POND DAM

Data for Dam at Outlet of Subarea A-1 (See sketch on Sheet D-4)

Name of Dam: LAKE ELLYN DAM

STORAGE DATA: THE FOLLOWING DATA WAS TAKEN FROM THE PHASE I REPORT FOR LAKE ELLYN DAM.

Elevation		Area (acres)		Storage million gals	Storage acre-ft		Remarks
1427.0	=ELEVO*	0		0	0		
1434.0	=ELEV1	54	=A1	41	126	=S1	NORMAL POOL
1440.0	**	102					

* ELEVO = ELEV1 - $(3S_1/A_1)$

** Planimetered contour (USGS Quad)

Reservoir Area at Normal Pool is 7 percent of subarea watershed.

BREACH DATA: BREACH ANALYSIS NOT REQUIRED

See Appendix B for sections and existing profile of the dam.

Soil Type from Visual Inspection: _____

Maximum Permissible Velocity (Plate 28, EM 1110-2-1601) _____ fps
(from $Q = CLH^{3/2} = V \cdot A$ and depth = (2/3) x H) & A = L·depth

HMAX = $(4/9\ V^2/C^2)$ = _____ ft., C = ____ Top of Dam El.= ____

HMAX + Top of Dam El. = _____ = FAILEL
(Above is elevation at which failure would start)

Dam Breach Data:

BRWID = _____ ft (width of bottom of breach)
Z = _____ (side slopes of breach)
ELBM = _____ (bottom of breach elevation, minimum of zero storage elevation)
WSEL = _____ (normal pool elevation)
T FAIL= _____ mins = _____ hrs (time for breach to develop)

Data for Dam at Outlet of Subarea A-1

Name of Dam: LAKE ELLYN DAM

SPILLWAY DATA: FROM PHASE I REPORT FOR LAKE ELLYN

	Existing Conditions	Design Conditions
Top of Dam Elevation	1435.7	(N/A)
Spillway Crest Elevation	1434.0	
Spillway Head Available (ft)	1.7	
Type Spillway	CONCRETE, BROAD-CRESTED WEIR	
"C" Value - Spillway	2.7	
Crest Length - Spillway (ft)	13.1	
Spillway Peak Discharge (cfs)	78	
Auxiliary Spillway Crest Elev.		
Auxiliary Spill. Head Avail. (ft)		
Type Auxiliary Spillway		
"C" Value - Auxiliary Spill. (ft)		
Crest Length - Auxil. Spill. (ft)		
Auxiliary Spillway Peak Discharge (cfs)		
Combined Spillway Discharge (cfs)		

Spillway Rating Curve: $Q = CLH^{1.5} = 35.4H^{1.5}$

Elevation	Q Spillway (cfs)	Q Auxiliary Spillway (cfs)	Combined (cfs)

OUTLET WORKS RATING:	Outlet 1	Outlet 2	Outlet 3
	NOT	APPLICABLE	
Invert of Outlet			
Invert of Inlet			
Type			
Diameter (ft) = D			
Length (ft) = L			
Area (sq. ft) = A			
N			
K Entrance			
K Exit			
K Friction=$29.1_N{}^2L/R^{4/3}$			
Sum of K			
$(1/K)^{0.5} = C$			
Maximum Head (ft) = HM			
$Q = CA\sqrt{2g(HM)}$(cfs)			
Q Combined (cfs)			

Data for Dam at Outlet of Subarea A-2 (See sketch on Sheet D-4)

Name of Dam: CRAFT POND

STORAGE DATA:

Elevation		Area (acres)		Storage million gals	Storage acre-ft		Remarks
1310.5	=ELEVO*	0		0	0		PLATE E-2
1325.0	=ELEV1	16	=A1		77	=S1	SPILL CREST
1329.2		22			157		TOP DAM
1340.0	**	42					

* ~~ELEVO = ELEV1 - (3S1/A1)~~ $S_1 = A_1 \times \frac{(ELEV1 - ELEVO)}{3}$

** Planimetered contour at least 10 feet above top of dam

Reservoir Area at Normal Pool is 1 percent of subarea watershed.

BREACH DATA:

See Appendix B for sections and existing profile of the dam.

Soil Type from Visual Inspection: NO SOIL EXCEPT TOPSOIL VISIBLE ASSUME COARSE SAND

Maximum Permissible Velocity (Plate 28, EM 1110-2-1601) 4 fps
(from $Q = CLH^{3/2} = V \cdot A$ and depth = (2/3) x H) & A = L·depth

HMAX = $(4/9\ V^2/C^2)$ = 0.7 ft., C = 3.1 Top of Dam El.= 1329.2

HMAX + Top of Dam El. = 1329.9 = FAILEL
(Above is elevation at which failure would start)

Dam Breach Data:

BRWID = 35 ft (width of bottom of breach)
Z = 3 (side slopes of breach)
ELBM = 1310.5 (bottom of breach elevation, minimum of zero storage elevation)
WSEL = 1325.0 (normal pool elevation)
T FAIL = 6 mins = 0.1 hrs (time for breach to develop)

Data for Dam at Outlet of Subarea A-2

Name of Dam: CRAFT POND

SPILLWAY DATA:	Existing Conditions	Design Conditions
Top of Dam Elevation	1429.2	INSUFFICIENT
Spillway Crest Elevation	1425.0	DATA TO
Spillway Head Available (ft)	4.2	ASSESS
Type Spillway	BROAD CREST WEIR	
"C" Value - Spillway	3.1	
Crest Length - Spillway (ft)	40.3	
Spillway Peak Discharge (cfs)★	1075	
Auxiliary Spillway Crest Elev.		
Auxiliary Spill. Head Avail. (ft)		
Type Auxiliary Spillway		
"C" Value - Auxiliary Spill. (ft)		
Crest Length - Auxil. Spill. (ft)		
Auxiliary Spillway Peak Discharge (cfs)		
Combined Spillway Discharge (cfs)	1075	

★ $Q = CLH^{1.5}$

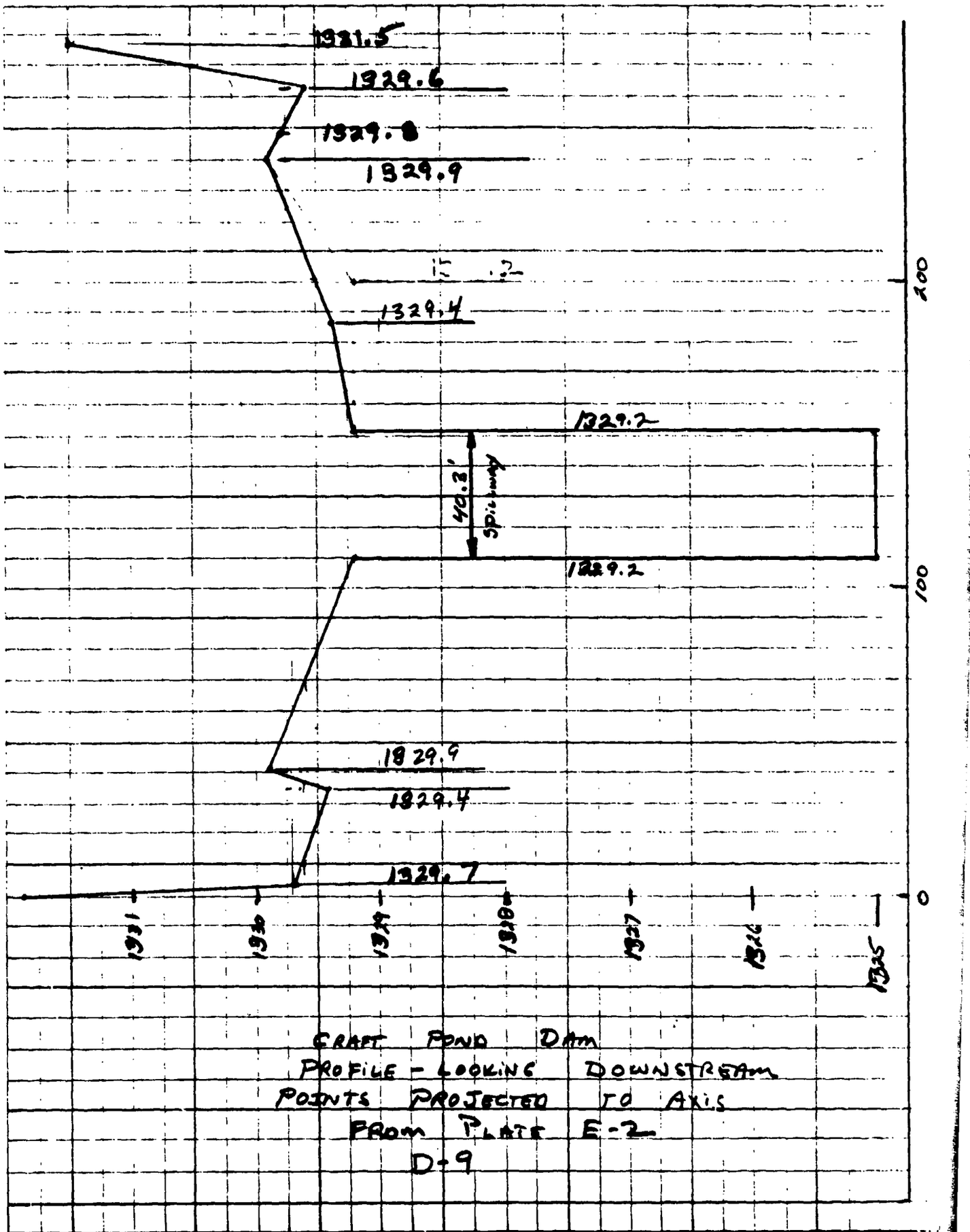
Spillway Rating Curve: NOT USED

Elevation	Q Spillway (cfs)	Q Auxiliary Spillway (cfs)	Combined (cfs)

OUTLET WORKS RATING:	Outlet 1	Outlet 2	Outlet 3
Invert of Outlet	NOT	FUNCTIONAL	
Invert of Inlet			
Type			
Diameter (ft) = D			
Length (ft) = L			
Area (sq. ft) = A			
N			
K Entrance			
K Exit			
K Friction=$29.1 N^2 L/R^{4/3}$			
Sum of K			
$(1/K)^{0.5} = C$			
Maximum Head (ft) = HM			
$Q = CA\sqrt{2g(HM)}$ (cfs)			
Q Combined (cfs)			

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____



CRAFT POND DAM
PROFILE - LOOKING DOWNSTREAM
POINTS PROJECTED TO AXIS
FROM PLATE E-2
D-9

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

SELECTED COMPUTER OUTPUT INDEX

MULTI-RATIO ANALYSIS

BREACH ANALYSIS

* ANALYSIS FOR LAKE ELLYN INCLUDED IN COMPUTER RUN BUT NOT INCLUDED IN SELECTED OUTPUT

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  01 APR 80
**********
    1  A1                    NATIONAL DAM INSPECTION PROGRAM
    2  A2                BALTIMORE DISTRICT CORPS OF ENGINEERS
    3  A3                          CRAFT DAM
    4  B     300       0      15       0       0       0       0       0      -4       0
    5  B1      5
    6  J       1       6       1
    7  J1      1      .5      .4      .3      .2      .1
    8  K       0       1                                       1
    9  K1        INFLOW TO LAKE ELLYN
   10  M       1       1    1.24            3.07                                   1
   11  P              21.5     111     123     133     142
   12  T                                                      1.0    0.05            0.07
   13  W    1.01    0.45
   14  X    -1.5   -0.05     2.0
   15  K       1       1                                       1
   16  K1        ROUTE THROUGH LAKE ELLYN
   17  Y                                       1       1
   18  Y1      1                                              -1434
   19  SA      0      54     102
   20  SE   1427    1434    1440
   21  SS   1434    13.1     2.7     1.5
   22  SD1435.7
   23  SL      0      35     312     348     364     377
   24  SV1435.7  1436.4  1437.0  1437.5  1438.0  1438.5
   25  K       1       2                                       1
   26  K1        STREAM REACH 1
   27  Y                                       1       1
   28  Y1      1                                              -1
   29  Y6   0.07    0.04    0.07    1425    1440    2200  0.0041
   30  Y7      0    1460     120    1440     610    1428     610    1425     640    1425
   31  Y7    640    1428    1400    1440    1550    1460
   32  K       1       3                                       1
   33  K1        STREAM REACH 2
   34  Y                                       1       1
   35  Y1      1                                              -1
   36  Y6   0.09    0.04    0.09    1387    1405    4900  0.0086
   37  Y7      0    1420     150    1400     230    1390     230    1387     250    1387
   38  Y7    250    1390     300    1400     420    1420
   39  K       1       4                                       1
   40  K1        STREAM REACH 3
   41  Y                                       1       1
   42  Y1      1                                              -1
   43  Y6   0.09    0.04    0.09    1340    1360    3500  0.0157
   44  Y7      0    1380     120    1360     290    1343     290    1340     310    1340
   45  Y7    310    1343     400    1360     480    1380
   46  K       0       5                                       1
   47  K1        INFLOW TO CRAFT DAM
   48  M       1       1    1.83            3.07                                   1
   49  P              21.5     111     123     133     142
   50  T                                                      1.0    0.05            0.01
```

D-11

E

```
51              W   1.71    0.65
52              X   -1.5   -0.05     2.0
53              K      2        5                                          1
54              K1      COMBINE INFLOW TO CRAFT POND
55              K      1        5                                          1
56              K1      ROUTE THROUGH CRAFT POND
57              Y                                    1       1
58              Y1     1                                                 -1325
59              SA     0       16       42
60              SE1310.5     1325     1340
61              SS1325.0     40.3      3.1      1.5
62              SD1329.2
63              SL     0       35      140      176      223      238
64              SV1329.2  1329.4   1329.6   1329.7   1329.9   1331.5
65              K     99
```

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 1.00	RATIO 2 .50	RATIO 3 .40	RATIO 4 .30	RATIO 5 .20	RATIO 6 .10	
HYDROGRAPH AT	1	1.24	1	3481.	1741.	1393.	1044.	696.	348.	
		(3.21)		(98.58)(	49.29)(	39.43)(	29.58)(	19.72)(	9.86)(	
ROUTED TO	1	1.24	1	3195.	1491.	1117.	729.	316.	82.	OUTFLOW LAKE ELLYN
		(3.21)		(90.48)(	42.23)(	31.64)(	20.65)(	8.94)(	2.33)(	
ROUTED TO	2	1.24	1	3163.	1476.	1106.	722.	314.	82.	
		(3.21)		(89.57)(	41.78)(	31.33)(	20.46)(	8.90)(	2.33)(	
ROUTED TO	3	1.24	1	3131.	1464.	1098.	718.	313.	82.	
		(3.21)		(88.67)(	41.44)(	31.10)(	20.33)(	8.87)(	2.32)(	
ROUTED TO	4	1.24	1	3135.	1458.	1093.	716.	312.	82.	
		(3.21)		(88.77)(	41.28)(	30.96)(	20.28)(	8.83)(	2.32)(	
HYDROGRAPH AT	5	1.83	1	3848.	1924.	1539.	1154.	770.	385.	
		(4.74)		(108.97)(	54.48)(	43.59)(	32.69)(	21.79)(	10.90)(	
2 COMBINED	5	3.07	1	6939.	3307.	2539.	1741.	922.	420.	INFLOW TO CRAFT POND
		(7.95)		(196.48)(	93.66)(	71.90)(	49.31)(	26.10)(	11.90)(	
ROUTED TO	5	3.07	1	6921.	3297.	2527.	1725.	895.	392.	OUTFLOW FROM CRAFT POND
		(7.95)		(195.97)(	93.36)(	71.56)(	48.84)(	25.34)(	11.09)(	

SUMMARY OF DAM SAFETY ANALYSIS

LAKE ELLYN DAM

PLAN 1 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1434.00	1434.00	1435.70
STORAGE	126.	126.	228.
OUTFLOW	0.	0.	78.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1438.58	2.88	450.	3195.	22.50	41.25	0.00
.50	1437.77	2.07	381.	1491.	18.25	41.50	0.00
.40	1437.55	1.85	363.	1117.	16.75	41.75	0.00
.30	1437.27	1.57	341.	729.	15.50	42.25	0.00
.20	1436.84	1.14	308.	316.	13.25	43.25	0.00
.10	1435.75	.05	231.	82.	3.00	44.25	0.00

PLAN 1 STATION 2

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
1.00	3163.	1431.8	41.50
.50	1476.	1430.3	41.75
.40	1106.	1429.8	42.00
.30	722.	1429.1	42.50
.20	314.	1427.6	43.25
.10	82.	1426.1	44.50

PLAN 1 STATION 3

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
1.00	3131.	1396.2	41.50
.50	1464.	1393.4	42.00
.40	1098.	1392.6	42.25
.30	718.	1391.6	42.75
.20	313.	1389.7	43.50
.10	82.	1388.1	44.75

PLAN 1 STATION 4

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
1.00	3135.	1347.9	41.75
.50	1458.	1345.5	42.00
.40	1093.	1344.7	42.25
.30	716.	1343.7	42.75
.20	312.	1342.2	43.50
.10	82.	1340.9	45.00

SUMMARY OF DAM SAFETY ANALYSIS

CRAFT POND DAM

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1325.00	1325.00	1329.20
STORAGE	77.	77.	157.
OUTFLOW	0.	0.	1075.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1332.81	3.61	247.	6921.	9.50	41.75	0.00
.50	1331.14	1.94	203.	3297.	6.25	42.00	0.00
.40	1330.68	1.48	191.	2527.	5.00	42.25	0.00
.30	1330.10	.90	177.	1725.	3.75	42.75	0.00
.20	1328.72	0.00	146.	895.	0.00	43.25	0.00
.10	1327.14	0.00	115.	392.	0.00	42.75	0.00

D-15

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  01 APR 80
**********
    1  A1                    NATIONAL DAM INSPECTION PROGRAM
    2  A2                 BALTIMORE DISTRICT CORPS OF ENGINEERS
    3  A3                          CRAFT DAM
    4  B     300       0       6       0       0       0       0       0      -4       0
    5  B1      5
    6  J       2       2       1
    7  J1     .5     .35
    8  K       0       1                                               1
    9  K1        INFLOW TO LAKE ELLYN
   10  M       1       1   1.24            3.07                                    1
   11  P               21.5     111     123     133
   12  T                                                               1.0    0.05            0.07
   13  W    1.01    0.45
   14  X    -1.5   -0.05     2.0
   15  K       1       1                                               1
   16  K1        ROUTE THROUGH LAKE ELLYN
   17  Y                                       1       1
   18  Y1      1                                                      -1434
   19  SA      0      56     102
   20  SE   1427    1434    1440
   21  SS   1434    13.1     2.7     1.5
   22  SD1435.7
   23  SL      0      35     312     348     364     377
   24  SV1435.7  1436.4  1437.0  1437.5  1438.0  1438.5
   25  K       1       2                                               1
   26  K1        STREAM REACH 1
   27  Y                                       1       1
   28  Y1      1                                                      -1
   29  Y6  0.07    0.04    0.07    1425    1440    2200  0.0041
   30  Y7      0    1460     120    1440     610    1428     610    1425     640    1425
   31  Y7    640    1428    1400    1440    1550    1460
   32  K       1       3                                               1
   33  K1        STREAM REACH 2
   34  Y                                       1       1
   35  Y1      1                                                      -1
   36  Y6  0.09    0.04    0.09    1387    1405    4900  0.0086
   37  Y7      0    1420     150    1400     230    1390     230    1387     250    1387
   38  Y7    250    1390     300    1400     420    1420
   39  K       1       4                                               1
   40  K1        STREAM REACH 3
   41  Y                                       1       1
   42  Y1      1                                                      -1
   43  Y6  0.09    0.04            1340    1360    3500  0.0157
   44  Y7      0    1380      20    1360     290    1343     290    1340     310    1340
   45  Y7    310    1343     400    1360     480    1380
   46  K       0       5                                               1
   47  K1        INFLOW TO CRAFT DAM
   48  M       1       1   1.83            3.07                                    1
   49  P               21.5     111     123     133
   50  T                                                               1.0    0.05            0.01
```

```
51  U   1.71    0.45
52  X   -1.5   -0.05     2.0
53  K      2        5                                                  1
54  K1      COMBINE INFLOW TO CRAFT POND
55  K      1        5                                                  1
56  K1      ROUTE THROUGH CRAFT POND
57  Y                                    1       1
58  Y1     1                                                       -1325
59  SA     0       16       42
60  SE1310.5     1325     1340
61  SS1325.0     40.3      3.1      1.5
62  SD1329.2
63  SL     0       35      140      176      223      238
64  SV1329.2   1329.4   1329.6   1329.7   1329.9   1331.5
65  SB    35        3   1310.5       .1     1325     1400
66  SB    35        3   1310.5       .1     1325   1329.9
67  K      1        6                                                  1
68  K1      DAMAGE CENTER AT LAKEVILLE
69  Y                                    1       1
70  Y1     1                                                         -1
71  Y6   .08      .06      .10     1260     1280     2800     .018
72  Y7     0     1300       10     1280      600     1264      604     1260      612     1260
73  Y7   616     1264      916     1280     1116     1300
74  K     99
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PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 .50	RATIO 2 .35
HYDROGRAPH AT	1	1.24	1	1751.	1226.
		(3.21)		(49.59)(	34.71)(
			2	1751.	1226.
				(49.59)(	34.71)(
ROUTED TO	1	1.24	1	1446.	886.
		(3.21)		(40.96)(	25.09)(
			2	1446.	886.
				(40.96)(	25.09)(
ROUTED TO	2	1.24	1	1431.	877.
		(3.21)		(40.53)(	24.84)(
			2	1431.	877.
				(40.53)(	24.84)(
ROUTED TO	3	1.24	1	1420.	871.
		(3.21)		(40.20)(	24.67)(
			2	1420.	871.
				(40.20)(	24.67)(
ROUTED TO	4	1.24	1	1416.	870.
		(3.21)		(40.10)(	24.62)(
			2	1416.	870.
				(40.10)(	24.62)(
HYDROGRAPH AT	5	1.83	1	1936.	1355.
		(4.74)		(54.82)(	38.38)(
			2	1936.	1355.
				(54.82)(	38.38)(
2 COMBINED	5	3.07	1	3249.	2087.
		(7.95)		(92.01)(	59.09)(
			2	3249.	2087.
				(92.01)(	59.09)(
ROUTED TO	5	3.07	1	3235.	2073.
		(7.95)		(91.61)(	58.71)(
			2	18520.	17958.
				(524.43)(	508.52)(
ROUTED TO	6	3.07	1	3228.	2066.
		(7.95)		(91.39)(	58.51)(
			2	11158.	10662.
				(315.96)(	301.91)(

SUMMARY OF DAM SAFETY ANALYSIS

CRAFT POND DAM

PLAN 1 ..NO..DAM..BREACH

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1325.00	1325.00	1329.20
STORAGE	77.	77.	157.
OUTFLOW	0.	0.	1075.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.50	1331.11	1.91	202.	3235.	6.10	18.00	0.00
.35	1330.37	1.17	184.	2073.	4.50	18.50	0.00

PLAN 2 ..DAM..BREACH

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1325.00	1325.00	1329.20
STORAGE	77.	77.	157.
OUTFLOW	0.	0.	1075.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.50	1330.12	.92	178.	18520.	.58	16.70	16.60
.35	1329.93	.73	173.	17958.	.57	17.40	17.30

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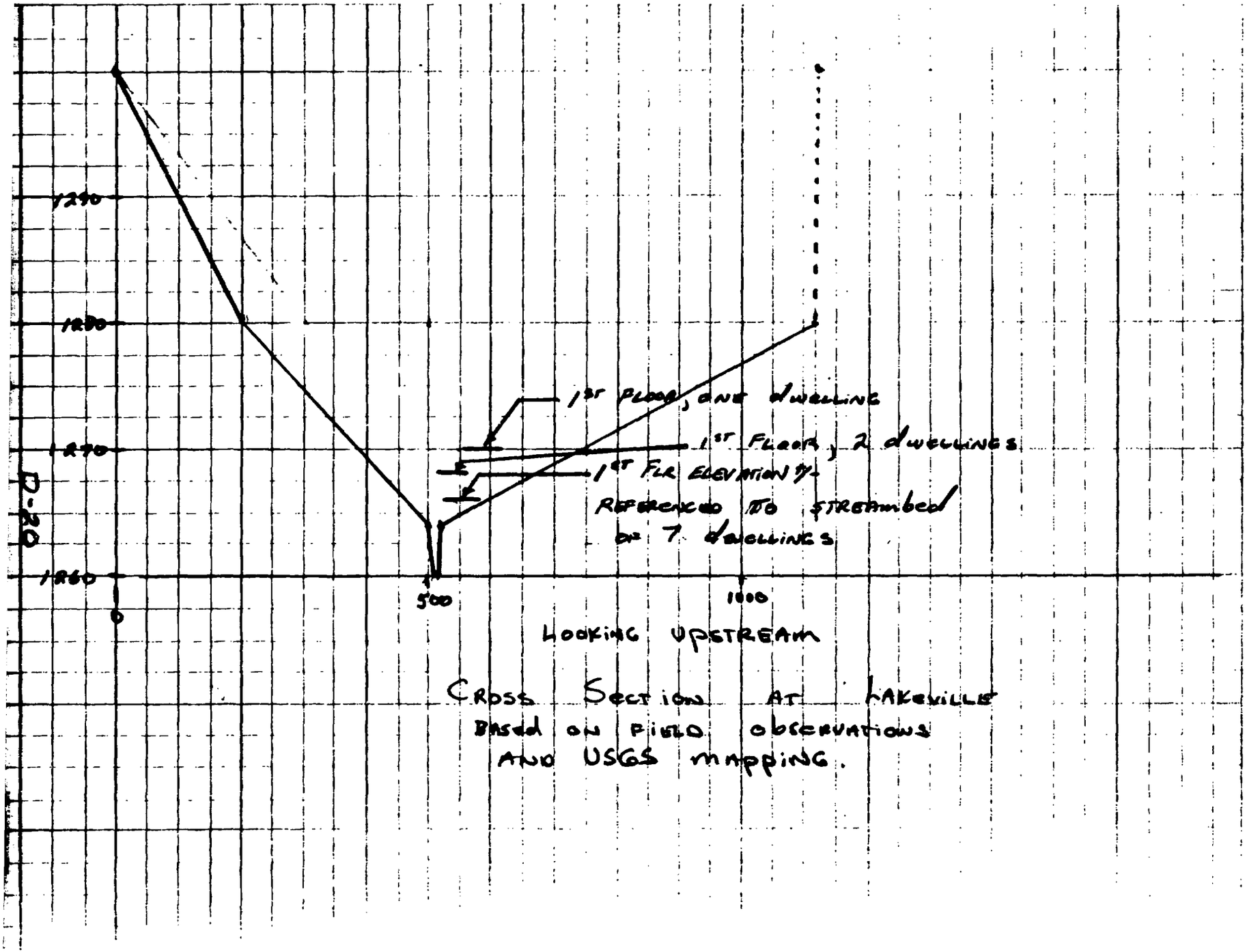
PLAN 1 STATION 6

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.50	3228.	1268.2	18.20
.35	2066.	1267.4	18.60

DAMAGE CENTER

PLAN 2 STATION 6

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.50	11158.	1271.5	16.80
.35	10662.	1271.3	17.50



CROSS SECTION AT LAKEVILLE
BASED ON FIELD OBSERVATIONS
AND USGS MAPPING.

R-20

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____
CHKD. BY _____ DATE _____ JOB. NO. _____

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB. NO. _____

Summary of Pertinent Results

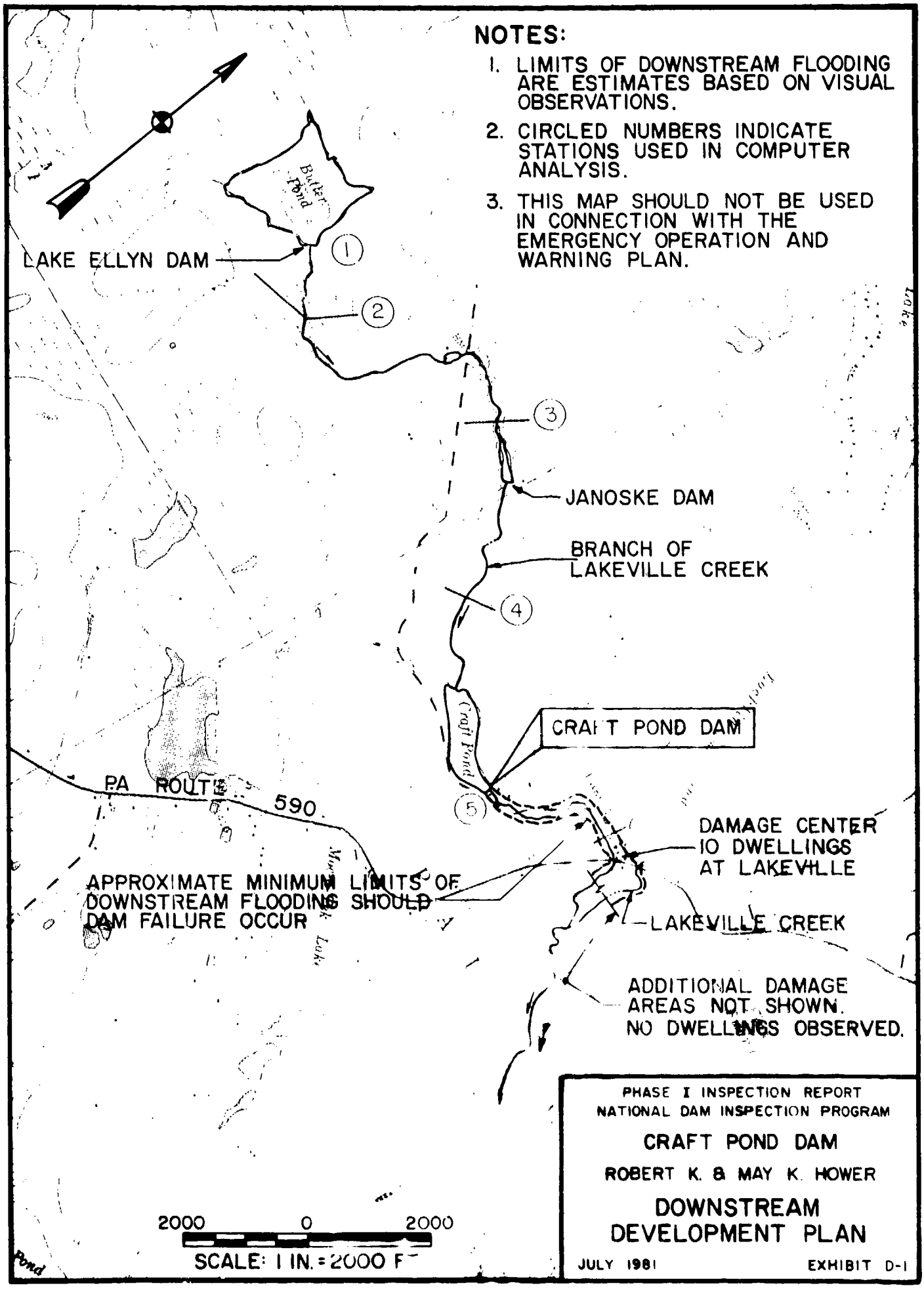
Multi-Ratio Analysis

	PMF	½PMF = SDF
Rainfall (inches)	24.42	—
Runoff (inches)	22.11	11.06
Craft Pond Dam		
Inflow (cfs)	6,939	3,307
Outflow (cfs)	6,921	3,297
Depth of Overtopping (ft)	3.61	1.94
Duration of Overtopping (hrs)	9.50	6.25

Breach Analysis

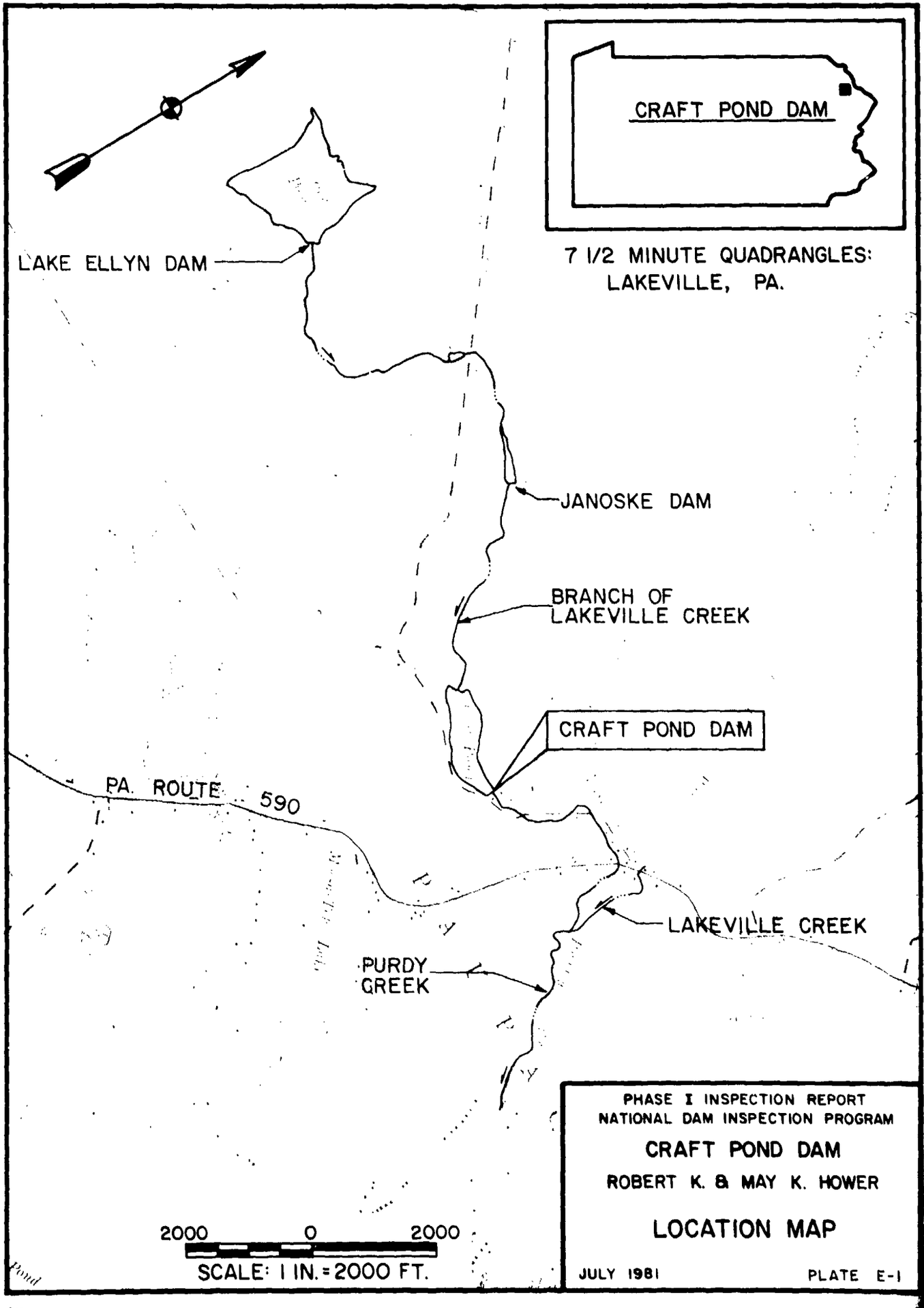
Craft Pond Dam	½ PMF	35% PMF
Outflow (cfs)	18,520	17,958
At Damage Center*		
Water Surface:		
Dam Breach (elev)	1271.5	1271.3
No Dam Breach (elev)	1268.2	1267.4
Difference (ft)	3.3	3.9

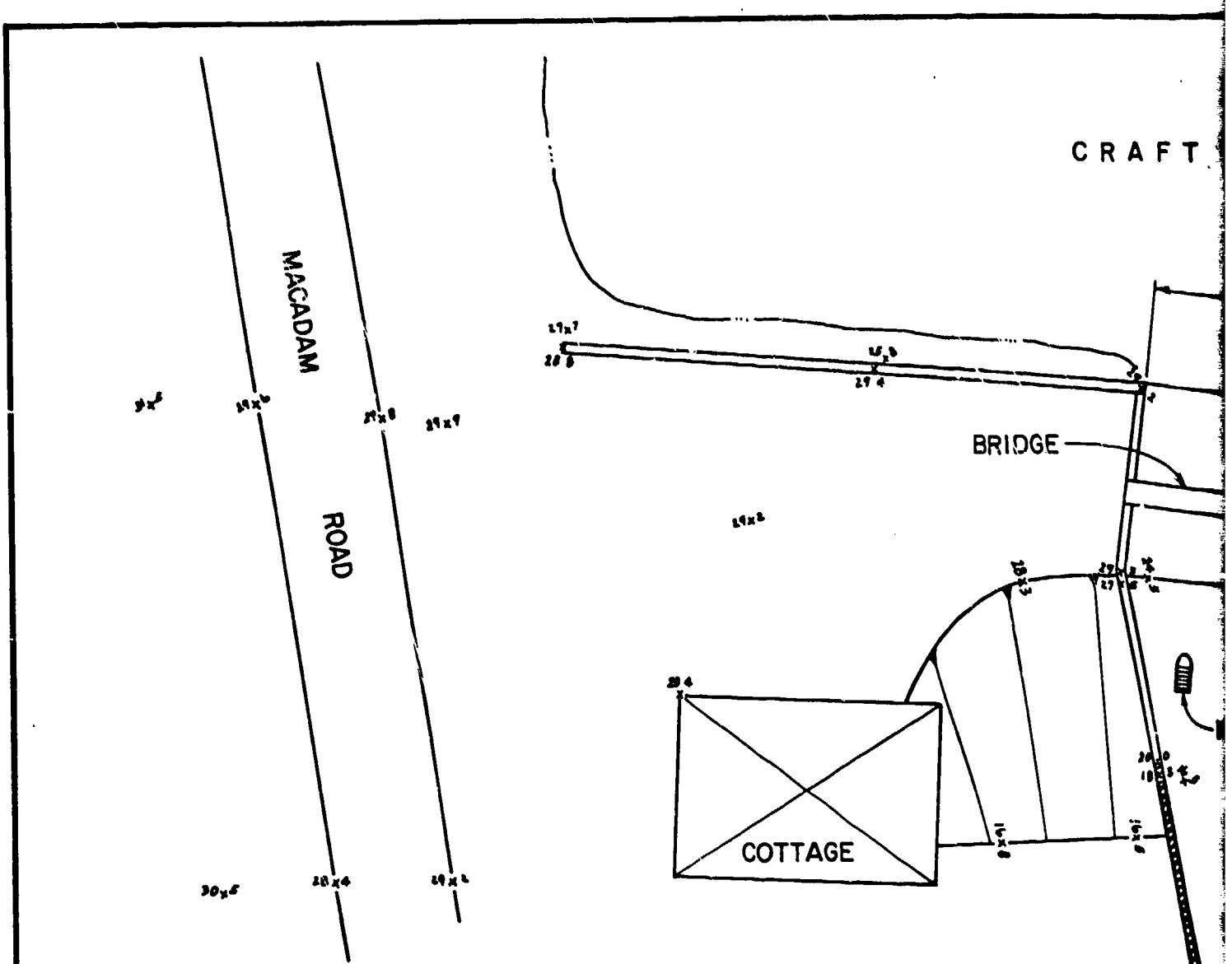
* See section on previous sheet


NOTES:
1. LIMITS OF DOWNSTREAM FLOODING ARE ESTIMATES BASED ON VISUAL OBSERVATIONS.
2. CIRCLED NUMBERS INDICATE STATIONS USED IN COMPUTER ANALYSIS.
3. THIS MAP SHOULD NOT BE USED IN CONNECTION WITH THE EMERGENCY OPERATION AND WARNING PLAN.
Butler Pond
LAKE ELLYN DAM
1
2
3
JANOSKE DAM
BRANCH OF LAKEVILLE CREEK
4
Craft Pond
CRAFT POND DAM
5
PA ROUTE 590
APPROXIMATE MINIMUM LIMITS OF DOWNSTREAM FLOODING SHOULD DAM FAILURE OCCUR
DAMAGE CENTER 10 DWELLINGS AT LAKEVILLE
LAKEVILLE CREEK
ADDITIONAL DAMAGE AREAS NOT SHOWN. NO DWELLINGS OBSERVED.
2000 0 2000
SCALE: 1 IN. = 2000 F
PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
CRAFT POND DAM
ROBERT K. & MAY K. HOWER
DOWNSTREAM DEVELOPMENT PLAN
JULY 1981
EXHIBIT D-1

APPENDIX E

PLATES


CRAFT POND DAM
7 1/2 MINUTE QUADRANGLES:
LAKEVILLE, PA.
LAKE ELLYN DAM
JANOSKE DAM
BRANCH OF
LAKEVILLE CREEK
CRAFT POND DAM
PA. ROUTE 590
LAKEVILLE CREEK
PURDY
CREEK
2000 0 2000
SCALE: 1 IN. = 2000 FT.
PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
CRAFT POND DAM
ROBERT K. & MAY K. HOWER
LOCATION MAP
JULY 1981
PLATE E-1



LEGEND

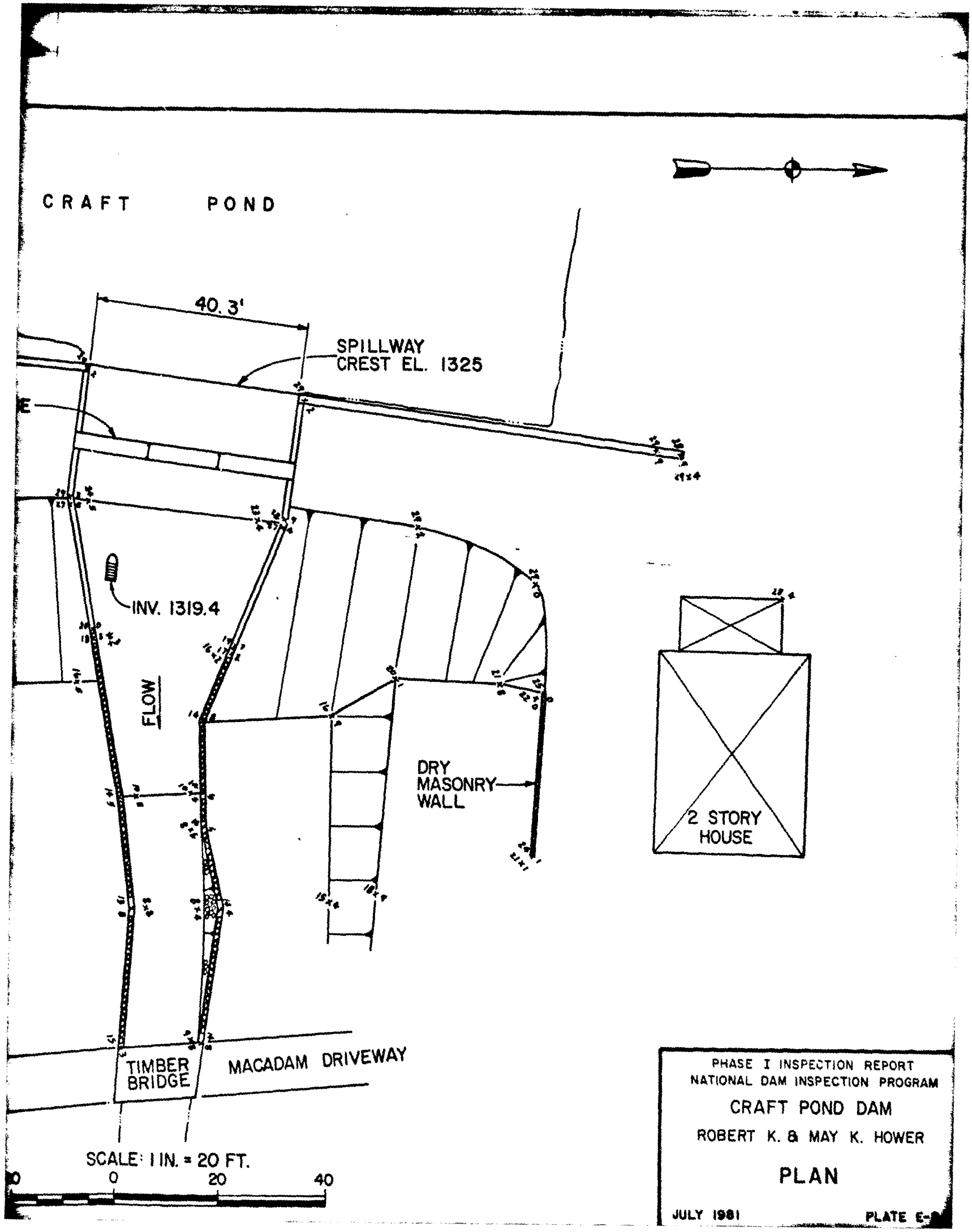
- INDICATES EXPOSED DRY MASONRY

x – INDICATES ELEVATION AT POINT x
(1300 MUST BE ADDED TO ELEVATIONS)
(E.G. 15 x 3 INDICATES ELEVATION
1315.3 AT POINT x)

NOTE:

THIS PLATE WAS DRAWN FROM LIMITED SURVEY DATA ACQUIRED FOR THIS INSPECTION. THEY SHOULD NOT BE CONSIDERED DEFINITIVE.

SCA
20 0



PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

CRAFT POND DAM

ROBERT K. & MAY K. HOWER

PLAN

JULY 1981

PLATE E-

APPENDIX F

GEOLOGY

CRAFT POND DAM

APPENDIX F

GEOLOGY

Craft Pond Dam is located in Wayne County within the Appalachian Plateau Physiographic Province. The most pronounced topographic feature in the area is Camelback Mountain, which is part of the Pocono Plateau Escarpment. The escarpment has a well defined, southwestward trend from Camelback Mountain, but it is irregular between Camelback Mountain and Mt. Pocono, which lies to the north. Streams east of the escarpment drain directly to the Delaware River, while those to the west drain to the Lehigh River.

The Pocono Plateau Section lies to the west of the escarpment. This area is relatively flat, with local relief seldom exceeding 100 feet. The topography has been greatly influenced by continental glaciation. Many features were created by deposition of glacial materials. The entire plateau lacks well-developed drainage.

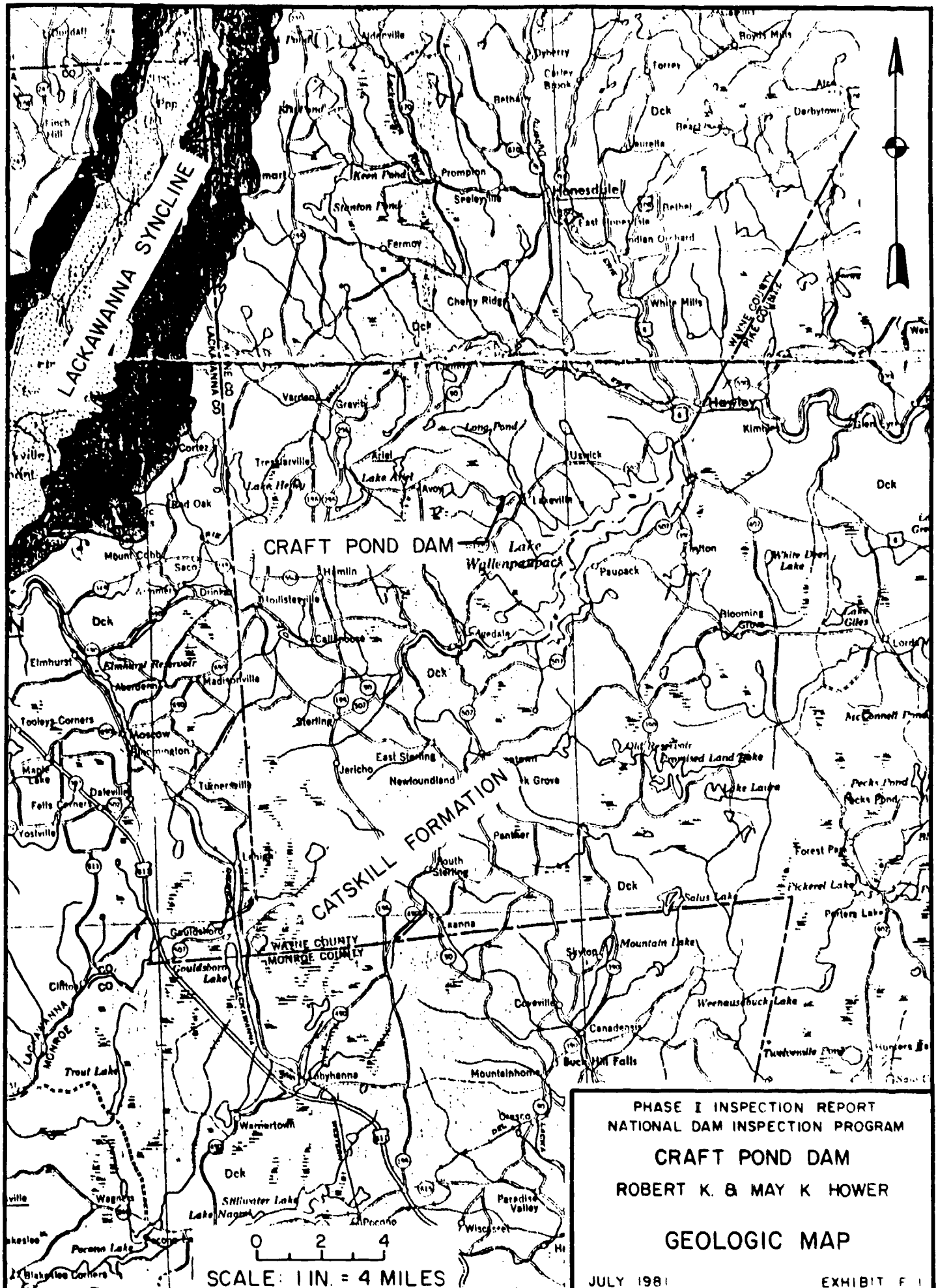
East of the escarpment is the Glaciated Low Plateaus Section of the province. This area is characterized by preglacial erosional topography with locally-thick glacial deposits. Local relief is generally 100 to 300 feet.

Bedrock units of the sections described above are the lithified sediments of offshore marine, marginal marine, deltaic environments, and fluvial environments associated with the Devonian Period. These units include siltstones of the Mahantango Formation, siltstones and shales of the Trimmers Rock Formation, and seven mapped members of the Catskill Formation. These members include sandstones, siltstones, and shales of the Towamensing Member; sandstone, siltstone and shale of the Walcksville Member; sandstones, siltstones and shale of the Beaverdam Run Member; sandstone and shale in the Long Run Member; sandstones and conglomerates in the Packerton Member; sandstones and some conglomerates in the Poplar Gap Member; and sandstones and conglomerates in the Duncannon Member.

Craft Pond Dam is underlain by the Catskill Formation. The Catskill Formation is predominantly red to brownish gray shales and sandstone with interbedded siltstones and conglomerates. Sandstones present are thickbedded, fine-to coarse-grained and exhibit very low primary porosity due to a clay and silica matrix. Effective porosity results from fractures and parting planes.

The rocks are well indurated and generally are not susceptible to slope failure; however, the presence of well-developed bedding and joint planes will result in some rockfall from vertical and high-angle cut slopes. Bedrock is entirely overlain by glacial till of Late Wisconsin Age. This till is an unsorted mixture of clay, silt, sand, and gravel. It is moderately cohesive and is generally derived locally from the sandstones of the Catskill Formation. Thickness of the till varies from 5 to 75 feet.

Foundation conditions at the dam are not known.



PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

CRAFT POND DAM

ROBERT K. & MAY K. HOWER

GEOLOGIC MAP

JULY 1981

EXHIBIT F 1