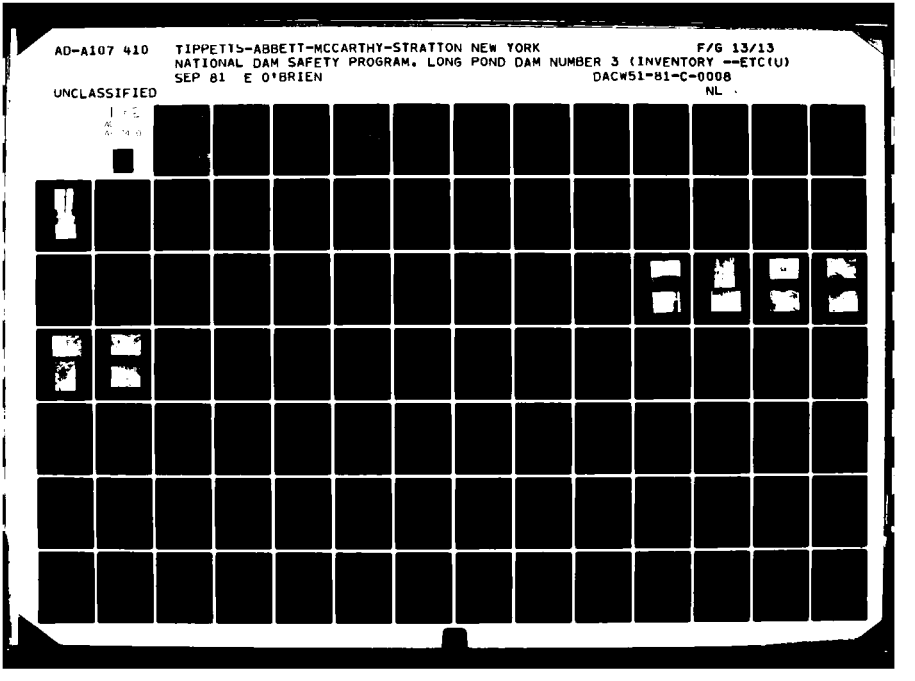
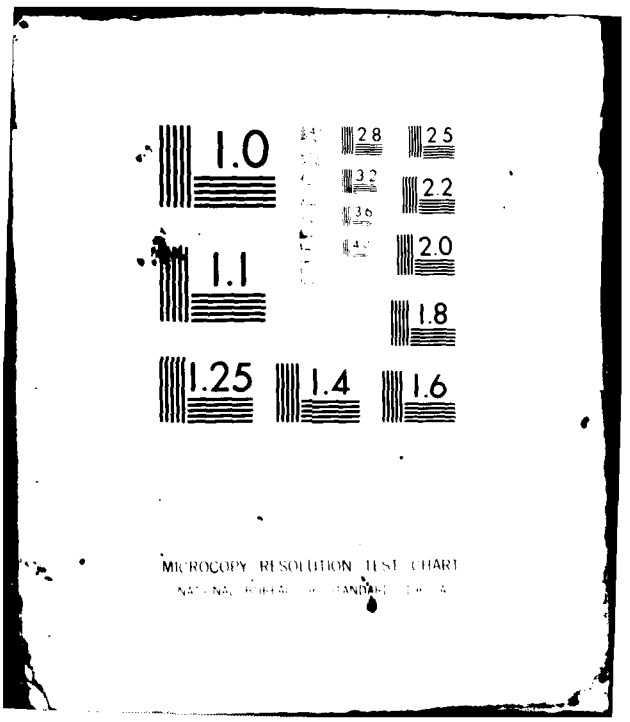
AD-A107 410 TIPPETTS-ABBETT-MCCARTHY-STRATTON NEW YORK F/G 13/13
NATIONAL DAM SAFETY PROGRAM. LONG POND DAM NUMBER 3 (INVENTORY --ETC(U)
SEP 81 E O'BRIEN DACW51-81-C-0008

UNCLASSIFIED NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

AD A107410

3
LEVEL II

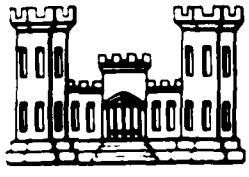
LONG ISLAND BASIN

LONG POND DAM NO. 3

WESTCHESTER COUNTY, NEW YORK
INVENTORY NO. N.Y. 115

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

...ISHED TO A
...ER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.



APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED

DTIC
ELECTE
NOV 16 1981
S D
D

DTIC FILE COPY

NEW YORK DISTRICT CORPS OF ENGINEERS

SEPTEMBER 1981

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A107410
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) Phase I Inspection Report Long Pond Dam No. 3 Long Island Basin, Westchester County, NY Inventory No. 115	5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) EUGENE O'Brien	8. CONTRACT OR GRANT NUMBER(s) DACW51-81-C-0008
9. PERFORMING ORGANIZATION NAME AND ADDRESS Tippetts-Abbett-McCarthy-Stratton The TAMS Building 655 Third Avenue New York, New York 10017	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army 26 Federal Plaza New York District, CofE New York, New York 10287	12. REPORT DATE 14 August 1981 13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Department of the Army 26 Federal Plaza New York District, CofE New York, NY 10287	15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

15. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; Distribution unlimited.

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

National Dam Safety Program. Long Pond Dam Number 3 (Inventory Number NY 115), Long Island Basin, Westchester County, New York. Phase I Inspection Report,

18. SUPPLEMENTARY NOTES

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

Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Long Pond Dam No. 3
Westchester County
Long Island Basin

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

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Examination of available documents and a visual inspection of the dam and the appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Using Corps of Engineers' Screening Criteria, it has been determined that the dam would be overtopped for all storms exceeding approximately 41 percent of Probable Maximum Flood (PMF). The service spillway is, therefore, adjudged as "seriously inadequate" and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a "seriously inadequate spillway" is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

DTIC
ELECTE
NOV 16 1981
S D
D

LONG ISLAND BASIN

LONG POND DAM NO. 3

WESTCHESTER COUNTY, NEW YORK
INVENTORY NO. N.Y. 115

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

NEW YORK DISTRICT CORPS OF ENGINEERS

SEPTEMBER 1981

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D. C., 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed 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 frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

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

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
LONG POND DAM NO. 3
I.D. NO. N.Y. 00115
D.E.C. NO.
LONG ISLAND BASIN
WESTCHESTER COUNTY, NEW YORK

CONTENTS

		Page No.
-	ASSESSMENT	-
-	OVERVIEW PHOTOGRAPH	-
1.	PROJECT INFORMATION	1
1.1	GENERAL	1
	a. Authority	1
	b. Purpose of Inspection	1
1.2	DESCRIPTION OF THE PROJECT	1
	a. Description of Dam and Appurtenant Structures	1
	b. Location	2
	c. Size Classification	2
	d. Hazard Classification	2
	e. Ownership	3
	f. Purpose of Dam	3
	g. Design and Construction History	3
	h. Normal Operating Procedure	3
1.3	PERTINENT DATA	3
	a. Drainage Area	3
	b. Discharge at Dam Site	3
	c. Elevation	3
	d. Reservoir	4
	e. Storage	4
	f. Dam	4
	g. Spillway	4
	h. Reservoir Drain and Pipeline	4
2.	ENGINEERING DATA	6
2.1	GEOLOGY	6
2.2	SUBSURFACE INVESTIGATION	6

		Page No.
2.3	DAM AND APPURTENANT STRUCTURES	6
2.4	CONSTRUCTION RECORDS	6
2.5	OPERATION RECORDS	6
2.6	EVALUATION OF DATA	6
3.	VISUAL INSPECTION	7
3.1	FINDINGS	7
	a. General	7
	b. Dam	7
	c. Spillway	7
	d. Appurtenant Structures	8
	e. Downstream Channel	8
	f. Abutments	8
	g. Reservoir Area	8
3.2	EVALUATION OF OBSERVATIONS	9
4.	OPERATION AND MAINTENANCE PROCEDURES	11
4.1	PROCEDURES	11
4.2	MAINTENANCE OF DAM	11
4.3	WARNING SYSTEM IN EFFECT	11
4.4	EVALUATION	11
5.	HYDROLOGIC/HYDRAULICS	12
5.1	DRAINAGE AND CHARACTERISTICS	12
5.2	ANALYSIS CRITERIA	12
5.3	SPILLWAY CAPACITY	13
5.4	RESERVOIR CAPACITY	13
5.5	OVERTOPPING POTENTIAL	13
5.6	EVALUATION	14
6.	STRUCTURAL STABILITY	15
6.1	EVALUATION OF STRUCTURAL STABILITY	15

		Page No.
a.	Visual Observations	15
b.	Design and Construction Drawings	15
c.	Stability Analysis	15
d.	Operating Records	15
e.	Post-Construction Changes	15
f.	Seismicity Stability	15
7.	ASSESSMENT/RECOMMENDATIONS	16
7.1	ASSESSMENT	16
a.	Safety	16
b.	Adequacy of Information	17
c.	Need for Additional Investigations	17
d.	Urgency	17
7.2	RECOMMENDED MEASURES	17

APPENDICES

A. DRAWINGS
   a. Vicinity Map
   b. Topographic Map
   c. Summary of Field Measurements

B. PHOTOGRAPHS

C. VISUAL INSPECTION CHECKLIST

D. HYDROLOGIC DATA AND COMPUTATIONS

E. REFERENCES

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

NAME OF DAM:	Long Pond Dam No. 3,N.Y. 00115
STATE LOCATED:	New York
COUNTY LOCATED:	Westchester
STREAM:	Mianus River
BASIN:	Long Island
DATE OF INSPECTION:	June 9, 1981

ASSESSMENT

Examination of available documents and a visual inspection of the dam and the appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property.

Using Corps of Engineers' Screening Criteria, it has been determined that the dam would be overtopped for all storms exceeding approximately 41 percent of Probable Maximum Flood (PMF). The service spillway is , therefore, adjudged as "seriously inadequate" and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a "seriously inadequate spillway" is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

It is, therefore, recommended that within 3 months of notification to the owner, detailed hydrological-hydraulic investigations of the structure should be undertaken to more accurately determine the site specific characteristics of the watershed and their affect upon the overtopping potential of the dam. At the same time a dam break analysis should be carried out to ascertain the effect of a sudden flood from the upstream reservoir discharging into the lower reservoir. The results of these investigations will determine the appropriate remedial measures which will be required to achieve a spillway capacity

adequate to discharge the outflow from at least the ½ PMF.

In the interim, a detailed emergency action plan must be developed and implemented during periods of unusually heavy precipitation. Also, around-the-clock surveillance of the structure must be provided during these periods.

The following remedial measures must be completed within one year:

1. Nature of the seepage at the central toe of the dam should be investigated.

2. Location of the reservoir drain discharge should be determined.

3. Only after locating the reservoir drain discharge, the workability of the drain valve should be evaluated. If found to be inoperable or defective, it should be repaired to a good working condition or replaced.

4. The concrete on the spillway training walls and downstream bottom slab should be repaired.

5. The rocklined spillway discharge channel should be evaluated to determine if it has sufficient capacity to contain calculated maximum spillway flows.

6. The seepage area at the south abutment should be blanketed with a properly filtered drainage material to allow controlled transportation of seepage waters downslope in addition to minimizing the potential for piping of finer grained embankment soils.

7. All small trees, dead large trees and large trees located near the crest and upstream slope should be cut down and removed. Larger trees on the downstream slope should be inventoried and their condition monitored. If one of these trees dies it should be cut down and the area around the stump should be monitored for the development of seepage. Holes and depressions developing as a result of tree removal should be backfilled and sealed.

8. The low lying area, upstream of Duck Pond immediately adjacent to the dam's toe should be backfilled to prohibit backwater encroachment on the downstream slope.

9. The upstream slope of the dam should be properly protected against erosion.

10. A program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the repaired gates should be provided. This program should be documented for future reference. The emergency action plan, described in Section 7.1d, should be maintained and updated periodically during the life of the structure.

Eugene O'Brien, P.E.
New York No. 29823

Approved By:

Col. W. M. Smith, Jr.
New York District Engineer

Date: 14 August 81

1. GENERAL OVERVIEW OF DAM

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
LONG POND DAM NO. 3
I.D. NO. N.Y. 00115
D.E.C. NO.
LONG ISLAND BASIN
WESTCHESTER COUNTY, NEW YORK

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers by Contract No. DACW 51-81-C-0008, dated 14 December 1980, in fulfillment of the requirements of the National Dam Inspection Act, Public Law 92-367, 8 August 1972.

b. Purpose of Inspection

The inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life or property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF THE PROJECT

a. Description of Dam and Appurtenant Structures

The Long Pond Dam No. 3 is composed of a 355 ft long earth and rockfill embankment having a maximum height of approximately 40 ft and crest width of 34 ft. Upstream slopes of the dam typically range from 1 Vertical to 5 Horizontal (1V:5H) to 1V:6H. In the vicinity of the spillway approach upstream slopes are steeper, on the order of 1V:3H. No slope protection is present on the upstream face. The downstream slope typically has a 1V:1.5-1.0H slope descending about 20 ft from the crest to a 20 ft wide horizontal bench and then continuing

downslope at a 1V:1.5-2.0H slope to the toe. Near the north abutment in the vicinity of the rocklined spillway channel, downstream slopes are typically 1V:3H. Typical slope geometry is shown in section view in Appendix A.

The spillway, located at the north abutment contact in a reinforced concrete box culvert 4 ft high and 6 ft wide. Base slab elevation of the spillway is about 6 ft below the dam crest. The spillway is uncontrolled and passes water through the dam crest discharging into a rocklined channel running down the north abutment.

The dam which creates a recreational lake is equipped with a reservoir drain of unknown dimension and construction. Gatehouse for this drain is located about 100 ft upstream of the center of the dam (See Photograph 6).

North Lake Dam is situated approximately 1,200 ft upstream of Long Pond Dam. An uncontrolled overflow spillway passes water from North Lake directly into Long Pond.

b. Location

Long Pond No. 3 Dam is located at the south end of Long Pond Court within the Windmill Farms Development, approximately 6½ miles northeast of the City of North Castle, Westchester County, New York.

c. Size Classification

The dam is 40 ft high and has a reservoir at this height with a storage capacity of approximately 115 acre-feet and is therefore classified as a small dam.

d. Hazard Classification

The dam is in the "high" hazard potential category because it is located upstream of a moderately to densely populated area of the Windmill Farms subdivision.

e. Ownership

The Long Pond Dam No. 3 is located on property owned by Mr. K. Karl Mueller, 4 Long Pond Court, Windmill Farms, Armonk, N.Y. 10504, Telephone No.: (914) 273-8074. However, the lake bottom property and the reservoir drain control house is owned by the Town of New Castle.

f. Purpose of Dam

The dam was constructed to create a lake used for recreational purposes.

g. Design and Construction History

Design drawings or construction records do not exist for the Long Pond Dam No.3. The dam was reportedly designed by Elwyn E. Seelye and Company, Park Avenue, New York, N.Y. and built circa 1936.

h. Normal Operating Procedure

Water periodically flows through the uncontrolled spillway. It is not known if the reservoir drain is periodically used for water level control or even operational.

1.3 PERTINENT DATA

a. Drainage Area (sq. miles)	0.46
b. Discharge at Dam Site (cfs)	
Ungated Spillway at Maximum Pool	222
Capacity of Reservoir drain	unknown
Total Discharge, Maximum Pool(El. 476)	222 ±
c. Elevation (ft above MSL USGS Datum)*	
Top of Dam	476 ±
Maximum Design Pool	474 ±
Spillway, Upstream Invert	470 ±
Inverts, Reservoir Drain	unknown

* All elevations are based on pond level datum relative to an elevation interpolated from the USGS QUAD sheet.

d. Reservoir

Length of Maximum Pool (miles)	0.096
Length of Shoreline at Spillway Crest (miles)	0.74
Surface Area (acres)	11.28

e. Storage (acre-feet)

Reservoir at Spillway Crest	115
Reservoir at Maximum Pool	173.6

f. Dam

Type	Earth and Rock Fill
Length (feet)	355 ft
Height (feet)	40
Upstream Slope	1V:5H
Downstream Slope	1V:1.5-2.0H w/ 20 ft bench at mid-height
Crest Elevation (feet)	476*
Crest Width (feet)	34
Cutoff Type	None
Grout Curtain	None

g. Spillway

Type	Concrete, 4' x 6' box culvert with rocklined open channel running down north abutment
Length (feet)	54
Crest Elevation (feet)	470*

h. Reservoir Drain and Pipeline

A control structure, located approximately at the center of the dam, and about 100 ft upstream , houses the control valves for the reservoir drain. Valve type, pipe size and

* See Note on Page 3.

location of discharge are unknown, and/or could not accurately be determined at the time of inspection. Access to the off-shore gate house was not possible during inspection, therefore, the condition or workability of the drain control could not be ascertained.

SECTION 2 - ENGINEERING DATA

2.1 GEOLOGY

The records of the owner contain no data on site geology. However, there is data available in the published literature (Ref.4) on the general geology of the area. Long Pond Dam. No.3 is located in the New England Upland Section of the New England Maritime Physiographic Province. The bedrock in this section consists of metamorphic, igneous and sedimentary rocks which have undergone a complex sequence of deposition, folding, faulting and erosion. In the vicinity of the damsite, bedrock is primarily composed of Fordham gneiss.

2.2 SUBSURFACE INVESTIGATION

There is no record of subsurface investigation for the dam. The shallow surface soils in the area are of glacial origin and for the most part consist of complex sands, silts, gravels and boulders.

2.3 DAM AND APPURTENANT STRUCTURES

The files of the owner contain no prints, design data or construction record of the dam. There are no drawings of the outlet works or any subsequent changes which may have been made.

2.4 CONSTRUCTION RECORDS

No information has been located in relation to the construction of the dam, spillway or outlet works. Based on the construction history of several dams built in conjunction with development of the Windmill Farms Area, the completion of the project was probably circa 1936.

2.5 OPERATION RECORDS

According to the owner there are no records of operation for the dam.

2.6 EVALUATION OF DATA

The data available in the records of the owner, along with a field inspection and personal interviews are sufficient to support a Phase I evaluation of the dam.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

The visual inspection of the Long Pond Dam No. 3 was performed on June 9, 1981. The weather was overcast with intermittent showers and temperatures ranges in the mid to high 70's F. The reservoir was at a level approximately 5.5 ft below the crest of the dam, about 6 inches deep in the spillway.

b. Dam

The dam is generally in good condition, showing no noticeable signs of vertical or horizontal displacements. Slopes appear to be stable. Seepage at the south abutment contact at a point mid-height on the slope was observed. Quantities of seepage were relatively small and soil transport did not appear to be occurring; however, this seepage still requires immediate attention. There is no slope protection on the upstream face of the dam, however, no significant erosion was observed.

Additionally, the following adverse conditions were noted:

1. There are a great number of very large trees growing on the downstream slope of the dam. Near the crest of the dam the root systems are likely to extend to the upstream face of the dam. This could result in the formation of seepage paths through the dam.

2. There is no emergency action plan for the project.

c. Spillway

The reinforced box culvert spillway, located at the north abutment, is in fair condition. Minor spalling of the concrete approach walls was observed. Of major concern, is the

broken and displaced slab at the downstream end of the spillway. A majority of the water passing through the spillway presently passes and exits below the downstream slab which,as a result is severely undermined (See Photograph 8). The spillway channel located along the north abutment is heavily revetted, with massive boulders (See Photograph 9) and appears in good condition for the present amount of overflow. There is no definite shape or rigid alignment to the channel and hence it may tend to extend onto unprotected portions of the embankment when required to handle large quantities of flow.

d. Appurtenant Structures

Condition, description and workability of the upstream reservoir drain controls are not known. Location of the downstream exit of the reservoir drain could not be positively identified, but is suspected to be partially buried within a pile of rock near the central downstream toe of the dam. Flowing water from this area may indicate that the valve is partially open or leaking.

e. Downstream Channel

The spillway tailrace channel passes along the north abutment of the dam and exits in the natural channel of the Mianus River.

f. Abutments

The abutment-dam contact areas are generally in good condition with the exception of a small seep located about mid-slope at the south abutment.

g. Reservoir Area

In the general vicinity of the dam and along the south of the lake, reservoir slopes are generally stable. No slides, rock falls or sloughing was observed during the inspection. There are however, two unusual conditions in the reservoir area which are considered significant. These are:

1. A portion of Long Pond road, built on a low embankment, forms an estimated 600 to 800 ft long stretch of reservoir shoreline at the southeast end of the lake. At its present level, the lake does not immediately infringe on the embankment, however, during flood stage, this portion of the roadway embankment will act as a dam. Based on "rough" measurements made during the dam inspection visit, it is estimated that a majority of this 600 to 800 ft long stretch of Long Pond road is 1 to 1½ ft lower in elevation than the crest of Long Pond Dam No. 3 and consequently may act as a secondary spillway under severe flood conditions.

2. The close proximity of North Lake Dam is located immediately upstream of the reservoir.

3.2 EVALUATION OF OBSERVATIONS

Although deficiencies were observed, there is no indication that the dam is in imminent danger. Some of the deficiencies observed in the previous paragraphs are minor and should be corrected by the owners' maintenance forces. Other conditions described above, however, represent conditions which may have potential for further deterioration and for this reason these conditions need to be further investigated and corrected.

The following is a summary of the problem areas encountered requiring further investigations and corrective action. An appropriate recommended action is included.

1) Nature of the flowing water emitting from the rockpile at the central toe area of the dam should determined. This may be the location of the reservoir drain outlet.

2) Condition and workability of the reservoir drain controls should be evaluated.

3) All small trees (trunk less than 8 inches in diameter), large dead trees and large trees located near the crest of the dam should be removed with the resulting holes or depressions properly backfilled and seeded. Larger trees on the downstream slope should be inventoried and their conditions monitored.

4) Seepage area at the south abutment should be blanketed with a graded gravel to mitigate surface water erosion or potential piping. This area should also be monitored on a frequent basis.

5) The downstream end of the spillway should be repaired including backfilling undercut areas.

6) A program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of the moving parts of the reservoir drain should be provided. This program should be documented for future reference. The aforementioned emergency action plan should be maintained and updated periodically during the life of the structure.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

No written operation and maintenance procedures exist for the facility. The normal operation is to allow uncontrolled flow through the spillway.

4.2 MAINTENANCE OF DAM

It is reported that no routine maintenance of the dam is performed.

4.3 WARNING SYSTEM IN EFFECT

No warning system is in effect or in preparation.

4.4 EVALUATION

The overall operation and maintenance of the Long Pond Dam No. 3 is considered inadequate as a result of the following conditions:

1. Inaccessible or otherwise buried reservoir drain discharge
2. Deteriorating spillway
3. Uncontrolled seepage at the south abutment
4. Absence of a written operation and maintenance procedure
5. Absence of any written maintenance history

SECTION 5 - HYDROLOGIC/HYDRAULICS

5.1 DRAINAGE AND CHARACTERISTICS

The Long Pond Dam is located in North Castle Township, Westchester County, New York (Hydrologic Unit Code No. 01100006). The area contributing to Long Pond is 0.52 sq. miles, and includes tow reservoirs, North Lake and Windmill Lake. Th (basin is hilly with steep wooded slopes and narrow valleys. North Lake controls 0.26 sq. miles of the drainage area, while Windmill Lake controls 0.06 sq. miles (40.4 acres).

5.2 ANALYSIS CRITERIA

Spillway capacity adequacy was analysed by developing a design flood, using the unit hydrograph and the Probable Maximum Precipitation (PMP). For the analyses, the drainage area was ivided into four sub-areas. The runoff from the drainage area contributing to Windmill Lake was assumed to be totally controlled by the available storage of the lake and was not included. However, the watershed downstream of Windmill Lake - subarea 2 - was assumed to contribute to Long Pond. Runoff from the North Lake sub-area was routed through the reservoir, then channel routed flow was subsequently combined with the runoff calculated for the Long Pond drainage area (Subarea 1) to form a composite hydrograph. The computed runoff hydrograph, Subarea 2, was then combined with the hydrograph from the two previous subareas and routed through Long Pond.

The all seasons 200 sq. miles 24 hours PMP for the Long Pond area, taken from Weather Bureau sources (Ref. 2) is 22 inches. The three unit hydrographs were computed by the Snyder method using coefficients of 2 and 0.6 for C_T and C_P, respectively. The inflow hydrographs were developed by the U.S. Army Corps of Engineers HEC-1DB computer program (Ref. 1). Loss rates of 1.0 inch initial loss ad 0.1 inch/hour constant loss were estimated as representative of the basin for the design storm.

In accordance with the recommended guidelines for Safety and Inspection of Dams (Ref. 3), the adequacy of the spillway was analyzed using the Probable Maximum Flood (PMF). A multiplan analysis was performed for the full o.75, 0.50 and 0.25 PMF for tow cases.

The Case I analysis considers discharge from the Long Pond reservoir during flood stage to be routed solely through the spillway located at the north abutment of the dam with the excess being permitted to overtop the structure.

Case II analysis considers the possibility that a portion of the highway embankment bounding the southeast end of the lake has a crest elevation approximately 1 ft lower than Long Pond dam and therefore would act as a secondary spillway in combination with the service spillway during a PMP event.

5.3 SPILLWAY CAPACITY

The service spillway located near the north abutment of Lond Pond dam is a reinforced concrete box culvert 6.0 ft wide by 4.0 ft high, with an invert elevation estimated to be at 470 ft (MSL). The maximum computed discharge for a lake water surface at elevation 476 (top of dam) is 222 cfs.

The hypothesized secondary spillway provided by the low lying section of highway embankment at the southeast end of the lake has an estimated invert elevation of 475 (MSL) and an estimated trapezoidal section having a 250 ft base width with side slopes of approximately 0.5 percent. Routed flow would be over the road and routed north and south to two adjacent unnamed drainage areas. The computed maximum discharge of the "secondary spillway" for a lake level at 476 (MSL) is 669 cfs.

5.4 RESERVOIR CAPACITY

The normal reservoir capacity is listed as 115 acre-feet. The computed surcharge storage of 58.6 acre-feet is equivalent to approximately 2.4 inches of runoff over the entire basin.

5.5 FLOODS OF RECORD

There are no records available of Floods or maximum lake elevations.

5.6 OVERTOPPING POTENTIAL

The potential of the dam being overtopped was investigated on the basis of the spillway or spillways discharge capacities and the available surcharge storage to meet the selected design flood inflows for each of the two cases described previously.

The analyses were performed assuming that the water surface in the reservoir was at the service spillway crest elevation (El 470) at the start of the flood event. The computed PMF peak inflow was 1,647 cfs. The HEC-1DB analysis indicated that the dam would be overtopped by all floods exceeding 41 percent of the PMF for Case I. Table 1 is a summary of the computer analysis.

Table 1

Results of Case I Analysis

RATIO OF PMF	PEAK INFLOW (cfs)	PEAK OUTFLOW (cfs)	OVER-TOPPING (feet)
1.00	1,647	1,630	1.14
0.75	1,224	1,214	0.90
0.50	806	761	0.60
0.25	242	159	0.00

For Case II the dam would be overtopped by all floods equal to an exceeding 58 percent of the PMF. The results of this analysis are presented in Table 2.

Table 2

Results of Case II Analysis

RATIO OF PMF	PEAK INFLOW (cfs)	PEAK OUTFLOW (cfs)	OVER-TOPPING (feet)
1.00	1,647	1,628	0.22
0.75	1,224	1,222	0.11
0.50	806	847	0.00
0.25	242	159	0.00

5.6 EVALUATION

The service spillway of the Long Pond dam is incapable of passing flows exceeding 41 percent of the PMF without the dam being overtopped. When considering the low roadway embankment at the southeastern corner of the reservoir (approximately 1,500 ft south of the dam)acting as a secondary spillway floods less than or equal to 50 percent of the PMF would not overtop the dam. Because of the uncertainty of the data regarding the "secondary spillway", the service spillway must be assessed as being seriously inadequate.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Visual observations did not reveal any conditions which at present adversely affect the structural stability of the dam. Seepage observed at the south abutment and flowing water,observed at the central toe of the dam did not show transportation of any soil particles and is therefore not considered an immediate hazard. The source of the flowing water at the toe, however, does require further investigation. Stability of the spillway structure appears adequate provided the downstream portions of the cracked and undercut slab are properly repaired. Location of the downstream reservoir drain discharge needs to be determined.

b. Design and Construction Drawings

There are no design or construction drawings in existence to the best knowledge of the owner.

c. Stability Analysis

Based on the results of visual observations, the stability of the dam appears adequate for a Phase I assessment. Similarly, stability of the service spillway is also judged as adequate.

d. Operating Records

There are no operating records for the dam.

e. Post-Construction Changes

There are reportedly no post-construction changes to the dam.

f. Seismicity Stability.

The dam is located in Seismic Zone 1 and in accordance with recommended Phase I guidelines. However, based on the past earthquake activity in the region, the New York Geological Survey considers the site to be more characteristic of a Zone 2 Setting. Based on this assessment, the dam is considered in the Seismic Zone 2.

SECTION 7 - ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

Examination of available documents and visual inspection of the dam and the appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which require further investigation and remedial action.

The earth embankment is considered to be stable under present operating conditions; however, poor condition of the downstream spillway slab, associated undercutting, and seepage observed at the south abutment may present a hazard condition under severe flood stage conditions. The stability of the dam is further endangered by the presence of a large masonry dam of unknown stability located immediately upstream of the reservoir.

Using the Corps of Engineers' Screening Criteria for review of spillway adequacy, it has been determined that the dam would be overtopped for all storms exceeding approximately 41 and 58 percent of the PMF for Cases I and II Analyses, as described in Section 5.2. The overtopping of the dam could cause the erosion of both abutments and the downstream face of the dam resulting in a breach, thus significantly increasing the hazard for loss of life downstream. The service spillway is therefore assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a "seriously inadequate" spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean,however that based on an initial screening and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

b. Adequacy of Information

This report and its conclusions are based on visual inspection, interviews, and office hydrologic/hydraulic studies. This information and data are adequate for a Phase I inspection.

c. Need for Additional Investigations

Since the spillway is considered to be "seriously inadequate", additional hydrologic/hydraulic investigations are required to more accurately determine the site specific characteristics of the watershed including detailed information of the roadway embankment assumed to act as a secondary spillway for Case II analyses. After the in-depth hydrologic/hydraulic investigations have been completed, remedial measures must be initiated to provide spillway capacity sufficient to safely discharge the outflow from the ½ PMF event.

Additionally it is recommended that a dambreak type study be performed to assess the effect of the upstream North Lake reservoir on the safety of the Long Pond Dam.

d. Urgency

The additional hydrologic/hydraulic investigations which are required must be initiated within 3 months from the date of notification. Within 12 months of notification, remedial measures as a result of these investigations must be initiated, with completion of these measures during the following year. In the interim, an emergency action plan for the notification of downstream residents and proper governmental authorities in the event of overtopping should be developed, and around-the-clock surveillance of the dam during periods of extreme runoff should be provided. The other problem areas listed below must be corrected within one year from notification.

7.2 RECOMMENDED MEASURES

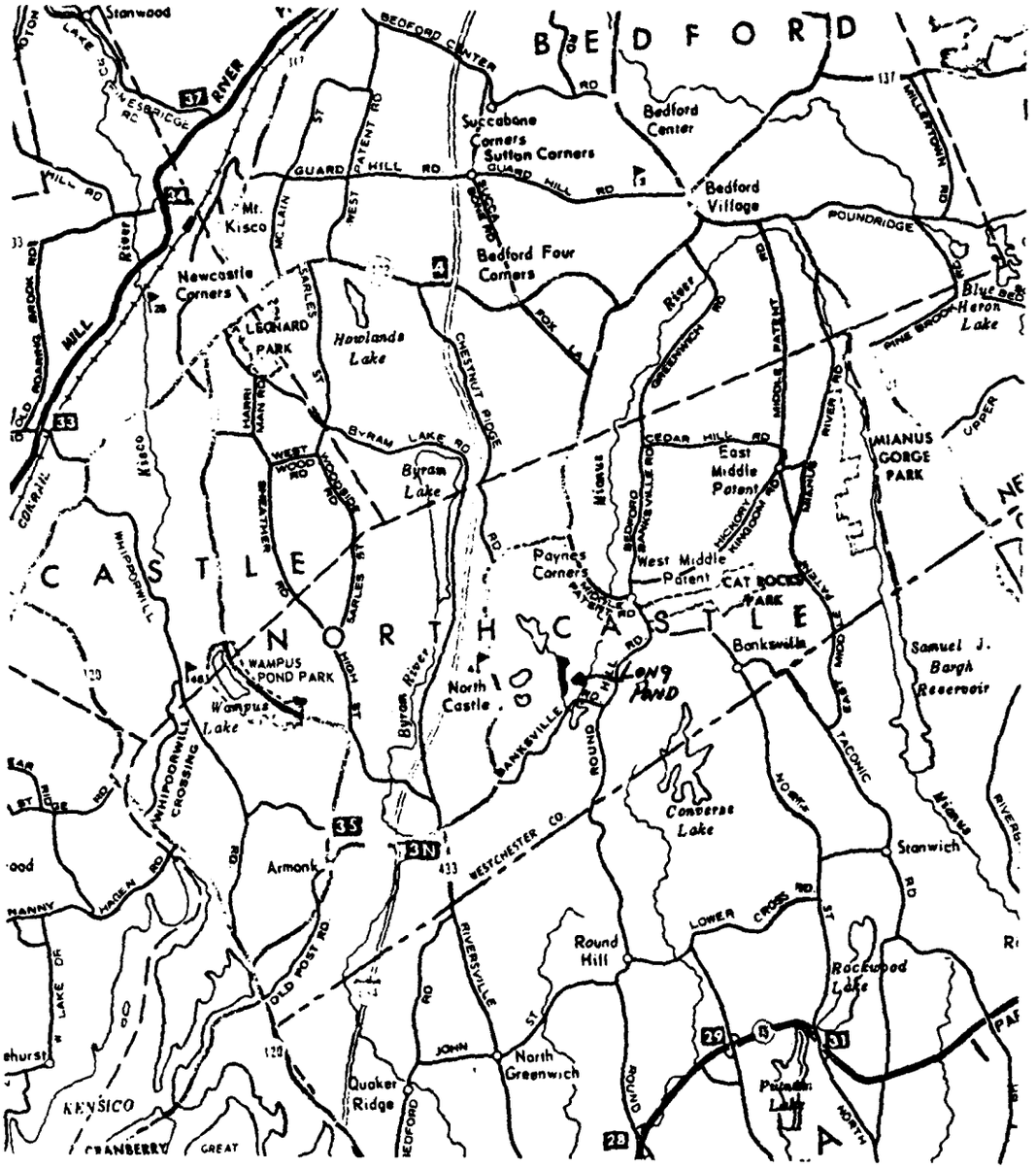
Recommended measures are as follows:

1. Nature of the seepage at the central toe of the dam should be investigated.

2. Location of the reservoir drain discharge should be determined.
3. Only after locating the reservoir drain discharge, the workability of the drain valve should be evaluated. If found to be inoperable or defective it should be repaired to a good working condition or replaced.
4. The concrete on the spillway training walls and downstream bottom slab should be repaired with proper backfilling of the unsupported portion of the slab being performed as part of this repair.
5. The rocklined spillway discharge channel should be evaluated to determine if it has sufficient capacity to contain calculated maximum spillway flows.
6. The seepage area at the south abutment should be blanketed with a properly filtered drainage blanket to allow controlled transportation of seepage waters downslope,in addition to minimizing the potential for piping of finer grained embankment soils.
7. All small trees, dead large trees and larger trees located near the crest should be cut down and removed. Larger trees on the downstream slope should be inventoried and their conditions and the area around the stump should be monitored for the development of seepage. Holes and depressions resulting from removal of trees should be backfilled and sealed.
8. The low lying area upstream of Duck Pond immediately adjacent to the toe of the dam should be backfilled to prohibit backwater encroachment on the downstream slope.
9. The upstream slope of the dam should be provided with proper slope protection against erosion.
10. A program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the repaired gates should be provided. This program should be documented for future reference. The emergency action plan, described in Section 7.1d, should be maintained and updated periodically during the life of the structure.

DRAWINGS

APPENDIX A

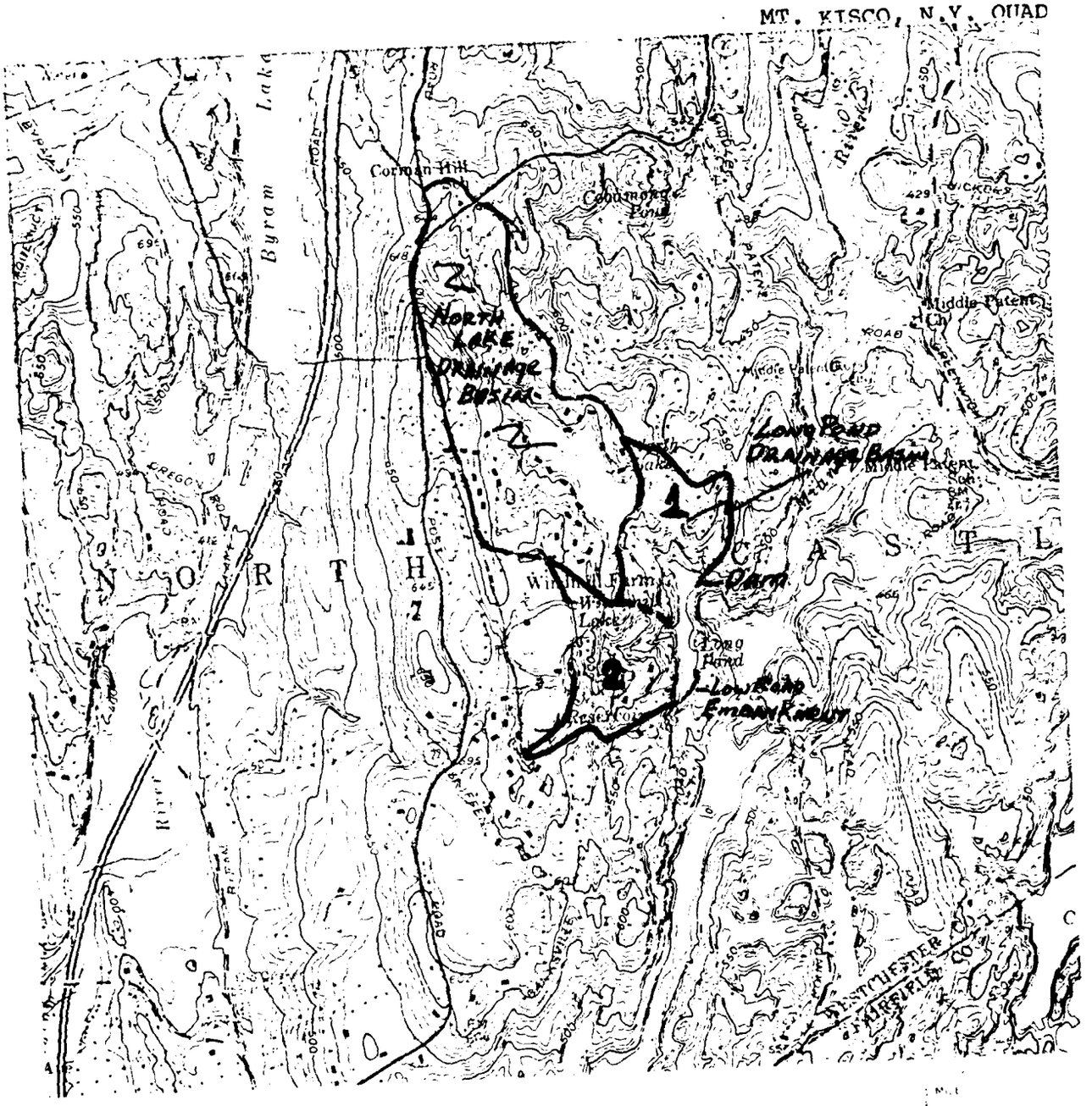


SCALE

0 1 2 3 4 Miles

VICINITY MAP

LONG POND DAM NO. 3



SCALE 1:24000

TOPOGRAPHIC MAP

LONG POND DAM NO. 3

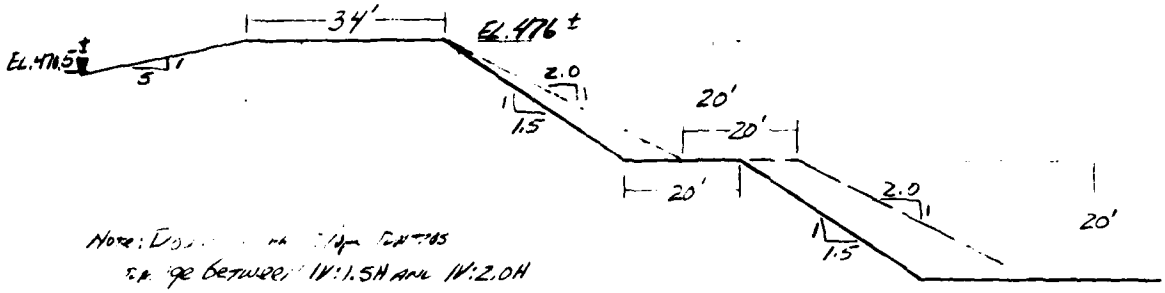
TAMS

Job No. 1579-10 Sheet ____ of ____

Project [illegible] Date 6-26-81

Subject [illegible] By JFW

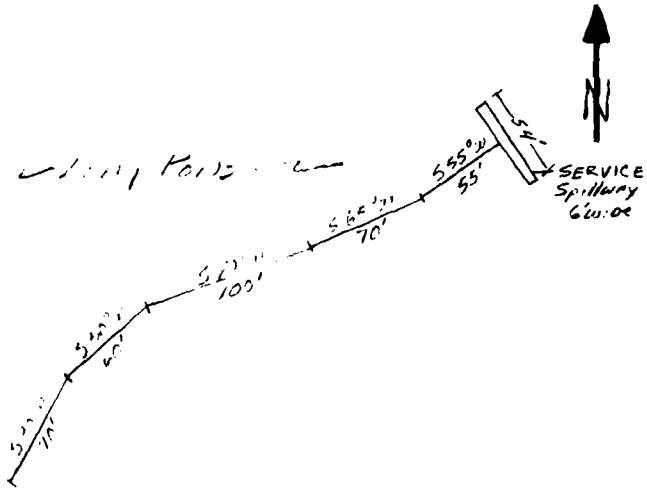
[illegible] Ch'k. by ____



Note: [illegible]
[illegible]

Approximate Maximum Dam [illegible]

Scale 1"=30'



Approximate Alignment of Dam [illegible]

Scale 1"=100'

PHOTOGRAPHS

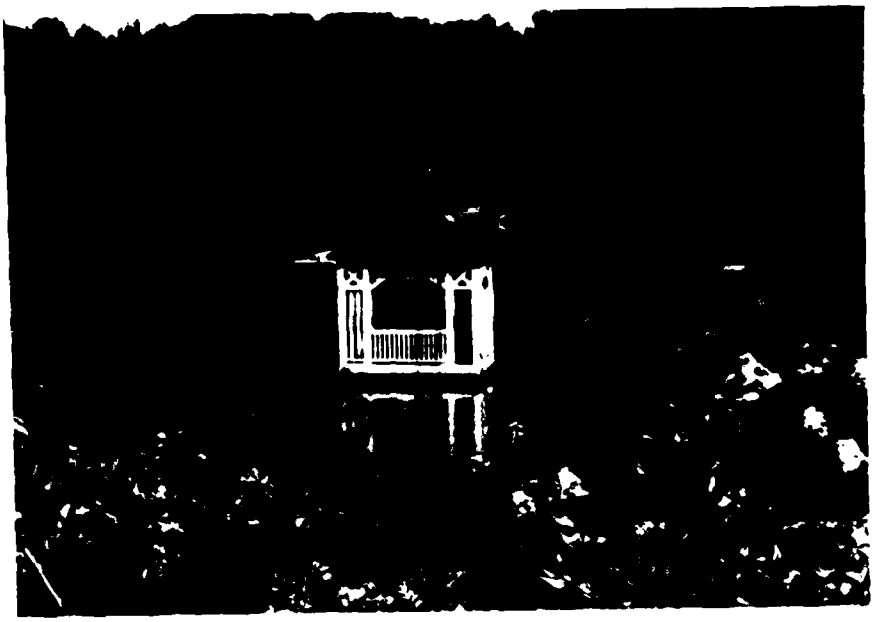
APPENDIX B

2. VIEW FROM NORTH END OF CREST LOOKING SOUTH DOWN CENTER LINE OF DAM.

3. VIEW OF UPSTREAM SLOPE FROM NEAR SPILLWAY ENTRANCE.

4. VIEW OF DOWNSTREAM SLOPE AS SEEN FROM TOE. (NOTE: BENCHED SLOPE GEOMETRY)

5. VIEW OF DOWNSTREAM SLOPE AS SEEN FROM MID SLOPE.

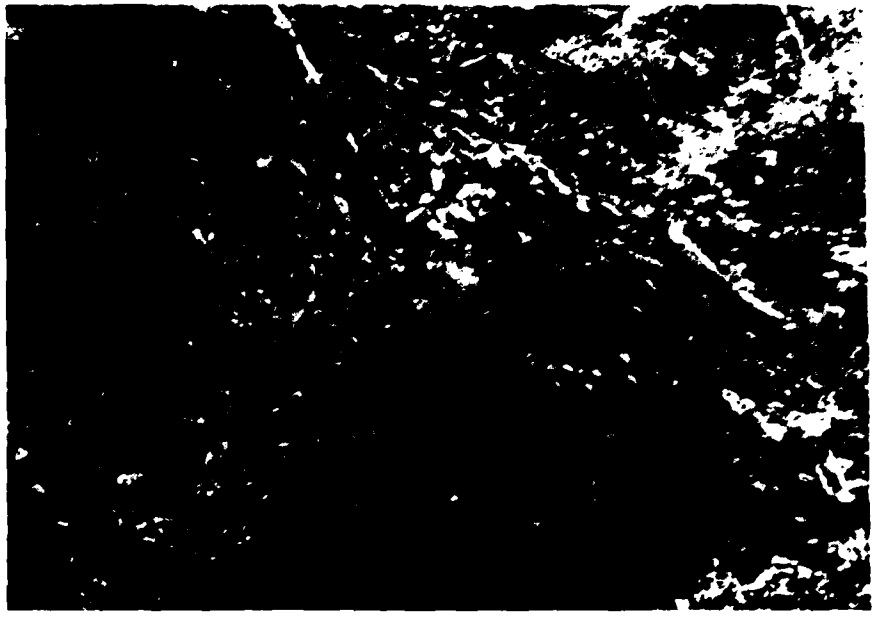


6. RESERVOIR DRAIN GATE HOUSE

7. UPSTREAM VIEW OF SPILLWAY. (NOTE: SPALLING OF CONCRETE ON TRAINING WALLS).

8. CRACKED AND UNDERMINED SLAB AT DOWNSTREAM END OF SPILLWAY.

9. ROCK LINED SPILLWAY DISCHARGE CHANNEL, DOWNSTREAM NEAR TOE OF SLOPE.



10. OVERVIEW OF SEEPAGE AT CONTACT ON SOUTH ABUTMENT.

11. CLOSEUP VIEW OF SEEPAGE AREA REFERENCED ABOVE.

12. DISCHARGE AT CENTER TOE OF DOWNSTREAM SLOPE. PRESUMABLE BURIED RESERVOIR DRAIN OUTLET.

13. OVERVIEW OF LOW LYING DUCK POND BACKWATER AREA ADJACENT TO TOE OF DOWNSTREAM SLOPE.

VISUAL INSPECTION CHECKLIST

APPENDIX C

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Long Pond Dam No. 3

Fed. I.D. # NY00115 DEC Dam No. 1

River Basin Mamus River

Location: Town North Castle County Westchester

Stream Name Unnamed Drainage

Tributary of Mamus River

Latitude (N) 41-08.5 Longitude (W) 073-40.4

Type of Dam Earth and Rockfill

Hazard Category High (1)

Date(s) of Inspection 9 June 1981

Weather Conditions Overcast & intermittent showers

Reservoir Level at Time of Inspection 370.5± (Estimated based on USGS Map)

b. Inspection Personnel Harvey Feldman - Principal Geotechnical Eng.
John F. Wallace - Geotechnical Engineer

c. Persons Contacted (Including Address & Phone No.) Mr. K. Karl Mueller
Long Pond Ct., Windmill Farms, Armonk, N.Y. 10504
(914)-273-8074

d. History:

Date Constructed Unknown (Circa 1925) Date(s) Reconstructed —

Designer Elwyne E. Seelye & Co., Consulting Engineers N.Y., N.Y.

Constructed By Unknown

Owner Mr. K. Karl Mueller, Long Pond Ct. Armonk, N.Y.

2. Embankment

a. Characteristics

(1) Embankment Material EARTH AND Rock Fill

(2) Cutoff Type NONE KNOWN to EXIST

(3) Impervious Core NONE KNOWN to EXIST

(4) Internal Drainage System NONE KNOWN to EXIST

(5) Miscellaneous ———

b. Crest

(1) Vertical Alignment GOOD

(2) Horizontal Alignment GOOD

(3) Surface Cracks NONE

(4) Miscellaneous

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1V:5H to 1V:6H

(2) Undesirable Growth or Debris, Animal Burrows NUMEROUS BUSHES OCCATIONAL small (smaller than 8" diam) DECIDUOUS TREES

(3) Sloughing, Subsidence or Depressions NONE OBSERVED

(4) Slope Protection NONE

(5) Surface Cracks or Movement at Toe NONE observed

d. Downstream Slope

(1) Slope (Estimate - V:H) Broken Slope 1V:1.5H to 1V:2.0H w/20' bench 20' below crest
Near North Abutment spillway channel slopes are 1V:3H

(2) Undesirable Growth or Debris, Animal Burrows NUMEROUS middle age (8" to 18" diameter) deciduous trees - bushes & shrubs AT crest

(3) Sloughing, Subsidence or Depressions NONE observed

(4) Surface Cracks or Movement at Toe NONE

(5) Seepage seepage at midslope of south abutment - seepage flow estimated to be 5 to 7 gpm. no soil erosion

(6) External Drainage System (Ditches, Trenches; Blanket) spillway channel located on Downstream slope near Earth abutment.

(7) Condition Around Outlet Structure some under cutting of spillway slab

(8) Seepage Beyond Toe NONE observed

e. Abutments - Embankment Contact

seepage at contact of south abutment near midpoint of slope

(1) Erosion at Contact NONE

(2) Seepage Along Contact AT MIDPOINT OF WEST ABUTMENT - QUANTITY EST to be 5 to 7 gpm

3) Drainage System

a. Description of System NONE

b. Condition of System N/A

c. Discharge from Drainage System N/A

4 Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) None observed

Reservoir

a. Slopes Appear to be generally stable. No signs of sloughing or instability in vicinity of Dam or South shoreline

b. Sedimentation None

c. Unusual Conditions Which Affect Dam Location of North Lake Dam immediately Upstream

6, Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) several residential homes -

b. Seepage, Unusual Growth None

c. Evidence of Movement Beyond Toe of Dam None

d. Condition of Downstream Channel Natural swail with few trees otherwise good

7 Spillway(s) (Including Discharge Conveyance Channel)

a. General Rectangular Reinforced Box Culvert located at North End of Dam - 4' high by 6' wide section 54' in length including approach and discharge slabs - Walls are 1ft thick with

b. Condition of Service Spillway Some spalling of training walls and approach edges - bottom slab on downstream end is cracked and partially separated approximately 3-5 feet from end. Some undercutting of slab. Support has resulted

c. Condition of Auxiliary Spillway Roadway Embankment located on south end of lake may have a crest elevation one to two feet lower than the embankment crest and therefore could function as a secondary spillway under peak flood (PMF) conditions. Present condition is good - inst supports an asphalt paved road.

d. Condition of Discharge Conveyance Channel. Channel Section on Downstream Dam Face heavily reveted with durable massive boulders - no significant erosion - Section beyond toe in natural channel - relatively clear except for occasional deciduous trees - good condition

8) Reservoir Drain/Outlet

Type: Pipe UNKNOWN Conduit — Other —

Material: Concrete UNKNOWN Metal — Other —

Size: UNKNOWN Length UNKNOWN

Invert Elevations: Entrance UNKNOWN Exit UNKNOWN

Physical Condition (Describe): Unobservable X

Material: UNKNOWN

Joints: Alignment

Structural Integrity: UNKNOWN

Hydraulic Capability: UNKNOWN

Means of Control: Gate ? Valve ? Uncontrolled

Operation: Operable Inoperable Other UNKNOWN

Present Condition (Describe): Outlet downstream of dam is presumably burried under several large boulders - gate house in situated in Reservoir and was inaccessible

Structural

a. Concrete Surfaces see ITEM 7 Spillway

b. Structural Cracking see item 7b

c. Movement - Horizontal & Vertical Alignment (Settlement)

See Item 7b

d. Junctions with Abutments or Embankments spillway junctions with dam are good with the exception of the downstream tie of the bottom slab. Underseepage has caused moderate erosion to occur

e. Drains - Foundation, Joint, Face none observed

f. Water Passages, Conduits, Sluices see Item 7

g. Seepage or Leakage leakage below downstream spillway channel slab through crack and separation located 4 to 6 feet upstream of downstream end

h. Joints - Construction, etc. None observed

i. Foundation —

j. Abutments —

k. Control Gates NONE

l. Approach & Outlet Channels See Item 7B

m. Energy Dissipators (Plunge Pool, etc.) NONE

n. Intake Structures NOT observable

o. Stability Good

p. Miscellaneous —

10) Appurtenant Structures (Powerhouse, Lock, Gatehouse, Other)

a. Description and Condition

See Item 7 Spillway

NO OTHER APPURTENANT STRUCTURES

WERE OBSERVED

HYDROLOGIC DATA AND COMPUTATIONS

APPENDIX D

Long Pond Dam #3.

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation* (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	476	11.28	173.6
2) Design High Water (Max. Design Pool)	Unknown 475±		
3) Auxiliary Spillway Crest	Low highway embankment		
4) Pool Level with Flashboards			
5) Service Spillway Crest	470	8.26	115

DISCHARGES

	Volume (cfs)
1) Average Daily	Unknown
2) Spillway @ Maximum High Water	222
3) Spillway @ Design High Water	Unknown
4) Spillway @ Auxiliary Spillway Crest Elevation	Unknown
5) Low Level Outlet	Unknown
6) Total (of all facilities) @ Maximum High Water	222±
7) Maximum Known Flood	UNKNOWN
8) At Time of Inspection	UNKNOWN

* All Elevations are based on Mean Sea Level Datum relative to an elevation interpolated from the USGS Norwalk, NY. Quad Sheet.

CREST: Embankment ELEVATION: 476

Type: Earth and Rock-fill

Width: 34' Length: 365'

Spillover None

Location ———

SPILLWAY:

SERVICE		AUXILIARY
470' * Invert	Elevation	
4.0' H x 6.0' W box culvert	Type	
Approx 54.0' in length	Width	
	Type of Control	
✓	Uncontrolled	
	Controlled:	
	Type (Flashboards; gate)	
	Number	
	Size/Length	
	Invert Material	
	Anticipated Length of operating service	
	Chute Length	
	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	

HYDROMETEROLOGICAL GAGES: None Used

Type : _____

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: None

_____

Method of Controlled Releases (mechanisms):

gate valve on Reservoir Pond

_____

DRAINAGE AREA: 0.52 SQ MI

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: WOODS - SMALL FARMS

Terrain - Relief: HILLY

Surface - Soil: GLACIAL TILL

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

None observed.

Potential Sedimentation problem areas (natural or man-made; present or future)

None

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

None.

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: _____

Elevation: _____

Reservoir:

Length @ Maximum Pool 0.096 (Normal Pool Dam Alignment) (Miles)

Length of Shoreline (@ Spillway Crest) 0.74 mi. (Miles)

TAMS

Job No. 1579-10 | Sheet 1 of 85
Project LONG POND DAM No 3 | Date JUNE 18, 81
Subject HYDROLOGIC / HYDRAULIC COMPUTATIONS | By [illegible]
HYDROLOGIC UNIT CODE No 01100006 | Ch'k. by

ASSUME:

1. BASIN UPSTREAM OF WINDMILL LAKE IS COMPLETELY CONTROLLED & WILL NOT CONTRIBUTE to LONG POND INFLOW

2. FOR ANALYSIS BASIN is divided into 3 Sub-areas

(1) North Lake sub-area

(2) Sub-area 1 downstream of North Lake.

(3) Sub area 2 West of Long Pond [illegible] to WINDMILL LAKE
TOTAL AREA = 0.46 SQ MILES.

SUB-AREA 1 (59.2 ac = 0.09 mi²)

$L = 1900' = 0.36$ miles

$L_{CA} = 400' = 0.076$ miles

Use $C_T = 2$ & $640 C_p = 400$ $C_p = 0.625$

$t_p = 2(.36 \times 0.076)^{.3} = 0.68$ hrs

$t_R = 0.08/0.6 = 0.12$ hrs

FOR $t_R = 0.33$ hrs

$t_{PR} = t_p + 0.25(0.33 - 0.12) = 0.73$ hours.
% impervious $4.13/59.2 = 0.07$

SUB-AREA 2 (67.5 acres = 0.11 mi²)

$L = 1600' = 0.3$ mile

$L_{CA} = 600' = 0.11$ mile

Use $C_T = 2$ & $640 C_p = 400$

$t_p = 2(0.3 \times 0.11)^{0.3} = 0.73$ hrs

$t_R = [illegible] = 0.13$ hrs

TAMS

Job No. 1579-10 Sheet 2 of 35
Project LONG POND DAM #3 Date
Subject HYDROLOGIC/HYDRAULIC COMPUTATIONS By DLC
Ch'k. by

SUB AREA 2 CON- % impervious $\frac{4.13}{67.5}$ 0.06

$t_{PR} = t_p + 0.25(t_R - t_R)$

For t_R = 0.33 hrs

$t_{PR} = 0.72 + 0.25(0.33 - 0.13) = 0.77$ hours

NORTH LAKE Sub-basin (from North Long Dam #3 (PHASE 1 REPORT)

t_{PR} = 0.98 hrs

t_R = 0.33 hrs

TAMS

Job No. 1579-10 Sheet 3 of 85

Project LONG POND DAM NO 3 Date JUNE 13, 81

Subject HYDROLOGIC / HYDRAULIC COMPUTATIONS By D.L.C.

Ch'k. by J.M.D.

SPILLWAY RATING INVERT EL 470.

USE MANNING FORMULA for depth (d) = 1, 2, 3 5

$Q = \frac{1.49}{n} \cdot A R^{2/3} S^{1/2}$ $S = 0.0025$ $n = 0.015$

d	$\frac{1.49}{n}$	A	P	A/P	$K^{2/3}$	$S^{1/2}$	Q
1	99.3	6.	8	.75		.05	24.6
2		12	10	1.2		.05	67.3
3.5		21	13	1.6		.05	142.6

d = 4. b = 6

H/d	H	Q/b	Q_1	Q	(See attached chart, Open Channel Hydraulics -- Flow)
0.3	1.2	4	24.	471.2	
0.5	2.0	8.8	53	472	
1.0	4	25	150	474	Inlet control.
1.25	5	30	180	475	
1.375	5.5	33.5	201	476.5	
1.5	6	37	222	476	TOP OF DAM EL
2.0	8	45	270	478	
2.5	10	53	318	480	

498 RAPIDLY VARIED FLOW

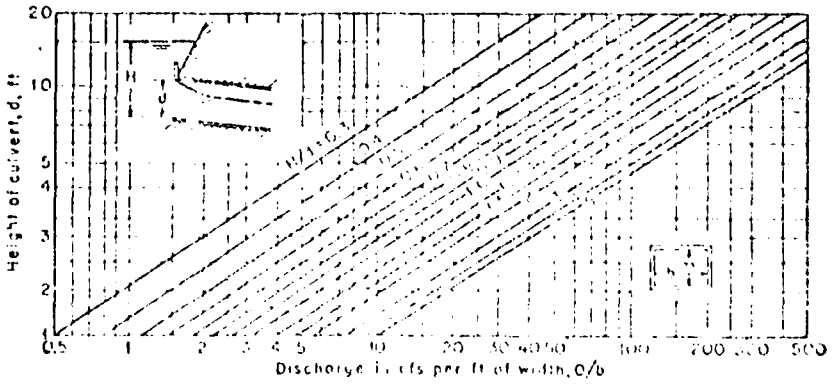


FIG. 17-29. Chart for estimating headwater on box culverts with square-edged entrances, flowing partly full. (*Based on data of U.S. Bureau of Public Roads* [29].)

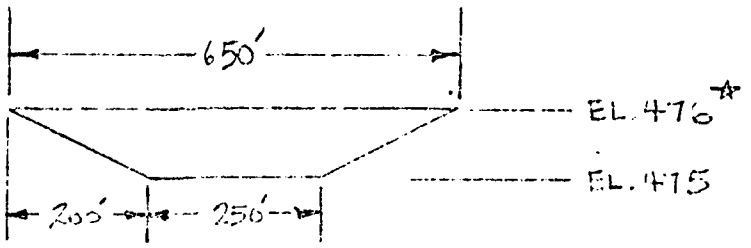
TAMS

Job No. 1579-10 | Sheet 4 of 35

Project Long Pond Dam No. 3 | Date 6/25/81

Subject Low spot in reservoir which acts as secondary spillway - discharge vs. elevation | By [illegible] DLC

Ch'k. by



ASSUME: n = 0.025 (LAWN & ROADWAY SURFACES)
S = 0.001 ⇒ $S^{1/2}$ = 0.032

ELEV. (ft)	A (ft^2)	P (ft)	R (ft)	$R^{2/3}$ ($ft^{2/3}$)	$Q_{\alpha} = \frac{1.49}{n} A R^{2/3} S^{1/2} = 1.9072 A R^{2/3}$ (cfs)
475					0
475.5	175	450	0.39	0.55	177
476	450	650	0.69	0.78	669
478	1750	654	2.68	1.93	6433

*Above EL. 476, the spillway width will remain at 650 ft.

NORTH LAKE (ID # 113) - STORAGE:

ELEVATION	ΔH	AREA AC.	MEAN AREA AC.	Δ VOL AC-FT	STORAGE AC-FT.
572		21.6			210
	2		22.25	44.5	
574		22.9			2[illegible].5
	1		23.25	23.25	
575		23.6			277.75
	2		24.3	48.6	
577		25.0			3[illegible].25
	3		26.05	[illegible]	
580		27.1			40[illegible].5

TAMS

Job No. 1572-10 Sheet 5 of 25

Project [illegible] Date [illegible]

Subject [illegible] By [illegible]

Ch'k. by

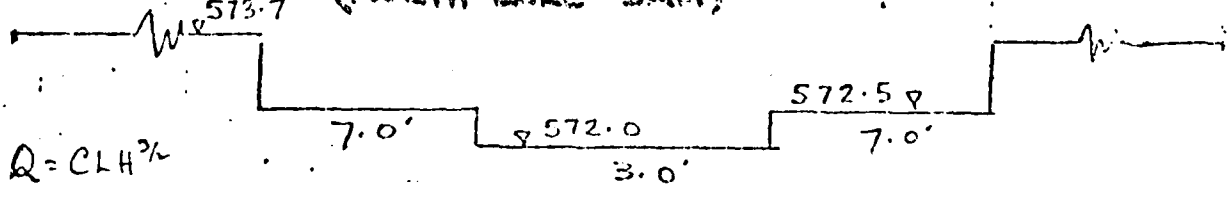
LONG POND – SPILLWAY

DISCHARGE RATING

	(PRIMARY SPILLWAY) Q_1	(SE Corner of Lake) Flow over Low Spot Q_2	TOTAL Q_T
470	0	0	0
471.2	24	0	24
472.	53	0	53
474	150	0	150
475	180	0	180
475.5	201	177	378
476	222	669	891
478	270	6433	6703
4 Y4			4 Y5

SPILLWAY DISCHARGE CAPACITY (NORTH LAKE DAM)

BREADTH ≈ 60'



$Q = CLH^{3/2}$

EL.	L_1	H	C_1	Q_1 (CFS)	L_2	H	C_2	Q_2	Q_T
572	3	0	0		0		0		0
573	3	1	2.68	8	14	0.5	2.6	12.9	20.9
573.75	3	1.75	2.65	18.4	14	1.25	2.66	52.0	70.4
575	3	3	2.66	41.5	14	2.5	2.67	147.8	189.3

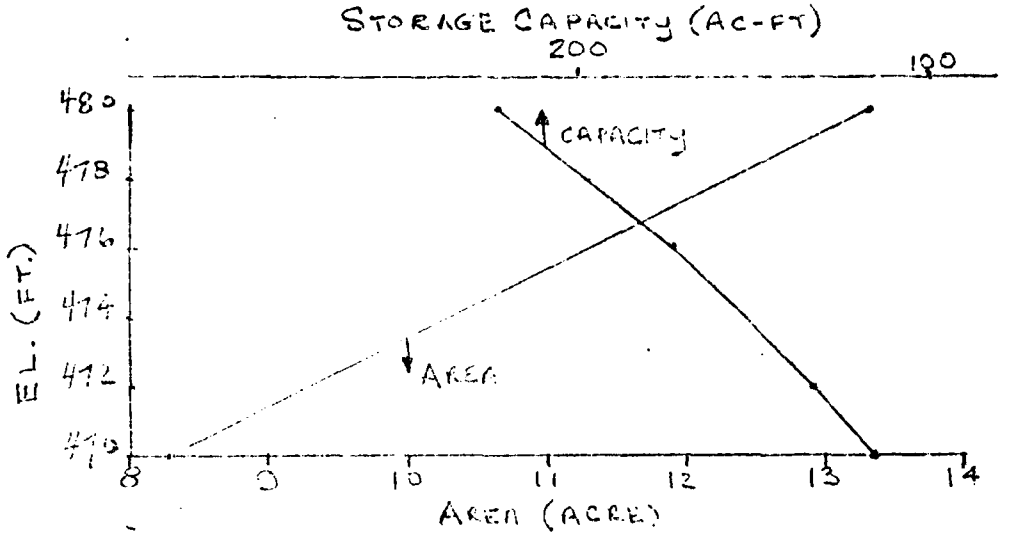
TAMS

Job No. 1579-10 Sheet 6 of 8

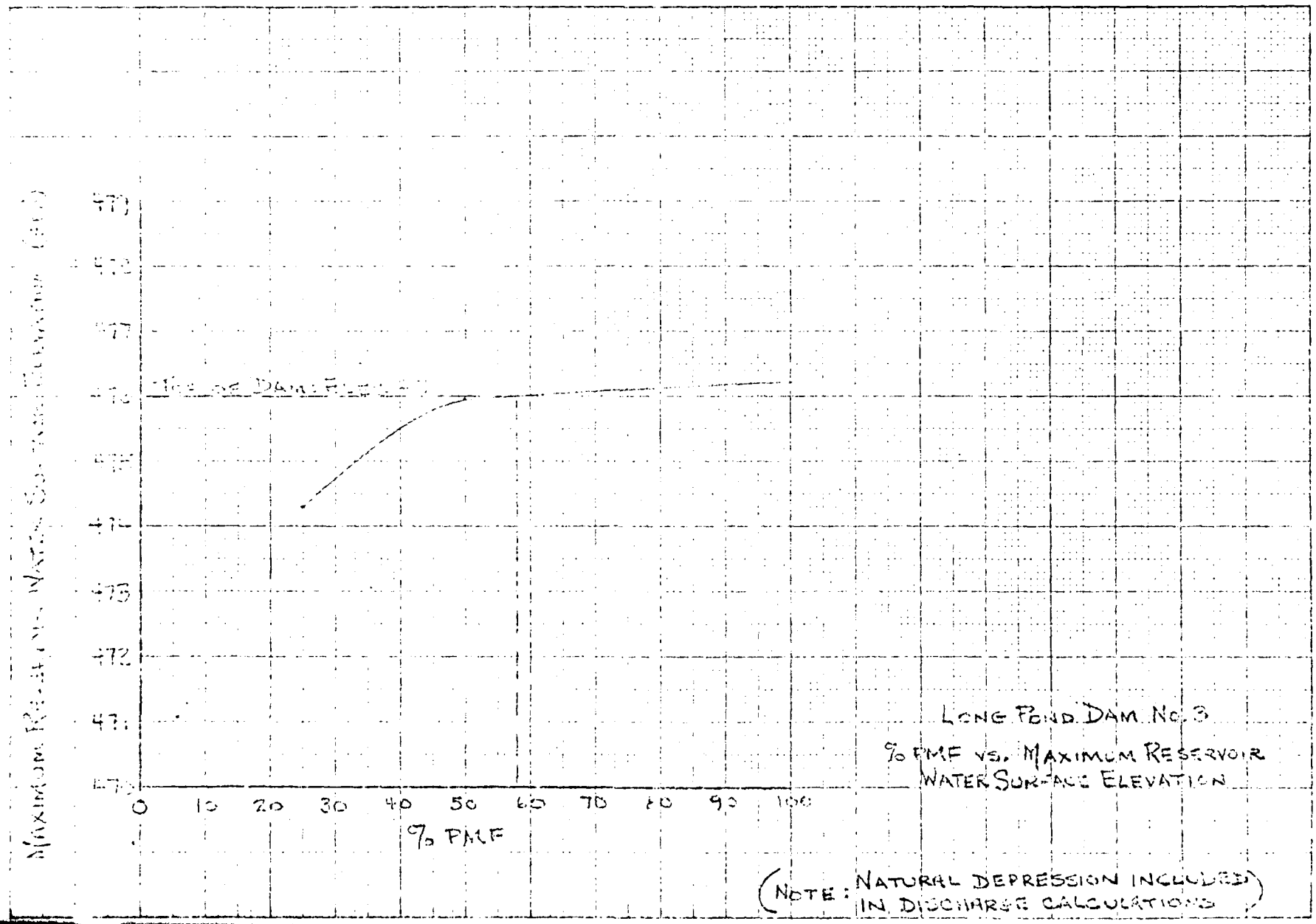
Project LONG POND DAM NO 3 Date JUNE 16

Subject HYDROLOGIC / HYDRAULIC COMPUTATION By DLC

Ch'k. by



EL	ΔH	AREA	MEAN AREA	Δ VOL	STORAGE
470		8.26			115*
	2		8.765	17.53	
472		9.27			132.5
	2		9.775	19.55	
474		10.28			152.1
	2		10.78	21.56	
476		11.28			173.6
	4		12.29	49.16	
480		13.3			222.8

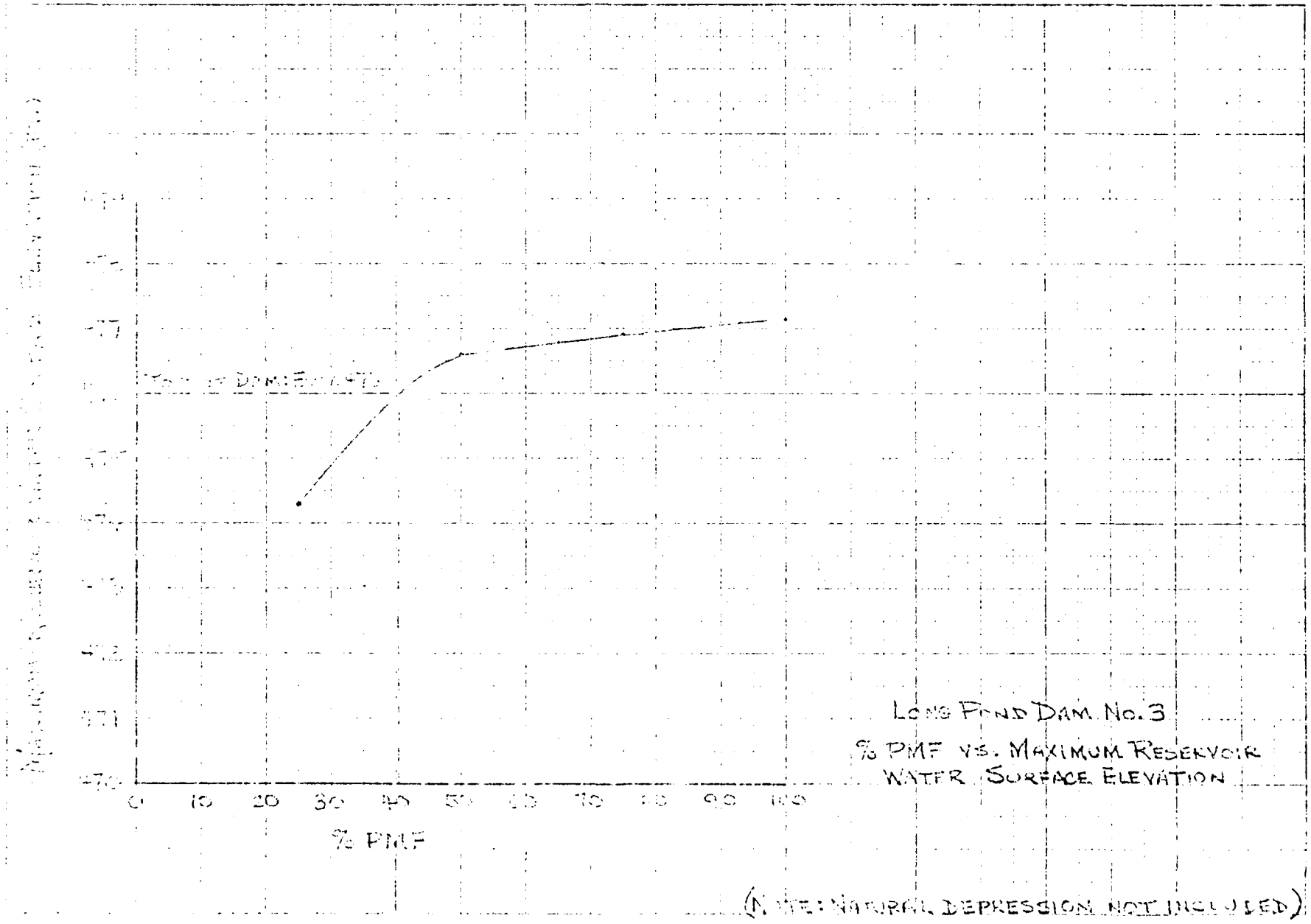


LONG POND DAM NO. 3

% PMF vs. MAXIMUM RESERVOIR WATER SURFACE ELEVATION

(NOTE: NATURAL DEPRESSION INCLUDED IN DISCHARGE CALCULATIONS)

7 of 15


% PMF
0
10
20
30
40
50
60
70
80
90
100
LONG POND DAM No. 3
% PMF VS. MAXIMUM RESERVOIR
WATER SURFACE ELEVATION
(NOTE: NATURAL DEPRESSION NOT INCLUDED)

CASE 1

```
FLOOD HYDROGRAPH PACKAGE (HEC-1)
AN [illegible] 1976
[illegible]
*********************************
A1                    LONG POND DAM NO 3
A2                    PHASE 1 SAFETY INSPECTION
A3                    HEC 1 DB PMF ANALYSIS
B     150       0      20       0       0       0       0       0       0       0
B1      5
J       1       4       1
J1      1    0.75     0.5    0.25
K       0       1                                       1
K1      1 NORTH LAKE BASIN RUN-OFF
M       1       1    0.26            0.46                                   1
P              22     112     123     133     141
T                                                       1     0.1                .13
W    0.98   0.625
X      -1    -0.1     1.5
K       1       2                                       1
K1      2 ROUTE HYDROGRAPH THROUGH NORTH LAKE
Y                                   1       1
Y1      1                                             210      -1
Y4    572     573  573.75     575
Y5      [illegible]    20.9    70.4   189.3
Y6      1     [illegible]   254.5   277.8   326.4   404.5
Y8    541     572     574     575     577     580
Y9    572
Y10  573.75     2.7     1.5     600
K       1       3                                       1
K1      3 CHANNEL ROUTE TO STATION 7+00
Y                                   1       1
Y1      1
Y6  0.035   0.035   0.035     476     500     700   0.036
Y7      0     500      70     490      60     490      72     476      80     476
Y7    100     460     120     490     170     500
K       0       2                                       1
K1      2 SUB-AREA 1 RUN-OFF
M       1       1    0.09            0.46                                   1
P              22     112     123     133     141
T                                                       1     0.1               0.07
W    0.73   0.625
X      -1    -0.1     1.5
K       2       2                                       1
K1      2 COMBINE ROUTED HYDROGRAPH WITH SUB AREA 2 INFLOW
K       0       3                                       1
K1      3 SUB-AREA 3 RUNOFF
M       1       1    0.11            0.46                                   1
P              22     112     123     133     141
T                                                       1     0.1               0.06
W    0.77   0.625
X      -1    -0.1     1.5
K       2       3                                       1
K1      3 COMBINE SUBAREA 3 WITH COMBINED HYDROGRAPH
K       1      10                                       1

K1     10 ROUTE THROUGH LONG POND
Y                                   1       1
Y1      1                                             115      -1
Y4    470   471.2     472     474     475     476     478     480
Y5      [illegible]      24      53     150     180     222     270     318
Y6    115   132.5   152.1   173.6   222.8
Y8    470     472     474     476     480
Y9    470
Y10   476    3.09     1.5     365
K      99
```

Sheet [illegible] of 25

```
51          *1      10 ROUTE THROUGH LONG POND
52          Y                                1       1
53          Y1      1                                                  115     -1
54          Y4    470    471.2     472     474     475     476     478     480
55          Y5            24      53     150     180     222     270     318
56          SS    115    132.5   152.1   173.6   222.8
57          SF    470     472     474     476     480
58          SS    470
59          CD    476    3.09     1.5     365
60          K      99
```

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	1
ROUTE HYDROGRAPH TO	2
ROUTE HYDROGRAPH TO	3

Sheet 10 of 35

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	1
ROUTE HYDROGRAPH TO	2
ROUTE HYDROGRAPH TO	3
RUNOFF HYDROGRAPH AT	2
COMBINE 2 HYDROGRAPHS AT	2
RUNOFF HYDROGRAPH AT	3
COMBINE 2 HYDROGRAPHS AT	3
ROUTE HYDROGRAPH TO	10
END OF NETWORK	

HEC-1 HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 01 APR 79

Sheet 11 of 25

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 01 APR 80

RUN DATE= 11/ 6/30.
TIME= 17.03.24.

LONG POND DAM NO 3
PHASE 1 SAFETY INSPECTION
HEC 1 OR PMF ANALYSIS

JOB SPECIFICATION

NS	NWP	AMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
150	0	20	0	0	0	0	0	0	0

JOPER	NWT	LROPT	ITRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 4 LRTIO= 1

RTIOS= 1.00 .75 .50 .25

****

SUB-AREA RUNOFF COMPUTATION

1 NORTH LAKE BASIN RUN-OFF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUNG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	.26	0.00	.46	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.10	0.00	.13

UNIT HYDROGRAPH DATA
TP= .99 CP= .63 NTA= 0

RECESSION DATA
STRTQ= -1.00 QRCSN= -.10 RTIOR= 1.50
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 3.63 AND R= 2.36 INTERVALS

UNIT HYDROGRAPH 15 END-OF-PERIOD ORDINATES, LAG= .97 HOURS, CP= .62 VOL= 1.00

16.	62.	101.	103.	76.	50.	32.	21.	14.	9.
6.	4.	2.	2.	1.					

Sheet 12 of 25

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.20	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	3.
1.01	.40	2	.00	.00	.00	0.	1.02	1.40	77	.04	.01	.03	4.
1.01	1.00	3	.00	.00	.00	0.	1.02	2.00	78	.04	.01	.03	4.
1.01	1.20	4	.00	.00	.00	0.	1.02	2.20	79	.04	.01	.03	5.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.40	80	.04	.01	.03	5.
[illegible]													

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.20	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	3.
1.01	.40	2	.00	.00	.00	0.	1.02	1.40	77	.04	.01	.03	4.
1.01	1.00	3	.00	.00	.00	0.	1.02	2.00	78	.04	.01	.03	4.
1.01	1.20	4	.00	.00	.00	0.	1.02	2.20	79	.04	.01	.03	5.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.40	80	.04	.01	.03	5.
1.01	2.00	6	.00	.00	.00	0.	1.02	3.00	81	.04	.01	.03	5.
1.01	2.20	7	.00	.00	.00	0.	1.02	3.20	82	.04	.01	.03	5.
1.01	2.40	8	.00	.00	.00	0.	1.02	3.40	83	.04	.01	.03	5.
1.01	3.00	9	.00	.00	.00	0.	1.02	4.00	84	.04	.01	.03	5.
1.01	3.20	10	.00	.00	.00	0.	1.02	4.20	85	.04	.01	.03	5.
1.01	3.40	11	.00	.00	.00	0.	1.02	4.40	86	.04	.01	.03	5.
1.01	4.00	12	.00	.00	.00	0.	1.02	5.00	87	.04	.01	.03	5.
1.01	4.20	13	.00	.00	.00	0.	1.02	5.20	88	.04	.01	.03	5.
1.01	4.40	14	.00	.00	.00	0.	1.02	5.40	89	.04	.01	.03	5.
1.01	5.00	15	.00	.00	.00	0.	1.02	6.00	90	.04	.01	.03	5.
1.01	5.20	16	.00	.00	.00	0.	1.02	6.20	91	.11	.08	.03	6.
1.01	5.40	17	.00	.00	.00	0.	1.02	6.40	92	.11	.08	.03	11.
1.01	6.00	18	.00	.00	.00	0.	1.02	7.00	93	.11	.08	.03	18.
1.01	6.20	19	.00	.00	.01	0.	1.02	7.20	94	.11	.08	.03	25.
1.01	6.40	20	.00	.00	.01	0.	1.02	7.40	95	.11	.08	.03	30.
1.01	7.00	21	.00	.00	.01	0.	1.02	8.00	96	.11	.08	.03	33.
1.01	7.20	22	.00	.00	.01	0.	1.02	8.20	97	.11	.08	.03	35.
1.01	7.40	23	.00	.00	.01	0.	1.02	8.40	98	.11	.08	.03	37.
1.01	8.00	24	.00	.00	.01	0.	1.02	9.00	99	.11	.08	.03	38.
1.01	8.20	25	.00	.00	.01	0.	1.02	9.20	100	.11	.08	.03	38.
1.01	8.40	26	.00	.00	.01	0.	1.02	9.40	101	.11	.08	.03	39.
1.01	9.00	27	.00	.00	.01	0.	1.02	10.00	102	.11	.08	.03	39.
1.01	9.20	28	.00	.00	.01	0.	1.02	10.20	103	.11	.08	.03	39.
1.01	9.40	29	.00	.00	.01	0.	1.02	10.40	104	.11	.08	.03	39.
1.01	10.00	30	.00	.00	.01	0.	1.02	11.00	105	.11	.08	.03	39.
1.01	10.20	31	.00	.00	.01	0.	1.02	11.20	106	.11	.08	.03	39.
1.01	10.40	32	.00	.00	.01	0.	1.02	11.40	107	.11	.08	.03	39.
1.01	11.00	33	.00	.00	.01	0.	1.02	12.00	108	.11	.08	.03	39.
1.01	11.20	34	.00	.00	.01	0.	1.02	12.20	109	.66	.63	.03	49.
1.01	11.40	35	.00	.00	.01	0.	1.02	12.40	110	.66	.63	.03	83.
1.01	12.00	36	.00	.00	.01	0.	1.02	13.00	111	.66	.63	.03	139.
1.01	12.20	37	.04	.01	.03	1.	1.02	13.20	112	.79	.76	.03	199.
1.01	12.40	38	.04	.01	.03	1.	1.02	13.40	113	.79	.76	.03	248.
1.01	13.00	39	.04	.01	.03	1.	1.02	14.00	114	.79	.76	.03	289.
1.01	13.20	40	.05	.02	.03	2.	1.02	14.20	115	.79	.76	.03	324.
1.01	13.40	41	.05	.02	.03	2.	1.02	14.40	116	.79	.76	.03	354.
1.01	14.00	42	.05	.02	.03	2.	1.02	15.00	117	.79	.76	.03	382.
1.01	14.20	43	.05	.02	.03	3.	1.02	15.20	118	1.72	1.69	.03	434.
1.01	14.40	44	.05	.02	.03	3.	1.02	15.40	119	4.72	4.69	.03	555.
1.01	15.00	45	.05	.02	.03	3.	1.02	16.00	120	1.05	1.02	.03	764.
1.01	15.20	46	.11	.08	.03	4.	1.02	16.20	121	.92	.89	.03	922.
1.01	15.40	47	.11	.08	.03	4.	1.02	16.40	122	.92	.89	.03	914.
1.01	16.00	48	.11	.08	.03	6.	1.02	17.00	123	.92	.89	.03	780.
1.01	16.20	49	.06	.03	.03	9.	1.02	17.20	124	.72	.69	.03	668.
1.01	16.40	50	.06	.03	.03	11.	1.02	17.40	125	.72	.69	.03	577.
1.01	17.00	51	.06	.03	.03	12.	1.02	18.00	126	.72	.69	.03	506.
1.01	17.20	52	.04	.01	.03	12.	1.02	18.20	127	.04	.01	.03	440.
1.01	17.40	53	.04	.01	.03	12.	1.02	18.40	128	.04	.01	.03	362.
1.01	18.00	54	.04	.01	.03	11.	1.02	19.00	129	.04	.01	.03	271.
1.01	18.20	55	.00	.00	.00	9.	1.02	19.20	130	.04	.01	.03	187.
1.01	18.40	56	.00	.00	.00	8.	1.02	19.40	131	.04	.01	.03	126.

Sheet 13 of 35

1.01	19.00	57	.00	.00	.00	6.	1.02	20.00	132	.04	.01	.03	92.
1.01	19.20	58	.00	.00	.00	4.	1.02	20.20	133	.04	.01	.03	88.
1.01	19.40	59	.00	.00	.00	3.	1.02	20.40	134	.04	.01	.03	85.
1.01	20.00	60	.00	.00	.00	2.	1.02	21.00	135	.04	.01	.03	81.
1.01	20.20	61	.00	.00	.00	1.	1.02	21.20	136	.04	.01	.03	78.
1.01	20.40	62	.00	.00	.00	1.	1.02	21.40	137	.04	.01	.03	75.
1.01	21.00	63	.00	.00	.00	1.	1.02	22.00	138	.04	.01	.03	72.
1.01	21.20	64	.00	.00	.00	1.	1.02	22.20	139	.04	.01	.03	69.
1.01	21.40	65	.00	.00	.00	1.	1.02	22.40	140	.04	.01	.03	66.

						6.	1.02	20.00	136	.06	.03	.03	92.	
						4.	1.02	20.20	133	.06	.03	.03	88.	
						3.	1.02	20.40	134	.06	.03	.03	85.	
						2.	1.02	21.00	135	.06	.03	.03	81.	
						1.	1.02	21.20	136	.06	.03	.03	78.	
						1.	1.02	21.40	137	.06	.03	.03	75.	
						1.	1.02	22.00	139	.06	.03	.03	72.	
						1.	1.02	22.20	139	.06	.03	.03	69.	
						1.	1.02	22.40	140	.06	.03	.03	66.	
						1.	1.02	23.00	141	.06	.03	.03	64.	
						1.	1.02	23.20	142	.06	.03	.03	61.	
						1.	1.02	23.40	143	.06	.03	.03	59.	
						1.	1.03	0.00	144	.06	.03	.03	56.	
						1.	1.03	.20	145	0.00	0.00	0.00	54.	
						1.	1.03	.40	146	0.00	0.00	0.00	52.	
						1.	1.03	1.00	147	0.00	0.00	0.00	50.	
						1.	1.03	1.20	148	0.00	0.00	0.00	48.	
						1.	1.03	1.40	149	0.00	0.00	0.00	46.	
						2.	1.03	2.00	150	0.00	0.00	0.00	44.	
									SUM	24.42	21.61	3.21	11637.	
										(620.)(	549.)(	82.)(	329.52)	

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	922.	500.	159.	79.	11630.
CMS	26.	14.	5.	2.	329.
INCHES		17.90	22.78	23.12	23.12
MM		454.78	578.69	587.15	587.15
AC-FT		248.	316.	320.	320.
THOUS CU M		306.	389.	395.	395.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	2.		
2.	2.	3.	7.	3.	4.	4.	6.	9.	11.	
12.	12.	12.	11.	9.	8.	6.	4.	3.	2.	
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	
1.	1.	1.	1.	2.	3.	4.	4.	5.	5.	
5.	5.	5.	5.	5.	5.	5.	5.	5.	5.	
6.	11.	17.	25.	30.	33.	35.	37.	38.	39.	
39.	39.	39.	39.	39.	39.	39.	39.	40.	83.	
159.	191.	249.	299.	324.	359.	390.	434.	555.	764.	
744.	914.	991.	665.	577.	516.	440.	362.	271.	187.	
126.	98.	85.	85.	81.	79.	76.	72.	69.	66.	
64.	61.	59.	56.	54.	52.	50.	48.	46.	44.	

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	922.	500.	159.	79.	11630.
CMS	26.	14.	5.	2.	329.
INCHES		17.90	22.78	23.12	23.12
MM		454.78	578.69	587.15	587.15
AC-FT		248.	316.	320.	320.
THOUS CU M		306.	389.	395.	395.

Sheet 14 of 15

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	
2.	2.	2.	2.	3.	3.	5.	7.	8.		
9.	9.	9.	8.	7.	6.	4.	3.	2.	1.	
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	
1.	1.	1.	1.	1.	2.	3.	3.	3.	4.	
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	
5.	8.	13.	19.	22.	25.	27.	28.	28.	29.	
29.	29.	29.	29.	29.	30.	30.	30.	32.	63.	

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	5.	7.	8.
9.	9.	9.	8.	7.	6.	4.	3.	2.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	2.	3.	3.	3.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
5.	7.	13.	18.	22.	25.	27.	28.	28.	29.
29.	29.	29.	29.	30.	30.	30.	30.	37.	63.
106.	140.	166.	217.	243.	268.	294.	306.	416.	573.
574.	615.	592.	531.	433.	369.	330.	272.	203.	140.
70.	64.	66.	63.	61.	58.	54.	52.	50.	50.
48.	46.	44.	42.	41.	39.	37.	36.	35.	33.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	692.	379.	119.	59.	8732.
CMS	20.	11.	3.	2.	247.
INCHES		13.43	17.09	17.34	17.34
MM		341.09	434.02	440.36	440.36
AC-FT		196.	237.	240.	240.
THOUS CU M		230.	292.	296.	296.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	2.	2.	2.	3.	4.	5.
7.	6.	6.	5.	5.	4.	3.	2.	1.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	2.	2.	2.	2.
2.	2.	2.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	12.	15.	17.	19.	19.	19.	19.
19.	20.	20.	20.	21.	20.	20.	20.	35.	42.
71.	94.	126.	140.	162.	179.	196.	217.	278.	382.
461.	457.	395.	334.	288.	253.	220.	181.	136.	93.
63.	46.	44.	42.	41.	39.	37.	36.	35.	33.
32.	31.	29.	29.	27.	26.	25.	24.	23.	22.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	461.	250.	80.	39.	5815.
CMS	13.	7.	2.	1.	165.
INCHES		8.95	11.39	11.56	11.56
MM		227.39	289.34	293.58	293.58
AC-FT		130.	158.	160.	160.
THOUS CU M		153.	195.	198.	198.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	2.	2.	3.

Sheet 15 of 35

3.	3.	3.	3.	2.	2.	1.	1.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	4.	6.	6.	7.	8.	9.	9.	9.	10.
10.	10.	10.	10.	10.	10.	10.	10.	12.	21.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100.	139.	131.
[illegible]	[illegible]	1.	144.	144.	142.	110.	91.	69.	47.

3.	3.	3.	3.	2.	2.	1.	1.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	3.	4.	6.	7.	8.	9.	9.	9.	10.
10.	10.	10.	10.	10.	10.	10.	10.	12.	21.
35.	50.	62.	72.	81.	89.	98.	109.	139.	191.
231.	228.	197.	167.	144.	127.	110.	91.	68.	47.
32.	27.	22.	21.	20.	19.	19.	18.	17.	17.
16.	15.	15.	14.	14.	13.	12.	12.	12.	11.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	231.	125.	40.	19.	2907.
CMS	7.	4.	1.	1.	82.
INCHES		4.48	5.70	5.78	5.78
MM		113.70	144.67	146.79	146.79
AC-FT		62.	79.	80.	80.
THOUS CU M		77.	97.	99.	99.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

2 ROUTE HYDROGRAPH THROUGH NORTH LAKE

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ICAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	210.	-1

STAGE	572.00	573.00	573.75	575.00		
FLOW	0.00	20.90	70.40	189.30		
CAPACITY=	1.	210.	255.	278.	326.	405.
ELEVATION=	541.	572.	574.	575.	577.	580.

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
572.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
573.8	2.7	1.5	600.

STATION 2, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Sheet 16 of 25

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	4.	5.	5.	6.	7.	8.	8.
9.	10.	11.	11.	12.	13.	13.	14.	15.	16.
19.	26.	41.	59.	124.	209.	367.	410.	491.	660.
852.	925.	846.	722.	619.	541.	475.	405.	324.	241.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	83.	80.	77.	74.	72.

	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
	2.	2.	2.	2.	2.	3.	3.	3.	3.	3.
	3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
	5.	5.	5.	4.	5.	5.	6.	7.	8.	8.
	9.	10.	11.	11.	12.	13.	13.	14.	15.	16.
	19.	26.	41.	59.	124.	209.	367.	410.	491.	660.
	972.	923.	840.	722.	619.	541.	475.	405.	324.	241.
	132.	124.	103.	93.	87.	83.	80.	77.	74.	72.
	70.	70.	69.	68.	67.	66.	65.	64.	62.	61.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	211.	211.	211.	211.	211.	211.	211.
212.	212.	212.	212.	213.	213.	213.	213.	213.	213.
213.	213.	213.	213.	213.	213.	213.	213.	213.	213.
213.	213.	213.	212.	212.	212.	212.	212.	213.	213.
213.	213.	213.	213.	213.	213.	213.	213.	213.	213.
213.	213.	213.	214.	215.	216.	216.	217.	218.	219.
220.	220.	221.	222.	223.	224.	224.	225.	226.	227.
234.	244.	279.	245.	251.	255.	256.	256.	255.	260.
248.	247.	242.	241.	259.	258.	257.	256.	255.	254.
252.	251.	250.	250.	250.	250.	250.	249.	249.	249.
249.	247.	247.	248.	248.	247.	247.	247.	246.	246.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.2	572.2	572.2	572.2	572.2	572.3	572.3	572.4	572.4
572.4	572.5	572.5	572.5	572.6	572.6	572.6	572.7	572.7	572.8
572.8	573.1	573.1	573.6	573.8	574.1	574.1	574.1	574.1	574.2
574.3	574.4	574.5	574.5	574.2	574.0	574.1	574.1	574.0	574.0
573.9	573.8	573.8	573.8	573.9	573.8	573.8	573.8	573.8	573.8
573.7	573.7	573.7	573.7	573.7	573.7	573.7	573.7	573.6	573.6

...FLOW IS 923. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	923.	477.	142.	69.	10730.
CMS	26.	14.	4.	2.	293.
INCHES		17.07	20.38	20.53	20.53
MM		433.48.	517.56	521.54	521.54
AC-FT		237.	282.	285.	285.
THOUS CU M		292.	348.	351.	351.

Sheet 17 of 25

STATION 2, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STATION 2, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	3.	3.	3.	4.	4.	5.	6.	6.
7.	7.	8.	8.	9.	10.	10.	11.	11.	12.
14.	17.	21.	34.	50.	65.	165.	285.	362.	487.
612.	690.	639.	544.	468.	409.	359.	307.	246.	185.
134.	104.	82.	74.	71.	70.	69.	68.	66.	65.
64.	63.	61.	60.	59.	57.	55.	54.	52.	51.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	211.	211.	211.	211.	211.
211.	211.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	213.	213.	213.	214.	214.	215.	215.	216.	217.
217.	218.	219.	219.	220.	220.	221.	221.	222.	223.
225.	228.	236.	237.	242.	247.	252.	254.	256.	256.
260.	260.	260.	256.	257.	256.	256.	255.	254.	252.
251.	250.	250.	247.	249.	249.	249.	249.	248.	247.
247.	246.	246.	245.	245.	244.	244.	243.	243.	242.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.2	572.2	572.2	572.2	572.3	572.3
572.3	572.4	572.4	572.4	572.4	572.5	572.5	572.5	572.5	572.6
572.7	572.8	573.0	573.2	573.4	573.7	573.9	574.0	574.0	574.1
574.2	574.2	574.2	574.2	574.1	574.1	574.0	574.0	574.0	573.9
573.9	573.8	573.8	573.8	573.8	573.7	573.7	573.7	573.7	573.7
573.7	573.6	573.6	573.6	573.6	573.5	573.5	573.5	573.5	573.5

PEAK OUTFLOW IS 690. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	690.	342.	104.	50.	7544.
CMS	20.	10.	3.	1.	214.
INCHES		12.25	14.88	15.00	15.00
MM		311.21	377.94	380.87	380.87
AC-FT		170.	206.	208.	208.
THOUS CU M		209.	254.	256.	256.

Sheet 15 of 85

CFS	690.	342.	104.	50.	7544.
CMS	20.	10.	3.	1.	214.
INCHES		12.25	14.96	15.00	15.00
HA		311.21	377.89	380.97	380.97
AC-FT		170.	206.	208.	208.
THOUS CU M		209.	254.	256.	256.

STATION 2, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	2.	2.	2.	2.	3.	3.	3.	4.	4.
5.	5.	6.	6.	6.	6.	7.	7.	7.	8.
9.	11.	14.	17.	20.	31.	43.	56.	72.	253.
404.	405.	406.	396.	377.	276.	242.	208.	169.	129.
94.	75.	69.	67.	65.	63.	61.	59.	57.	56.
54.	52.	50.	49.	47.	45.	44.	42.	41.	39.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	212.	212.	212.
212.	212.	212.	212.	212.	213.	213.	214.	214.	214.
215.	215.	216.	216.	216.	217.	217.	217.	218.	219.
220.	220.	221.	222.	223.	226.	230.	236.	244.	249.	254.
253.	253.	253.	254.	255.	254.	254.	253.	252.	251.
250.	249.	248.	248.	248.	247.	246.	245.	245.	244.
243.	242.	242.	242.	241.	241.	240.	239.	239.	238.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.3	572.0
574.0	573.0	573.0	572.1	572.1	572.1	572.1	572.1	572.1	572.1
574.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
574.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
574.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
574.1	572.1	572.1	572.1	572.1	572.1	572.1	572.2	572.2	572.2
572.2	572.2	572.3	572.3	572.3	572.3	572.3	572.3	572.4	572.4
572.4	572.5	572.7	572.8	573.0	573.2	573.3	573.5	573.8	574.0

Sept 17 & 20

574.1	574.1	574.1	574.1	574.0	574.0	574.0	573.9	573.9	573.8
573.8	573.8	573.7	573.7	573.7	573.6	573.6	573.6	573.6	573.5
573.5	573.5	573.4	573.4	573.4	573.4	573.3	573.3	573.3	573.3

PEAK OUTFLOW IS 454. AT TIME 40.67 HOURS

574.0

574.1 574.1 574.1 574.1 574.0 574.0 574.0 573.9 573.9 573.8
573.8 573.8 573.7 573.7 573.7 573.6 573.6 573.6 573.6 573.5
573.5 573.5 573.4 573.4 573.4 573.4 573.3 573.3 573.3 573.3

PEAK OUTFLOW IS 456. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	456.	209.	66.	32.	4781.
CMS	13.	6.	2.	1.	135.
INCHES		7.46	9.43	9.50	9.50
CM		189.57	239.60	241.39	241.39
ACRE-FT		103.	131.	132.	132.
THOUS CU M		127.	161.	162.	162.

STATION 2, PLAN 1, RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 1. 1. 1. 1. 1. 1. 1. 1.
1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
1. 1. 1. 1. 1. 1. 1. 2. 2. 2.
2. 2. 3. 3. 3. 3. 3. 4. 4. 4.
4. 6. 7. 7. 10. 12. 14. 16. 19. 27.
41. 55. 71. 99. 143. 139. 124. 109. 91. 75.
64. 55. 62. 59. 56. 54. 50. 48. 46. 43.
40. 39. 37. 36. 34. 32. 31. 29. 28. 27.

STORAGE

210. 210. 210. 210. 210. 210. 210. 210. 210. 210.
210. 210. 210. 210. 210. 210. 210. 210. 210. 210.
210. 210. 210. 210. 210. 210. 210. 210. 210. 210.
210. 210. 210. 210. 210. 210. 210. 210. 210. 210.
210. 210. 210. 210. 210. 210. 210. 210. 210. 210.
210. 210. 211. 211. 211. 211. 211. 211. 211. 211.
211. 211. 211. 211. 211. 211. 211. 211. 211. 211.
211. 211. 211. 211. 211. 211. 211. 211. 211. 211.
211. 211. 211. 211. 211. 211. 211. 211. 211. 211.
211. 211. 211. 211. 211. 211. 212. 212. 212. 212.
212. 213. 213. 213. 213. 213. 214. 214. 214. 214.
215. 216. 217. 219. 221. 223. 225. 228. 230. 234.
244. 244. 248. 251. 251. 251. 251. 251. 250. 249.
248. 247. 246. 245. 244. 243. 242. 241. 241. 240.
239. 239. 238. 238. 237. 237. 236. 236. 235. 235. 234.

STAGE

572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0

Sheet 20 of 25

572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0 572.0
572.0 572.0 572.0 572.0 572.1 572.1 572.1 572.1 572.1 572.1
572.1 572.1 572.1 572.1 572.1 572.2 572.2 572.2 572.2 572.2

				572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	
572.0	572.0	572.0	572.0	572.1	572.1	572.1	572.1	572.1	572.1	
572.1	572.1	572.1	572.1	572.1	572.2	572.2	572.2	572.2	572.2	
572.2	572.3	572.3	572.4	572.5	572.6	572.7	572.8	572.9	573.1	
573.3	573.5	573.7	573.8	573.9	573.9	573.8	573.8	573.8	573.8	
573.7	573.7	573.6	573.6	573.5	573.5	573.4	573.4	573.4	573.3	
573.3	573.3	573.2	573.2	573.2	573.2	573.1	573.1	573.1	573.1	

PEAK OUTFLOW IS 143. AT TIME 41.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	143.	79.	29.	14.	2030.
CMS	4.	2.	1.	0.	57.
INCHES		2.84	4.00	4.04	4.04
MM		72.02	101.51	102.51	102.51
AC-FT		39.	55.	56.	56.
THOUS CU M		48.	68.	69.	69.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

3 CHANNEL ROUTE TO STATION 7+00

ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

ISTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	0.	0

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELEVT	ELMAX	RLNTH	SEL
.035	.035	.035	476.0	503.0	700.	.026000

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC

0.00	500.00	30.00	490.00	60.00	480.00	72.00	476.00	90.00	476.00
100.00	480.00	120.00	490.00	170.00	500.00				

STORAGE	1.00	.24	.74	1.41	2.26	3.25	4.36	5.60	6.98	8.46
	10.02	11.24	13.73	15.67	18.19	20.72	23.45	26.39	29.53	32.88

Sheet 21 of 85

OUTFLOW	0.00	191.07	776.04	1971.51	3892.90	6684.99	10228.09	14560.86	19722.81	25753.93
	32693.21	40582.41	49269.75	59032.24	70174.11	82581.95	96446.30	111798.25	128708.21	147245.45
STAGE	476.00	477.24	479.53	479.79	481.65	483.32	485.58	486.84	488.11	489.37
	490.63	489.89	491.16	492.42	493.68	494.95	496.21	497.47	498.74	500.00
F OF	0.00	191.07	776.04	1971.51	3892.90	6684.99	10228.09	14560.86	19722.81	25753.93
	32693.21	40582.41	49269.75	59032.24	70174.11	82581.95	96446.30	111798.25	128708.21	147245.45

OUTFLOW	0.00	191.07	776.04	1871.51	3892.90	6694.99	10228.09	14560.86	19722.81	25753.83
	32693.41	40582.41	49209.75	59032.24	70134.11	82591.95	96446.30	111798.25	128708.21	147245.45
STAGE	474.00	477.26	478.53	479.79	481.05	482.32	483.58	484.84	486.11	487.37
	488.63	489.89	491.16	492.42	493.68	494.95	496.21	497.47	498.74	500.00
FLOW	0.00	191.07	776.04	1871.51	3892.90	6694.99	10228.09	14560.86	19722.81	25753.83
	32693.41	40582.41	49209.75	59032.24	70134.11	82591.95	96446.30	111798.25	128708.21	147245.45

STATION 3, PLAN 1, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	4.	4.	5.	6.	7.	7.	8.
9.	10.	11.	11.	12.	13.	13.	14.	15.	16.
18.	25.	41.	59.	119.	229.	370.	484.	491.	650.
1[illegible].	961.	851.	724.	624.	542.	478.	406.	338.	262.
17[illegible].	12[illegible].	1[illegible].	93.	89.	76.	20.	77.	75.	72.
7.	79.	69.	68.	67.	66.	65.	64.	62.	61.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.1
476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1
476.1	476.2	476.3	476.4	476.6	476.8	477.0	477.2	477.4	477.3
476.6	476.7	476.6	476.4	476.2	476.0	475.9	475.7	476.6	476.4
476.2	476.8	476.7	476.6	476.6	476.6	476.5	476.5	476.5	476.5

Sheet 22 of 25

476.5	476.5	476.5	476.5	476.4	476.4	476.4	476.4	476.4	476.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	921.	477.	142.	49.	10227.
CMS	26.	14.	4.	2.	292.
INCHES		17.07	20.37	20.63	20.63
MM		433.52	517.41	521.39	521.39
AC-FT		237.	282.	284.	284.

476.5 476.5 476.5 476.5 476.4 476.4 476.4 476.4 476.4 476.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	921.	477.	142.	69.	10327.
CMS	26.	14.	4.	2.	292.
INCHES		17.07	20.37	20.53	20.53
MM		433.62	517.41	521.39	521.39
AC-FT		237.	282.	284.	284.
THOUS CU M		292.	348.	351.	351.

MAXIMUM STORAGE = 1.

MAXIMUM STAGE IS 478.7

STATION 3, PLAN 1, RTIO 2

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	3.	3.	3.	4.	5.	6.	6.	6.
7.	7.	8.	8.	9.	10.	10.	11.	11.	12.
14.	17.	20.	33.	49.	69.	156.	284.	359.	483.
627.	691.	640.	549.	470.	411.	360.	309.	248.	187.
137.	101.	83.	74.	71.	69.	69.	67.	67.	65.
64.	63.	61.	60.	58.	57.	56.	54.	53.	51.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0

Sheet 23 of 85

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1
476.1	476.1	476.1	476.2	476.3	476.4	477.0	477.5	477.6	477.9
477.2	477.3	477.2	478.0	477.9	477.7	477.6	477.5	477.4	477.2
477.0	477.7	477.5	476.5	476.5	476.5	476.5	476.4	476.4	476.4

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1
476.1	476.1	476.1	476.2	476.3	476.4	477.0	477.5	477.6	477.9
476.2	476.3	476.2	476.3	476.3	476.7	477.6	477.5	477.4	477.2
476.3	476.3	476.5	476.5	476.5	476.5	476.5	476.4	476.4	476.4
476.4	476.4	476.4	476.4	476.4	476.4	476.4	476.4	476.3	476.3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	641.	342.	104.	50.	7541.
CMS	18.	10.	3.	1.	214.
INCHES		12.25	14.27	14.99	14.99
AC-FT		311.19	377.78	380.74	380.74
THOUS CU M		384.	466.	470.	470.
		379.	464.	469.	469.

MAXIMUM STORAGE = 1.

MAXIMUM STAGE IS 476.3

STATION 3, PLAN 1, RTIO 3

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	4.	4.	4.
5.	5.	5.	6.	6.	6.	7.	7.	7.	7.
11.	11.	10.	17.	20.	50.	43.	55.	72.	229.
450.	450.	410.	366.	323.	275.	244.	200.	173.	129.
75.	75.	72.	68.	66.	63.	62.	59.	58.	55.
59.	59.	58.	49.	47.	45.	44.	42.	41.	39.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.1
476.1	476.1	476.1	476.1	476.1	476.2	476.3	476.4	476.5	477.4
477.0	477.1	477.2	477.3	477.5	477.4	477.4	477.3	477.1	476.9
476.7	476.6	476.5	476.4	476.4	476.4	476.4	476.4	476.4	476.4
476.4	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	450.	209.	66.	32.	4779.
CMS	13.	6.	2.	1.	135.
INCHES		7.66	9.42	9.50	9.50
MM		194.55	239.30	241.29	241.29
AC-FT		103.	131.	133.	133.
THOUS CU M		126.	161.	163.	163.

MAXIMUM STORAGE = 0.

MAXIMUM [illegible] = 477.4

STATION 2, PLAN 1, RTIO 4

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	2.	2.	2.
2.	2.	3.	3.	3.	3.	4.	4.	4.	4.
5.	7.	7.	9.	10.	12.	14.	16.	17.	20.
41.	56.	64.	110.	116.	131.	126.	102.	82.	73.
59.	50.	47.	39.	37.	35.	51.	47.	45.	43.
41.	39.	37.	34.	33.	32.	31.	29.	28.	27.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

	0.	0.	0.	0.	0.	0.	0.	0.	0.

LOSS DATA

LRATI	STRKR	DLTKR	STRTL	CNSTL	RTIOR	STRTQ	RTIOQ	CNSTQ	ALSMX	RTIMP
0.	0.00	0.00	1.00	0.00	0.00	0.0	0.00	.10	0.00	.07

UNIT HYDROGRAPH DATA

TP= .77 CP= .63 NTAB= 9

RECESSION DATA

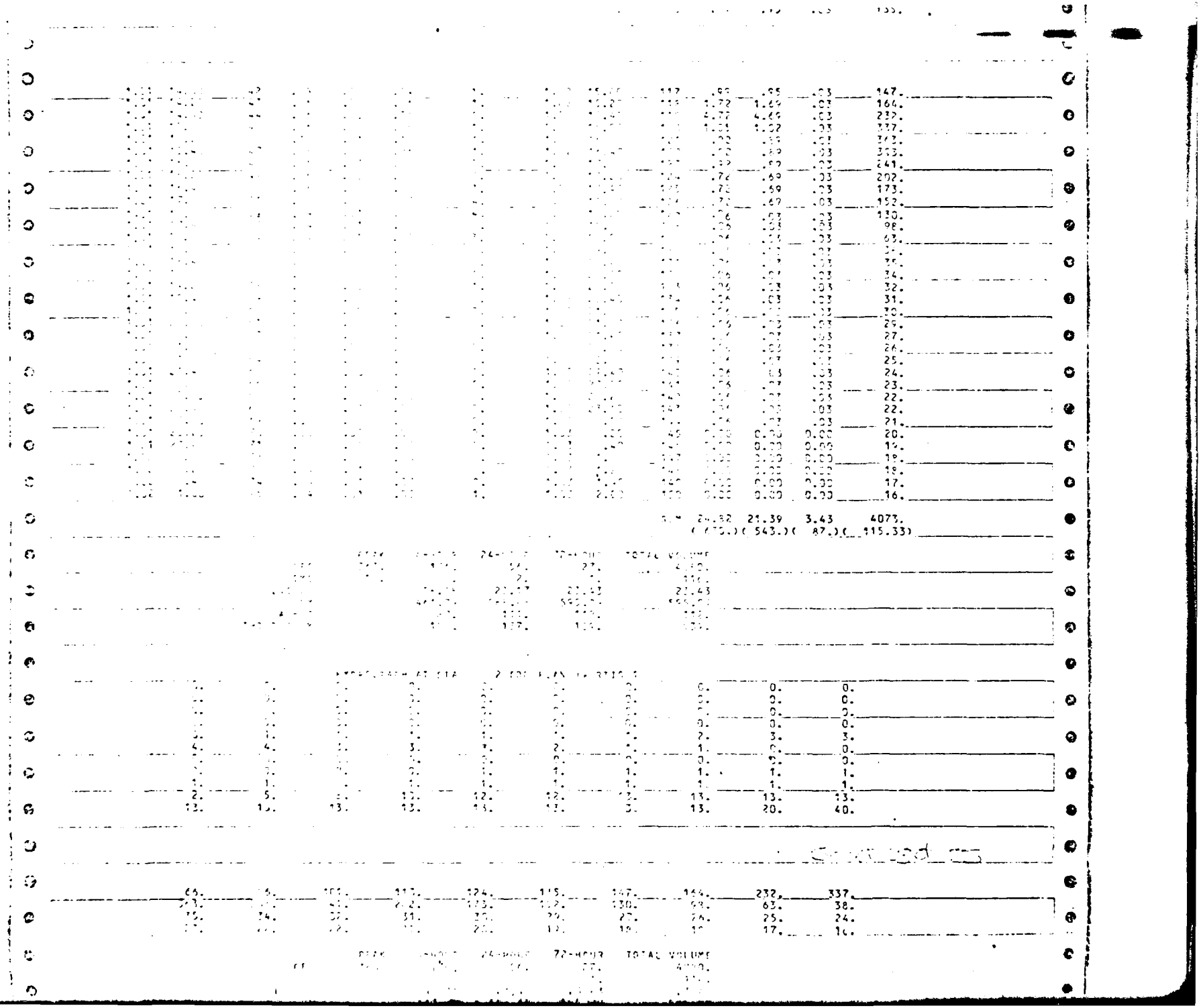
STRTQ= 41.0 QRCSN= -.10 RTIOR= 1.50

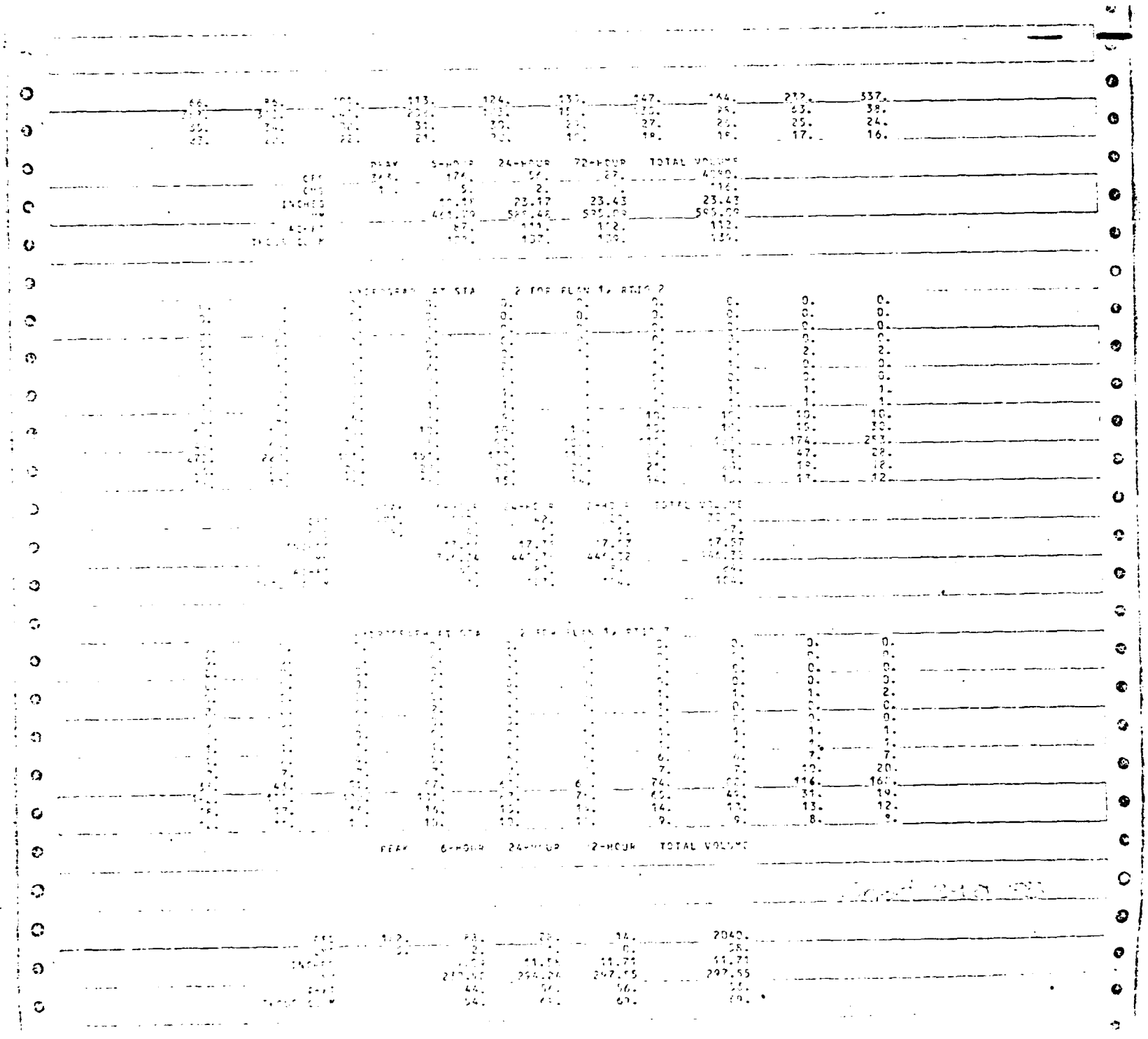
APPROXIMATE CLARK COEFFICIENTS FROM SNYDER CP AND TP ARE TC= 2.67 AND R= 1.86 INTERVALS

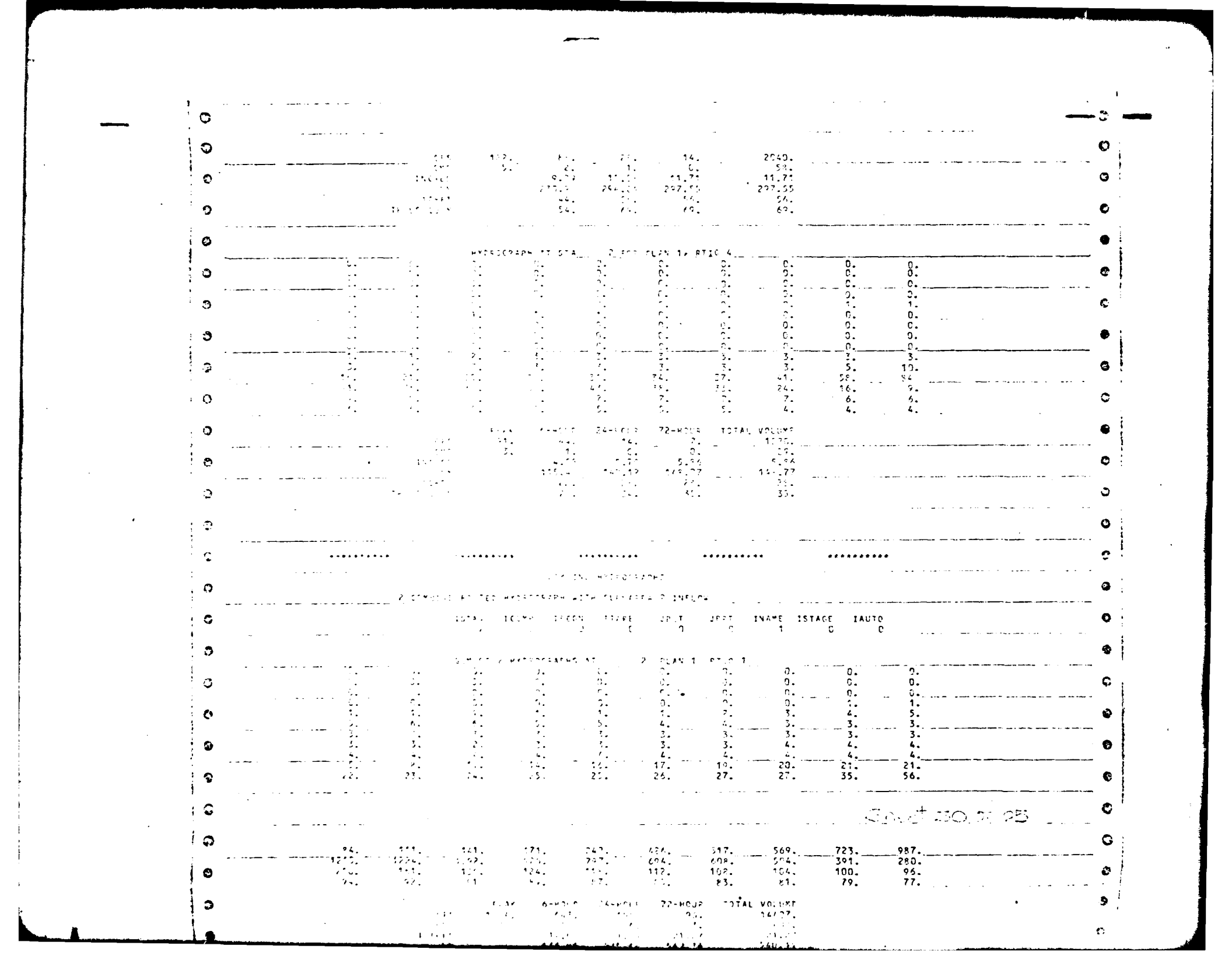
UNIT HYDROGRAPH 12 END-OF-PERIOD ORDINATES, LAG= .77 HOURS, CP= .63 VOL= 1.00

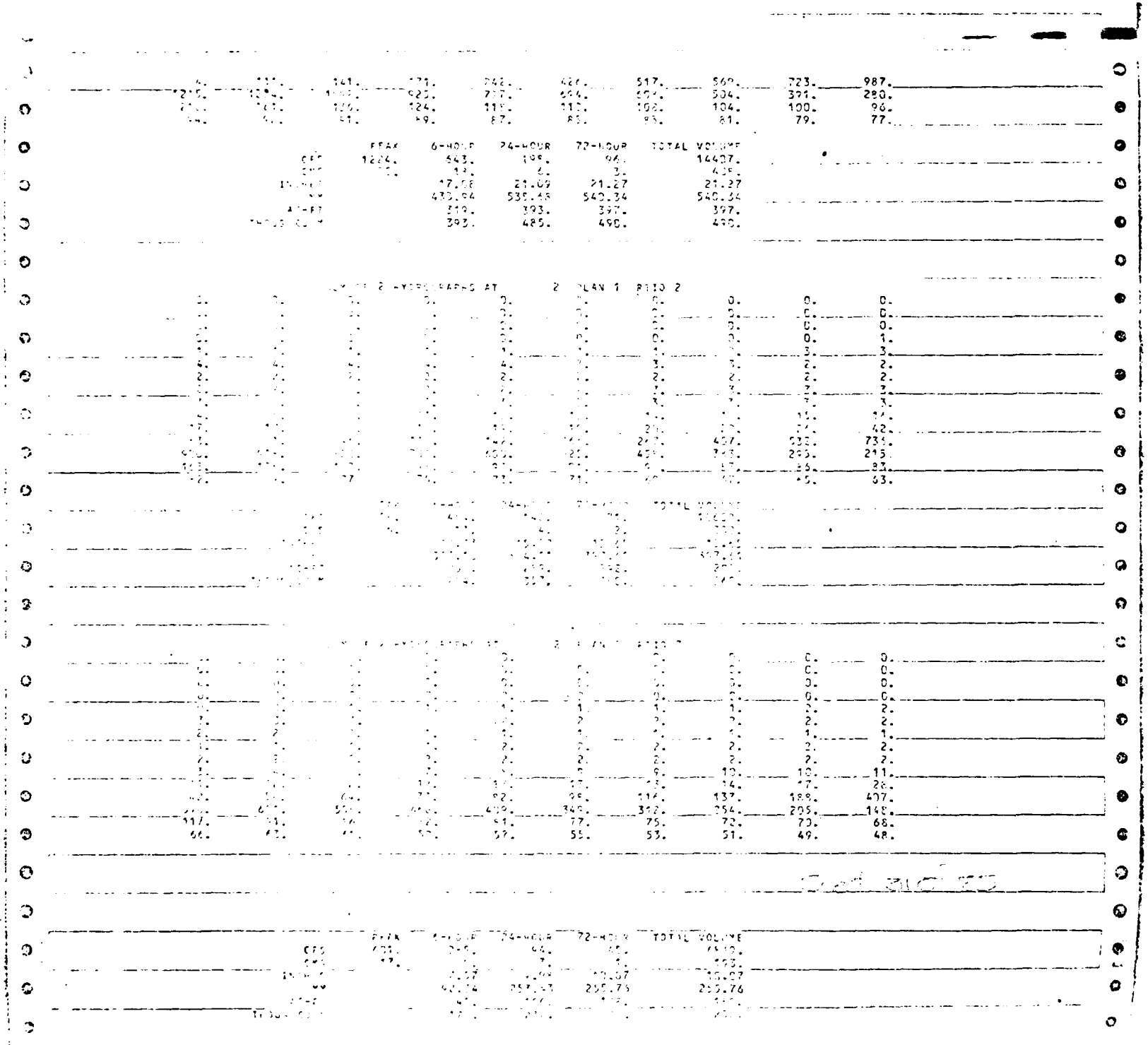
6.	17.	40.	78.	93.	71.	46.	28.	16.	9.	5.	3.

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	1.00	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	1.
1.01	1.10	2	.00	.00	.00	0.	1.02	1.30	77	.04	.01	.03	1.
1.01	1.20	3	.00	.00	.00	0.	1.02	1.40	78	.04	.01	.03	1.
1.01	1.30	4	.00	.00	.00	0.	1.02	1.50	79	.04	.01	.03	1.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.00	80	.04	.01	.03	1.
1.01	1.50	6	.00	.00	.00	0.	1.02	2.10	81	.04	.01	.03	1.
1.01	2.00	7	.00	.00	.00	0.	1.02	2.20	82	.04	.01	.03	1.
1.01	2.10	8	.00	.00	.00	0.	1.02	2.30	83	.04	.01	.03	1.
1.01	2.20	9	.00	.00	.00	0.	1.02	2.40	84	.04	.01	.03	1.
1.01	2.30	10	.00	.00	.00	0.	1.02	2.50	85	.04	.01	.03	1.
1.01	2.40	11	.00	.00	.00	0.	1.02	3.00	86	.04	.01	.03	1.
1.01	2.50	12	.00	.00	.00	0.	1.02	3.10	87	.04	.01	.03	1.
1.01	3.00	13	.00	.00	.00	0.	1.02	3.20	88	.04	.01	.03	1.
1.01	3.10	14	.00	.00	.00	0.	1.02	3.30	89	.04	.01	.03	1.
1.01	3.20	15	.00	.00	.00	0.	1.02	3.40	90	.04	.01	.03	1.
1.01	3.30	16	.00	.00	.00	0.	1.02	3.50	91	.04	.01	.03	1.
1.01	3.40	17	.00	.00	.00	0.	1.02	4.00	92	.04	.01	.03	1.
1.01	3.50	18	.00	.00	.00	0.	1.02	4.10	93	.04	.01	.03	1.
1.01	4.00	19	.00	.00	.00	0.	1.02	4.20	94	.04	.01	.03	1.
1.01	4.10	20	.00	.00	.00	0.	1.02	4.30	95	.04	.01	.03	1.
1.01	4.20	21	.00	.00	.00	0.	1.02	4.40	96	.04	.01	.03	1.
1.01	4.30	22	.00	.00	.00	0.	1.02	4.50	97	.04	.01	.03	1.
1.01	4.40	23	.00	.00	.00	0.	1.02	5.00	98	.04	.01	.03	1.
1.01	4.50	24	.00	.00	.00	0.	1.02	5.10	99	.04	.01	.03	1.
1.01	5.00	25	.00	.00	.00	0.	1.02	5.20	100	.04	.01	.03	1.
1.01	5.10	26	.00	.00	.00	0.	1.02	5.30	101	.04	.01	.03	1.
1.01	5.20	27	.00	.00	.00	0.	1.02	5.40	102	.04	.01	.03	1.
1.01	5.30	28	.00	.00	.00	0.	1.02	5.50	103	.04	.01	.03	1.
1.01	5.40	29	.00	.00	.00	0.	1.02	6.00	104	.04	.01	.03	1.
1.01	5.50	30	.00	.00	.00	0.	1.02	6.10	105	.04	.01	.03	1.
1.01	6.00	31	.00	.00	.00	0.	1.02	6.20	106	.04	.01	.03	1.
1.01	6.10	32	.00	.00	.00	0.	1.02	6.30	107	.04	.01	.03	1.
1.01	6.20	33	.00	.00	.00	0.	1.02	6.40	108	.04	.01	.03	1.
1.01	6.30	34	.00	.00	.00	0.	1.02	6.50	109	.04	.01	.03	1.
1.01	6.40	35	.00	.00	.00	0.	1.02	7.00	110	.04	.01	.03	1.
1.01	6.50	36	.00	.00	.00	0.	1.02	7.10	111	.04	.01	.03	1.
1.01	7.00	37	.00	.00	.00	0.	1.02	7.20	112	.04	.01	.03	1.
1.01	7.10	38	.00	.00	.00	0.	1.02	7.30	113	.04	.01	.03	1.
1.01	7.20	39	.00	.00	.00	0.	1.02	7.40	114	.04	.01	.03	1.
1.01	7.30	40	.00	.00	.00	0.	1.02	7.50	115	.04	.01	.03	1.
1.01	7.40	41	.00	.00	.00	0.	1.02	8.00	116	.04	.01	.03	1.
1.01	7.50	42	.00	.00	.00	0.	1.02	8.10	117	.04	.01	.03	2.
1.01	8.00	43	.00	.00	.00	0.	1.02	8.20	118	.11	.08	.03	5.
1.01	8.10	44	.00	.00	.00	0.	1.02	8.30	119	.11	.08	.03	8.
1.01	8.20	45	.00	.00	.00	0.	1.02	8.40	120	.11	.08	.03	10.
1.01	8.30	46	.00	.00	.00	0.	1.02	8.50	121	.11	.08	.03	12.
1.01	8.40	47	.00	.00	.00	0.	1.02	9.00	122	.11	.08	.03	12.
1.01	8.50	48	.00	.00	.00	0.	1.02	9.10	123	.11	.08	.03	13.
1.01	9.00	49	.00	.00	.00	0.	1.02	9.20	124	.11	.08	.03	13.
1.01	9.10	50	.00	.00	.00	0.	1.02	9.30	125	.11	.08	.03	13.
1.01	9.20	51	.00	.00	.00	0.	1.02	9.40	126	.11	.08	.03	13.
1.01	9.30	52	.00	.00	.00	0.	1.02	9.50	127	.11	.08	.03	13.
1.01	9.40	53	.00	.00	.00	0.	1.02	10.00	128	.11	.08	.03	13.
1.01	9.50	54	.00	.00	.00	0.	1.02	10.10	129	.11	.08	.03	13.
1.01	10.00	55	.00	.00	.00	0.	1.02	10.20	130	.11	.08	.03	13.
1.01	10.10	56	.00	.00	.00	0.	1.02	10.30	131	.11	.08	.03	13.
1.01	10.20	57	.00	.00	.00	0.	1.02	10.40	132	.11	.08	.03	13.
1.01	10.30	58	.00	.00	.00	0.	1.02	10.50	133	.11	.08	.03	13.
1.01	10.40	59	.00	.00	.00	0.	1.02	11.00	134	.11	.08	.03	13.
1.01	10.50	60	.00	.00	.00	0.	1.02	11.10	135	.11	.08	.03	13.
1.01	11.00	61	.00	.00	.00	0.	1.02	11.20	136	.11	.08	.03	13.
1.01	11.10	62	.00	.00	.00	0.	1.02	11.30	137	.11	.08	.03	13.
1.01	11.20	63	.00	.00	.00	0.	1.02	11.40	138	.11	.08	.03	13.
1.01	11.30	64	.00	.00	.00	0.	1.02	11.50	139	.11	.08	.03	13.
1.01	11.40	65	.00	.00	.00	0.	1.02	12.00	140	.11	.08	.03	13.
1.01	11.50	66	.00	.00	.00	0.	1.02	12.10	141	.11	.08	.03	13.
1.01	12.00	67	.00	.00	.00	0.	1.02	12.20	142	.11	.08	.03	13.
1.01	12.10	68	.00	.00	.00	0.	1.02	12.30	143	.11	.08	.03	13.
1.01	12.20	69	.00	.00	.00	0.	1.02	12.40	144	.11	.08	.03	13.
1.01	12.30	70	.00	.00	.00	0.	1.02	12.50	145	.11	.08	.03	13.
1.01	12.40	71	.00	.00	.00	0.	1.02	13.00	146	.11	.08	.03	13.
1.01	12.50	72	.00	.00	.00	0.	1.02	13.10	147	.11	.08	.03	13.
1.01	13.00	73	.00	.00	.00	0.	1.02	13.20	148	.11	.08	.03	13.
1.01	13.10	74	.00	.00	.00	0.	1.02	13.30	149	.11	.08	.03	13.
1.01	13.20	75	.00	.00	.00	0.	1.02	13.40	150	.11	.08	.03	13.
1.01	13.30	76	.00	.00	.00	0.	1.02	13.50	151	.11	.08	.03	13.
1.01	13.40	77	.00	.00	.00	0.	1.02	14.00	152	.11	.08	.03	13.
1.01	13.50	78	.00	.00	.00	0.	1.02	14.10	153	.11	.08	.03	13.
1.01	14.00	79	.00	.00	.00	0.	1.02	14.20	154	.11	.08	.03	13.
1.01	14.10	80	.00	.00	.00	0.	1.02	14.30	155	.11	.08	.03	13.
1.01	14.20	81	.00	.00	.00	0.	1.02	14.40	156	.11	.08	.03	13.
1.01	14.30	82	.00	.00	.00	0.	1.02	14.50	157	.11	.08	.03	13.
1.01	14.40	83	.00	.00	.00	0.	1.02	15.00	158	.11	.08	.03	13.
1.01	14.50	84	.00	.00	.00	0.	1.02	15.10	159	.11	.08	.03	13.
1.01	15.00	85	.00	.00	.00	0.	1.02	15.20	160	.11	.08	.03	13.
1.01	15.10	86	.00	.00	.00	0.	1.02	15.30	161	.11	.08	.03	13.
1.01	15.20	87	.00	.00	.00	0.	1.02	15.40	162	.11	.08	.03	13.
1.01	15.30	88	.00	.00	.00	0.	1.02	15.50	163	.11	.08	.03	13.
1.01	15.40	89	.00	.00	.00	0.	1.02	16.00	164	.11	.08	.03	13.
1.01	15.50	90	.00	.00	.00	0.	1.02	16.10	165	.11	.08	.03	13.
1.01	16.00	91	.00	.00	.00	0.	1.02	16.20	166	.11	.08	.03	13.
1.01	16.10	92	.00	.00	.00	0.	1.02	16.30	167	.11	.08	.03	13.
1.01	16.20	93	.00	.00	.00	0.	1.02	16.40	168	.11	.08	.03	13.
1.01	16.30	94	.00	.00	.00	0.	1.02	16.50	169	.11	.08	.03	13.
1.01	16.40	95	.00	.00	.00	0.	1.02	17.00	170	.11	.08	.03	13.
1.01	16.50	96	.00	.00	.00	0.	1.02	17.10	171	.11	.08	.03	13.
1.01	17.00	97	.00	.00	.00	0.	1.02	17.20	172	.11	.08	.03	13.
1.01	17.10	98	.00	.00	.00	0.	1.02	17.30	173	.11	.08	.03	13.
1.01	17.20	99	.00	.00	.00	0.	1.02	17.40	174	.11	.08	.03	13.
1.01	17.30	100	.00	.00	.00	0.	1.02	17.50	175	.11	.08	.03	13.
1.01	17.40	101	.00	.00	.00	0.	1.02	18.00	176	.11	.08	.03	13.
1.01	17.50	102	.00	.00	.00	0.	1.02	18.10	177	.11	.08	.03	13.
1.01	18.00	103	.00	.00	.00	0.	1.02	18.20	178	.11	.08	.03	13.
1.01	18.10	104	.00	.00	.00	0.	1.02	18.30	179	.11	.08	.03	13.
1.01	18.20	105	.00	.00	.00	0.	1.02	18.40	180	.11	.08	.03	13.
1.01	18.30	106	.00	.00	.00	0.	1.02	18.50	181	.11	.08	.03	13.
1.01	18.40	107	.00	.00	.00	0.	1.02	19.00	182	.11	.08	.03	13.
1.01	18.50	108	.00	.00	.00	0.	1.02	19.10	183	.11	.08	.03	13.
1.01	19.00	109	.00	.00	.00	0.	1.02	19.20	184	.11	.08	.03	13.
1.01	19.10	110	.00	.00	.00	0.	1.02	19.30	185	.11	.08	.03	13.
1.01	19.20	111	.00	.00	.00	0.	1.02	19.40	186	.11	.08	.03	13.
1.01	19.30	112	.00	.00	.00	0.	1.02	19.50	187	.11	.08	.03	13.
1.01	19.40	113	.00	.00	.00	0.	1.02	20.00	188	.11	.08	.03	13.
1.01	19.50	114	.00	.00	.00	0.	1.02	20.10	189	.11	.08	.03	13.
1.01	20.00	115	.00	.00	.00	0.	1.02	20.20	190	.11	.08	.03	13.
1.01	20.10	116	.00	.00	.00	0.	1.02	20.30	191	.11	.08	.03	13.
1.01	20.20	117	.00	.00	.00	0.	1.02	20.40	192	.11	.08	.03	13.
1.01	20.30	118	.00	.00	.00	0.	1.02	20.50	193	.11	.08	.03	13.
1.01	20.40	119	.00	.00	.00	0.	1.02	21.00	194	.11	.08	.03	13.
1.01	20.50	120	.00	.00	.00	0.	1.02	21.10	195	.11	.08	.03	13.
1.01	21.00	121	.00	.00	.00	0.	1.02	21.20	196	.11	.08	.03	13.
1.01	21.10	122	.00	.00	.00	0.	1.02	21.30	197	.11	.08	.03	13.
1.01	21.20	123	.00	.00	.00	0.	1.02	21.40	198	.11	.08	.03	13.
1.01	21.30	124	.00	.00	.00	0.	1.02	21.50	199	.11	.08	.03	13.
1.01	21.40	125	.00	.00	.00	0.	1.02	22.00	200	.11	.08	.03	13.
1.01	21.50	126	.00	.00	.00	0.	1.02	22.10	201	.11	.08	.03	13.
1.01	22.00	127	.00	.00	.00	0.	1.02	22.20	202	.11	.08	.03	13.
1.01	22.10	128	.00	.00	.00	0.	1.02	22.30	203	.11	.08	.03	13.
1.01	22.20	129	.00	.00	.00	0.	1.02	22.40	204	.11	.08	.03	13.
1.01	22.30	130	.00	.00	.00	0.	1.02	22.50	205	.11	.08	.03	13.
1.01	22.40	131	.00	.00	.00	0.	1.02	23.00	206	.11	.08	.03	13.
1.01	22.50	132	.00	.00	.00	0.	1.02	23.10	207	.11	.08	.03	13.
1.01	23.00	133	.00	.00	.00	0.	1.02	23.20	208	.11	.08	.03	13.
1.01	23.10	134	.00	.00	.00	0.	1.02	23.30	209	.11	.08	.03	13.
1.01	23.20	135	.00	.00	.00	0.	1.02	23.40	210	.11	.08	.03	13.
1.01	23.30	136	.00	.00	.00	0.	1.02	23.50	211	.11	.08	.03	13.
1.01	23.40	137	.00	.00	.00	0.	1.02	24.00	212	.11	.08	.03	13.
1.01	23.50	138	.00	.00	.00	0.	1.02	24.10	213	.11	.08	.03	13.
1.01	24.00	139	.00	.00	.00	0.	1.02	24.20	214	.11	.08	.03	13.
1.01	24.10	140	.00	.00	.00	0.	1.02	24.30	215	.11	.08	.03	13.
1.01	24.20	141	.00	.00	.00	0.	1.02	24.40	216	.11	.08	.03	13.
1.01	24.30	142	.00	.00	.00	0.	1.02	24.50	217	.11	.08	.03	13.
1.01	24.40	143	.00	.00	.00	0.	1.02	25.00	218	.11	.08	.03	13.
1.01	24.50	144	.00	.00	.00	0.	1.02	25.10	219	.11	.08	.03	13.
1.01	25.00	145	.00	.00	.00	0.	1.02	25.20	220	.11	.08	.03	13.
1.01	25.10	146	.00	.00	.00	0.	1.02	25.30	221	.11	.08	.03	13.
1.01	25.20	147	.00	.00	.00	0.	1.02	25.40	222	.11	.08	.03	13.
1.01	25.30	148	.00	.00	.00	0.	1.02	25.50	223	.11	.08	.03	13.
1.01	25.40	149	.00	.00	.00	0.	1.02	26.00	224	.11	.08	.03	13.
1.01	25.50	150	.00	.00	.00	0.	1.02	26.10	225	.11	.08	.03	13.
1.01	26.00	151	.00	.00	.00	0.	1.02	26.20	226	.11	.08	.03	13.
1.01	26.10	152	.00	.00	.00	0.	1.02	26.30	227	.11	.08	.03	13.
1.01	26.20	153	.00	.00	.00	0.	1.02	26.40	228	.11	.08	.03	13.
1.01	26.30	154	.00	.00	.00	0.	1.02	26.50	229	.11	.08	.03	13.
1.01	26.40	155	.00	.00	.00	0.	1.02	27.00	230	.11	.08	.03	13.
1.01	26.50	156	.00	.00	.00	0.	1.02	27.10	231	.11	.08	.03	13.
1.01	27.00	157	.00	.00	.00	0.	1.02	27.20	232	.11	.08	.03	13.
1.01	27.10	158	.00	.00	.00	0.	1.02	27.30	233	.11	.08	.03	13.
1.01	27.20	159	.00	.00	.00	0.	1.02	27.40	234	.11	.08	.03	13.
1.01	27.30	160	.00	.00	.00	0.	1.02	27.50	235	.11	.08	.03	13.
1.01	27.40	161	.00	.00	.00	0.	1.02	28.00	236	.11	.08	.03	13.
1.01	27.50	162	.00	.00	.00	0.	1.02	28.10	237	.11	.08	.03	13.
1.01	28.00	163	.00	.00	.00	0.	1.02	28.20	238	.11	.08	.03	13.
1.01	28.10	164	.00	.00	.00	0.	1.02	28.30	239	.11	.08	.03	13.
1.01	28.20	165	.00	.00	.00	0.	1.02	28.40	240	.11	.08	.03	13.
1.01	28.30	166	.00	.00	.00	0.	1.02	28.50	241	.11	.08	.03	13.
1.01	28.40	167	.00	.00	.00	0.	1.02	29.00	242	.11	.08	.03	13.
1.01	28.50	168	.00	.00	.00	0.	1.02	29.10	243	.11	.08	.03	13.
1.01	29.00	169	.00	.00	.00	0.	1.02	29.20	244	.11	.08	.03	13.
1.01	29.10	170	.00	.00	.00	0.	1.02	29.30	245	.11	.08	.03	13.
1.01	29.20	171	.00	.00	.00	0.	1.02	29.40	246	.11	.08	.03	13.
1.01	29.30	172	.00	.00	.00	0.	1.02	29.50	247	.11	.08	.03	13.
1.01	29.40	173	.00	.00	.00	0.	1.02	30.00	248	.11	.08	.03	13.
1.01	29.50	174	.00	.00	.00	0.	1.02	30.10	249	.11	.08	.03	13.
1.01	30.00	175	.00	.00	.00	0.	1.02	30.20	250	.11	.08	.03	13.
1.01	30.10	176	.00	.00	.00	0.	1.02	30.30	251	.11	.08	.03	13.
1.01	30.20	177	.00	.00	.00	0.	1.02	30.40	252	.11	.08	.03	13.
1.01	30.30	178	.00	.00	.00	0.	1.02	30.50	253	.11	.08	.03	13.
1.01	30.40	179	.00	.00	.00	0.	1.02	31.00	254	.11	.08	.03	13.
1.01	30.50	180	.00	.00	.00	0.	1.02	31.10	255	.11	.08	.03	13.
1.01	31.00	181	.00	.00	.00	0.	1.02	31.20	256	.11	.08	.03	13.
1.01	31.10	182	.00	.00	.00	0.	1.02	31.30	257	.11	.08	.03	13.
1.01	31.20	183	.00	.00	.00	0.	1.02	31.40	258	.11	.08	.03	13.
1.01	31.30	184	.00	.00	.00	0.	1.02	31.50	259	.11	.08	.03	13.
1.01	31.40	185	.00	.00	.00	0.	1.02	32.00	260	.11	.08	.03	13.
1.01	31.50	186	.00	.00	.00	0.	1.02	32.10	261	.11	.08	.03	13.
1.01	32.00	187	.00	.00	.00	0.	1.02	32.20	262	.11	.08	.03	13.
1.01	32.10	188	.00	.00	.00	0.	1.02	32.30	263	.11	.08	.03	13.
1.01	32.20	189	.00	.00	.00	0.	1.02	32.40	264	.11	.08	.03	13.
1.01	32.30	190	.00	.00	.00	0.	1.02	32.50	265	.11	.08	.03	13.
1.01	32.40	191	.00	.00	.00	0.	1.02	33.00	266	.11	.08	.03	13.
1.01	32.50	192	.00	.00	.00	0.	1.02	33.10	267	.11	.08	.03	13.
1.01	33.00	193	.00	.00	.00	0.	1.02	33.20	268	.11	.08	.03	13.
1.01	33.10	194	.00	.00	.00	0.	1.02	33.30	269	.11	.08	.03	13.
1.01	33.20	195	.00	.00	.00	0.	1.02	33.40	270	.11	.08	.03	13.
1.01	33.30	196	.00	.00	.00	0.	1.02	33.50	271	.11	.08	.03	13.
1.01	33.40	197	.00	.00	.00	0.	1.02	34.00	272	.11	.08	.03	13.
1.01	33.50	198	.00	.00	.00	0.	1.02	34.10	273	.11	.08	.03	13.
1.01	34.00	199	.00	.00	.00	0.	1.02	34.20	274	.11	.08	.03	13.
1.01	34.10	200	.00	.00	.00	0.	1.02	34.30	275	.11	.08	.03	13.
1.01	34.20	201	.00	.00	.00	0.	1.02	34.40	276	.11	.08	.03	13.
1.01	34.30	202	.00	.00	.00	0.	1.02	34.50	277	.11	.08	.03	13.
1.01	34.40	203	.00	.00	.00	0.	1.02	35.00	278	.11	.08	.03	13.
1.01	34.50	204	.00	.00	.00	0.	1.02	35.10	279	.11	.08	.03	13.
1.01	35.00	205	.00	.00	.00	0.	1.02	35.20	280	.11	.08	.03	13.
1.01	35.10	206	.00	.00	.00	0.	1.02	35.30	281	.11	.08	.03	13.
1.01	35.20	207	.00	.00	.00	0.	1.02	35.40	282	.11	.08	.03	13.
1.01	35.30	208	.00	.00	.00	0.	1.02	35.50	283	.11	.08	.03	13.
1.01	35.40	209	.00	.00	.00	0.	1.02	36.00	284	.11	.08	.03	13.
1.01	35.50	210	.00	.00	.00	0.	1.02	36.10	285	.11	.08	.03	13.
1.01	36.00	211	.00	.00	.00	0.	1.02	36.20	286	.11	.08	.03	13.
1.01	36.10	212	.00	.00	.00	0.	1.02	36.30	287	.11	.08	.03	13.
1.01	36.20	213	.00	.00	.00	0.	1.02	36.40	288	.11	.08	.03	13.
1.01	36.30	214	.00	.00	.00	0.	1.02	36.50	289	.11	.08	.03	13.
1.01	36.40	215	.00	.00	.00	0.	1.02	37.00	290	.11	.08	.03	13.
1.01	36.50	216	.00	.00	.00	0.	1.02	37.10	291	.11	.08	.03	13.
1.01	37.00	217	.00	.00	.00	0.	1.02	37.20	292	.11	.08	.03	13.
1.01	37.10	218	.00	.00	.00	0.	1.02	37.30	293	.11	.08	.03	13.
1.01	37.20	219	.00	.00	.00	0.	1.02	37.40	294	.11	.08	.03	13.
1.01	37.30	220	.00	.00	.00	0.	1.02	37.50	295	.11	.08	.03	13.
1.01	37.40	221	.00	.00	.00	0.	1.02	38.00	296	.11	.08	.03	13.
1.01	37.50	222	.00	.00	.00	0.	1.02	38.10	297	.11	.08	.03	13.
1.01	38.00	223	.00	.00	.00	0.	1.02	38.20	298	.11	.08	.03	13.
1.01	38.10	224	.00	.00	.00	0.	1.02	38.30	299	.11	.08	.03	13.
1.01	38.20	225	.00	.00	.00	0.	1.02	38.40	300	.11	.08	.03	13.
1.01	38.30	226	.00	.00	.00	0.	1.02	38.50	301	.11	.08	.03	13.
1.01	38.40	227	.00	.00	.00	0.	1.02	39.00	302	.11	.08	.03	13.
1.01	38.50	228	.00	.00	.00	0.	1.02	39.10	303	.11	.08	.03	13.
1.01	39.00	229	.00	.00	.00	0.	1.02	39.20	304	.11	.08	.03	13.
1.01	39.10	230	.00	.00	.00	0.	1.02	39.30	305	.11	.08	.03	13.
1.01	39.20	231	.00	.00	.00	0.	1.02	39.40	306	.11	.08	.03	13.
1.01	39.30	232	.00	.00	.00	0.	1.02	39.50	307	.11	.08	.03	13.
1.01	39.40	233	.00	.00	.00	0.	1.02	40.00	308	.11	.08	.03	13.
1.01	39.50	234	.00	.00	.00	0.	1.02	40.10	309	.11	.08	.03	13









	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	601.	215.	45.	45.	6819.
CMS	17.	6.	1.	1.	193.
INCHES		7.07	10.07	10.07	10.07
MM		192.34	255.76	255.76	255.76
AC-FT		141.	100.	100.	100.
THOUS CU M		174.	123.	123.	123.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	443.	111.	20.	20.	465.
CMS	13.	3.	1.	1.	13.
INCHES		2.16	4.44	4.44	4.44	
MM		54.93	112.89	112.89	112.89	
AC-FT		55.	64.	64.	64.
THOUS CU M		68.	79.	79.	79.

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1

438.	299.	204.	246.	145.	169.	277.	197.	274.	394.
					1 2.	264.	127.	84	5

46.	47.	39.	38.	36.	35.	33.	32.	31.	29.
24.	21.	26.	25.	24.	23.	22.	21.	20.	20.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	438.	294.	59.	33.	4955.
CMS	12.	8.	2.	1.	140.
INCHES		15.17	23.04	23.28	23.23
MM		385.31	585.10	591.31	591.31
AC-FT		756.	1255.	1377.	1377.
THOUS CU M		933.	1547.	1699.	1698.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	2.	3.
1.	1.	1.	1.	1.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	4.	7.	9.	10.	11.	12.	12.	12.	12.
32.	42.	52.	60.	72.	102.	132.	148.	185.	295.
57.	75.	94.	111.	111.	127.	132.	148.	205.	295.
344.	277.	225.	183.	144.	124.	95.	63.	40.	
34.	31.	29.	28.	27.	26.	25.	24.	23.	22.
21.	20.	20.	19.	18.	18.	17.	16.	15.	15.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	344.	94.	51.	25.	3716.
CMS	9.	3.	1.	1.	105.
INCHES		17.49	27.29	17.46	17.46
MM		444.02	438.63	443.48	443.48
AC-FT		7..	101.	102.	102.
THOUS CU M		9..	125.	126.	126.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2.	2.	2.	2.	1.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
3.	3.	5.	6.	7.	7.	8.	8.	8.	8.
20.	20.	20.	20.	20.	20.	20.	20.	12.	23.
30.	39.	51.	67.	74.	81.	88.	98.	137.	197.
216.	192.	150.	127.	110.	96.	83.	63.	42.	27.
21.	20.	20.	19.	18.	17.	16.	15.	15.	15.
14.	14.	13.	13.	12.	12.	11.	11.	10.	10.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	216.	107.	34.	17.	2478.
CMS	6.	3.	1.	0.	70.

Sheet 22 of 255

INCHES	9.04	11.52	11.64	11.64
MM	229.50	292.55	295.65	295.65
AC-FT	53.	68.	69.	69.
THOUS CU M	65.	83.	84.	84.

														166.
					.06	1.	1.02	15.20	118	1.72	1.69	.03	197.

LSTR	STRKS	DLTKR	RTIOL	FRAIN	STRKS	RTIOK	STRTL	CNSTL	FLGMX	RTIMP
0	0.00	0.00	1.50	0.50	0.00	1.00	1.00	.10	0.00	.05

UNIT HYDROGRAPH DATA

TP= .77 CP= .62 NTA= 0

RECESSION DATA

STRTQ= -1.00 QRCSN= -.10 RTIOR= 1.50

APPROXIMATE CLARK COEFFICIENTS FOR GIVEN NUMBER OF AND TP ARE TC= 2.71 AND R= 2.05 INTERVALS

UNIT HYDROGRAPH 18 END-OF-PERIOD ORDINATES, LAG= .77 HOURS, CP= .62 VOL= 1.00

13. 46. 54. 47. 25. 15. 9. 6. 3. 2.
1. 1.

EXCESS-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.40	1	.05	.00	.05	0.	1.02	1.20	76	.04	.01	.03	1.
1.01	.45	2	.05	.00	.05	0.	1.02	1.40	77	.04	.01	.03	1.
1.01	1.00	3	.05	.00	.05	0.	1.02	2.00	78	.04	.01	.03	1.
1.01	1.20	4	.05	.00	.05	0.	1.02	2.20	79	.04	.01	.03	2.
1.01	1.40	5	.05	.00	.05	0.	1.02	2.40	80	.04	.01	.03	2.
1.01	2.00	6	.05	.00	.05	0.	1.02	3.00	81	.04	.01	.03	2.
1.01	2.20	7	.05	.00	.05	0.	1.02	3.20	82	.04	.01	.03	2.
1.01	2.40	8	.05	.00	.05	0.	1.02	3.40	83	.04	.01	.03	2.
1.01	3.00	9	.05	.00	.05	0.	1.02	4.00	84	.04	.01	.03	2.
1.01	3.20	10	.05	.00	.05	0.	1.02	4.20	85	.04	.01	.03	2.
1.01	3.40	11	.05	.00	.05	0.	1.02	4.40	86	.04	.01	.03	2.
1.01	4.00	12	.05	.00	.05	0.	1.02	5.00	87	.04	.01	.03	2.
1.01	4.20	13	.05	.00	.05	0.	1.02	5.20	88	.04	.01	.03	2.
1.01	4.40	14	.05	.00	.05	0.	1.02	5.40	89	.04	.01	.03	2.
1.01	5.00	15	.05	.00	.05	0.	1.02	6.00	90	.04	.01	.03	2.
1.01	5.20	16	.05	.00	.05	0.	1.02	6.20	91	.11	.08	.03	3.
1.01	5.40	17	.05	.00	.05	0.	1.02	6.40	92	.11	.08	.03	5.
1.01	6.00	18	.05	.00	.05	0.	1.02	7.00	93	.11	.08	.03	9.
1.01	6.20	19	.11	.06	.05	0.	1.02	7.20	94	.11	.08	.03	12.
1.01	6.40	20	.11	.06	.05	0.	1.02	7.40	95	.11	.08	.03	14.
1.01	7.00	21	.11	.06	.05	0.	1.02	8.00	96	.11	.08	.03	15.
1.01	7.20	22	.11	.06	.05	0.	1.02	8.20	97	.11	.08	.03	15.
1.01	7.40	23	.11	.06	.05	0.	1.02	8.40	98	.11	.08	.03	16.
1.01	8.00	24	.11	.06	.05	0.	1.02	9.00	99	.11	.08	.03	16.
1.01	8.20	25	.11	.06	.05	0.	1.02	9.20	100	.11	.08	.03	16.
1.01	8.40	26	.11	.06	.05	0.	1.02	9.40	101	.11	.08	.03	16.
1.01	9.00	27	.11	.06	.05	0.	1.02	10.00	102	.11	.08	.03	16.
1.01	9.20	28	.11	.06	.05	0.	1.02	10.20	103	.11	.08	.03	16.
1.01	9.40	29	.11	.06	.05	0.	1.02	10.40	104	.11	.08	.03	16.
1.01	10.00	30	.11	.06	.05	0.	1.02	11.00	105	.11	.08	.03	16.
1.01	10.20	31	.11	.06	.05	0.	1.02	11.20	106	.11	.08	.03	16.
1.01	10.40	32	.11	.06	.05	0.	1.02	11.40	107	.11	.08	.03	16.
1.01	11.00	33	.11	.06	.05	0.	1.02	12.00	108	.11	.08	.03	14.
1.01	11.20	34	.11	.06	.05	0.	1.02	12.20	109	.66	.63	.03	23.
1.01	11.40	35	.11	.06	.05	0.	1.02	12.40	110	.66	.63	.03	46.
1.01	12.00	36	.11	.06	.05	0.	1.02	13.00	111	.66	.63	.03	76.
1.01	12.20	37	.04	.00	.04	0.	1.02	13.20	112	.79	.76	.03	100.
1.01	12.40	38	.04	.00	.04	0.	1.02	13.40	113	.79	.76	.03	119.
1.01	13.00	39	.04	.00	.04	0.	1.02	14.00	114	.79	.76	.03	135.
1.01	13.20	40	.04	.00	.04	0.	1.02	14.20	115	.99	.95	.03	148.
1.01	13.40	41	.04	.00	.04	0.	1.02	14.40	116	.99	.95	.03	162.
1.01	14.00	42	.04	.00	.04	0.	1.02	15.00	117	.99	.95	.03	177.
1.01	14.20	43	.06	.00	.06	1.	1.02	15.20	118	1.72	1.69	.03	197.
1.01	14.40	44	.06	.00	.06	1.	1.02	15.40	119	4.72	4.69	.03	274.
1.01	15.00	45	.06	.00	.06	1.	1.02	16.00	120	1.05	1.02	.03	304.
1.01	15.20	46	.06	.00	.06	1.	1.02	16.20	121	.92	.89	.03	433.
1.01	15.40	47	.06	.00	.06	1.	1.02	16.40	122	.92	.89	.03	371.
1.01	16.00	48	.06	.00	.06	1.	1.02	17.00	123	.92	.89	.03	321.
1.01	16.20	49	.06	.00	.06	1.	1.02	17.20	124	.72	.69	.03	284.
1.01	16.40	50	.06	.00	.06	1.	1.02	17.40	125	.72	.69	.03	254.

INCHES	9.04	11.52	11.64	11.64
AC-FT	229.50	292.50	295.65	295.65
THOUS CU M	63.	81.	82.	82.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
2.	2.	3.	3.	3.	3.	3.	0.	0.	0.
4.	4.	4.	4.	4.	4.	4.	0.	0.	0.
6.	6.	6.	6.	6.	6.	6.	0.	0.	0.
9.	9.	9.	9.	9.	9.	9.	0.	0.	0.
13.	13.	13.	13.	13.	13.	13.	4.	4.	4.
18.	18.	18.	18.	18.	18.	18.	6.	12.	12.
25.	25.	25.	34.	37.	41.	44.	49.	68.	98.
106.	95.	79.	63.	55.	48.	41.	32.	21.	13.
11.	11.	10.	9.	9.	9.	8.	8.	8.	7.
7.	7.	7.	6.	6.	6.	6.	5.	5.	5.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	176.	52.	17.	6.	1239.
CMS	5.	2.	0.	0.	35.
INCHES		4.52	5.76	5.82	5.82
MM		114.75	146.28	147.83	147.83
AC-FT		26.	34.	34.	34.
THOUS CU M		33.	42.	42.	42.

COMBINE HYDROGRAPHS

3 COMBINE SUBAREA 3 WITH COMBINED HYDROGRAPH

ISTAG	ICOMP	ICON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	2	0	0	0	0	1	0	0

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	3.	4.	6.	8.
9.	10.	10.	9.	9.	7.	5.	4.	4.	4.
6.	6.	5.	5.	5.	5.	5.	5.	5.	5.
5.	5.	5.	5.	6.	6.	6.	6.	6.	6.
31.	31.	31.	36.	39.	42.	44.	45.	46.	47.
53.	54.	50.	51.	51.	52.	53.	53.	68.	113.
166.	211.	221.	206.	190.	180.	174.	165.	197.	1381.
1447.	1295.	1192.	1179.	1016.	924.	774.	651.	475.	333.

See 36 + EE

253.	209.	175.	160.	154.	147.	141.	135.	131.	126.
122.	119.	117.	114.	111.	108.	105.	102.	100.	97.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1447.	450.	256.	129.	19362.
CMS	41.	24.	7.	4.	548.
INCHES		2.3	21.58	21.75	21.75
MM		584.0	547.99	552.53	552.53
AC-FT		144.	1599.	806.	806.

1647.	1595.	1592.	1179.	1016.	886.	774.	631.	475.	333

253.	202.	175.	162.	154.	147.	141.	135.	131.	126.
122.	119.	117.	114.	111.	108.	105.	102.	100.	97.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1647.	850.	266.	129.	19362.
CMS	47.	24.	8.	4.	548.
INCHES		17.20	21.56	21.75	21.75
MM		436.78	547.50	552.53	552.53
AC-FT		422.	529.	533.	533.
THOUS CU M		520.	652.	658.	658.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	2.	2.	3.	5.	6.
7.	7.	7.	7.	6.	5.	4.	3.	3.	3.
3.	3.	3.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	3.	3.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	5.	5.
6.	10.	15.	20.	22.	24.	25.	26.	27.	28.
29.	29.	30.	31.	31.	32.	32.	33.	44.	77.
120.	156.	196.	219.	253.	288.	399.	555.	737.	1031.
1224.	1176.	1045.	891.	764.	669.	582.	478.	358.	255.
195.	156.	137.	126.	120.	117.	115.	111.	109.	105.
103.	100.	97.	94.	91.	89.	86.	83.	81.	78.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1224.	619.	197.	95.	14318.
CMS	35.	11.	6.	3.	405.
INCHES		12.51	15.94	16.09	16.09
MM		317.77	404.81	408.58	408.58
AC-FT		307.	391.	394.	394.
THOUS CU M		378.	482.	487.	487.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
1.	1.	1.	1.	1.	1.	1.	2.	3.	4.
5.	5.	5.	4.	4.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	2.	2.	2.	2.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
4.	7.	10.	13.	15.	16.	17.	18.	18.	19.
19.	20.	21.	20.	21.	21.	21.	22.	29.	51.
80.	104.	124.	141.	156.	179.	205.	236.	324.	604.
806.	786.	706.	593.	519.	445.	394.	318.	247.	174.
138.	112.	106.	101.	99.	94.	92.	88.	86.	82.
80.	77.	74.	71.	69.	66.	64.	62.	60.	57.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME

Sheet 37 of 80

CFS	806.	387.	128.	62.	9297.
CMS	23.	11.	4.	2.	263.
INCHES		7.82	10.75	10.44	10.44
MM		198.74	262.78	265.30	265.30
AC-FT		192.	254.	256.	256.
THOUS CU M		237.	313.	316.	316.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	606.	397.	128.	62.	9297.
CMS	23.	11.	4.	2.	263.
INCHES		7.92	10.35	10.44	10.44
MM		195.74	262.78	265.30	265.30
AC-FT		192.	254.	256.	256.
THOUS CU M		237.	313.	316.	316.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	2.	2.
2.	2.	2.	2.	2.	2.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
2.	3.	5.	7.	7.	8.	8.	9.	9.	9.
10.	10.	10.	10.	10.	11.	11.	11.	19.	26.
40.	52.	62.	70.	79.	96.	95.	107.	145.	209.
240.	224.	223.	226.	242.	224.	200.	165.	129.	98.
85.	84.	80.	74.	77.	69.	66.	63.	60.	57.
54.	52.	49.	47.	45.	43.	41.	39.	37.	36.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	242.	156.	59.	30.	4298.
CMS	7.	4.	2.	1.	121.
INCHES		3.20	4.77	4.82	4.82
MM		81.17	121.10	122.36	122.36
AC-FT		79.	117.	118.	118.
THOUS CU M		97.	144.	146.	146.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

10 ROUTE THROUGH LONG POND

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
10	1	0	0	0	0	1	0	0

ROUTING DATA

ILOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.0000	0.000	0.000	115.	-1

STAGE	470.00	471.20	472.00	474.00	475.00	476.00	478.00	480.00
FLOW	0.00	24.00	53.00	150.00	180.00	222.00	270.00	318.00
CAPACITY=	115.	133.	152.	174.	223.			

Sheet 38 of 85

ELEVATION=	470.	472.	474.	476.	480.

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
472.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL COQD EXPD DAMWID

ELEVATIONS 470. 472. 474. 476. 480.

S-EL	SPWID	COOW	EXPW	FLEV	COOL	CAREA	EXPL
477.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COOD	EXPD	DAMWID
476.0	3.1	1.5	365.

STATION 10, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	3.	3.	3.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	5.	5.	5.	5.
5.	5.	6.	7.	8.	10.	11.	13.	14.	15.
17.	19.	19.	21.	22.	23.	24.	26.	29.	35.
45.	64.	94.	140.	190.	234.	645.	929.	1259.	
1590.	1831.	1446.	1211.	1050.	934.	846.	668.	534.	395.
2[illegible]	2[illegible]	600.	315.	2[illegible]	203.	197.	191.	185.	180.
176.	171.	167.	164.	160.	156.	152.	148.	142.	136.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	116.	116.
116.	116.	116.	116.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	118.	118.	120.	120.	121.	122.
123.	124.	124.	124.	125.	125.	126.	126.	127.	128.
131.	136.	139.	144.	150.	158.	158.	158.	182.	185.
177.	175.	174.	174.	174.	174.	174.	174.	179.	177.
176.	174.	173.	172.	170.	169.	167.	166.	164.	162.
161.	159.	157.	156.	154.	154.	153.	152.	151.	149.

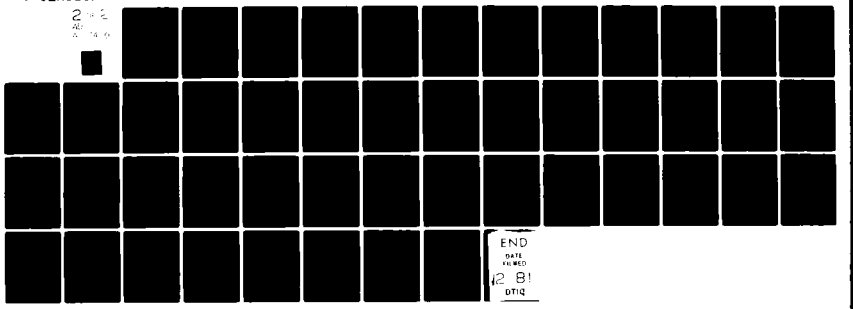
STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1	470.1	470.1
470.1	470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.3	470.3	470.3	470.4	470.5	470.6	470.6	470.6	470.7	470.8
471.0	471.0	471.0	471.1	471.3	471.3	471.3	471.3	471.5	471.5
471.8	472.2	472.6	473.2	473.8	474.7	475.8	476.5	476.7	476.9

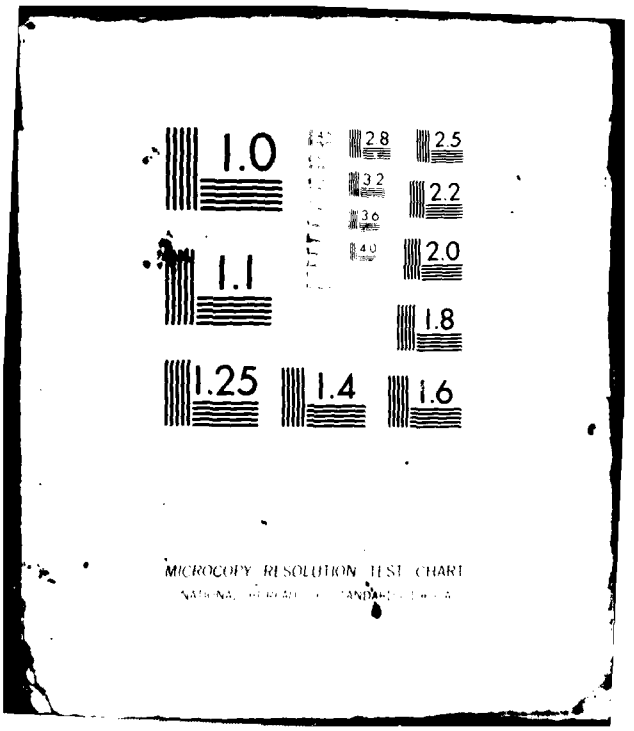
477.1	477.1	477.0	476.9	476.8	476.7	476.6	476.5	476.4	476.3
476.2	476.1	476.0	475.8	475.7	475.6	475.4	475.3	475.1	475.0
474.6	474.7	474.6	474.5	474.3	474.2	474.1	474.0	473.8	473.7

PEAK OUTFLOW IS [illegible] AT TIME 40.67 HOURS

AD-A107 410 TIPPETTS-ABBETT-MCCARTHY-STRATTON NEW YORK F/G 13/13
NATIONAL DAM SAFETY PROGRAM. LONG POND DAM NUMBER 3 (INVENTORY --ETC(U)
SEP 81 E O'BRIEN DACW51-81-C-0008
UNCLASSIFIED NL



END
DATE FILMED
12 81
DTIC


1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8
MICROCOPY RESOLUTION TEST CHART

471.8	472.2	472.6	473.2	473.8	474.7	475.8	476.5	476.7	476.9

477.1	477.1	477.0	476.9	476.8	476.7	476.6	476.5	476.4	476.3
476.2	476.1	476.0	475.8	475.7	475.6	475.4	475.3	475.1	475.0
474.6	474.7	474.6	474.5	474.3	474.2	474.1	474.0	473.8	473.7

PEAK OUTFLOW IS 1630. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1630.	796.	250.	121.	18113.
CMS	46.	23.	7.	3.	513.
INCHES		16.10	20.22	20.35	20.35
MM		409.07	513.53	516.89	516.89
AC-FT		395.	496.	499.	499.
THOUS CU M		487.	612.	615.	615.

STATION 10, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
2.	2.	2.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	4.	4.
4.	4.	4.	5.	6.	7.	8.	9.	10.	12.
13.	14.	15.	16.	16.	17.	18.	19.	20.	23.
38.	47.	58.	75.	95.	118.	146.	172.	218.	268.
1192.	1614.	1694.	936.	803.	700.	614.	519.	411.	310.
242.	219.	212.	204.	195.	188.	180.	175.	170.	166.
161.	157.	152.	147.	140.	134.	128.	122.	117.	112.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	117.	117.	117.
117.	117.	117.	117.	118.	118.	119.	119.	120.	120.
121.	121.	121.	122.	122.	123.	123.	123.	124.	125.
127.	130.	133.	137.	141.	146.	151.	160.	173.	182.
185.	185.	184.	183.	181.	180.	180.	179.	177.	176.
174.	173.	171.	169.	167.	165.	163.	161.	159.	158.
156.	154.	153.	151.	150.	149.	148.	146.	145.	144.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0

Sheet 40 of 25

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.2	470.2	470.2	470.2
470.2	470.2	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.3	470.3	470.4	470.4	470.5	470.5	470.6
470.6	470.7	470.8	470.8	470.8	470.9	470.9	471.0	471.0	471.1
471.1	471.1	471.1	471.2	471.2	471.2	471.3	471.3		

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.2	470.2	470.2	470.2
470.2	470.2	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.3	470.3	470.4	470.4	470.5	470.5	470.6
470.6	470.7	470.7	470.8	470.8	470.9	470.9	471.0	471.0	471.1
471.4	471.7	472.1	472.4	472.9	473.3	473.9	474.7	475.9	476.7
476.9	476.9	476.8	476.7	476.6	476.6	476.5	476.4	476.3	476.2
476.1	475.9	475.8	475.6	475.4	475.2	475.0	474.8	474.7	474.5
474.4	474.2	474.1	473.9	473.8	473.7	473.5	473.4	473.3	473.2

PEAK OUTFLOW IS 1214. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1214.	563.	183.	88.	13248.
CMS	34.	16.	5.	3.	375.
INCHES		11.39	14.79	14.88	14.88
MM		289.16	375.54	378.06	378.06
AC-FT		279.	363.	365.	365.
THOUS CU M		344.	447.	450.	450.

STATION 10, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	4.	4.	5.	6.	6.	7.	8.
9.	9.	10.	10.	11.	12.	12.	13.	14.	15.
16.	27.	32.	42.	54.	69.	84.	102.	124.	160.
209.	644.	771.	630.	546.	479.	417.	356.	288.	231.
217.	207.	197.	188.	179.	171.	165.	161.	156.	151.
142.	134.	126.	120.	113.	108.	102.	97.	92.	88.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	117.	117.	117.	117.	118.	118.	118.
119.	119.	119.	120.	120.	120.	120.	121.	121.	122.
123.	125.	127.	130.	133.	136.	139.	142.	147.	156.
170.	170.	171.	169.	179.	178.	177.	176.	175.	174.

Sheet 41 of 85

172.	170.	167.	165.	162.	160.	158.	156.	154.	152.
150.	149.	147.	146.	145.	144.	142.	141.	140.	140.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0

[illegible]	[illegible]	[illegible]	180.	179.	178.	177.	176.	175.	174.
172.	170.	167.	165.	162.	160.	158.	156.	154.	152.
150.	149.	147.	146.	145.	144.	142.	141.	140.	140.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.2	470.2	470.2	470.3	470.3	470.3	470.4
470.4	470.5	470.5	470.5	470.5	470.6	470.6	470.6	470.7	470.8
470.9	471.1	471.4	471.7	472.0	472.3	472.6	473.0	473.5	474.3
475.2	476.5	476.6	476.5	476.4	476.4	476.3	476.2	476.1	476.0
475.9	475.6	475.4	475.2	475.0	474.8	474.6	474.4	474.2	474.0
473.8	473.7	473.5	473.4	473.2	473.1	473.0	472.9	472.8	472.7

PEAK OUTFLOW IS 761. AT TIME 41.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	761.	337.	116.	56.	8404.
CMS	22.	10.	3.	2.	238.
INCHES		6.81	9.38	9.44	9.44
MM		173.06	238.15	239.83	239.83
AC-FT		167.	230.	232.	232.
THOUS CU M		206.	284.	286.	286.

STATION 10, PLAN 1, RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	3.	3.	3.	4.
4.	5.	5.	5.	5.	6.	6.	6.	7.	8.
9.	11.	14.	17.	21.	25.	32.	39.	49.	64.
85.	104.	119.	130.	143.	153.	157.	159.	158.	155.
153.	142.	135.	127.	121.	114.	108.	103.	97.	92.
86.	83.	79.	75.	71.	68.	65.	61.	58.	56.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.

Sheet 42 of 35

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	117.	117.
117.	117.	117.	117.	117.	118.	118.	118.	118.	118.
119.	120.	121.	123.	124.	126.	127.	129.	131.	135.
139.	145.	146.	149.	151.	153.	155.	155.	155.	154.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	117.	117.
117.	117.	117.	117.	117.	118.	118.	118.	118.	118.
119.	120.	121.	123.	124.	126.	127.	129.	131.	135.
139.	143.	146.	148.	151.	153.	155.	155.	155.	154.
152.	151.	149.	148.	146.	145.	144.	143.	141.	140.
140.	139.	138.	137.	136.	136.	135.	134.	134.	133.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.1	470.1	470.1	470.1
470.1	470.1	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.2	470.2	470.2
470.2	470.2	470.2	470.3	470.3	470.3	470.3	470.3	470.3	470.4
470.5	470.6	470.7	470.9	471.0	471.2	471.4	471.6	471.9	472.2
472.7	473.0	473.3	473.6	473.9	474.1	474.2	474.3	474.3	474.2
474.0	473.8	473.7	473.5	473.4	473.3	473.1	473.0	472.9	472.8
472.7	472.6	472.5	472.5	472.4	472.3	472.2	472.2	472.1	472.1

PEAK OUTFLOW IS 159. AT TIME 42.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	159.	132.	50.	24.	3633.
CMS	5.	4.	1.	1.	103.
INCHES		2.66	4.05	4.08	4.08
MM		67.59	102.84	103.68	103.68
AC-FT		65.	99.	100.	100.
THOUS CU M		80.	122.	123.	123.

********** ********** ********** ********** **********

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)

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 1.30	RATIO 2 .75	RATIO 3 .50	RATIO 4 .25
HYDROGRAPH AT	1	.26	1	928.	692.	461.	231.
		(.67)		(26.12)(	19.59)(	13.06)(	6.53)(
ROUTED TO	2	.26	1	923.	690.	456.	143.
		(.67)		(26.13)(	19.53)(	12.91)(	4.06)(
ROUTED TO	3	.26	1	921.	691.	459.	144.
		(.67)		(26.07)(	19.55)(	12.77)(	4.09)(
HYDROGRAPH AT	2	.09	1	361.	273.	182.	91.
		(.23)		(10.23)(	7.72)(	5.15)(	2.57)(
2 COMBINED	2	.35	1	1224.	918.	601.	187.
		(.91)		(34.66)(	25.99)(	17.02)(	5.30)(
HYDROGRAPH AT	3	.11	1	433.	324.	216.	108.
		(.28)		(12.25)(	9.19)(	6.13)(	3.06)(
2 COMBINED	3	.46	1	1647.	1224.	806.	242.
		(1.19)		(46.64)(	34.66)(	22.83)(	6.85)(
ROUTED TO	10	.46	1	1630.	1214.	761.	159.
		(1.19)		(46.15)(	34.38)(	21.55)(	4.50)(

Sheet 44 of 85

North Lake Dam
SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	572.00	572.00	573.75
STORAGE	210.	210.	249.

North Lake Dam

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	572.00	572.00	573.75
STORAGE	210.	210.	249.
OUTFLOW	0.	0.	70.

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	574.37	.62	263.	923.	8.67	40.67	0.00
.75	574.25	.50	260.	690.	6.33	40.67	0.00
.50	574.11	.36	257.	456.	4.67	40.67	0.00
.25	573.86	.11	251.	143.	2.33	41.67	0.00

PLAN 1 STATION 3

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
1.00	921.	478.7	40.67
.75	691.	478.3	40.67
.50	450.	477.8	40.67
.25	144.	477.0	41.67

Sheet 45 of 85

Long Pond Dam w/o Auxiliary Spillway

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	470.00	470.00	476.00
STORAGE	115.	115.	174.
OUTFLOW	0.	0.	222.

Long Pond Dam w/o Auxiliary Spillway

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	470.00	470.00	476.00
STORAGE	115.	115.	174.
OUTFLOW	0.	0.	222.

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	477.14	1.14	188.	1430.	5.00	40.67	0.00
.75	476.90	.90	185.	1214.	4.00	40.67	0.00
.50	476.60	.60	181.	941.	3.00	41.00	0.00
.25	474.30	0.00	155.	159.	0.00	42.67	0.00

Sheet 4 of 25

WITH HIGHWAY EMBANKMENT
AS SECONDARY SPILLWAY

CASE II

```
**********************************
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  01 APR 80
**********************************
     A1                          LONG POND DAM NO 3
     A2                          PHASE 1 SAFETY INSPECTION
     A3                          HEC 1 DB PMF ANALYSIS
     B     150       0      20       0       0       0       0       0       0       0
     B1      5
     J       1       4       1
     J1      1    0.75     0.5    0.25
     K       0       1                                       1
     K1      1 NORTH LAKE BASIN RUN-OFF
     M       1       1    0.26            0.46                                   1
     P              22     112     123     133     141
     T                                                       1     0.1                .13
     W    0.93   0.625
     X      -1    -0.1     1.5
     K       1       2                                       1
     K1      2 ROUTE HYDROGRAPH THROUGH NORTH LAKE
     Y                               1       1
     Y1      1                                             210      -1
     Y4    572     573  573.75     575
     Y5      0    20.9    70.4   189.3
     Y8      1     210   254.5   277.8   326.4   404.5
     YE    541     572     574     575     577     580
     YS    572
     ID573.75     2.7     1.5     600
     K       1       3                                       1
     K1      3 CHANNEL ROUTE TO STATION 7+00
     Y                               1       1
     Y1      1
     Y6  0.035   0.035   0.035     476     500     700   0.086
     Y7      0     500      30     490      60     490      72     476      80     476
     Y7    100     480     120     490     170     500
     K       0       2                                       1
     K1      2 SUB-AREA 1 RUN-OFF
     M       1       1    0.09            0.46                                   1
     P              22     112     123     133     141
     T                                                       1     0.1               0.07
     W    0.73   0.625
     X      -1    -0.1     1.5
     K       2       2                                       1
     K1      2 COMBINE ROUTED HYDROGRAPH WITH SUB AREA 2 INFLOW
     K       1       3                                       1
     K1      3 SUB-AREA 3 RUNOFF
     M       1       1    0.11            0.46                                   1
     P              22     112     123     133     141
     T                                                       1     0.1               0.06
     W    0.77   0.625
     X      -1    -0.1     1.5
     K       2       3                                       1
     K1      3 COMBINE SUBAREA 3 WITH COMBINED HYDROGRAPH
     X       1      10                                       1
```

Sheet 47 of 85

```
     K1      10 ROUTE THROUGH LONG POND(INCLUDING FLOW OVER DEPRESSION)
     Y                               1       1
```

```
50          K      1      10                                                  1

51          K1      10 ROUTE THROUGH LONG POND(INCLUDING FLOW OVER DEPRESSION)
52          Y                                  1       1
53          Y1      1                                                  115      -1
54          Y4    470   471.2     472     474     475   475.5     476     478
55          Y5      0      24      53     150     180     378     891    6433
56          $S    115   132.5   152.1   173.6   222.8
57          $E    470     472     474     476     480
58          $$    470
59          $D    476    3.09     1.5     365
60          K      99
```

Sheet 48 of 55

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	1
ROUTE HYDROGRAPH TO	2
ROUTE HYDROGRAPH TO	3
RUNOFF HYDROGRAPH AT	2
COMBINE 2 HYDROGRAPHS AT	2
ROUTE HYDROGRAPH AT	3
COMBINE 2 HYDROGRAPHS AT	3
ROUTE HYDROGRAPH TO	10
END OF NETWORK	

****
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 01 APR 80
****

RUN DATE= 81/06/29.
TIME= 12.49.20.

LONG POND DAM NO 3
PHASE 1 SAFETY INSPECTION
HEC 1 DD PMF ANALYSIS

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
150	0	20	0	0	0	0	0	0	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 4 LRTIO= 1
RTIOS= 1.00 .75 .50 .25

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

1 NORTH LAKE BASIN RUN-OFF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	.26	0.00	.46	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .600

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	FRAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.10	0.00	.13

UNIT HYDROGRAPH DATA
TP= .98 CP= .63 NTA= 0

RECESSION DATA
STRTQ= -1.00 QRCSN= -.10 RTIOR= 1.50
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 3.63 AND R= 2.36 INTERVALS

UNIT HYDROGRAPH 15 END-OF-PERIOD ORDINATES, LAG= .97 HOURS, CP= .62 VOL= 1.00

18.	62.	101.	103.	76.	50.	32.	21.	14.	9.
6.	4.	2.	2.	1.					

Sheet 50 of 85

END-OF-PERIOD FLOW

HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q

RECESSION DATA

S1 -1 90 - RT 1.50

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 3.63 AND R= 2.36 INTERVALS

UNIT HYDROGRAPH 15 END-OF-PERIOD ORDINATES, LAG= .97 HOURS, CP= .62 VOL= 1.00

18. 62. 101. 103. 76. 50. 32. 21. 14. 9.

6. 4. 2. 2. 1.

	END-OF-PERIOD FLOW													
MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.20	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	3.
1.01	.40	2	.00	.00	.00	0.	1.02	1.40	77	.04	.01	.03	4.
1.01	1.00	3	.00	.00	.00	0.	1.02	2.00	78	.04	.01	.03	4.
1.01	1.20	4	.00	.00	.00	0.	1.02	2.20	79	.04	.01	.03	5.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.40	80	.04	.01	.03	5.
1.01	2.00	6	.00	.00	.00	0.	1.02	3.00	81	.04	.01	.03	5.
1.01	2.20	7	.00	.00	.00	0.	1.02	3.20	82	.04	.01	.03	5.
1.01	2.40	8	.00	.00	.00	0.	1.02	3.40	83	.04	.01	.03	5.
1.01	3.00	9	.00	.00	.00	0.	1.02	4.00	84	.04	.01	.03	5.
1.01	3.20	10	.00	.00	.00	0.	1.02	4.20	85	.04	.01	.03	5.
1.01	3.40	11	.00	.00	.00	0.	1.02	4.40	86	.04	.01	.03	5.
1.01	4.00	12	.00	.00	.00	0.	1.02	5.00	87	.04	.01	.03	5.
1.01	4.20	13	.00	.00	.00	0.	1.02	5.20	88	.04	.01	.03	5.
1.01	4.40	14	.00	.00	.00	0.	1.02	5.40	89	.04	.01	.03	5.
1.01	5.00	15	.00	.00	.00	0.	1.02	6.00	90	.04	.01	.03	5.
1.01	5.20	16	.00	.00	.00	0.	1.02	6.20	91	.11	.08	.03	6.
1.01	5.40	17	.00	.00	.00	0.	1.02	6.40	92	.11	.08	.03	11.
1.01	6.00	18	.00	.00	.00	0.	1.02	7.00	93	.11	.08	.03	18.
1.01	6.20	19	.01	.00	.01	0.	1.02	7.20	94	.11	.08	.03	25.
1.01	6.40	20	.01	.00	.01	0.	1.02	7.40	95	.11	.08	.03	30.
1.01	7.00	21	.01	.00	.01	0.	1.02	8.00	96	.11	.08	.03	33.
1.01	7.20	22	.01	.00	.01	0.	1.02	8.20	97	.11	.08	.03	35.
1.01	7.40	23	.01	.00	.01	0.	1.02	8.40	98	.11	.08	.03	37.
1.01	8.00	24	.01	.00	.01	0.	1.02	9.00	99	.11	.08	.03	38.
1.01	8.20	25	.01	.00	.01	0.	1.02	9.20	100	.11	.08	.03	38.
1.01	8.40	26	.01	.00	.01	0.	1.02	9.40	101	.11	.08	.03	39.
1.01	9.00	27	.01	.00	.01	0.	1.02	10.00	102	.11	.08	.03	39.
1.01	9.20	28	.01	.00	.01	0.	1.02	10.20	103	.11	.08	.03	39.
1.01	9.40	29	.01	.00	.01	0.	1.02	10.40	104	.11	.08	.03	39.
1.01	10.00	30	.01	.00	.01	0.	1.02	11.00	105	.11	.08	.03	39.
1.01	10.20	31	.01	.00	.01	0.	1.02	11.20	106	.11	.08	.03	39.
1.01	10.40	32	.01	.00	.01	0.	1.02	11.40	107	.11	.08	.03	39.
1.01	11.00	33	.01	.00	.01	0.	1.02	12.00	108	.11	.08	.03	39.
1.01	11.20	34	.01	.00	.01	0.	1.02	12.20	109	.66	.63	.03	49.
1.01	11.40	35	.01	.00	.01	0.	1.02	12.40	110	.66	.63	.03	83.
1.01	12.00	36	.01	.00	.01	0.	1.02	13.00	111	.66	.63	.03	139.
1.01	12.20	37	.04	.01	.03	1.	1.02	13.20	112	.79	.76	.03	198.
1.01	12.40	38	.04	.01	.03	1.	1.02	13.40	113	.79	.76	.03	248.
1.01	13.00	39	.04	.01	.03	1.	1.02	14.00	114	.79	.76	.03	289.
1.01	13.20	40	.08	.01	.04	2.	1.02	14.20	115	.99	.96	.03	324.
1.01	13.40	41	.08	.01	.04	2.	1.02	14.40	116	.99	.96	.03	358.
1.01	14.00	42	.08	.01	.04	2.	1.02	15.00	117	.99	.96	.03	392.
1.01	14.20	43	.16	.01	.05	3.	1.02	15.20	118	1.72	1.69	.03	434.
1.01	14.40	44	.16	.01	.05	3.	1.02	15.40	119	4.72	4.69	.03	555.
1.01	15.00	45	.94	.01	.05	3.	1.02	16.00	120	1.05	1.02	.03	764.
1.01	15.20	46	.10	.01	.09	4.	1.02	16.20	121	.92	.89	.03	922.
1.01	15.40	47	.29	.04	.25	4.	1.02	16.40	122	.92	.89	.03	914.
1.01	16.00	48	.06	.03	.04	6.	1.02	17.00	123	.92	.89	.03	790.
1.01	16.20	49	.06	.03	.03	9.	1.02	17.20	124	.72	.69	.03	668.
1.01	16.40	50	.06	.03	.03	11.	1.02	17.40	125	.72	.69	.03	577.
1.01	17.00	51	.06	.03	.03	12.	1.02	18.00	126	.72	.69	.03	506.
1.01	17.20	52	.04	.01	.03	12.	1.02	18.20	127	.06	.03	.03	440.
1.01	17.40	53	.04	.01	.03	12.	1.02	18.40	128	.06	.03	.03	362.
1.01	18.00	54	.04	.01	.03	11.	1.02	19.00	129	.06	.03	.03	271.
1.01	18.20	55	.00	.00	.00	9.	1.02	19.20	130	.06	.03	.03	187.
1.01	18.40	56	.00	.00	.00	8.	1.02	19.40	131	.06	.03	.03	126.

Sheet 51 of 85

1.01	17.00	51	.04	.01	.03	12.	1.02	18.00	126	.72	.69	.03	577.
1.01	17.20	52	.04	.01	.03	12.	1.02	18.20	127	.72	.69	.03	504.
1.01	17.40	53	.04	.01	.03	12.	1.02	18.40	128	.06	.03	.03	362.
1.01	18.00	54	.04	.01	.03	11.	1.02	19.00	129	.06	.03	.03	271.
1.01	18.20	55	.00	.00	.00	9.	1.02	19.20	130	.06	.03	.03	187.
1.01	18.40	56	.00	.00	.00	8.	1.02	19.40	131	.06	.03	.03	126.
1.01	19.00	57	.00	.00	.00	6.	1.02	20.00	132	.06	.03	.03	92.
1.01	19.20	58	.00	.00	.00	4.	1.02	20.20	133	.06	.03	.03	88.
1.01	19.40	59	.00	.00	.00	3.	1.02	20.40	134	.06	.03	.03	85.
1.01	20.00	60	.00	.00	.00	2.	1.02	21.00	135	.06	.03	.03	81.
1.01	20.20	61	.00	.00	.00	1.	1.02	21.20	136	.06	.03	.03	78.
1.01	20.40	62	.00	.00	.00	1.	1.02	21.40	137	.06	.03	.03	75.
1.01	21.00	63	.00	.00	.00	1.	1.02	22.00	138	.06	.03	.03	72.
1.01	21.20	64	.00	.00	.00	1.	1.02	22.20	139	.06	.03	.03	69.
1.01	21.40	65	.00	.00	.00	1.	1.02	22.40	140	.06	.03	.03	66.
1.01	22.00	66	.00	.00	.00	1.	1.02	23.00	141	.06	.03	.03	64.
1.01	22.20	67	.00	.00	.00	1.	1.02	23.20	142	.06	.03	.03	61.
1.01	22.40	68	.00	.00	.00	1.	1.02	23.40	143	.06	.03	.03	59.
1.01	23.00	69	.00	.00	.00	1.	1.03	0.00	144	.06	.03	.03	56.
1.01	23.20	70	.00	.00	.00	1.	1.03	.20	145	0.00	0.00	0.00	54.
1.01	23.40	71	.00	.00	.00	1.	1.03	.40	146	0.00	0.00	0.00	52.
1.02	0.00	72	.00	.00	.00	1.	1.03	1.00	147	0.00	0.00	0.00	50.
1.02	.20	73	.04	.01	.03	1.	1.03	1.20	148	0.00	0.00	0.00	48.
1.02	.40	74	.04	.01	.03	1.	1.03	1.40	149	0.00	0.00	0.00	46.
1.02	1.00	75	.04	.01	.03	2.	1.03	2.00	150	0.00	0.00	0.00	44.
									SUM	24.82	21.61	3.21	11637.
										(630.)(549.)(82.)(329.52)			

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	922.	500.	159.	78.	11630.
CMS	26.	14.	5.	2.	329.
INCHES		17.90	22.78	23.12	23.12
MM		454.78	578.69	587.15	587.15
AC-FT		248.	316.	320.	320.
THOUS CU M		306.	389.	395.	395.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	2.
2.	2.	3.	3.	3.	4.	4.	6.	9.	11.
12.	12.	12.	11.	9.	8.	6.	4.	3.	2.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	3.	4.	4.	5.	5.
5.	5.	5.	5.	5.	5.	5.	5.	5.	5.
6.	11.	18.	25.	30.	33.	35.	37.	38.	39.
39.	39.	39.	39.	39.	39.	39.	39.	49.	83.
159.	199.	249.	299.	324.	358.	392.	474.	555.	764.
942.	914.	790.	668.	577.	506.	440.	362.	271.	187.
126.	92.	88.	85.	81.	78.	75.	72.	69.	66.
64.	61.	59.	56.	54.	52.	50.	48.	46.	44.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	922.	500.	159.	78.	11630.
CMS	26.	14.	5.	2.	329.
INCHES		17.90	22.78	23.12	23.12
MM		454.78	578.69	587.15	587.15
AC-FT		248.	316.	320.	320.
THOUS CU M		306.	389.	395.	395.

Sheet 52 of 25

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

0. 0. 0. 0. 0. 0. 0. 0.

INCHES		17.90	22.78	23.12	23.12
MM		[illegible].78	[illegible].69	[illegible]	[illegible]5
AC-FT		[illegible]48.	316.	320.	[illegible]
THOUS CU M		306.	389.	395.	395.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	5.	7.	8.
9.	9.	9.	8.	7.	6.	4.	3.	2.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	2.	3.	3.	3.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
5.	8.	13.	18.	22.	25.	27.	28.	28.	29.
29.	29.	29.	29.	30.	30.	30.	30.	37.	63.
104.	149.	186.	217.	243.	268.	294.	326.	416.	573.
692.	685.	592.	501.	433.	380.	330.	272.	203.	140.
95.	69.	66.	63.	61.	58.	56.	54.	52.	50.
48.	46.	44.	42.	41.	39.	37.	36.	35.	33.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	692.	375.	119.	58.	8722.
CMS	20.	11.	3.	2.	247.
INCHES		13.43	17.09	17.34	17.34
MM		341.09	434.02	440.36	440.36
AC-FT		186.	237.	240.	240.
THOUS CU M		230.	292.	296.	296.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	2.	2.	2.	3.	4.	5.
6.	6.	6.	5.	5.	4.	3.	2.	1.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	2.	2.	2.	2.
2.	2.	2.	3.	3.	3.	3.	3.	3.	3.
3.	5.	9.	12.	15.	17.	18.	18.	19.	19.
19.	20.	20.	20.	20.	20.	20.	20.	25.	42.
70.	99.	124.	145.	162.	179.	196.	217.	278.	382.
461.	457.	395.	334.	288.	253.	220.	181.	136.	93.
63.	46.	44.	42.	41.	39.	37.	36.	35.	33.
32.	31.	29.	28.	27.	26.	25.	24.	23.	22.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	461.	250.	80.	39.	5815.
CMS	13.	7.	2.	1.	165.
INCHES		8.95	11.39	11.56	11.56
MM		227.39	289.34	293.58	293.58
AC-FT		124.	158.	160.	160.
THOUS CU M		153.	195.	198.	198.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	2.	2.	3.

Sheet 53 of 83

HYDROGRAPH AT STA 1 FOR PLAN 1 RATIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	2.	2.	3.
3.	3.	3.	3.	2.	2.	1.	1.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	3.	4.	6.	7.	8.	9.	9.	9.	10.
10.	10.	10.	10.	10.	10.	10.	10.	12.	21.
35.	50.	62.	72.	81.	89.	98.	109.	139.	191.
231.	228.	197.	167.	144.	127.	110.	91.	68.	47.
32.	23.	22.	21.	20.	19.	19.	18.	17.	17.
16.	15.	15.	14.	14.	13.	12.	12.	12.	11.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	231.	125.	40.	19.	2907.
CMS	7.	4.	1.	1.	82.
INCHES		4.48	5.70	5.78	5.78
MM		113.70	144.67	146.79	146.79
AC-FT		62.	79.	80.	80.
THOUS CU M		77.	97.	99.	99.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

2 ROUTE HYDROGRAPH THROUGH NORTH LAKE

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0

ROUTING DATA

GLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	210.	-1

STAGE	572.00	573.00	573.75	575.00
FLOW	0.00	20.90	70.40	189.30

CAPACITY=	1.	210.	255.	279.	326.	405.
ELEVATION=	541.	572.	574.	575.	577.	580.

CREL	SPWID	COGW	EXPW	ELEVL	COOL	CAREA	EXPL
572.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COGD	EXPD	DAMWID
573.9	2.7	1.5	600.

STATION 2, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Sheet 54 of 85

0.	0.	0.	0.	0.	0.	0.			
0.	0.								

STATION 2, PLAN 1, RATIO 1

CO-OP ... OD H ... RAPH ... NATE.

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	3.	3.	3.	3.
5.	5.	3.	4.	5.	5.	6.	7.	8.	8.
9.	10.	11.	11.	12.	13.	13.	14.	15.	16.
19.	26.	41.	59.	124.	219.	367.	410.	491.	650.
852.	923.	846.	722.	619.	541.	475.	405.	324.	241.
172.	126.	103.	93.	87.	83.	80.	77.	74.	72.
70.	70.	69.	68.	67.	66.	65.	64.	62.	61.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	211.	211.	211.	211.	211.	211.	211.
212.	212.	212.	212.	213.	213.	213.	213.	213.	213.
213.	213.	213.	213.	213.	213.	213.	213.	213.	213.
213.	213.	212.	212.	212.	212.	212.	212.	213.	213.
213.	213.	213.	213.	213.	213.	213.	213.	213.	213.
215.	213.	214.	214.	215.	216.	216.	217.	218.	219.
220.	220.	221.	222.	223.	224.	224.	225.	226.	227.
230.	234.	239.	245.	251.	255.	256.	256.	258.	260.
262.	263.	262.	261.	259.	258.	257.	256.	255.	254.
252.	251.	250.	250.	250.	250.	250.	249.	249.	249.
249.	249.	248.	248.	248.	247.	247.	247.	246.	246.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.2	572.2	572.2	572.2	572.2	572.3	572.3	572.4	572.4
572.4	572.5	572.5	572.5	572.6	572.6	572.6	572.7	572.7	572.8
572.9	573.1	573.3	573.6	573.8	574.0	574.1	574.1	574.1	574.2
574.3	574.4	574.3	574.3	574.2	574.2	574.1	574.1	574.0	574.0
573.9	573.8	573.8	573.8	573.8	573.8	573.8	573.8	573.8	573.8
573.7	573.7	573.7	573.7	573.7	573.7	573.7	573.6	573.6	573.6

PEAK OUTFLOW IS 923. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	923.	477.	142.	69.	10330.
CMS	26.	14.	4.	2.	293.
INCHES		17.07	20.38	20.53	20.53
MM		433.48	517.56	521.54	521.54
AC-FT		237.	282.	295.	295.
THOUS CU M		292.	348.	351.	351.

INCHES	17.07	20.38	20.53	20.53	
MM	433.48	517.56	521.54	521.54	
THOUS CU M	292.	348.	285. 351.	351.	

STATION 2, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	3.	3.	3.	4.	4.	5.	6.	6.
7.	7.	8.	8.	9.	10.	10.	11.	11.	12.
14.	17.	21.	34.	50.	66.	165.	285.	362.	487.
632.	690.	639.	546.	468.	409.	359.	307.	246.	185.
134.	100.	82.	74.	71.	70.	69.	68.	66.	65.
64.	63.	61.	60.	58.	57.	55.	54.	52.	51.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	211.	211.	211.	211.	211.
211.	211.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	212.	212.	212.	212.	212.	212.	212.	212.	212.
212.	213.	213.	213.	214.	214.	215.	215.	216.	217.
217.	219.	226.	219.	220.	220.	221.	221.	222.	223.
225.	228.	232.	237.	242.	247.	252.	254.	256.	258.
260.	260.	260.	258.	257.	256.	256.	255.	254.	252.
251.	250.	250.	249.	249.	249.	248.	248.	248.	247.
247.	246.	246.	245.	245.	244.	244.	243.	243.	242.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.2	572.2	572.2	572.2	572.3	572.3
572.3	572.4	572.4	572.4	572.4	572.5	572.5	572.5	572.5	572.6
572.7	572.8	573.0	573.2	573.4	573.7	573.9	574.0	574.0	574.1
574.2	574.2	574.2	574.2	574.1	574.1	574.0	574.0	574.0	573.9
573.9	573.8	573.8	573.8	573.8	573.7	573.7	573.7	573.7	573.7
573.7	573.6	573.6	573.6	573.6	573.5	573.5	573.5	573.5	573.5

PEAK OUTFLOW IS 690. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	620.	342.	194.	50.	7544.
CMS	20.	10.	5.	1.	214.
INCHES	12.25	14.88	15.00	15.00	15.00

Sheet 56 of 65

573.4 573.6 573.5 573.5 573.5 573.5 573.5

...AK OF ... IS 690. TIME 7 HR

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	690.	342.	104.	50.	7544.
CMS	20.	10.	3.	1.	214.
INCHES		12.25	14.88	15.00	15.00
MM		311.21	377.89	380.87	380.87
AC-FT		170.	206.	209.	209.
THOUS CU M		209.	254.	256.	256.

STATION 2, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	2.	2.	2.	2.	3.	3.	3.	4.	4.
5.	5.	5.	6.	6.	6.	7.	7.	7.	8.
9.	11.	14.	17.	20.	31.	43.	56.	72.	253.
404.	456.	428.	369.	317.	276.	242.	208.	169.	129.
96.	75.	69.	67.	65.	63.	61.	59.	57.	56.
54.	52.	50.	49.	47.	45.	44.	42.	41.	39.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	212.	212.	212.	212.
212.	212.	212.	212.	212.	213.	213.	214.	214.	214.
215.	215.	216.	216.	216.	217.	217.	217.	218.	219.
220.	222.	225.	228.	232.	236.	240.	244.	249.	254.
256.	257.	257.	256.	255.	254.	254.	253.	252.	251.
250.	247.	249.	249.	247.	247.	246.	245.	245.	244.
243.	243.	242.	242.	241.	241.	240.	239.	239.	238.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.2	572.2	572.2
572.2	572.2	572.3	572.3	572.3	572.3	572.3	572.3	572.4	572.4
572.4	572.5	572.7	572.8	573.0	573.2	573.3	573.5	573.8	574.0

sheet 57 of 85

574.1 574.1 574.1 574.1 574.0 574.0 574.0 573.9 573.9 573.8

572.0	572.0	572.0	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.	572	57	5		1	.1	.2.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.1	572.1	572.2	572.2	572.2
572.2	572.2	572.3	572.3	572.3	572.3	572.3	572.3	572.4	572.4
572.4	572.5	572.7	572.8	573.0	573.2	573.3	573.5	573.8	574.0

574.1	574.1	574.1	574.1	574.0	574.0	574.0	573.9	573.9	573.8
573.8	573.8	573.7	573.7	573.7	573.6	573.6	573.6	573.6	573.5
573.5	573.5	573.4	573.4	573.4	573.4	573.3	573.3	573.3	573.3

PEAK OUTFLOW IS 456. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	456.	209.	66.	32.	4781.
CMS	13.	6.	2.	1.	135.
INCHES		7.46	9.43	9.50	9.50
CMM		189.57	239.40	241.39	241.39
AC-FT		103.	131.	132.	132.
THOUS CU M		128.	161.	162.	162.

STATION 2, PLAN 1, RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	2.	2.	2.
2.	2.	3.	3.	3.	3.	3.	4.	4.	4.
5.	6.	7.	8.	10.	12.	14.	16.	19.	27.
41.	56.	65.	116.	143.	138.	124.	109.	91.	75.
69.	65.	62.	59.	56.	53.	50.	48.	46.	43.
41.	39.	37.	36.	34.	32.	31.	29.	28.	27.

STORAGE

210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	210.	210.	210.	210.	210.	210.	210.	210.
210.	210.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	211.	211.	211.	211.
211.	211.	211.	211.	211.	211.	212.	212.	212.	212.
212.	213.	213.	213.	213.	213.	214.	214.	214.	214.
215.	216.	217.	219.	221.	223.	225.	228.	230.	234.
239.	244.	248.	251.	251.	251.	251.	251.	250.	249.
248.	247.	246.	245.	244.	243.	242.	241.	241.	240.
239.	239.	238.	237.	237.	236.	236.	235.	235.	234.

STAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0

572	57	S	[illegible]	[illegible]	236.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0

PAGE

572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0	572.0
572.0	572.0	572.0	572.0	572.1	572.1	572.1	572.1	572.1	572.1
572.1	572.1	572.1	572.1	572.1	572.2	572.2	572.2	572.2	572.2
572.2	572.3	572.3	572.4	572.5	572.6	572.7	572.8	572.9	573.1
573.3	573.5	573.7	573.8	573.9	573.9	573.8	573.8	573.8	573.8
573.7	573.7	573.6	573.6	573.5	573.5	573.4	573.4	573.4	573.3
573.3	573.3	573.2	573.2	573.2	573.2	573.1	573.1	573.1	573.1

PEAK OUTFLOW IS 143. AT TIME 41.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	143.	79.	28.	14.	2030.
CMS	4.	2.	1.	0.	57.
INCHES		2.84	4.00	4.04	4.04
MM		72.02	101.51	102.51	102.51
AC-FT		39.	55.	56.	56.
THOUS CU M		48.	68.	69.	69.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

3 CHANNEL ROUTE TO STATION 7+00

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	ICPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	0.	0

NORMAL DEPTH CHANNEL ROUTING

QA(1)	QV(2)	QV(3)	ELNVT	ELMAX	RLNTH	SEL
.0350	.0350	.0350	476.0	500.0	700.	.08600

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC

0.00	500.00	30.00	490.00	60.00	480.00	72.00	476.00	80.00	476.00
100.00	480.00	120.00	490.00	170.00	500.00				

STORAGE	0.00	.26	.74	1.41	2.26	3.25	4.36	5.60	6.96	8.46
	10.02	11.84	13.75	15.87	18.19	20.72	23.45	26.39	29.53	32.88

Sheet 09 of 55

OUTFLOW	0.00	191.07	776.04	1871.51	3492.90	5684.99	10222.09	14560.84	19722.81	25753.83
	32493.61	40582.61	49209.75	59032.26	70134.11	82591.95	96446.30	111798.25	128709.21	147245.45

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC

0.00 500.00 30.00 480.00 60.00 480.00 72.00 476.00 80.00 476.00
100.00 500.00 1.00 .00 0 5

STORAGE	0.00	.26	.74	1.41	2.26	3.25	4.36	5.60	6.96	8.46
	10.08	11.84	13.75	15.87	18.19	20.72	23.45	26.39	29.53	32.88

OUTFLOW	0.00	191.07	776.04	1871.51	3892.90	6684.99	10228.09	14560.86	19722.81	25753.83
	32693.81	40582.41	49209.75	59032.24	70134.11	82581.95	96446.30	111798.25	128708.21	147245.45
STAGE	476.00	477.26	478.53	479.79	481.05	482.32	483.58	484.84	486.11	487.37
	488.63	489.89	491.16	492.42	493.68	494.95	496.21	497.47	498.74	500.00
FLOW	0.00	191.07	776.04	1871.51	3892.90	6684.99	10228.09	14560.86	19722.81	25753.83
	32693.81	40582.41	49209.75	59032.24	70134.11	82581.95	96446.30	111798.25	128708.21	147245.45

STATION 3, PLAN 1, RATIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	4.	4.	5.	6.	7.	7.	8.
9.	10.	11.	11.	12.	13.	13.	14.	15.	16.
18.	25.	40.	58.	119.	291.	370.	404.	491.	650.
851.	921.	851.	724.	624.	542.	479.	406.	328.	242.
175.	128.	103.	93.	89.	84.	80.	77.	75.	72.
70.	70.	69.	68.	67.	66.	65.	64.	62.	61.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.1
476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1
476.1	476.2	476.3	476.4	476.8	477.5	477.6	477.7	477.9	478.3
478.6	478.7	478.6	478.4	478.2	478.0	477.9	477.7	477.6	477.4
477.2	476.8	476.7	476.6	476.6	476.6	476.5	476.5	476.5	476.5

sheet 2 of 25

476.5	476.5	476.5	476.5	476.4	476.4	476.4	476.4	476.4	476.4

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.1
476.	476	47	4		1	.1	.1	.1	76.1
476.1	476.2	476.3	476.4	476.8	477.5	477.6	477.7	477.9	478.3
478.6	478.7	478.6	478.4	478.2	478.0	477.9	477.7	477.6	477.4
477.2	476.8	476.7	476.6	476.6	476.6	476.5	476.5	476.5	476.5
476.5	476.5	476.5	476.5	476.4	476.4	476.4	476.4	476.4	476.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	921.	477.	142.	69.	10327.
CMS	26.	14.	4.	2.	292.
INCHES		17.07	20.37	20.53	20.53
MM		433.52	517.41	521.39	521.39
AC-FT		237.	282.	284.	284.
THOUS CU M		292.	349.	351.	351.

MAXIMUM STORAGE = 1.

MAXIMUM STAGE IS 478.7

STATION 3, PLAN 1, RTIO 2

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	3.	3.	3.	4.	4.	5.	6.	6.
7.	7.	8.	8.	9.	10.	10.	11.	11.	12.
14.	17.	20.	34.	49.	65.	156.	284.	358.	483.
627.	691.	640.	549.	470.	411.	360.	309.	248.	187.
137.	101.	83.	74.	71.	69.	69.	67.	67.	65.
64.	63.	61.	60.	58.	57.	56.	54.	53.	51.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0

Sheet 61 of 85

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0						

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.1	476.1	476.1	476.1	476.1	476.1	476.1	476.1
476.1	476.1	476.1	476.2	476.3	476.4	477.0	477.5	477.6	477.9
478.2	478.3	478.2	478.0	477.9	477.7	477.6	477.5	477.4	477.2
476.9	476.7	476.5	476.5	476.5	476.5	476.5	476.4	476.4	476.4
476.4	476.4	476.4	476.4	476.4	476.4	476.4	476.4	476.3	476.3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	691.	342.	104.	50.	7541.
CMS	20.	10.	3.	1.	214.
INCHES		12.25	14.87	14.99	14.99
PR		311.18	377.76	380.74	380.74
AC-FT		170.	206.	209.	209.
THOUSAND M		209.	254.	256.	256.

MAXIMUM STORAGE = 1.

MAXIMUM STAGE IS 476.3

STATION 3, PLAN 1, RTIO 3

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	2.	2.	2.	2.	3.	3.	3.	4.	4.
5.	5.	5.	6.	6.	6.	7.	7.	7.	8.
9.	11.	14.	17.	20.	30.	43.	55.	72.	239.
408.	458.	435.	365.	323.	273.	246.	205.	173.	129.
100.	75.	70.	66.	66.	63.	62.	59.	58.	55.
54.	52.	50.	49.	47.	45.	44.	42.	41.	39.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Sheet 62 of 85

STAGE

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.1
476.1	476.1	476.1	476.1	476.1	476.2	476.3	476.4	476.5	477.4
477.7	477.6	477.6	477.6	477.5	477.4	477.4	477.3	477.1	476.9
476.7	476.5	476.5	476.4	476.4	476.4	476.4	476.4	476.4	476.4
476.4	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3	476.3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	450.	209.	66.	32.	4779.
CMS	13.	6.	2.	1.	135.
INCHES		7.46	9.42	9.50	9.50
MM		189.55	239.30	241.29	241.29
AC-FT		103.	131.	132.	132.
THOUS CU M		128.	161.	162.	162.

MAXIMUM STORAGE = 0.

MAXIMUM STAGE IS 477.7

STATION 3, PLAN 1, RTIO 4

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	2.	2.	2.
2.	2.	3.	3.	3.	3.	3.	4.	4.	4.
5.	6.	7.	8.	10.	12.	14.	16.	19.	26.
41.	56.	68.	112.	144.	138.	126.	109.	92.	75.
69.	66.	62.	59.	56.	53.	51.	48.	46.	43.
41.	39.	37.	36.	34.	32.	31.	29.	28.	27.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Sheet 63 of 85

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0	476.0
476.0	476.0	476.0	476.1	476.1	476.1	476.1	476.1	476.1	476.2
476.3	476.4	476.4	476.7	477.0	476.9	476.8	476.7	476.6	476.5
476.5	476.4	476.4	476.4	476.4	476.4	476.3	476.3	476.3	476.3
476.3	476.3	476.3	476.2	476.2	476.2	476.2	476.2	476.2	476.2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	144.	79.	29.	14.	2029.
CMS	4.	2.	1.	0.	57.
INCHES		2.44	3.99	4.03	4.03
MM		72.01	101.44	102.44	102.44
AC-FT		39.	55.	56.	56.
THOUS CU M		49.	68.	69.	69.

MAXIMUM STORAGE = 0.

MAXIMUM STAGE IS 477.0

********** ********** *********** *********** **********

SUB-AREA RUNOFF COMPUTATION

2 SUB-AREA 1 RUN-OFF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	.09	0.00	.46	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .800

Sheet 4 of 25

LROPT	KIRKN	CLKK	MSKK	CNAIN	STRK	RTIOK	STRTL	CNSTL	ALSMX	RTIMP

1 1 .05 0.00 .46 0.00 0.000 0 1 0

PF DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

ERSPC COMPUTED BY THE PROGRAM IS .000

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.10	0.00	.07

UNIT HYDROGRAPH DATA

TP= .73 CP= .63 NTA= 0

RECESSION DATA

STRTQ= -1.00 QRCSN= -.10 RTIOR= 1.50

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 2.67 AND R= 1.86 INTERVALS

UNIT HYDROGRAPH 12 END-OF-PERIOD ORDINATES, LAG= .73 HOURS, CP= .63 VOL= 1.00

12. 37. 46. 33. 19. 11. 6. 4. 2. 1.
1. 0.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.20	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	1.
1.01	.40	2	.00	.00	.00	0.	1.02	1.40	77	.04	.01	.03	1.
1.01	1.00	3	.00	.00	.00	0.	1.02	2.00	78	.04	.01	.03	1.
1.01	1.20	4	.00	.00	.00	0.	1.02	2.20	79	.04	.01	.03	1.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.40	80	.04	.01	.03	1.
1.01	2.00	6	.00	.00	.00	0.	1.02	3.00	81	.04	.01	.03	1.
1.01	2.20	7	.00	.00	.00	0.	1.02	3.20	82	.04	.01	.03	1.
1.01	2.40	8	.00	.00	.00	0.	1.02	3.40	83	.04	.01	.03	1.
1.01	3.00	9	.00	.00	.00	0.	1.02	4.00	84	.04	.01	.03	1.
1.01	3.20	10	.00	.00	.00	0.	1.02	4.20	85	.04	.01	.03	1.
1.01	3.40	11	.00	.00	.00	0.	1.02	4.40	86	.04	.01	.03	1.
1.01	4.00	12	.00	.00	.00	0.	1.02	5.00	87	.04	.01	.03	1.
1.01	4.20	13	.00	.00	.00	0.	1.02	5.20	88	.04	.01	.03	1.
1.01	4.40	14	.00	.00	.00	0.	1.02	5.40	89	.04	.01	.03	1.
1.01	5.00	15	.00	.00	.00	0.	1.02	6.00	90	.04	.01	.03	1.
1.01	5.20	16	.00	.00	.00	0.	1.02	6.20	91	.11	.08	.03	2.
1.01	5.40	17	.00	.00	.00	0.	1.02	6.40	92	.11	.08	.03	5.
1.01	6.00	18	.00	.00	.00	0.	1.02	7.00	93	.11	.08	.03	8.
1.01	6.20	19	.01	.00	.01	0.	1.02	7.20	94	.11	.08	.03	10.
1.01	6.40	20	.01	.00	.01	0.	1.02	7.40	95	.11	.08	.03	12.
1.01	7.00	21	.01	.00	.01	0.	1.02	8.00	96	.11	.08	.03	12.
1.01	7.20	22	.01	.00	.01	0.	1.02	8.20	97	.11	.08	.03	13.
1.01	7.40	23	.01	.00	.01	0.	1.02	8.40	98	.11	.08	.03	13.
1.01	8.00	24	.01	.00	.01	0.	1.02	9.00	99	.11	.08	.03	13.
1.01	8.20	25	.01	.00	.01	0.	1.02	9.20	100	.11	.08	.03	13.
1.01	8.40	26	.01	.00	.01	0.	1.02	9.40	101	.11	.08	.03	13.
1.01	9.00	27	.01	.00	.01	0.	1.02	10.00	102	.11	.08	.03	13.
1.01	9.20	28	.01	.00	.01	0.	1.02	10.20	103	.11	.08	.03	13.
1.01	9.40	29	.01	.00	.01	0.	1.02	10.40	104	.11	.08	.03	13.
1.01	10.00	30	.01	.00	.01	0.	1.02	11.00	105	.11	.08	.03	13.
1.01	10.20	31	.01	.00	.01	0.	1.02	11.20	106	.11	.08	.03	13.
1.01	10.40	32	.01	.00	.01	0.	1.02	11.40	107	.11	.08	.03	13.
1.01	11.00	33	.01	.00	.01	0.	1.02	12.00	108	.11	.08	.03	13.
1.01	11.20	34	.01	.00	.01	0.	1.02	12.20	109	.66	.63	.03	20.
1.01	11.40	35	.01	.00	.01	0.	1.02	12.40	110	.66	.63	.03	40.
1.01	12.00	36	.01	.00	.01	0.	1.02	13.00	111	.66	.63	.03	66.
1.01	12.20	37	.04	.00	.04	0.	1.02	13.20	112	.79	.76	.03	86.
1.01	12.40	38	.04	.00	.04	0.	1.02	13.40	113	.79	.76	.03	101.
1.01	13.00	39	.04	.00	.04	0.	1.02	14.00	114	.79	.76	.03	113.
1.01	13.20	40	.05	.00	.04	0.	1.02	14.20	115	.99	.95	.03	124.
1.01	13.40	41	.05	.00	.04	0.	1.02	14.40	116	.99	.95	.03	135.

Sheet 15 of 20

1.01	14.00	42	.05	.00	.04	1.	1.02	15.00	117	.99	.95	.03	147.
1.01	14.20	43	.06	.00	.06	1.	1.02	15.20	118	1.32	1.02	.01	164.

1.01	12.00	36	.01	.00	.01	0.	1.02	13.00	111	.66	.63	.03	66.
1.01	12.20	37	.04	.00	.01	0.	1.02	13.20	112	.76	.73	.03	86.
1.01	12.40	38	.04	.00	.04	0.	1.02	13.40	113	.76	.73	.03	101.
1.01	13.00	39	.04	.00	.04	0.	1.02	14.00	114	.79	.76	.03	113.
1.01	13.20	40	.05	.00	.04	0.	1.02	14.20	115	.99	.95	.03	124.
1.01	13.40	41	.05	.00	.04	0.	1.02	14.40	116	.99	.95	.03	135.
1.01	14.00	42	.05	.00	.04	1.	1.02	15.00	117	.99	.95	.03	147.
1.01	14.20	43	.06	.00	.06	1.	1.02	15.20	118	1.72	1.69	.03	164.
1.01	14.40	44	.06	.00	.06	1.	1.02	15.40	119	4.72	4.69	.03	232.
1.01	15.00	45	.06	.00	.06	1.	1.02	16.00	120	1.05	1.02	.03	337.
1.01	15.20	46	.10	.01	.10	1.	1.02	16.20	121	.92	.89	.03	363.
1.01	15.40	47	.29	.02	.26	1.	1.02	16.40	122	.92	.89	.03	303.
1.01	16.00	48	.06	.03	.04	2.	1.02	17.00	123	.92	.89	.03	241.
1.01	16.20	49	.06	.02	.03	3.	1.02	17.20	124	.72	.69	.03	202.
1.01	16.40	50	.06	.02	.03	3.	1.02	17.40	125	.72	.69	.03	173.
1.01	17.00	51	.06	.02	.03	4.	1.02	18.00	126	.72	.69	.03	152.
1.01	17.20	52	.04	.01	.03	4.	1.02	18.20	127	.06	.03	.03	130.
1.01	17.40	53	.04	.01	.03	3.	1.02	18.40	128	.06	.03	.03	98.
1.01	18.00	54	.04	.01	.03	3.	1.02	19.00	129	.06	.03	.03	83.
1.01	18.20	55	.00	.00	.00	3.	1.02	19.20	130	.06	.03	.03	38.
1.01	18.40	56	.00	.00	.00	2.	1.02	19.40	131	.06	.03	.03	35.
1.01	19.00	57	.00	.00	.00	1.	1.02	20.00	132	.06	.03	.03	34.
1.01	19.20	58	.00	.00	.00	1.	1.02	20.20	133	.06	.03	.03	32.
1.01	19.40	59	.00	.00	.00	0.	1.02	20.40	134	.06	.03	.03	31.
1.01	20.00	60	.00	.00	.00	0.	1.02	21.00	135	.06	.03	.03	30.
1.01	20.20	61	.00	.00	.00	0.	1.02	21.20	136	.06	.03	.03	29.
1.01	20.40	62	.00	.00	.00	0.	1.02	21.40	137	.06	.03	.03	27.
1.01	21.00	63	.00	.00	.00	0.	1.02	22.00	138	.06	.03	.03	26.
1.01	21.20	64	.00	.00	.00	0.	1.02	22.20	139	.06	.03	.03	25.
1.01	21.40	65	.00	.00	.00	0.	1.02	22.40	140	.06	.03	.03	24.
1.01	22.00	66	.00	.00	.00	0.	1.02	23.00	141	.06	.03	.03	23.
1.01	22.20	67	.00	.00	.00	0.	1.02	23.20	142	.06	.03	.03	22.
1.01	22.40	68	.00	.00	.00	0.	1.02	23.40	143	.06	.03	.03	22.
1.01	23.00	69	.00	.00	.00	0.	1.03	0.00	144	.06	.03	.03	21.
1.01	23.20	70	.00	.00	.00	0.	1.03	.20	145	0.00	0.00	0.00	20.
1.01	23.40	71	.00	.00	.00	0.	1.03	.40	146	0.00	0.00	0.00	19.
1.02	0.00	72	.00	.00	.00	0.	1.03	1.00	147	0.00	0.00	0.00	18.
1.02	.20	73	.04	.01	.03	0.	1.03	1.20	148	0.00	0.00	0.00	18.
1.02	.40	74	.04	.01	.03	0.	1.03	1.40	149	0.00	0.00	0.00	17.
1.02	1.00	75	.04	.01	.03	1.	1.03	2.00	150	0.00	0.00	0.00	16.
									SUM	24.82	21.39	3.43	4073.
										(630.)	(543.)	(87.)	(115.33)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	363.	176.	56.	27.	4090.
CMS	10.	5.	2.	1.	116.
INCHES		18.10	23.17	23.43	23.43
MM		461.79	588.48	595.09	595.09
AC-FT		87.	111.	112.	112.
THOUS CU M		108.	137.	139.	139.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	1.	1.	1.	1.	2.	3.	3.	
4.	4.	3.	3.	3.	2.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	5.	8.	10.	12.	12.	13.	13.	13.	13.
13.	13.	13.	13.	13.	13.	13.	13.	20.	40.

Continued

66.	94.	101.	113.	124.	1[illegible].	147.	164.	232.	337.
343.	3[illegible].	241.	2[illegible].	173.	1[illegible].	130.	98.	83.	38.
35.	34.	32.	31.	30.	29.	27.	26.	25.	24.

4.	4.	3.	3.	3.	2.	1.	1.	0.	0.	
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
						1.	1.	1.	1.	
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	
2.	5.	8.	10.	12.	12.	13.	13.	13.	13.	
13.	13.	13.	13.	13.	13.	13.	13.	20.	40.	

66.	86.	101.	113.	124.	135.	147.	164.	232.	337.
363.	305.	241.	202.	177.	152.	130.	98.	63.	38.
35.	34.	32.	31.	30.	29.	27.	26.	25.	24.
23.	22.	22.	21.	20.	19.	18.	18.	17.	16.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	363.	176.	56.	27.	4080.
CMS	10.	5.	2.	1.	116.
INCHES		18.18	23.17	23.43	23.43
MM		461.79	588.49	595.09	595.09
AC-FT		87.	111.	112.	112.
THOUS CU M		108.	137.	139.	139.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	2.	2.
3.	3.	3.	2.	2.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	4.	6.	8.	9.	9.	10.	10.	10.	10.
10.	10.	10.	10.	10.	10.	10.	10.	15.	30.
49.	64.	76.	85.	93.	102.	110.	123.	174.	253.
273.	227.	181.	151.	130.	114.	98.	73.	47.	28.
26.	25.	24.	23.	22.	21.	21.	20.	19.	18.
18.	17.	16.	16.	15.	14.	14.	13.	13.	12.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	273.	132.	42.	20.	3060.
CMS	8.	4.	1.	1.	87.
INCHES		13.64	17.38	17.57	17.57
MM		346.34	441.36	446.32	446.32
AC-FT		65.	83.	84.	84.
THOUS CU M		81.	103.	104.	104.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	2.
2.	2.	2.	2.	1.	1.	1.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	4.	5.	6.	6.	6.	6.	7.	7.
7.	7.	7.	7.	7.	7.	7.	7.	10.	20.
33.	43.	51.	57.	62.	68.	74.	82.	116.	168.
182.	152.	120.	101.	87.	76.	65.	49.	31.	19.
13.	12.	12.	11.	11.	10.	10.	9.	9.	8.
12.	11.	11.	10.	10.	10.	9.	9.	8.	8.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	182.	89.	29.	14.	2040.
CMS	5.	2.	1.	0.	58.
INCHES		9.09	11.59	11.71	11.71

Sheet 57 of 155

7.	7.	7.	7.	7.	7.	7.	7.	10.	20.
33.	43.	51.	57.	62.	68.	74.	82.	116.	168.
18	1[illegible]	[illegible]				5.	49.	31.	19.
18.	1[illegible].	16.	16.	15.	14.	14.	13.	13.	12.
12.	11.	11.	10.	10.	10.	9.	9.	8.	8.

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME

CFS	182.	88.	28.	14.	2040.
CMS	5.	2.	1.	0.	58.
INCHES		9.09	11.58	11.71	11.71
MM		230.90	294.24	297.55	297.55
AC-FT		44.	56.	56.	56.
THOUS CU M		54.	69.	69.	69.

HYDROGRAPH AT STA 2 FOR PLAN 1, RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	2.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	5.	10.
16.	21.	25.	29.	31.	34.	37.	41.	58.	84.
91.	76.	60.	50.	43.	38.	33.	24.	16.	9.
9.	8.	8.	8.	7.	7.	7.	7.	6.	6.
6.	6.	5.	5.	5.	5.	5.	4.	4.	4.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	91.	44.	14.	7.	1020.
CMS	3.	1.	0.	0.	29.
INCHES		4.55	5.79	5.86	5.86
MM		115.45	147.12	148.77	148.77
AC-FT		22.	28.	28.	28.
THOUS CU M		27.	34.	35.	35.

********** ********** ********** ********** **********

COMBINE HYDROGRAPHS

2 COMBINE ROUTED HYDROGRAPH WITH SUB AREA 2 INFLOW

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	2	0	0	0	0	1	0	0

SUM OF 2 HYDROGRAPHS AT 2 PLAN 1 RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	2.	3.	4.	5.
5.	6.	6.	5.	5.	4.	4.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	2.	3.	3.	3.	3.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
5.	9.	11.	14.	16.	17.	19.	20.	21.	21.
22.	23.	24.	25.	25.	26.	27.	27.	35.	56.

84.	111.	141.	171.	242.	424.	517.	569.	723.	987.
1255.	1234.	1092.	925.	797.	694.	608.	504.	381.	280.

1.	1.	1.	1.	1.	1.	2.	3.	4.	5.	
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	
3.	3.	2.	3.	3.	3.	3.	4.	4.	4.	
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	
5.	9.	11.	14.	16.	17.	19.	20.	21.	21.	
22.	23.	24.	25.	25.	26.	27.	27.	35.	56.	

84.	111.	141.	171.	242.	426.	517.	569.	723.	987.
1215.	1224.	1092.	925.	797.	694.	608.	524.	391.	280.
140.	161.	136.	124.	113.	112.	109.	104.	100.	96.
94.	92.	91.	89.	87.	85.	83.	81.	79.	77.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1224.	643.	198.	96.	14407.
CMS	35.	18.	6.	3.	409.
INCHES		17.09	21.09	21.27	21.27
MM		433.94	535.68	540.34	540.34
AC-FT		319.	393.	397.	397.
THOUS CU M		393.	485.	490.	490.

SUM OF 2 HYDROGRAPHS AT 2 PLAN 1 RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
1.	1.	1.	1.	1.	1.	1.	2.	3.	3.
4.	4.	4.	4.	4.	3.	3.	3.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
4.	6.	9.	11.	12.	13.	14.	15.	15.	16.
17.	17.	18.	18.	19.	19.	20.	20.	26.	42.
65.	91.	96.	118.	142.	165.	267.	407.	532.	736.
920.	914.	820.	701.	600.	525.	458.	383.	295.	215.
143.	124.	107.	98.	93.	91.	90.	87.	86.	83.
82.	79.	77.	75.	73.	71.	69.	67.	65.	63.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	918.	464.	146.	71.	10602.
CMS	26.	13.	4.	2.	300.
INCHES		12.33	15.52	15.65	15.65
MM		313.13	394.11	397.61	397.61
AC-FT		230.	289.	292.	292.
THOUS CU M		284.	357.	360.	360.

SUM OF 2 HYDROGRAPHS AT 2 PLAN 1 RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	2.	2.	2.
3.	3.	3.	3.	2.	2.	2.	2.	2.	2.
2.	2.	2.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
3.	4.	6.	7.	8.	9.	9.	10.	10.	11.
11.	12.	12.	12.	13.	13.	13.	14.	17.	28.
42.	54.	64.	73.	82.	93.	116.	137.	188.	407.
590.	601.	556.	464.	409.	349.	312.	254.	205.	148.
117.	91.	86.	82.	81.	77.	75.	72.	70.	68.
66.	63.	61.	59.	57.	55.	53.	51.	49.	48.

Chatsworth 23

1.	1.	1.	1.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
					9.	9.	10.	10	1
12.	12.	12.	12.	13.	13.	13.	14.	17.	26.
42.	54.	64.	73.	82.	98.	116.	137.	188.	407.
590.	601.	556.	486.	409.	349.	312.	254.	205.	148.
117.	91.	86.	82.	81.	77.	75.	72.	70.	68.
66.	63.	61.	59.	57.	55.	53.	51.	49.	48.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	601.	285.	94.	45.	6819.
CMS	17.	8.	3.	1.	193.
INCHES		7.57	9.99	10.07	10.07
MM		192.34	253.43	255.76	255.76
AC-FT		141.	186.	188.	188.
THOUS CU M		174.	230.	232.	232.

SUM OF 2 HYDROGRAPHS AT 2 PLAN 1 RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	3.	4.	4.	4.	5.	5.	5.	5.
6.	6.	6.	6.	6.	6.	7.	7.	9.	14.
21.	27.	32.	37.	41.	46.	51.	57.	77.	111.
132.	131.	129.	163.	187.	176.	158.	133.	108.	85.
75.	74.	70.	67.	64.	60.	57.	55.	52.	49.
47.	45.	43.	41.	39.	37.	35.	34.	32.	31.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	127.	111.	42.	20.	3049.
CMS	5.	3.	1.	1.	86.
INCHES		2.95	4.46	4.50	4.50
MM		75.00	113.19	114.35	114.35
AC-FT		55.	83.	84.	84.
THOUS CU M		68.	103.	104.	104.

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

3 SUB-AREA 3 RUNOFF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUNG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	.11	0.00	.46	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .00

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	UNKK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.10	0.00	.00

PRECIP DATA

	SPFE	PMS	R6	R24	R48	R72	R	R9
	0.00	22.00	112.00	123.00	133.00	141.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.10	0.00	.06

UNIT HYDROGRAPH DATA
TP= .77 CP= .63 NTA= 0

RECESSION DATA
STRTQ= -1.00 QRCSN= -.10 RTIOR= 1.50

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 2.71 AND R= 2.05 INTERVALS

UNIT HYDROGRAPH 13 END-OF-PERIOD ORDINATES, LAG= .77 HOURS, CP= .62 VOL= 1.00

13. 42. 54. 41. 25. 15. 9. 6. 3. 2.
1. 1. 0.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.20	1	.00	.00	.00	0.	1.02	1.20	76	.04	.01	.03	1.
1.01	.40	2	.00	.00	.00	0.	1.02	1.40	77	.04	.01	.03	1.
1.01	1.00	3	.00	.00	.00	0.	1.02	2.00	78	.04	.01	.03	1.
1.01	1.20	4	.00	.00	.00	0.	1.02	2.20	79	.04	.01	.03	2.
1.01	1.40	5	.00	.00	.00	0.	1.02	2.40	80	.04	.01	.03	2.
1.01	2.00	6	.00	.00	.00	0.	1.02	3.00	81	.04	.01	.03	2.
1.01	2.20	7	.00	.00	.00	0.	1.02	3.20	82	.04	.01	.03	2.
1.01	2.40	8	.00	.00	.00	0.	1.02	3.40	83	.04	.01	.03	2.
1.01	3.00	9	.00	.00	.00	0.	1.02	4.00	84	.04	.01	.03	2.
1.01	3.20	10	.00	.00	.00	0.	1.02	4.20	85	.04	.01	.03	2.
1.01	3.40	11	.00	.00	.00	0.	1.02	4.40	86	.04	.01	.03	2.
1.01	4.00	12	.00	.00	.00	0.	1.02	5.00	87	.04	.01	.03	2.
1.01	4.20	13	.00	.00	.00	0.	1.02	5.20	88	.04	.01	.03	2.
1.01	4.40	14	.00	.00	.00	0.	1.02	5.40	89	.04	.01	.03	2.
1.01	5.00	15	.00	.00	.00	0.	1.02	6.00	90	.04	.01	.03	2.
1.01	5.20	16	.00	.00	.00	0.	1.02	6.20	91	.11	.05	.03	3.
1.01	5.40	17	.00	.00	.00	0.	1.02	6.40	92	.11	.05	.03	5.
1.01	6.00	18	.00	.00	.00	0.	1.02	7.00	93	.11	.08	.03	9.
1.01	6.20	19	.01	.00	.01	0.	1.02	7.20	94	.11	.08	.03	12.
1.01	6.40	20	.01	.00	.01	0.	1.02	7.40	95	.11	.08	.03	14.
1.01	7.00	21	.01	.00	.01	0.	1.02	8.00	96	.11	.08	.03	15.
1.01	7.20	22	.01	.00	.01	0.	1.02	8.20	97	.11	.08	.03	15.
1.01	7.40	23	.01	.00	.01	0.	1.02	8.40	98	.11	.08	.03	16.
1.01	8.00	24	.01	.00	.01	0.	1.02	9.00	99	.11	.08	.03	16.
1.01	8.20	25	.01	.00	.01	0.	1.02	9.20	100	.11	.08	.03	16.
1.01	8.40	26	.01	.00	.01	0.	1.02	9.40	101	.11	.08	.03	16.
1.01	9.00	27	.01	.00	.01	0.	1.02	10.00	102	.11	.08	.03	16.
1.01	9.20	28	.01	.00	.01	0.	1.02	10.20	103	.11	.08	.03	16.
1.01	9.40	29	.01	.00	.01	0.	1.02	10.40	104	.11	.08	.03	16.
1.01	10.00	30	.01	.00	.01	0.	1.02	11.00	105	.11	.08	.03	16.
1.01	10.20	31	.01	.00	.01	0.	1.02	11.20	106	.11	.08	.03	16.
1.01	10.40	32	.01	.00	.01	0.	1.02	11.40	107	.11	.08	.03	16.
1.01	11.00	33	.01	.00	.01	0.	1.02	12.00	108	.11	.08	.03	16.
1.01	11.20	34	.01	.00	.01	0.	1.02	12.20	109	.66	.63	.03	23.
1.01	11.40	35	.01	.00	.01	0.	1.02	12.40	110	.66	.63	.03	46.
1.01	12.00	36	.01	.00	.01	0.	1.02	13.00	111	.66	.63	.03	76.
1.01	12.20	37	.04	.00	.04	0.	1.02	13.20	112	.79	.76	.03	100.
1.01	12.40	38	.04	.00	.04	0.	1.02	13.40	113	.79	.76	.03	119.
1.01	13.00	39	.04	.00	.04	0.	1.02	14.00	114	.79	.76	.03	135.
1.01	13.20	40	.05	.00	.04	0.	1.02	14.20	115	.99	.95	.03	148.
1.01	13.40	41	.05	.00	.04	0.	1.02	14.40	116	.99	.95	.03	162.
1.01	14.00	42	.05	.00	.04	1.	1.02	15.00	117	.99	.95	.03	177.
1.01	14.20	43	.04	.00	.04	1.	1.02	15.20	118	1.72	1.69	.03	197.

Sheet 7 of 25

1.01	14.40	44	.04	.00	.04	1.	1.02	15.40	119	1.72	1.69	.03	224.
1.01	15.00	45	.04	.00	.04	1.	1.02	16.00	120	1.05	1.02	.03	254.
1.01	15.20	46	.04	.00	.04	1.	1.02	16.20	121	1.05	1.02	.03	284.

1.01	12.00	36	.01	.00	.01	0.	1.02	13.00	111	.95	.93	.03	100.
1.01	12.20	37	.04	.00	.04	0.	1.02	13.20	112	.79	.76	.03	109.
	12.	3	.04	0			02				.76	03	10.
1.01	13.00	39	.04	.00	.04	0.	.02	14.00	114	.79	.76	.03	135.
1.01	13.20	40	.05	.00	.04	0.	1.02	14.20	115	.99	.95	.03	148.
1.01	13.40	41	.05	.00	.04	0.	1.02	14.40	116	.99	.95	.03	162.
1.01	14.00	42	.05	.00	.04	1.	1.02	15.00	117	.99	.95	.03	177.
1.01	14.20	43	.06	.00	.06	1.	1.02	15.20	118	1.72	1.69	.03	197.
1.01	14.40	44	.06	.00	.06	1.	1.02	15.40	119	4.72	4.69	.03	274.
1.01	15.00	45	.06	.00	.06	1.	1.02	16.00	120	1.05	1.02	.03	394.
1.01	15.20	46	.10	.01	.10	1.	1.02	16.20	121	.92	.89	.03	433.
1.01	15.40	47	.29	.02	.27	1.	1.02	16.40	122	.92	.89	.03	371.
1.01	16.00	48	.06	.03	.04	2.	1.02	17.00	123	.92	.89	.03	300.
1.01	16.20	49	.06	.02	.03	3.	1.02	17.20	124	.72	.69	.03	254.
1.01	16.40	50	.06	.02	.03	4.	1.02	17.40	125	.72	.69	.03	219.
1.01	17.00	51	.06	.02	.03	4.	1.02	18.00	126	.72	.69	.03	192.
1.01	17.20	52	.04	.01	.03	4.	1.02	18.20	127	.06	.03	.03	166.
1.01	17.40	53	.04	.01	.03	4.	1.02	18.40	128	.06	.03	.03	127.
1.01	18.00	54	.04	.01	.03	4.	1.02	19.00	129	.06	.03	.03	84.
1.01	18.20	55	.00	.00	.00	3.	1.02	19.20	130	.06	.03	.03	53.
1.01	18.40	56	.00	.00	.00	2.	1.02	19.40	131	.06	.03	.03	42.
1.01	19.00	57	.00	.00	.00	2.	1.02	20.00	132	.06	.03	.03	41.
1.01	19.20	58	.00	.00	.00	1.	1.02	20.20	133	.06	.03	.03	39.
1.01	19.40	59	.00	.00	.00	1.	1.02	20.40	134	.06	.03	.03	39.
1.01	20.00	60	.00	.00	.00	0.	1.02	21.00	135	.06	.03	.03	36.
1.01	20.20	61	.00	.00	.00	0.	1.02	21.20	136	.06	.03	.03	35.
1.01	20.40	62	.00	.00	.00	0.	1.02	21.40	137	.06	.03	.03	33.
1.01	21.00	63	.00	.00	.00	0.	1.02	22.00	138	.06	.03	.03	32.
1.01	21.20	64	.00	.00	.00	0.	1.02	22.20	139	.06	.03	.03	31.
1.01	21.40	65	.00	.00	.00	0.	1.02	22.40	140	.06	.03	.03	29.
1.01	22.00	66	.00	.00	.00	0.	1.02	23.00	141	.06	.03	.03	28.
1.01	22.20	67	.00	.00	.00	0.	1.02	23.20	142	.06	.03	.03	27.
1.01	22.40	68	.00	.00	.00	0.	1.02	23.40	143	.06	.03	.03	26.
1.01	23.00	69	.00	.00	.00	0.	1.03	0.00	144	.06	.03	.03	25.
1.01	23.20	70	.00	.00	.00	0.	1.03	.20	145	0.00	0.00	0.00	24.
1.01	23.40	71	.00	.00	.00	0.	1.03	.40	146	0.00	0.00	0.00	23.
1.02	0.00	72	.00	.00	.00	0.	1.03	1.00	147	0.00	0.00	0.00	22.
1.02	.20	73	.01	.01	.01	0.	1.03	1.20	148	0.00	0.00	0.00	21.
1.02	.40	74	.04	.01	.03	0.	1.03	1.40	149	0.00	0.00	0.00	20.
1.02	1.00	75	.04	.01	.03	1.	1.03	2.00	150	0.00	0.00	0.00	20.
									SUM	24.92	21.35	3.47	4959.
										(630.)	(542.)	(88.)	(140.42)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	433.	214.	68.	33.	4955.
CMS	12.	6.	2.	1.	140.
INCHES		18.07	23.04	23.28	23.28
MM		459.01	585.10	591.31	591.31
AC-FT		106.	135.	137.	137.
THOUS CU M		131.	167.	169.	169.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	1.	1.	1.	1.	1.	2.	3.	4.
4.	4.	4.	4.	3.	2.	2.	1.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
5.	5.	9.	12.	14.	15.	15.	16.	16.	16.
16.	16.	14.	14.	16.	14.	16.	16.	23.	46.
76.	100.	119.	135.	148.	162.	177.	197.	274.	394.
433.	371.	300.	254.	219.	192.	166.	127.	84.	53.

Chart 2 of 3

42.	41.	39.	38.	36.	35.	33.	32.	31.	29.
28.	27.	26.	25.	24.	23.	22.	21.	20.	20.

0.	0.	0.	0.	1.	1.	1.	1.	2.	2.	2.
16.	16.	16.	16.	16.	16.	16.	16.	16.	23.	46.
76.	100.	119.	135.	148.	162.	177.	197.	274.	394.	
433.	371.	300.	254.	219.	192.	166.	127.	84.	53.	
42.	41.	39.	38.	36.	35.	33.	32.	31.	29.	
28.	27.	26.	25.	24.	23.	22.	21.	20.	20.	

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	433.	214.	69.	33.	4955.
CMS	12.	6.	2.	1.	140.
INCHES		18.07	23.04	23.28	23.28
MM		459.01	585.10	591.31	591.31
AC-FT		109.	135.	137.	137.
THOUS CU M		134.	167.	169.	169.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	3.
0.	0.	0.	1.	1.	1.	1.	2.	3.	
3.	3.	3.	2.	2.	1.	1.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	4.	7.	9.	10.	11.	11.	12.	12.	12.
12.	12.	12.	12.	12.	12.	12.	12.	18.	35.
57.	75.	99.	101.	111.	122.	132.	148.	205.	295.
324.	279.	235.	190.	164.	144.	124.	95.	63.	40.
32.	31.	29.	28.	27.	26.	25.	24.	23.	22.
21.	20.	20.	19.	18.	17.	17.	16.	15.	15.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	324.	160.	51.	25.	3715.
CMS	9.	5.	1.	1.	105.
INCHES		13.55	17.28	17.46	17.46
MM		344.26	438.83	443.48	443.48
AC-FT		79.	101.	102.	102.
THOUS CU M		98.	125.	126.	126.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
2.	2.	2.	2.	1.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	3.	5.	6.	7.	7.	8.	8.	8.	8.
8.	8.	8.	8.	8.	8.	8.	8.	12.	23.
36.	50.	60.	67.	74.	81.	89.	98.	137.	197.
216.	185.	150.	127.	110.	96.	83.	63.	42.	27.
21.	20.	20.	19.	18.	17.	17.	16.	15.	15.
14.	14.	13.	13.	12.	12.	11.	11.	10.	10.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	216.	107.	34.	17.	2478.
CMS	6.	3.	1.	0.	70.
INCHES		9.04	11.52	11.64	11.64
MM		229.50	292.55	295.65	295.65
AC-FT		53.	68.	69.	68.
THOUS CU M		65.	83.	85.	84.

Sheet 72 of 85

21.	20.	20.	19.	18.	17.	17.	16.	15.	15.
					12.	11.	11.	10	1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	216.	107.	34.	17.	2478.
CMS	6.	3.	1.	0.	70.

INCHES	9.04	11.52	11.64	11.64
MM	229.50	292.55	295.65	295.65
AC-FT	53.	68.	68.	69.
THOUS CU M	65.	83.	84.	34.

HYDROGRAPH AT STA 3 FOR PLAN 1, RTIO 4

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	2.	3.	3.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	6.	12.
19.	25.	30.	34.	37.	41.	44.	49.	68.	98.
130.	93.	75.	63.	55.	48.	41.	32.	21.	13.
11.	10.	10.	9.	9.	9.	8.	8.	8.	7.
7.	7.	7.	6.	6.	6.	6.	5.	5.	5.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	108.	53.	17.	8.	1239.
CMS	3.	2.	0.	0.	35.
INCHES		4.52	5.76	5.82	5.82
MM		114.75	146.28	147.83	147.83
AC-FT		26.	34.	34.	34.
THOUS CU M		33.	42.	42.	42.

********** *********** ********** ********* **********

COMBINE HYDROGRAPHS

3 COMBINE SUBAREA 3 WITH COMBINED HYDROGRAPH

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	2	0	0	0	0	1	0	0

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	3.	4.	6.	8.
9.	10.	10.	9.	8.	7.	5.	4.	4.	4.
4.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	4.	4.	5.	5.	5.	5.
5.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	13.	21.	24.	30.	32.	34.	35.	36.	37.
36.	39.	40.	41.	41.	42.	43.	43.	58.	103.
160.	211.	261.	306.	390.	588.	694.	765.	997.	1391.
1647.	1595.	1292.	1179.	1016.	886.	774.	631.	475.	333.

Sheet 21 of 35

265.	202.	175.	162.	154.	147.	141.	135.	131.	126.
122.	117.	113.	110.	107.	104.	102.	100.	98.	97.

3.	3.	3.	3.	4.	[illegible]	5.	5.	5.	5.
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.	6.	6.
8.	1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34.	35.	36.	37.
38.	39.	40.	41.	41.	42.	43.	43.	58.	103.
160.	211.	261.	306.	390.	58[illegible].	694.	765.	997.	1381.
1647.	1595.	1392.	1179.	1016.	884.	774.	631.	475.	333.

253.	202.	175.	162.	154.	147.	141.	135.	131.	126.
122.	119.	117.	114.	111.	108.	105.	102.	100.	97.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1647.	850.	266.	129.	19362.
CMS	47.	24.	8.	4.	548.
INCHES		17.20	21.56	21.75	21.75
MM		436.78	547.50	552.53	552.53
AC-FT		422.	529.	533.	533.
THOUS CU M		520.	652.	658.	658.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	1.	1.	1.	2.	2.	3.	5.	6.
7.	7.	7.	7.	6.	5.	4.	3.	3.	3.
3.	3.	3.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	3.	3.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	5.	5.
6.	10.	15.	20.	22.	24.	25.	26.	27.	28.
29.	29.	30.	31.	31.	32.	32.	33.	44.	77.
120.	156.	186.	219.	253.	288.	399.	555.	737.	1031.
1224.	1196.	1045.	891.	764.	669.	582.	478.	358.	255.
195.	156.	137.	125.	120.	117.	115.	111.	109.	105.
103.	100.	97.	94.	91.	89.	86.	83.	81.	78.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1224.	619.	197.	95.	14318.
CMS	35.	18.	6.	3.	405.
INCHES		12.51	15.94	16.09	16.09
MM		317.77	404.81	408.58	408.58
AC-FT		307.	391.	394.	394.
THOUS CU M		378.	482.	487.	487.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 3

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
1.	1.	1.	1.	1.	1.	1.	2.	3.	4.
5.	5.	5.	4.	4.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	2.	2.	2.	2.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
4.	7.	10.	13.	15.	16.	17.	18.	18.	19.
19.	20.	20.	20.	21.	21.	21.	22.	29.	51.
80.	104.	124.	141.	156.	179.	205.	236.	324.	604.
806.	786.	706.	593.	519.	445.	394.	318.	247.	174.
138.	112.	106.	101.	99.	94.	92.	88.	86.	82.
80.	77.	74.	71.	69.	66.	64.	62.	60.	57.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	806.	387.	128.	62.	9297.
CMS	23.	11.	4.	2.	263.

Sheet 75 of 55

	19.	20.	20.	20.	21.	21.	41.	66.	324.	604.
	50	107	137	144	154.	179.	205.	236.	247.	174.
	P01.	75.	7			.	4.	18.	86.	P2.
	138.	112.	106.	101.	99.	94.	92.	88.	60.	57.
	80.	77.	74.	71.	69.	66.	64.	62.		

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	106.	387.	129.	62.	9297.
CMS	25.	11.	4.	2.	263.
INCHES		7.82	10.35	10.44	10.44
MM		198.74	262.78	265.30	265.30
AC-FT		192.	254.	256.	256.
THOUS CU M		237.	313.	316.	316.

SUM OF 2 HYDROGRAPHS AT 3 PLAN 1 RTIO 4

	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.
	2.	2.	2.	2.	2.	2.	1.	1.	1.	1.
	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
	2.	5.	5.	7.	7.	8.	8.	9.	9.	9.
	10.	10.	10.	10.	10.	11.	11.	11.	15.	26.
	49.	56.	62.	70.	78.	86.	95.	107.	145.	209.
	240.	224.	203.	226.	242.	224.	200.	165.	129.	98.
	55.	54.	50.	76.	73.	69.	66.	63.	60.	57.
	54.	52.	49.	47.	45.	43.	41.	39.	37.	36.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	242.	158.	59.	29.	4232.
CMS	7.	4.	2.	1.	120.
INCHES		3.20	4.77	4.82	4.82
MM		81.17	121.10	122.36	122.36
AC-FT		78.	117.	118.	118.
THOUS CU M		97.	144.	146.	146.

********** *********** ********** ********* **********

HYDROGRAPH ROUTING

TO ROUTE THROUGH LONG POND(INCLUDING FLOW OVER DEPRESSION)

ISTAO	ICOMP	ICON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
10	1	0	0	0	0	1	0	0

ROUTING DATA

GLOSS	CLOSS	AVG	IRES	ISAME	ICPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	115.	-1

STAGE	470.00	471.20	472.00	474.00	475.00	475.50	476.00	478.00
FLOW	0.0	24.00	53.00	150.00	180.00	379.00	P91.00	6433.00
CAPACITY=	115.	133.	152.	174.	223.			

Sheet 26 of 125

STAGE.	470.00	471.20	472.00	474.00	475.00	475.50	476.00	478.00
	..00	24.0	5..0	...00	280.00	378.00	891.00	6433.00
CAPACITY=	115.	133.	152.	174.	223.			

ELEVATION= 470. 472. 474. 476. 480.

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
470.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COOD	EXPD	DAMWID
476.0	3.1	1.5	365.

STATION 10, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	3.	3.	3.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	5.	5.	5.	5.
5.	5.	6.	7.	8.	10.	11.	13.	14.	15.
17.	18.	19.	21.	22.	23.	24.	26.	29.	35.
45.	62.	84.	109.	140.	170.	424.	771.	897.	1353.
1609.	1628.	1414.	1211.	1033.	906.	816.	687.	535.	386.
320.	258.	211.	182.	178.	176.	174.	171.	168.	166.
162.	159.	156.	153.	150.	145.	140.	136.	131.	127.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	116.	116.
116.	116.	116.	116.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	117.	117.	117.	117.	117.	117.	117.	117.
117.	117.	118.	118.	119.	119.	120.	120.	121.	122.
122.	123.	123.	124.	125.	125.	126.	126.	127.	128.
131.	134.	139.	144.	150.	159.	169.	172.	174.	175.
176.	176.	176.	175.	174.	174.	173.	171.	170.	168.
167.	165.	164.	163.	162.	162.	161.	160.	159.	158.
157.	155.	154.	153.	152.	151.	150.	149.	148.	147.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1	470.1	470.1
470.1	470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.3	470.3	470.4	470.4	470.5	470.6	470.6	470.7	470.8
470.8	470.9	471.0	471.0	471.1	471.2	471.2	471.3	471.3	471.5
471.8	472.2	472.6	473.2	473.8	474.7	475.5	475.9	476.0	476.1

Sheet 7 of 25

476.2	476.2	476.2	476.1	476.0	476.0	475.9	475.8	475.7	475.5
475.4	475.2	475.1	475.0	474.9	474.9	474.8	474.7	474.6	474.5
474.4	474.3	474.2	474.1	474.0	473.9	473.8	473.7	473.6	473.5

470.1	470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.2	470.	470	470	47[illegible]	4[illegible]	
470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.3	470.3	470.4	470.4	470.5	470.6	470.6	470.7	470.8
470.8	470.9	471.0	471.0	471.1	471.2	471.2	471.3	471.3	471.5
471.8	472.2	472.6	473.2	473.8	474.7	475.5	475.9	476.0	476.1

476.2	476.2	476.2	476.1	476.0	476.0	475.9	475.8	475.7	475.5
475.4	475.2	475.1	475.0	474.9	474.9	474.8	474.7	474.6	474.5
474.4	474.3	474.2	474.1	474.0	473.9	473.8	473.7	473.6	473.5

PEAK OUTFLOW IS 1628. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1628.	813.	251.	121.	18182.
CMS	46.	23.	7.	3.	515.
INCHES		16.44	20.30	20.43	20.43
MM		417.64	515.50	518.85	518.85
AC-FT		403.	498.	501.	501.
THOUS CU M		497.	614.	618.	618.

STATION 10, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
2.	2.	2.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
3.	3.	3.	3.	3.	3.	3.	3.	4.	4.
4.	4.	4.	5.	6.	7.	8.	9.	10.	12.
13.	14.	15.	16.	16.	17.	18.	19.	20.	23.
30.	42.	56.	75.	95.	119.	146.	172.	465.	959.
1222.	1203.	1174.	910.	811.	704.	615.	518.	404.	329.
259.	203.	178.	175.	171.	167.	163.	160.	156.	152.
148.	142.	136.	131.	126.	122.	117.	113.	109.	105.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	117.	117.	117.
117.	117.	117.	117.	118.	118.	119.	119.	120.	120.
120.	121.	121.	122.	122.	123.	123.	123.	124.	125.
127.	130.	133.	137.	141.	146.	151.	160.	169.	174.
175.	175.	174.	174.	173.	172.	171.	170.	168.	167.
165.	163.	162.	161.	160.	159.	157.	156.	154.	153.
152.	150.	149.	148.	147.	146.	145.	145.	144.	143.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0

Sheet 78 of 85

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1
						470.2	470.2	470.2	470.2

STAGE

470.0	470.	470.	47	47	4		0	.0	0.0
470.0	470.	470.	470.	470.	470.	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.2	470.2	470.2	470.2
470.2	470.2	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2	470.2
470.2	470.2	470.2	470.3	470.3	470.4	470.4	470.5	470.5	470.6
470.6	470.7	470.7	470.8	470.8	470.9	470.9	471.0	471.0	471.1
471.4	471.7	472.1	472.4	472.9	473.3	473.9	474.7	475.6	476.0
476.1	476.1	476.1	476.0	475.9	475.8	475.7	475.6	475.5	475.4
475.2	475.1	474.9	474.8	474.7	474.6	474.4	474.3	474.2	474.1
474.0	473.8	473.7	473.6	473.5	473.4	473.3	473.2	473.2	473.1

PEAK OUTFLOW IS 1222. AT TIME 40.33 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1222.	576.	183.	89.	13299.
CMS	35.	16.	5.	3.	377.
INCHES		11.65	14.84	14.94	14.94
MM		295.92	376.98	379.49	379.49
AC-FT		286.	364.	366.	366.
THOUS CU M		352.	449.	452.	452.

STATION 10, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	4.	4.	5.	6.	6.	7.	8.
8.	9.	10.	10.	11.	12.	12.	13.	14.	15.
16.	23.	32.	42.	54.	68.	84.	102.	124.	160.
367.	847.	732.	638.	545.	473.	413.	360.	308.	262.
234.	214.	191.	186.	181.	156.	152.	145.	138.	131.
125.	119.	113.	108.	103.	99.	94.	90.	87.	83.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	117.	117.	117.	117.	118.	118.	118.
119.	119.	119.	120.	120.	120.	120.	121.	121.	122.
123.	125.	127.	130.	133.	136.	139.	142.	147.	156.
166.	175.	172.	171.	170.	169.	169.	168.	166.	165.

Sheet 23 of 25

163.	161.	160.	158.	156.	154.	153.	151.	150.	148.
147.	146.	145.	144.	143.	142.	141.	140.	139.	139.

116.	116.	116.	116.	116.	116.	116.	116.	116.	116.
116.	116.	116.	116.	116.	116.	116.	116.	116	117
1					6.	16.	116.	116	116
1					117.	117.	118.	118.	118.
119.	119.	119.	120.	120.	120.	120.	121.	121.	122.
123.	125.	127.	130.	133.	136.	139.	142.	147.	156.
168.	173.	172.	171.	170.	169.	169.	168.	166.	165.

163.	161.	160.	158.	156.	154.	153.	151.	150.	148.
147.	146.	145.	144.	143.	142.	141.	140.	139.	139.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.2	470.2	470.2	470.3	470.3	470.3	470.4
470.4	470.5	470.5	470.5	470.5	470.6	470.6	470.6	470.7	470.8
470.9	471.1	471.4	471.7	472.0	472.3	472.6	473.0	473.5	474.3
475.5	476.0	475.8	475.9	475.7	475.6	475.5	475.5	475.3	475.2
475.0	474.9	474.7	474.5	474.4	474.2	474.1	473.9	473.7	473.6
473.5	473.4	473.2	473.1	473.0	472.9	472.9	472.8	472.7	472.6

PEAK OUTFLOW IS 847. AT TIME 40.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	847.	347.	116.	56.	8441.
CMS	24.	10.	3.	2.	239.
INCHES		7.02	9.42	9.48	9.49
MM		178.25	239.19	240.87	240.87
AC-FT		172.	231.	233.	233.
THOUS CU M		212.	285.	287.	287.

STATION 10, PLAN 1, RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	3.	3.	3.	4.
4.	5.	5.	5.	5.	6.	6.	7.	8.	
9.	11.	14.	17.	21.	25.	32.	39.	49.	64.
85.	104.	118.	130.	143.	153.	157.	159.	158.	155.
150.	142.	135.	127.	121.	114.	108.	103.	97.	92.
88.	83.	79.	75.	71.	69.	65.	61.	58.	56.

STORAGE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.

Sheet 80 of 35

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.

GE

115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
115.	115.	115.	115.	115.	115.	115.	115.	115.	115.
116.	116.	116.	116.	116.	116.	116.	116.	117.	117.
117.	117.	117.	117.	117.	118.	118.	118.	118.	118.
119.	120.	121.	123.	124.	126.	127.	129.	131.	135.
139.	143.	146.	148.	151.	153.	155.	155.	155.	154.
152.	151.	149.	147.	146.	145.	144.	143.	141.	140.
140.	139.	138.	137.	136.	136.	135.	134.	134.	133.

STAGE

470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.1	470.1	470.1	470.1
470.1	470.1	470.0	470.0	470.0	470.1	470.0	470.0	470.0	470.0
470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0	470.0
470.0	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.1
470.1	470.1	470.1	470.1	470.1	470.1	470.1	470.2	470.2	470.2
470.2	470.2	470.2	470.3	470.3	470.3	470.3	470.3	470.3	470.4
470.5	470.6	470.7	470.9	471.0	471.2	471.4	471.6	471.9	472.2
472.7	473.0	473.3	473.6	473.9	474.1	474.2	474.3	474.3	474.2
474.0	473.8	473.7	473.5	473.4	473.3	473.1	473.0	472.9	472.8
472.7	472.6	472.5	472.5	472.4	472.3	472.2	472.2	472.1	472.1

PEAK OUTFLOW IS 159. AT TIME 42.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	159.	132.	50.	24.	3633.
CMS	5.	4.	1.	1.	103.
INCHES		2.66	4.05	4.08	4.08
MM		67.59	102.84	103.69	103.69
AC-FT		65.	99.	100.	100.
THOUS CU M		80.	122.	123.	123.

********** ********** ********** ********** **********

Sheet 21 of 25

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 .75	RATIO 3 .50	RATIO 4 .25
HYDROGRAPH AT	1	.26	1	922.	692.	461.	231.
	(	.67)	(	26.12)(	19.59)(	13.06)(	6.53)(
ROUTED TO	2	.26	1	923.	690.	456	143.
	(	.67)	(	26.13)(	19.53)(	12.91 (	4.06)(
ROUTED TO	3	.26	1	921.	691.	450	144.
	(	.67)	(	26.08)(	19.55)(	12.73)(	4.08)(
HYDROGRAPH AT	2	.09	1	363.	273.	182.	91.
	(	.23)	(	10.29)(	7.72)(	5.15)(	2.57)(
2 COMBINED	2	.35	1	1224.	918.	601.	187.
	(	.91)	(	34.66)(	25.99)(	17.02)(	5.30)(
HYDROGRAPH AT	3	.11	1	433.	324.	216.	108.
	(	.28)	(	12.25)(	9.19)(	6.12)(	3.06)(
2 COMBINED	3	.46	1	1647.	1224.	806.	242.
	(	1.19)	(	46.64)(	34.66)(	22.83)(	6.85)(
ROUTED TO	10	.46	1	1628.	1222.	847.	159.
	(	1.19)	(	46.10)(	34.62)(	23.99)(	4.50)(

Sheet 22 of 85

North Lake Dam

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	572.00	572.00	573.75
STORAGE	210.	210.	249.
OUTFLOW	0.	0.	70.

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	574.37	.62	263.	923.	8.67	40.67	0.00
.75	574.25	.50	260.	690.	6.33	40.67	0.00
.50	574.11	.36	257.	456.	4.67	40.67	0.00
.25	573.86	.11	251.	143.	2.33	41.67	0.00

PLAN 1 STATION 3

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
1.00	921.	478.7	40.67
.75	691.	478.3	40.67
.50	450.	477.8	40.67
.25	144.	477.0	41.67

Sheet 93 of 85

Long Pond Dam

SUMMARY OF DAM SAFETY ANALYSIS

Long Point Dam

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	470.00	470.00	476.00
STORAGE	115.	115.	174.
OUTFLOW	0.	0.	891.

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	476.22	.22	176.	1628.	2.67	40.67	0.00
.75	476.11	.11	175.	1222.	1.67	40.33	0.00
.50	475.96	0.00	173.	847.	0.00	40.67	0.00
.25	474.80	0.00	155.	159.	0.00	42.67	0.00

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION     JULY 1978
  LAST MODIFICATION  01 APR 80
**********
```

REFERENCES

APPENDIX E

REFERENCES

1. "Flood Hydrograph Package (HEC-1) Users Manual for Dam Safety Investigations", U. S. Army Corps of Engineers, Hydrologic Engineering Center, September 1979.

2. "Seasonal Variation of the Probable Maximum Precipitation, East of the 105th Meridian for Areas from 10 to 1,000 Square Miles, and Durations of 6, 12, 24 and 48 Hours", Hydrometeorological Report No. 33. Weather Bureau, U.S. Department of Commerce, April 1956.

3. "Recommended Guidelines for Safety Inspection of Dams", Department of the Army, Office of the Chief of Engineers, Appendix D.

4. The University of the State of New York, The State Education Department State Museum and Science Service Geological Survey - MAP and Chart Serves No. 5, Geologic MAP of New York 1961, Lower Hudson Sheet.

EN
DATE
FILME
12-8
DTI