

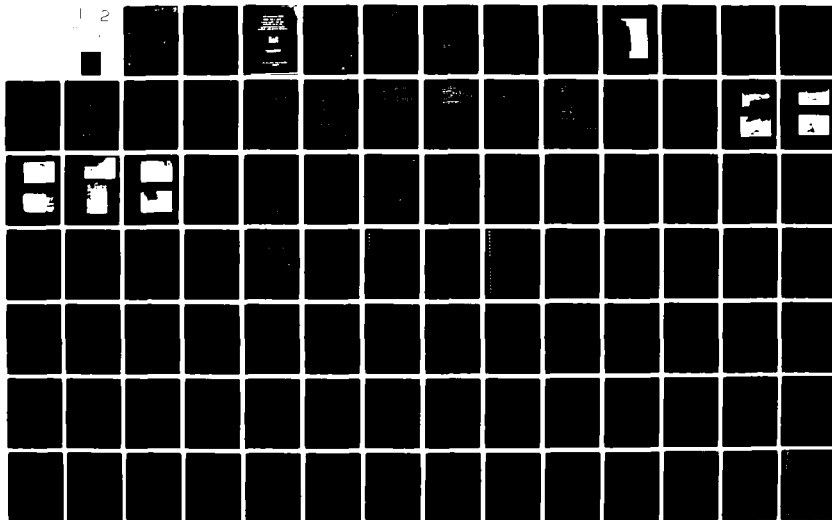
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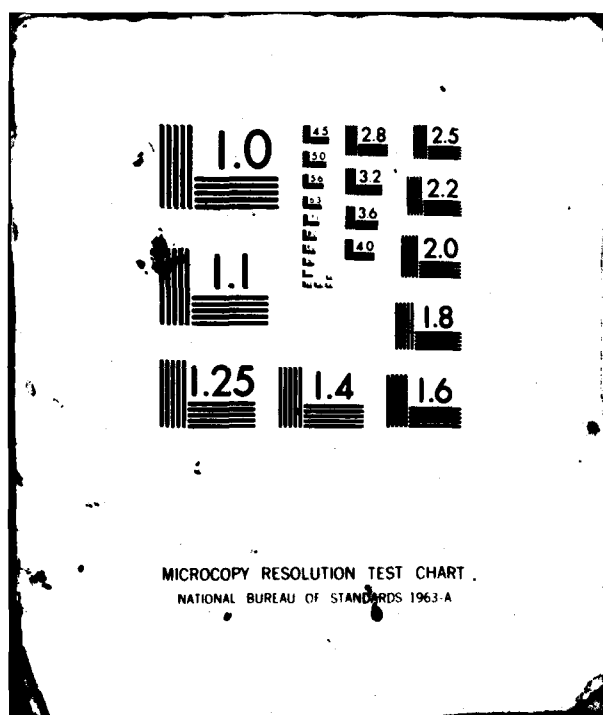
NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. MAIN MILL DAM (INVENTORY NUMBER N---ETC(U)
SEP 81 G KOCH DACW51-79-C-0001

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Main Mill Dam
Clinton County, NY
Lower Champlain 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.

Visual inspection of this dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which require further engineering investigations and remedial work. → next page

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Structural stability analyses performed for this report indicate that the spillway section is unstable for all conditions studied. The analysis was based on the limited information available and so may not reflect existing conditions. However, the analysis does indicate that there is a serious question concerning the stability of this dam and further investigations are required.

It is recommended that within 3 months of the date of notification of the owner, investigations into the structural stability deficiencies should be commenced. These studies should include developing accurate cross sections of the dam, progressing subsurface explorations, and coring the dam. This information should then be incorporated into a detailed stability evaluation and the need for modifications to the structure should be determined. Required changes of the structure should be completed within 18 months.

The spillway, while only having sufficient capacity to discharge 20% of the Probable Maximum Flood (PMF) is considered to be inadequate. For such a large storm event, a high tailwater condition would occur, resulting in the flooding of downstream hazard area. Hence, dam failure during a large storm event would not significantly increase the hazard to loss of life downstream from that which would exist just before overtopping failure.

LIFE COPY:



PREFACE

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

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

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through 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 aide 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.

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PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
MAIN MILL DAM
I.D. NO. NY-262
DEC #236A-234
LAKE CHAMPLAIN BASIN
CLINTON COUNTY, NEW YORK

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**PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM**

Name of Dam:	Main Mill Dam (I.D. No. NY-262)
State Located:	New York
County:	Clinton
Watershed:	Lake Champlain Basin
Stream:	Saranac River
Date of Inspection:	June 16, 1981

ASSESSMENT

Visual inspection of this dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which require further engineering investigations and remedial work.

Structural stability analyses performed for this report indicate that the spillway section is unstable for all conditions studied. The analysis was based on the limited information available and so may not reflect existing conditions. However, the analysis does indicate that there is a serious question concerning the stability of this dam and further investigations are required.

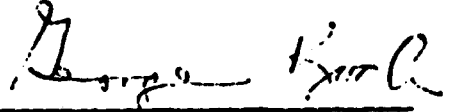
It is recommended that within 3 months of the date of notification of the owner, investigations into the structural stability deficiencies should be commenced. These studies should include developing accurate cross sections of the dam, progressing subsurface explorations, and coring the dam. This information should then be incorporated into a detailed stability evaluation and the need for modifications to the structure should be determined. Required changes of the structure should be completed within 18 months.

The spillway, while only having sufficient capacity to discharge 20% of the Probable Maximum Flood (PMF) is considered to be inadequate. For such a large storm event, a high tailwater condition would occur, resulting in the flooding of downstream hazard area. Hence, dam failure during a large storm event would not significantly increase the hazard to loss of life downstream from that which would exist just before overtopping failure.

Other deficiencies noted should be corrected within 12 months of the date of notification of the owner. Among the required actions are the following:

1. Cut trees and brush growing on the non-overflow embankment section at the left end of the dam.

2. Investigate the area where the sanitary sewer line goes through the embankment to assure that the backfill material is sufficiently impervious.
3. Develop an emergency action plan for the notification and evacuation of downstream residents.



George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937



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

Approved By:

Date:

20 SEP 81



OVERVIEW
MAIN MILL DAM
I.D. NO. NY262

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c. Size Classification

This dam is 26 feet high and has a storage capacity of 1413 acre-feet. Therefore, the dam is in the intermediate size category as defined by the "Recommended Guidelines for Safety Inspection of Dams."

d. Hazard Classification

The dam is classified as "high" hazard due to the presence of a trailer park and substantial development, including the City of Plattsburgh, downstream of the dam.

e. Ownership

This dam is owned by the Imperial Paper Company. The company's address is Underwood Avenue, Plattsburgh, New York 12901. Mr. George La Tulippe is the Chief Engineer for the plant. His assistant is Mr. Roy McGee. Their phone number is (518) 563-3800.

f. Purpose of Dam

This dam impounds a reservoir used for the generation of electrical power. The electricity generated is used by the owner.

g. Design and Construction History

There was no information available concerning the original design or construction of this dam. An old inspection report indicated that the dam was built in 1909 by John J. Cunningham.

h. Normal Operating Procedures

There are no prescribed operating procedures for this structure. The flashboards on the spillway section remain in place year round.

1.3 PERTINENT DATA

a. Drainage Area

608 square miles

b. Discharge at Dam

	<u>Water Surface Elev.</u>	<u>(cfs)</u>
Spillway:	193.8	15,820
	190.3	6,420
Flood Gate (fully open):	188.5	2,846
	193.8	2,146
	186.0	1,415
Powerhouse:	-	-

<u>c. Elevation</u>	(USGS Datum)
Top-of-Dam (@ Left embankment)	193.8
Top-of-Closed Flood Gate	190.3
Top-of-Flashboards	188.5
Spillway Crest	186.0
Flood Gate-sill	174.0

<u>d. Reservoir-Surface Area</u>	(acres)
Spillway Crest	83.6

<u>e. Storage Capacity</u>	(acre-feet)
Top-of-Dam	1413
Top-of-Flashboards	970
Spillway Crest	761
Flood Gate-Sill	310

f. Dam
 Type - Concrete and masonry spillway gravity section;
 embankment section with core wall at left end
 of dam

Dam Length (ft)	715
-----------------	-----

g. Spillway

Type - Concrete and masonry overflow weir with
 2.5 feet of flashboards across entire crest

Length (ft)	225
-------------	-----

h. Sluice Gates

Type- Two timber and steel channel gates controlled
 by electric mechanism located above gates

Size of Gates (approximate)	5' x 12'
-----------------------------	----------

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The Main Mill Dam is located in the Champlain lowlands physiographic province of New York State. The Champlain Lake Plain is a low, relatively flat area underlain with marine clays and limestone. Drift deposits and peat bogs are common in the northeast portion of the plain. Bedrock in the area is from the Ordovician era (435 to 500 million years ago). A review of the Brittle Structures Map of New York indicates that there is a topographic linear feature in the vicinity of the dam.

Surficial soils in the area are the result of glaciations during the Cenozoic Era, the last of which was the Wisconsin glaciation.

b. Subsurface Investigations

No records of any subsurface investigations performed in the vicinity of this structure could be located.

2.2 DESIGN RECORDS

No design records for this structure could be located.

2.3 CONSTRUCTION RECORDS

The only information available concerning the construction of this dam was included on a Conservation Commission inspection report, a copy of which has been included in Appendix F. This report states that the dam was constructed by John J. Cunningham. The report was prepared by Mr. Cunningham and included sketches of the dam.

2.4 OPERATIONS RECORDS

There were no operations records available for this structure.

2.5 EVALUATION OF DATA

Data used for the preparation of this report was obtained from the Department of Environmental Conservation files. The information available was very limited and analyses performed for this report had to be based on sketches from an old inspection report and on data and measurements gathered during the visual inspection.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Main Mill Dam was conducted on June 16, 1981. The weather was sunny and the temperature was in the mid-eighties. The water surface at the time of this inspection was at the level of the top of the flashboards, with some water spilling over the crest.

b. Spillway

The spillway composes the major portion of this dam. At the time of the inspection, water flowing over the flashboards made a detailed inspection of the downstream face impossible. No serious deficiencies were noted on the portions which were visible. Mr. McKee of the Imperial Paper Company reported that a gunite-type grouting was done on the spillway section in 1975. He stated that this work significantly reduced the leakage through the masonry.

c. Non-Overflow Segment

Inspection of the nonoverflow segment, at the left end of the dam, was hampered by trees and brush growing on the embankment. The vertical alignment of this section was slightly irregular but generally satisfactory. There was no indication of any sloughing or subsidence. No seepage or wet areas were observed. There was no slope protection on the upstream slope although there was a small area of concrete paving protecting the right end of the embankment (adjacent to the sluice gates).

An excavation had been made through the embankment to install a sanitary sewer line from the plant. There was a manhole in the center of this area. The backfill material near the surface was crushed stone. It was not known whether the remainder of the backfill was compacted properly to assure the imperviousness of the embankment.

d. Sluice Gates

The sluice gates at the left end of the spillway appeared to be in satisfactory condition. There were several leaks between the timbers and the steel channels which supported them. There was also some leakage under the gates. The control mechanism, located above the gates, was in satisfactory condition. The gates were reported to be operational and are opened several times each year.

e. Powerhouse

Minor concrete deterioration was noted on several of the exterior surfaces of the powerhouse. The trashracks and two vertical slide gates on the upstream end appeared to be in satisfactory condition. There was minor wetness on the interior walls of the powerhouse but the overall condition was satisfactory.

f. Downstream Channel

The downstream channel below this dam is the normal river bed, having exposed bedrock and numerous boulders scattered along the bottom.

3.2 EVALUATION OF OBSERVATIONS

Visual observations revealed several deficiencies on this structure. The following items were noted:

1. Trees and brush growing on the non-overflow embankment section at the left end of the dam.
2. Crushed stone backfill material in the area where the sanitary sewer line had been placed through the embankment.
3. Minor leakage on the sluice gates between the timbers and the steel channels supporting them as well as under the gates.
4. Minor concrete deterioration on the exterior surfaces of the power house.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There are no prescribed operating procedures for this dam. Flashboards remain in place on the spillway crest year round. The sluice gates are opened when the owner wants to drop the water level in the reservoir.

4.2 MAINTENANCE OF DAM

Normal maintenance is performed as required by the owner.

4.3 WARNING SYSTEM IN EFFECT

No apparent warning system for evacuation of downstream residents is present.

4.4 EVALUATION

The operation procedures for this dam are satisfactory. Some increased maintenance efforts are required to correct some of the deficiencies noted in Section 3.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

The delineation of the contributing watershed to this dam is indicated on the map titled "Drainage Area Map - Main Mill Dam" (Appendix C.) The irregular but somewhat rectangular-shaped, northeast-southwest oriented watershed of some 608 square miles is comprised of relatively undeveloped lands consisting of forests, open fields, woodlands, and mountains. The slope along the Saranac River main stem is flat to moderate, with abrupt changes in elevation occurring at nine run-of-river dams located between this site and Saranac Lake. However, the hills and mountains throughout the watershed have steep slopes with those hills forming the watershed divide ranging in elevation from 2000 to 4600 feet above the reservoir.

Numerous bodies of water within the drainage basin lie primarily in the upper reaches of the watershed; these being Lake Clear, Lake Colby, the Upper Middle and Lower Saranac Lakes, Lake Kiwassa and Oseetah Lake (all within the Lake Flower subbasin) plus Rainbow Lake, Lake Kushaqua, Loon Lake, Franklin Falls Pond, Union Falls Pond and Silver Lake. The lower end of the watershed contains only Patterson Reservoir and Mead Reservoir as sizeable bodies of water.

The major tributaries to the Saranac River main stem are the North Branch of the Saranac River and Silver Lake Brook. Many smaller streams connect the numerous lakes and/or discharge directly to the main stem. There are no known flow diversions either into or out of this watershed.

5.2 ANALYSIS CRITERIA

No hydrologic/hydraulic information was available regarding the original design for this dam. Therefore, the analysis of the flood-water retarding capability of the dam was performed using the Corps of Engineer's HEC-1 computer program, Dam Safety version. The computer program develops inflow hydrograph using the "Snyder Unit Hydrograph" method and then reservoir and/or channel routs the hydrographs using the "Modified Puls" flood routing procedure.

The Probable Maximum Flood (PMF) reservoir routed, outflow hydrograph at the upper subbasin, controlled by the Lake Flower Dam, was input directly to the program.

The lagged hydrograph was then channel routed down the Saranac River to this site but the nine intervening run-of-river dams were not taken into account for floodwater attenuation. The resulting runoff hydrographs were then combined at this dam and flood-routed over the spillway.

The spillway design flood selected for analysis was the Probable Maximum Flood, in accordance with the Recommended Guidelines of the U.S. Army Corps of Engineers. The PMF event is that hypothetical storm event resulting from the most critical combination of rainfall, minimum soil retention, and direct runoff to a specific site that is considered reasonably possible for a particular watershed.

The Corps of Engineers' Upper Hudson and Mohawk River Basin study (ref.7) was used to obtain hydrograph parameters, rainfall loss rate values of 1.0 inches (initial) and 0.1 inches per hour (constant) and base flow parameters. Precipitation values used in the analysis were obtained from the Weather Bureau publication, HMR 33.

5.3 SPILLWAY CAPACITY

The single, ungated 225 foot long, concrete and masonry spillway was analyzed for weir flow using a discharge coefficient, C, of 3.2. Although there presently exists 2.5 feet of wooden flashboards on the crest, the floodwater analysis assumed no flashboards in place. There also exists a flood gate at the left end of the spillway. The gate, with a computed discharge capacity of 2146 cfs fully open for a water surface at the spillway crest, was assumed in the closed position for the floodwater analysis. Also, no additional discharge capacity through the hydropower machinery inside the mill at the right end of the dam was included. The computed discharge capacity of the spillway is 15,820 cfs.

The flood water analysis performed for this dam indicates that the spillway does not have sufficient capacity for discharging one half the PMF. For this storm event, the peak inflow is 38,764 cfs and the peak outflow is 38,697 cfs. The PMF peak inflow and peak outflow are 77,528 cfs and 77,421 cfs respectively.

5.4 RESERVOIR CAPACITY

The normal water surface is at or near the top-of-flashboards (elevation 188.5 -USGS). The impounded capacity at this elevation is 970 acre-feet. The storage volume between the spillway crest elevation and the top-of-flashboards is 209 acre-feet. The total surcharge storage capacity to the top-of-dam (elevation 193.8) is 652 acre-feet which is equivalent to a direct runoff depth of 0.02 inches over the entire watershed. The total storage capacity at top-of-dam is 1413 acre-feet.

5.5 FLOODS OF RECORD

The maximum known flood occurring on the Saranac River was recorded at the nearby USGS gaging station, located 600 feet downstream of this dam, on April 8, 1928. The recorded discharge was 11,500 cfs. For this flow discharging entirely over the spillway, the computed water surface is 6.3 feet above the spillway crest (elevation 192.3 USGS) just 1.5 feet below the top-of-dam.

5.6 OVERTOPPING POTENTIAL

Analyses using one-half the PMF storm event indicates that the spillway

does not have sufficient discharge capacity. The peak outflow from one-half PIF event will overtop the dam to a computed depth of 4.42 feet. The peak outflow from the PIF event will overtop the dam to a computed depth of 18.05 feet. All storm events exceeding 20% of the PIF will result in the dam being overtopped.

5.7 EVALUATION

The spillway does not have sufficient capacity for discharging the peak outflow from one half the PIF without the dam being overtopped. For such a large storm event, a high tailwater condition would most likely occur resulting in the flooding of the downstream hazard areas. Hence, the spillway capacity is not considered to be seriously inadequate since dam failure from overtopping would not significantly increase the hazard to loss of life downstream from that which would exist just before overtopping failure. Therefore, the spillway is assessed as inadequate.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

The water flowing over the spillway made a detailed inspection of this segment of the dam impossible. However, no serious deficiencies were noted on the segments which were visible. Trees and brush growing on the non-overflow segment at the left end of the dam hampered the visual inspection of this area, but no serious defects were noted. The sluice gates at the left end of the spillway appeared to be in satisfactory condition with only minor leakage under the gates. Some minor concrete deterioration was noted on the power house at the right end of the dam.

b. Data Review and Stability Evaluation

No design or construction information concerning this structure was available. A Conservation Commission Inspection Report from 1913 contained a sketch of the dam's cross section. This sketch and measurements made at the time of the inspection were used to develop the approximate cross section shown in Appendix D. The stability analysis performed for this report was based on this approximate cross section. The results of the analysis are as follows:

<u>Case</u>	<u>Overturning Safety Factor</u>	<u>Resultant in Middle Third</u>	<u>Sliding Safety Factor</u>
a. Normal conditions, 2.5 feet of flashboards in place, surface at top of flashboards	0.94	No	0.65
b. Water surface at spillway crest (no flashboards) ice load of 5,000 lb/ft	0.81	No	0.65
c. Flood flow; water surface at top of dam, 7.8 ft. above spillway crest	0.76	No	0.47
d. Normal conditions as in case a. with seismic coefficient of 0.10.	0.88	No	0.51

This stability analysis indicates that the spillway section of the dam is unstable for all conditions studied. The fact that this structure has stood for eighty years indicates that the actual safety factors are substantially higher than those computed.

The analysis performed was based on the available information which may not accurately reflect the existing conditions. However, this analysis does indicate that there is a serious question concerning the stability of this dam and that further investigations are required.

The additional investigations should include developing accurate cross sections of the dam. Subsurface explorations and cores of the dam should be taken to obtain information about the structure and uplift forces acting on the foundation. A revised stability analysis should then be performed using this data. Based on the results of these analyses, the need for modifications to the structure should be determined.

c. Seismic Stability

This structure is located in Seismic Zone 3. A seismic stability analysis was performed for the dam assuming a seismic coefficient of 0.1. The results of this analysis (shown on page 11) indicate that the safety factors are below 1.0 for both overturning and sliding. Therefore, when the revised stability analysis is performed, seismic stability criteria should also be met.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase I inspection of the Main Mill Dam revealed several deficiencies which can affect the safety of the dam. The most serious of these deficiencies are related to the stability of the spillway segment of the dam.

The stability analysis performed for this report indicates that the spillway section is unstable for all conditions studied. This analysis was based on the limited information available and so may not reflect existing conditions. However, the analysis does indicate that there is a serious question concerning the stability of this dam and further investigations are required.

The spillway, while not having sufficient discharge capacity for passing one-half of the Probable Maximum Flood, is considered to be inadequate. For such a large storm event, a high tailwater condition would occur, resulting in the flooding of downstream hazard areas. Hence, dam failure during a large storm event would not significantly increase the hazard to loss of life downstream from that which would exist just before overtopping failure.

b. Adequacy of Information

The information available, while sufficient for the preparation of the Phase I report, was deficient in several respects. No plans or design information could be located. Analyses performed for this report were based on sketches from a 1912 Conservation Commission inspection report and measurements made at the time of the inspection.

c. Need for Additional Investigation

Further analysis of the structural stability of the spillway section is required. These studies should include developing accurate cross sections of the dam, progressing subsurface explorations, and coring the dam. This information should then be incorporated into a detailed stability evaluation.

d. Urgency

The investigations of the structural stability should be commenced within 3 months of the date of notification of the owner. Remedial measures deemed necessary as a result of this investigation should be completed within 18 months. Other deficiencies noted should be corrected within 12 months of the date of notification.

7.2 RECOMMENDED MEASURES

- 1. Modify the structure as necessary, based on the stability analysis.**
- 2. Cut trees and brush growing on the non-overflow embankment section at the left end of dam.**
- 3. Investigate area where the sanitary sewer line goes through the embankment to assure that the backfill material is sufficiently impervious.**
- 4. Develop an emergency action plan for the notification and evacuation of downstream residents.**





1913 PHOTO OF DOWNSTREAM FACE OF STRUCTURE



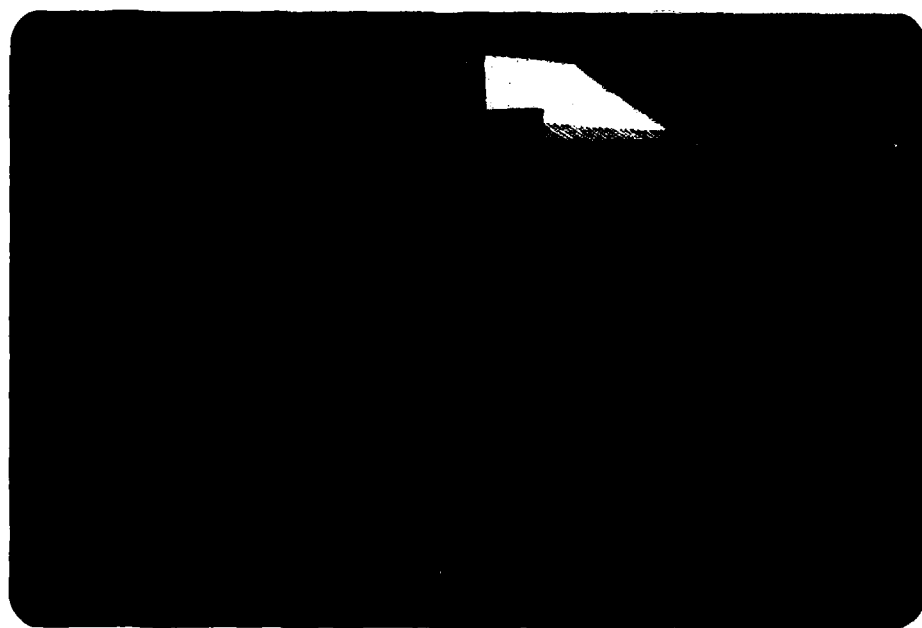
CURRENT PHOTO OF DOWNSTREAM FACE OF STRUCTURE



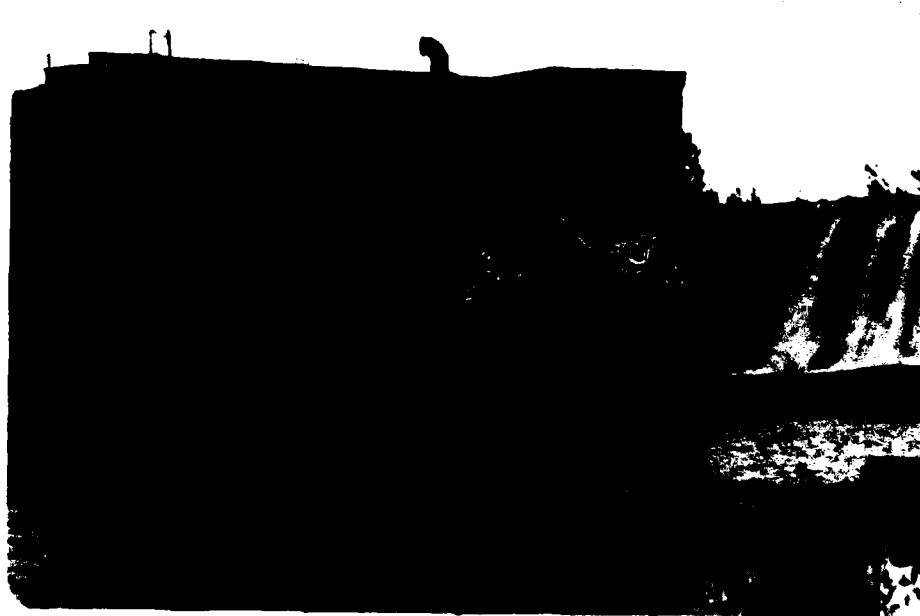
DOWNSTREAM FACE OF SPILLWAY SECTION



DOWNSTREAM FACE OF SPILLWAY SECTION



UPSTREAM VIEW OF POWERHOUSE



DOWNSTREAM VIEW OF POWER HOUSE



SLUICE GATE STRUCTURE AT END OF SPILLEAY SECTION



SLUICE GATES, NOTE MINOR LEAKAGE
AT EDGES OF GATES



NON-OVERFLOW EMBANKMENT SECTION
AT LEFT END OF SPILLWAY



NON-OVERFLOW EMBANKMENT SECTION LOOKING BACK AT SPILLWAY
CRUSHED STONE IN FOREGROUND IS FROM THE
EXCAVATION FOR THE SEWER LINE

APPENDIX B

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST1) Basic Data

a. General

Name of Dam MAIN MILL DAM
Fed. I.D. # 262 DEC Dam No. 236A-234
River Basin LAKE CHAMPLAIN
Location: Town PLATTSBURGH County CLINTON
Stream Name SARANAC RIVER
Tributary of
Latitude (N) 44° 41' Longitude (W) 73° 28.4'
Type of Dam CONCRETE & MASONRY
Hazard Category C
Date(s) of Inspection 6/16/81
Weather Conditions SUNNY 85°
Reservoir Level at Time of Inspection AT FLASHBOARD CREST

b. Inspection Personnel R.L. WARRENDER W.C. LYNICKc. Persons Contacted (Including Address & Phone No.) ROY MCKEE - IMPERIAL PAPER COMPANYUNDERWOOD AVEPLATTSBURGH, NEW YORK518-563-3800

d. History:

Date Constructed 1909 Date(s) Reconstructed Designer Constructed By JOHN J. CUNNINGHAMOwner IMPERIAL PAPER COMPANY

93-15-3(9/80)

2) **Embankment - LEFT END OF DAM**

a. Characteristics

- (1) Embankment Material UNKNOWN
- (2) Cutoff Type CORE WALL EXTENDS INTO FOUNDATION
- (3) Impervious Core CORE WALL - UNKNOWN COMPOSITION
- (4) Internal Drainage System NONE
- (5) Miscellaneous

b. Crest - 10 FT WIDE

- (1) Vertical Alignment SLIGHTLY IRREGULAR
- (2) Horizontal Alignment SATISFACTORY
- (3) Surface Cracks NONE
- (4) Miscellaneous MANHOLE CONTAINING PIPE FROM SANITARY SEWER FROM PLANT IS ON EMBANKMENT. - BACKFILL ON TOP IS CRUSHED STONE

c. Upstream Slope

- (1) Slope (Estimate) (V:H) 1 ON 2
- (2) Undesirable Growth or Debris, Animal Burrows SOME BRUSH & TREES
- (3) Sloughing, Subsidence or Depressions NONE

- (4) Slope Protection NO REGULAR PROTECTION ACROSS ~~CRUST~~
SLOPE - THERE IS SOME CONCRETE ON SLOPE & CREST AT END
OF EMBANKMENT ADJACENT TO SPILLWAY SECTION
- (5) Surface Cracks or Movement at Toe UNOBSERVABLE

d. Downstream Slope

- (1) Slope (Estimate - V:H) 1 ON 2
- (2) Undesirable Growth or Debris, Animal Burrows SUBSTANTIAL
AMOUNT OF GROWTH - BRUSH & TREES
- (3) Sloughing, Subsidence or Depressions NONE NOTED
- (4) Surface Cracks or Movement at Toe NONE
- (5) Seepage NONE
- (6) External Drainage System (Ditches, Trenches; Blanket) NONE
- (7) Condition Around Outlet Structure ● SATISFACTORY
- (8) Seepage Beyond Toe NONE

e. Abutments - Embankment Contact

CONCRETE PAVING PROTECTS SLOPE IN VICINITY
OF END OF SPILLWAY

93-15-3(9/80)

(1) Erosion at Contact NONE

(2) Seepage Along Contact NONE

3) Drainage System

a. Description of System NONE

b. Condition of System

c. Discharge from Drainage System

4) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.)

STAFF GAGE AT POWER HOUSE

USGS GAGE 600 FEET DOWNSTREAM OF DAM

5) Reservoir

- a. Slopes OKAY
- b. Sedimentation NO APPARENT PROBLEMS
- c. Unusual Conditions Which Affect Dam POND AREA IS FENCED OFF TO PREVENT ACCESS

6) Area Downstream of Dam

- a. Downstream Hazard (No. of Homes, Highways, etc.) CITY OF PLATTSBURG
- b. Seepage, Unusual Growth NONE
- c. Evidence of Movement Beyond Toe of Dam NONE
- d. Condition of Downstream Channel ROCK & BOULDER CHANNEL

7) Spillway(s) (Including Discharge Conveyance Channel)

- MAIN DAM IS OVERFLOW SPILLWAY SECTION - SLUICE GATES AT LEFT END OF SPILLWAY CAN LOWER WATER LEVEL.
- a. General _____
- b. Condition of ^{OVERFLOW} Service Spillway - FLASHBOARDS ON CREST - 2.5 FT ABOVE CONCRETE CREST - FLASHBOARDS STAY IN PLACE YEAR ROUND

93-15-3(9/80)

- c. Condition of ^{SLUICE GATES} ~~auxiliary spillway~~ - 2 GATES COMPOSED OF TIMBERS
HELD IN PLACE IN STEEL CHANNELS - SOME LEAKAGE THROUGH
SEAMS OF GATES PLUS LEAKS ALONG SILL.

CONTROL MECHANISM ELECTRICALLY OPERATED VIA
MECHANISM ABOVE THE GATES

- d. Condition of Discharge Conveyance Channel SARANAC RIVER
CHANNEL.

8) Reservoir Drain/Outlet - SEE SLUICE GATES ABOVE

Type: Pipe _____ Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other _____

Size: _____ Length _____

Invert Elevations: Entrance _____ Exit _____

Physical Condition (Describe): _____ Unobservable _____

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve _____ Uncontrolled _____

Operation: Operable _____ Inoperable _____ Other _____

Present Condition (Describe): _____

9) Structural

N/A

- a. Concrete Surfaces _____

- b. Structural Cracking _____

- c. Movement - Horizontal & Vertical Alignment (Settlement) _____

- d. Junctions with Abutments or Embankments _____

- e. Drains - Foundation, Joint, Face _____

- f. Water Passages, Conduits, Sluices _____

- g. Seepage or Leakage _____

- h. Joints - Construction, etc. _____

- i. Foundation _____

- j. Abutments _____

- k. Control Gates _____

- l. Approach & Outlet Channels _____

- m. Energy Dissipators (Plunge Pool, etc.) _____

- n. Intake Structures _____

- o. Stability _____

- p. Miscellaneous _____ N/A _____

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)a. Description and Condition

POWER HOUSE - CONSISTS OF TRASH RACKS - 2 VERTICAL
SLIDE GATES - A 35' DEEP FLUME - THEN THE
POWER STATION. - CONTAINS FIVE TURBINE
UNITS - TWO ARE PRESENTLY OPERABLE - THREE
OTHERS USED TO BE USED TO OPERATE GRINDERS.
THERE IS MINOR WETNESS ON THE
INTERIOR WALLS OF THE POWER HOUSE - NO SERIOUS
LEAKS. SOME CONCRETE DETERIORATION ON
EXTERIOR WALLS BOTH UPSTREAM & DOWNSTREAM
AS WELL.

11) Operation Procedures (Lake Level Regulation):

WATER SURFACE MAINTAINED AS HIGH AS POSSIBLE
FOR POWER GENERATION

APPENDIX C

HYDROLOGIC/HYDRAULIC
ENGINEERING DATA AND COMPUTATIONS

MAIN MILL DAM

NY 262

CHECK LIST FOR DAMS HYDROLOGIC AND HYDRAULIC ENGINEERING DATA

1

AREA-CAPACITY DATA:

	USGS DATUM Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	<u>193.8</u>	<u>83.6⁺</u>	<u>1413</u>
2) Design High Water (Max. Design Pool)	<u> </u>	<u> </u>	<u> </u>
3) ~~Auxiliary~~ Spillway Crest	<u>186.0</u>	<u>83.6</u>	<u>761</u>
4) Pool Level with Flashboards	<u>188.5</u>	<u>83.6⁺</u>	<u>970</u>
5) ~~Spillway~~ Spillway Crest ~~Flood GATE SILL~~	<u>174.0</u>	<u>83.6⁻</u>	<u>310</u>

DISCHARGES

	Volume (cfs)
1) Average Daily	<u>UNKNOWN</u>
2) Spillway @ Maximum High Water	<u>15,820</u>
3) Spillway @ Design High Water	<u> </u>
4) Spillway @ ~~Auxiliary~~ ^{FLASHBOARD} Spillway Crest Elevation	<u>2,846</u>
5) Low Level Outlet - ~~Flood GATE~~ FULLY OPENED	<u>2,146</u>
6) Total (of all facilities) @ Maximum High Water	<u>15,820⁻</u>
7) Maximum Known Flood	<u> </u>
8) At Time of Inspection	<u>11,500</u>

CREST:

ELEVATION: 193.8

Type: EARTH NON-OVERFLOW SEGMENT

Width: 15'± Length: 300'±

Spillover MASONRY SPILLWAY SECTION

Location CENTER OF DAM

SPILLWAY:

PRINCIPAL

EMERGENCY

186.0

Elevation

CONCRETE & MASONRY OVERFLOW

Type

2'±

Width

Type of Control

✓

Uncontrolled

Controlled:

2.5' FLASHBOARDS ACROSS CREST

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:

Type : USGS GAGE #04273500

Location: 600 ft downstream of dam

Records:

Date - APRIL 8, 1928

Max. Reading - 11,500 cfs

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

Method of Controlled Releases (mechanisms):

SLUICE GATES (ELECTRICALLY OPERATED) AT
END OF SPILLWAY

DRAINAGE AREA:

608 Sq. Mi.

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: ADIRONDAK MOUNTAINS

Terrain - Relief: STEEP TO MODERATE

Surface - Soil: GLACIAL TILL

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

NONE

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: NONE

Elevation: _____

Reservoir:

Length @ Maximum Pool _____ (Miles)

Length of Shoreline (@ Spillway Crest) _____ (Miles)

PROJECT GRID

JOB MAIN MILL DAM	SHEET NO. 1/	CHECKED BY	DATE
SUBJECT WATERSHED PARAMETERS	COMPUTED BY WL		DATE 7/23/81

DRAINAGE AREA :

VEGS GAGE # **04273500 @ DAM SITE :** AREA = **608 SQ. MI.**

SUBBASIN (LAKE FLOWER DAM)
NY-707 AREA = **179 SQ. MI.**

AA = 429 SQ. MI.

SUBBASIN - LOWER AREA = 429 SQ. MI.

MAIN STEM OF SARANAC RIVER (DAM TO LAKE FLOWER DAM) :

QUAD SHT.	SCALE	INS.	FT.	
PLATTSBURG	1:24000	5.3		(RESV. L = 6400' TO UPSTREAM DAM)
MORRISONVILLE		24.4		
DANNEMORA		24.8		
MOFFITSVILLE		3.5		
REDFORD		27.3		(24.4 TO CONFLUENCE W/ SILVER LAKE BROOK)
ALDER BROOK	1:24000	<u>10.8</u>		(9.4 TO OUTLET @ UNION FALLS POND)
		96.1	→ 192500	
			36.40 MILES	
LAKE PLACID	1:62500	7.5		
SARANAC LAKE	1:62500	<u>11.0</u>		
		18.5	→ 96354	
			18.25 MILES	
			<u>54.65 MILES</u>	
			<u>33.75 MILES</u>	

[illegible]

.1 LAKE FLOWER

(0077)	K	1	400	C	C	C	0	1	
(0078)	K1		ROUTE OVERDAM AT OUTLET TO LOWER SARANAC						
(0079)	Y	0	0	C	1	1			
(0080)	Y1	1	0	0	0	0	-1533	C	
(0081)	SS	C	15000	30000	51000				
(0082)	SE	1533	1540	1545	1550				
(0083)	SS	1533	60	3.5	1.5				
(0084)	SD	1537	2.65	1.5	12				
(0085)	K	1	600	C	0	C	1		
(0086)	K1		ROUTE THRU OSEETAN & LAKE FLOWER						
(0087)	Y	0	0	C	1				
(0088)	Y1	0	3	2	0	C	1		
(0089)	K	0	601	C	0	0	1		
(0090)	K1		RUNOFF SUBAREA 6						
(0091)	M	1	1	37.8	0	179.1	0	C	1
(0092)	F	0	16.	77	91	102	108		
(0093)	T	0	C	C	0	C	0	1.0	0.1
(0094)	A	4.6	C-625					0	.067
(0095)	A	-2.0	-0.10	1.6					
(0096)	K	2	600	C	C	C	0	1	
(0097)	K1		COMBINE 2 HYDROGRAPHS - INFLOW HYDROGRAPH FOR LAKE FLOWER 6+4=6						
(0098)	K	1	600	0	0	C	0	1	
(0099)	K1		ROUTE OVER LAKE FLOWER DAM						
(0100)	Y	C	0	C	1	1			
(0101)	Y1	1	0	0	0	C	0	-1528	-1
(0102)	Y4	1528	1529	1530	1531	1532	1534	1536	1540
(0103)	Y4	1544	1546	1548	1550				
(0104)	Y5	0	140	500	1010	1625	3065	4775	8880
(0105)	Y5	13755	16440	19290	22285				11225
(0106)	SS	0	820	2800	6200	9160	18460	30560	47000
(0107)	SE	1513	1522	1525	1528	1530	1535	1540	1545
(0108)	SS	1528							
(0109)	SD	1533	2.65	1.5	32				
(0110)	K	99							
(0111)	A								
(0112)	A								
(0113)	A								
(0114)	A								

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	1CJ
ROUTE HYDROGRAPH TO	2CJ
RUNOFF HYDROGRAPH AT	2C1
COMBINE 2 HYDROGRAPHS AT	2CJ
ROUTE HYDROGRAPH TO	21J
ROUTE HYDROGRAPH TO	3C1
RUNOFF HYDROGRAPH AT	3CJ
COMBINE 4 HYDROGRAPHS AT	3CJ
ROUTE HYDROGRAPH TO	3CJ
ROUTE HYDROGRAPH TO	4CJ
RUNOFF HYDROGRAPH AT	4C2
RUNOFF HYDROGRAPH AT	5CJ
COMBINE 3 HYDROGRAPHS AT	4CJ
ROUTE HYDROGRAPH TO	4CJ
ROUTE HYDROGRAPH TO	6CJ
RUNOFF HYDROGRAPH AT	6C1
COMBINE 2 HYDROGRAPHS AT	6CJ
ROUTE HYDROGRAPH TO	6CJ
END OF NETWORK	

.....
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 CAN SAFETY VERSION JULY 1972
 LAST MODIFICATION 26 FEB 79
 POCIFIED FOR HONEYWELL APR 79

.....
 NEW YORK STATE
 DEPT OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

LAKE FLOWER DAM		LAKE CHAMPLAIN BASIN	
DEC 183-1107 CHAMPLAIN		FRANKLIN COUNTY	
PMF -- 1/2 PMF		SNYDER UN	
PHASE 1 - DATE			
1	2	3	4
A1 NY-707		0	0
A2		0	0
A3		0	0
B	100	0	0
B1	5	0	0
J	1	2	1
J1	0.5	1	
K	0	100	1
K1			
RUNOFF SUBAREA 1			
M	1	1	179.1
P	16	77	91
T			102
W	6.2	0.625	108
X	-2.0	-0.10	1.6
K	1	200	1.0
K1			0.1
Y			0.136
ROUT THRU UPPER SARANAC			
V		0	1
V1	0		
K	0	201	1
K1			
RUNOFF SUBAREA 2			
M	1	1	179.1
P	16	77	91
T			102
W	5.0	0.625	108
X	-2.0	-0.10	1.6
K	2	200	1.0
K1			0.1
Y			0.254
COMBINE 2 HYDROGRAPHS AT UPPER SARANAC LAKE 1+2=2			
M	1	1	1
P	16	77	91
T			102
W	5.0	0.625	108
X	-2.0	-0.10	1.6
K	2	200	1.0
K1			0.1
Y			0.254
ROUT OVER UPPER SARANAC LAKE DAM			
M	1	1	1
P	16	77	91
T			102
W	5.0	0.625	108
X	-2.0	-0.10	1.6
K	2	200	1.0
K1			0.1
Y			0.254

61	K	0	462				1
62	K1			RUNOFF SUBAREA 4			
63	M	1	23.7	179.1			
64	P	16	77	91	102	108	
65	T						1.0 0.1 0.103
66	U	3.2	0.625				
67	X	-2.0	-0.10	1.6			
68	K	0	500				1
69	K1			RUNOFF SUBAREA 5			
70	M	1	19.2	179.1			1
71	P	16	77	91	102	108	
72	T						1.0 0.1 0.01
73	U	5.4	0.625				
74	X	-2.0	-0.10	1.6			
75	K	3	460				1
76	K1			COMEIIE 3 HYDROGRAPHS - INFLOW TO LOWER SARANAC 3+4+5+6			
77	K	1	400				1
78	K1			ROUT OVER DAM AT OUTLET TO LOWER SARANAC			
79	V			1	1		
80	V1	1					-1533 0
81	SS	0	15000	20000	51000		
82	SE	1533	1540	1545	1550		
83	SS	1533	60	3.5	1.5		
84	SO	1537	2.65	1.5	12		
85	K	1	600				1
86	K1			ROUT THRU CSEETAN AND LAKE FLOWER			
87	V			0	1		
88	V1	0					
89	K	0	601				1
90	K1			RUNOFF SUBAREA 6			

92	P	16	77	91	102	100	
93	T						1.0 0.1 8.067

94	W	4.0	8.625				
95	X	-2.0	-8.10	1.6			

96	K	2	600				1
----	---	---	-----	--	--	--	---

97	K1	CONEIDE 2 HYDROGRAPHS - INFLOW FOR LAKE FLOWER DAM 6+4=6					
----	----	--	--	--	--	--	--

98	K	1	600				1
----	---	---	-----	--	--	--	---

99	K1	ROUT OVER LAKE FLOWER DAM					
----	----	---------------------------	--	--	--	--	--

100	Y			1	1		
-----	---	--	--	---	---	--	--

101	Y1	1					-1528 -1
-----	----	---	--	--	--	--	----------

102	Y4	1528	1529	1530	1531	1532	1534 1536 1538 1540 1542
-----	----	------	------	------	------	------	--------------------------

103	Y4	1544	1546	1548	1550		
-----	----	------	------	------	------	--	--

104	Y5	0	140	500	1010	1625	3065 4775 6725 8800 11225
-----	----	---	-----	-----	------	------	---------------------------

105	Y5	13755	16440	18290	22285		
-----	----	-------	-------	-------	-------	--	--

106	SS	0	820	2800	6200	9160	18460 30560 47000
-----	----	---	-----	------	------	------	-------------------

107	SE	1513	1522	1525	1528	1530	1535 1540 1545
-----	----	------	------	------	------	------	----------------

108	SS	1528					
-----	----	------	--	--	--	--	--

109	SD	1533	2.65	1.5	32		
-----	----	------	------	-----	----	--	--

110	K	99					
-----	---	----	--	--	--	--	--

111	A						
-----	---	--	--	--	--	--	--

112	A						
-----	---	--	--	--	--	--	--

113	A						
-----	---	--	--	--	--	--	--

114	A						
-----	---	--	--	--	--	--	--

115	A						
-----	---	--	--	--	--	--	--

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

FLN OFF HYDROGRAPH AT 100
FCUTE HYDRGGRAPH TO 200
FLN CFF HYDRGGRAPH AT 201
LCBINE 2 HYDROGRAPHS AT 200
FCUTE HYDROGRAPH TO 200
FCUTE HYDRGGRAPH TO 301
FLN CFF HYDRGGRAPH AT 300
LCBINE 2 HYDROGRAPHS AT 300
FCUTE HYDRGGRAPH TO 300
FCUTE HYDRGGRAPH TO 400
FLN CFF HYDRGGRAPH AT 402
FLN CFF HYDRGGRAPH AT 500
LCBINE 3 HYDROGRAPHS AT 400
FCUTE HYDRGGRAPH TO 400
FCUTE HYDRGGRAPH TO 600
FLN CFF HYDRGGRAPH AT 601
LCBINE 2 HYDROGRAPHS AT 600
FCUTE HYDRGGRAPH TO 600
END OF NETWORK

CPS
INCHES
RM
AC-FT
THOUS CL M

525. 806. 488. 329. 17624.
1.48 3.58 7.24 16.16
27.57 90.97 183.80 410.55
14120. 34191. 69084. 154314.
17417. 42174. 85213. 150344.

.....

HYDROGRAPH ROUTING

ROUT OVER LAKE FLOWER DAY

ISTAQ	ICOPP	IECON	ITAPE	JPLY	JPRY	INAME	ISTAGE	IAUTC
600	1	0	0	0	0	1	0	0

ROUTING DATA

CLOSS	AVG	IRES	ISAME	IOPT	IFMP	LSTR
0.	0.	1	1	0	0	0

ASTFS NSTOL

LAG	APSKK	X	TSK	STORA	ISPRAY
0	0.	0.	0.	-1528.	-1

STAGE 1528.00 1529.00 1531.00 1532.00 1534.00 1536.00 1538.00 1540.00 1542.00
1544.00 1546.00 1548.00 1550.00

FLOW 0. 100.00 1010.00 1625.00 3065.00 4775.00 6725.00 8880.00 11225.00
13725.00 16440.00 19290.00 22285.00

CAPACITY= 0. 220. 2800. 6200. 9160. 18460. 30560. 47000.

ELEVATION= 1513. 1522. 1525. 1528. 1530. 1535. 1540. 1545.

CREL	SFUID	COON	EXPU	ELEVL	COOL	CAREA	EXPL
1528.0	0.	0.	0.	0.	0.	0.	0.

DAM DATA

TOPEL	COOD	EXPD	DAMUID
1523.0	2.7	1.5	32.

STATION 600, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

1/2 PMF

CUIFLOW

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
3987.	4024.	4039.	4048.	4054.	4073.	4077.	4075.	4070.	4062.	4052.	4052.
3842.	3816.	3785.	3781.	3760.	3730.	3695.	3687.	3634.	3599.	3563.	3563.
3526.	3488.	3445.	3409.	3368.	3327.	3289.	3242.	3158.	3158.	3154.	3154.
3115.	3076.	3036.	2995.	2953.	2912.	2870.	2827.	2785.	2743.	2703.	2703.
2780.	2658.	2616.	2574.	2532.	2491.	2450.	2410.	2370.	2332.	2322.	2322.
2254.	2256.	2218.	2181.	2143.	2106.	2070.	2033.	1997.	1957.	1923.	1923.
1927.	1892.	1856.	1824.	1791.	1758.	1726.	1694.	1663.	1632.	1602.	1602.

STORAGE

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
6209.	6218.	6227.	6236.	6247.	6261.	6280.	6298.	6313.	6331.	6351.	6351.
6412.	6674.	7373.	9200.	12291.	13262.	16904.	17684.	17933.	18056.	18056.	18056.
18148.	18215.	18255.	18288.	18304.	18310.	18308.	18299.	18284.	18266.	18266.	18266.
18241.	18219.	18198.	18176.	18154.	18132.	18110.	18088.	18066.	18044.	18022.	18000.

17685.	17638.	17788.	17735.	17681.	17624.	17564.	17503.	17429.	17373.
17304.	17230.	17161.	17087.	17011.	16933.	16854.	16773.	16651.	16608.
16524.	16437.	16348.	16257.	16165.	16071.	15977.	15881.	15785.	15688.
15550.	15492.	15394.	15295.	15197.	15098.	15000.	14902.	14803.	14765.
14607.	14510.	14412.	14315.	14219.	14123.	14028.	13935.	13842.	13750.
13668.	13570.	13482.	13395.	13309.	13224.	13140.	13058.	12977.	12897.

STAGE									
1528.0	1528.0	1528.0	1528.0	1528.0	1528.0	1528.1	1528.1	1528.1	1528.1
1528.1	1528.3	1528.8	1530.0	1531.7	1533.3	1534.2	1534.6	1534.7	1534.8
1534.8	1534.9	1534.9	1534.9	1534.9	1534.9	1534.9	1534.9	1534.9	1534.9
1534.9	1534.9	1534.9	1534.9	1534.8	1534.8	1534.8	1534.8	1534.7	1534.7
1534.7	1534.7	1534.6	1534.6	1534.6	1534.6	1534.5	1534.5	1534.5	1534.4
1534.4	1534.3	1534.3	1534.3	1534.2	1534.2	1534.1	1534.1	1534.0	1534.0
1534.0	1533.9	1533.9	1533.8	1533.8	1533.7	1533.6	1533.6	1533.6	1533.5
1533.5	1533.4	1533.4	1533.3	1533.2	1533.2	1533.1	1533.1	1533.0	1532.8
1532.9	1532.9	1532.8	1532.8	1532.7	1532.7	1532.6	1532.6	1532.5	1532.5
1532.4	1532.4	1532.3	1532.3	1532.2	1532.2	1532.1	1532.1	1532.1	1532.0

PEAK OUTFLOW IS 4077. AT TIME 78.0C HOURS

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
4077.	4075.	4065.	3982.	262961.
115.	115.	115.	113.	7446.
	0.21	0.84	2.48	6.83
	5.38	21.45	63.04	173.46
	20.1.	8062.	23693.	65197.
	2493.	9945.	29225.	80419.

STATION 600, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

PMF

CUTFLOW									
2.	3.	5.	7.	9.	12.	15.	19.	22.	25.
41.	91.	354.	1406.	4130.	6929.	8716.	9407.	9586.	9626.
9638.	9629.	9602.	9563.	9513.	9455.	9352.	9324.	9284.	9182.
9108.	9034.	8960.	8885.	8811.	8737.	8663.	8589.	8516.	8442.
8367.	8293.	8217.	8141.	8065.	7987.	7909.	7830.	7750.	7669.
7593.	7519.	7435.	7353.	7270.	7186.	7100.	7013.	6925.	6835.
6745.	6653.	6561.	6468.	6375.	6280.	6186.	6091.	5996.	5901.
5806.	5711.	5617.	5523.	5429.	5336.	5243.	5157.	5074.	4991.
4987.	4820.	4732.	4642.	4552.	4461.	4370.	4279.	4188.	4099.
3966.	3856.	3751.	3648.	3550.	3454.	3361.	3272.	3185.	3100.

STORAGE									
6218.	6236.	6254.	6273.	6294.	6323.	6362.	6398.	6429.	6465.
6428.	7159.	8558.	12218.	18406.	24281.	27559.	28762.	29072.	29341.
29163.	29147.	29101.	29033.	28946.	28846.	28726.	28619.	28497.	28371.
28243.	28114.	27985.	27855.	27725.	27596.	27467.	27337.	27208.	27078.
26947.	26816.	26682.	26549.	26414.	26277.	26139.	25998.	25856.	25712.
25565.	25415.	25261.	25104.	24943.	24780.	24614.	24444.	24272.	24098.
23921.	23742.	23561.	23378.	23194.	23008.	22822.	22634.	22445.	22256.
22067.	21878.	21686.	21499.	21311.	21123.	20936.	20748.	20561.	20372.
20181.	19984.	19782.	19578.	19370.	19161.	18950.	18737.	18525.	18314.
18109.	17911.	17716.	17530.	17348.	17171.	16998.	16831.	16667.	16507.

STAGE									
1528.0	1528.0	1528.0	1528.0	1528.1	1528.1	1528.1	1528.1	1528.2	1528.2

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

RATIOS APPLIED TO FLOWS

OPERATION STATION AREA PLAN RATIO 1 RATIO 2
 0.50 1.00

HYDROGRAPH AT 100 32.90 1 10003. 20007.
 (0.00) (283.27)(566.53)(

ROUTED TO 200 22.96 1 10003. 20007.
 (0.00) (283.27)(566.53)(

HYDROGRAPH AT 201 41.58 1 15624. 31248.
 (0.00) (442.43)(884.85)(

2 COMBINED 200 74.40 1 25628. 51255.
 (0.00) (725.69)(1451.30)(

ROUTED TO 200 74.40 1 2862. 6454.
 (0.00) (81.05)(182.75)(

ROUTED TO 301 74.40 1 2862. 6454.
 (0.00) (81.05)(182.75)(

HYDROGRAPH AT 300 24.00 1 9456. 18912.
 (0.00) (267.76)(535.52)(

2 COMBINED 300 98.40 1 10393. 21558.
 (0.00) (294.29)(610.45)(

ROUTED TO 300 98.40 1 2466. 5356.
 (0.00) (69.84)(151.67)(

ROUTED TO 400 98.40 1 2466. 5356.
 (0.00) (69.84)(151.67)(

HYDROGRAPH AT 402 23.70 1 10471. 20941.
 (0.00) (296.50)(593.00)(

HYDROGRAPH AT 500 19.20 1 6950. 13899.
 (0.00) (196.79)(393.59)(

3 COMBINED 400 141.30 1 17900. 36140.
 (0.00) (506.86)(1023.30)(

ROUTED TO 400 141.30 1 3178. 7185.
 (0.00) (89.98)(203.44)(

ROUTED TO 600 141.30 1 3178. 7185.
 (0.00) (89.98)(203.44)(

HYDROGRAPH AT 601 27.00 1 14202. 28404.
 (0.00) (402.15)(804.31)(

2 COMBINED 600 177.10 1 15707. 32679.

2 COMBINED

600 179.10

ROUTED TO	600	(9.00)	(444.78)	(925.38)
		179.10	1	4077.9638.
		(9.00)	(115.43)	(272.92)

1/2 MF PMF

SUMMARY OF DAM SAFETY ANALYSIS

UPPER SARANAC LAKE
DAM

PLAN 1

ELEVATION
STORAGE
OUTFLOW

INITIAL VALUE
1573.00
0.
0.

SPILLWAY CREST
1573.00
0.
0.

TOP OF DAM
1575.00
13000.
1312.

RATIO
OF
PMF
0.50
1.00

MAXIMUM
RESERVOIR
W-S-ELEV
1578.32
1578.67

MAXIMUM
DEPTH
OVER DAM
1.33
3.67

MAXIMUM
STORAGE
AC-FT
21663.
42178.

MAXIMUM
CUTFLOW
CFS
2862.
6459.

DURATION
OVER TOP
HOURS
126.00
158.00

TIME OF
MAX OUTFLOW
HOURS
60.00
57.00

TYPE OF
FAILURE
HOURS
0.
0.

SUMMARY OF DAM SAFETY ANALYSIS

OUTLET CONTROL @

MIDDLE SABANAC LAKE

PLAN 1

ELEVATION
STORAGE
OUTFLOW

INITIAL VALUE
1536.00
0.
0.

SPILLWAY CREST
1536.00
0.
0.

TOP OF DAM
1549.00
6000.
742.

RATIO
OF
PMF
0.50
1.00

MAXIMUM
RESERVOIR
ELEV
1549.54
1549.95

MAXIMUM
DEPTH
OVER DAM
4.54
9.95

MAXIMUM
STORAGE
AC-FT
19163.
28976.

MAXIMUM
OUTFLOW
CFS
2466.
5356.

DURATION
OVER TOP
HOURS
255.00
258.00

TIME OF
MAX OUTFLOW
HOURS
114.00
117.00

TYPE OF
FAILURE
MCURS
C.
G.

LOWER SARANAC LAKE

**ELEVATION
STORAGE
CUTFLCM**

INITIAL VALUE
1523.00
00.00
00.00

SPILWAY CREST
153.00
0.
0.

TCP OF DAN
1537.00
8571.
1600.

**RATIO
OF
PWF
0-50
1-00**

10-601
10-501
A373-S-N
MICHAEL
4011XV

MAXIMUM
DEPTH
OVER DAN
2.00
6.07

**MAXIMUM
STORAGE
AC-FY
12860.
24285.**

MAXIMUM
CUTFLOW
CFS
3172.
7185.

DURATION	
OVER TOP	
HOURS	
210.00	
258.00	

TIME OF X OUTFLOW HOURS	TYPE OF FAILURE HCLRS
108.00	0.
57.00	0.

SUMMARY OF DAM SAFETY ANALYSIS

LAKE FLOWER DAM
(WY-107)

PLAN 1

ELEVATION
STORAGE
CUTFLW

INITIAL VALUE
1526.00
6200.
0.

SPILLWAY CREST
1526.00
6200.
0.

TOP OF DAM
1533.00
14740.
2342.

RATIO
OF
PMF
0.50
1.00

MAXIMUM
RESERVOIR
ELEV
1534.92
1535.42

MAXIMUM
DEPTH
OVER DAM
1.92
6.42

MAXIMUM
STORAGE
AC-FT
18310.
29163.

MAXIMUM
CUTFLOW
CFS
14077.
19630.

DURATION
OVER TOP
HOURS
152.00
258.00

TIME OF
MAX CUTFLOW
HOURS
70.00
63.00

TIME OF
FAILURE
HOURS
0.
0.

PROJECT GRID

JOB MAIN MILL DAM		SHEET NO. 2/	CHECKED BY	DATE
SUBJECT WATERSHED PARAMETERS		COMPUTED BY WL		DATE 7/23/81
SUBBASIN - LOWER :				
ENVELOPE UNIT HYDROGRAPH :				
LAG TIME : $t_p = C_e (L \times L)^{0.3}$				
$C_e = 2.0$ $L = 54.65$ $L_{CA} = 33.75$				
$t_p = 19.09$ HRS				
UNIT RAINFALL DURATION : $t_r = \frac{t_p}{5.5}$				
$t_r = 3.47$ HRS USE $t_r = 3$ HRS				
ADJUSTED LAG TIME : $TP = t_p + 0.25(t_r - t_p)$				
$TP = 19.09 + 0.25(3 - 3.47)$				
$TP = 18.97$ HRS USE $TP = 19$ HRS				
PEAKING COEFFICIENT : CP				
FOR 2 ADJACENT WATERSHEDS :				
CORPS ENGRS. REF: UPPER HUDSON & MOHAWK RIVER BASIN STUDY				
SUBBASIN	3/4	CP = 0.55		
"	3/8	CP = 0.56		
USE CP = 0.56				

PROJECT GRID

JOB MAIN MILL DAM		SHEET NO. 3/	CHECKED BY	DATE
SUBJECT WATERSHED PARAMETERS		COMPUTED BY WL		DATE 7/23/81

RAINFALL INFILTRATION - SOIL LOSS RATES:

INITIAL LOSS = 1.0 INS. CONSTANT LOSS = 0.10 INS./HR

BASE FLOW:

RTIOR = 1.3 ← REF: CORPS EXRS
UPPER HUDSON RIVER BASIN STUDY

START Q = 858 cfs

AVE Q = 835 cfs (63 YRS - GAGE DATA) → 1.37 CSD

Q = 858 cfs (@ 2 CSD - LOWER SUBBASIN)

QRCSD = 0.2

RAINFALL - HRR # 33:

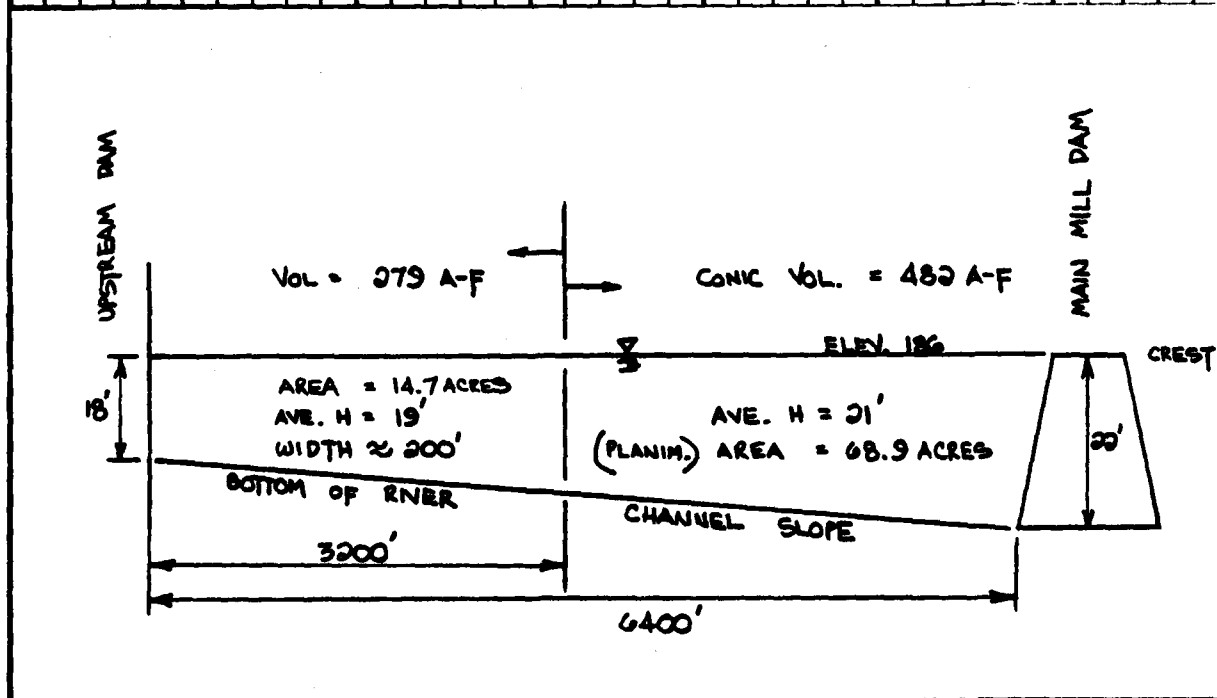
ZONE 1 200 SQ MI / 24 HR INDEX AVE = 1.6"

ADJUSTMENT FOR

AREA - DURATION					
		6	12	24	48
% OF INDEX:	59	74.3	85	90	

PROJECT GRID

JOB MAIN MILL DAM				SHEET NO. 4/		CHECKED BY	DATE
SUBJECT STORAGE VOLUME :				COMPUTED BY WL		DATE 7/23/81	
LOCATION	ELEV.	AH	AREA	AA	AV	YOL	
	164					0	
		10					
GATE SILL	174	12			451	310	
SPILL CREST	186	2.5	83.6		209	761	
TOP FLASHES	188.5	5.3	83.6		443	970	
TOP LT. EMB.	193.8	9.2	83.6		769	1413	
	203		83.6			2182	
PROJECTED							



PROJECT GRID

JOB		SHEET NO.		CHECKED BY		DATE	
MAIN MILL DAM		5/					
SUBJECT				COMPUTED BY		DATE	
SPILLWAY DISCHARGES				WL		7/24/81	
WEIR FLOW: $Q = CLH^{3/2}$							
NO FLASHBOARDS $C = 3.2$							
$L = 225'$							
$(\Delta H = H - 4.3)$							
ELEV.	H	SPILLWAY Q	ΔH	L	Q	TOTAL Q	
CREST 186	—	—	—	—	—	—	
	0.5	254					
	1	720					
	1.5	1320					
	2	2036					
TOP BOARD	2.5	2846					
	3	3741					
	4	5760					
TOP GATE	4.3	6420					
	4.8	7571	—	$C = 2.63$ $L = 10$	—	7571	
	5	8049	0.2		2	8051	
	6	10581	1.2		34	10615	
	7	13334	2.2		85	13419	
TOP EMB	7.8	15684	3		136	15820 ←	
	8	16291	3.2		150	16441	
	9	18440	4.2		226	19666	
	9.1	18764	4.3		234	19998	
BOT. WINDOW	9.8	22088	5		284	22382	

PROJECT GRID

JOB MAIN MILL DAM		SHEET NO. 6/	CHECKED BY	DATE
SUBJECT FLOOD GATE - DISCHARGES		COMPUTED BY WL		DATE 7/24/81

ORIFICE FLOW: $Q = CA\sqrt{2gH}$

$C = 0.6$

FULLY OPEN $A = 120 = 10 \times 12$

@ GATE BOTTOM @ SPILLCREST (ELEV 186)

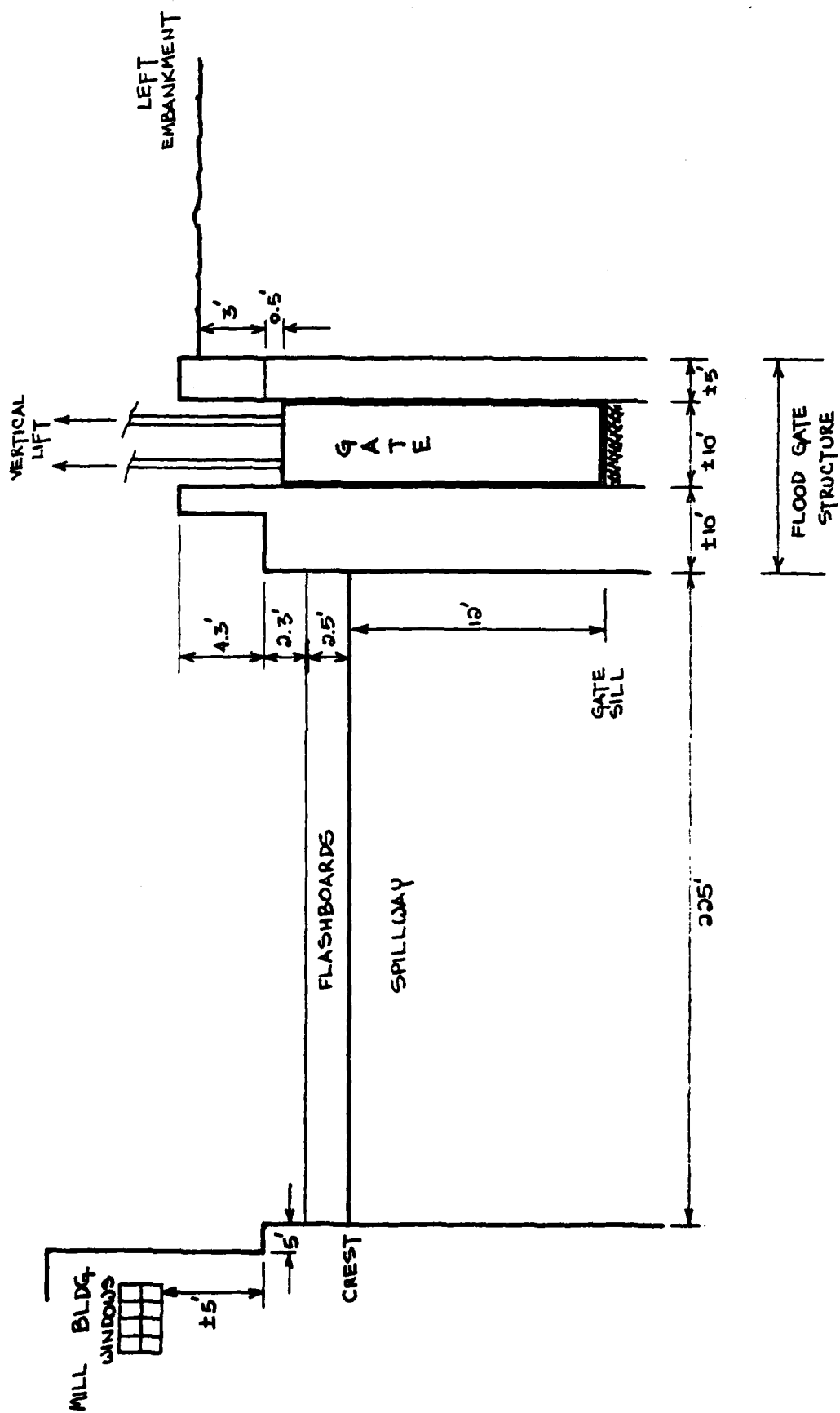
$Q = 577.8\sqrt{H}$

H - MEASURED FROM ELEV. 180

ELEV.	H	Q
CREST 186	6	1415
	6.5	1473
	7	1528
	7.5	1582
	8	1634
	8.5	1684
	9	1733
	10	1827
	10.3	1854
	10.8	1898
	11	1916
	12	2001
	13	2083
TOP EMB	13.8	2146

MAIN MILL DAM NY-262

FIELD MEASUREMENTS - 6/81



PROJECT GRID

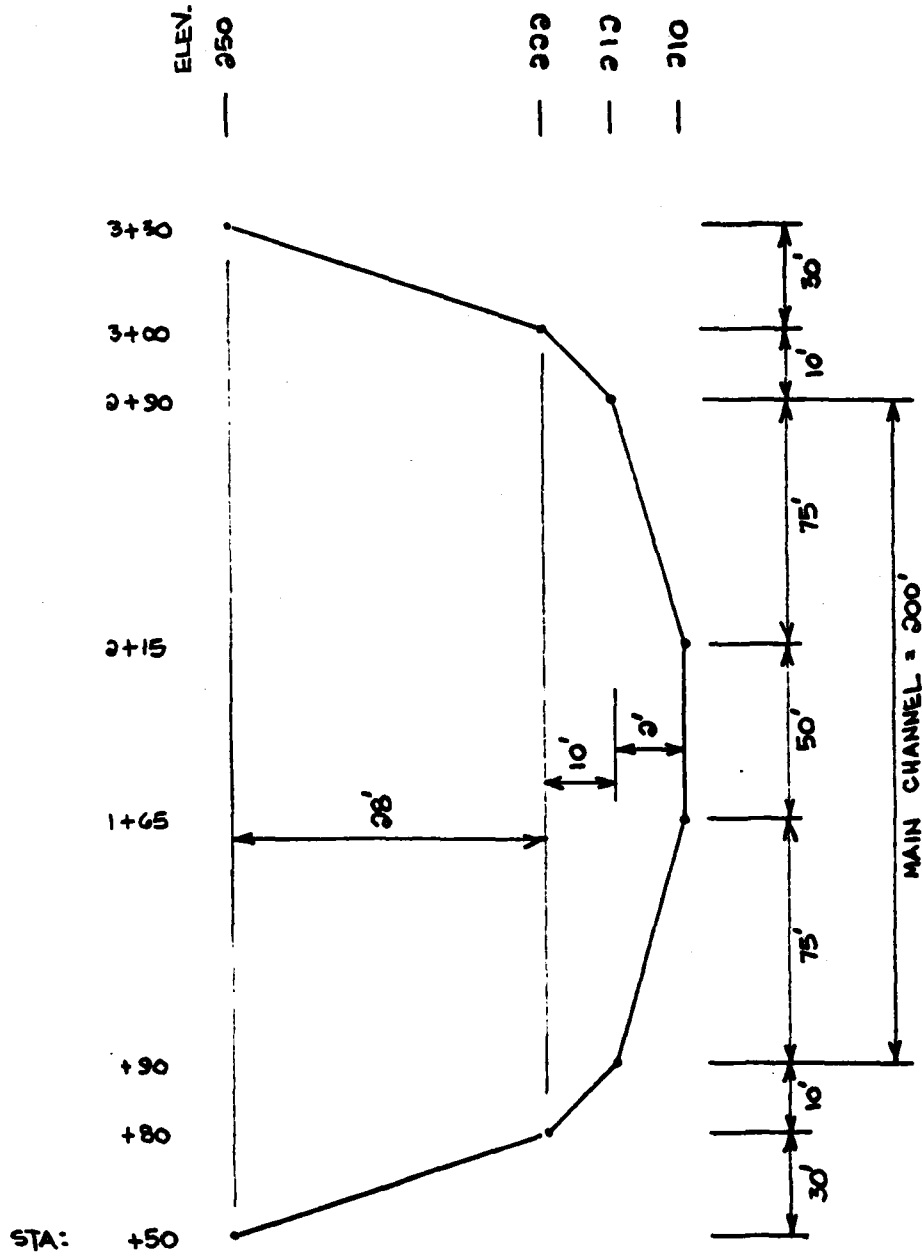
JOB	MAIN MILL DAM		SHEET NO.	7/	CHECKED BY		DATE	
SUBJECT					COMPUTED BY	WL	DATE	7/24/81

EMBANKMENT OVERTOPPING:	(WEIR FLOW)
CREST L = 715'	Q = CLH ^{3/2}
SPILLWAY = 225'	C = 2.63
MILL BLDG = 160'	
∴ OVERTOPPING L = 330'	@ ELEV. 193.8

MAIN MILL DAM
NY-262

SARANAC RIVER - MAIN STEM

[APPROX. X-SECTION - HEC-1DB INPUT]



$n = 0.055$

$n = 0.045$

$n = 0.055$

.....
FLOOD HYDROGRAPH PACKAGE (HLC-1)
DAM SAFETY VLRION JULY 1978
LAST MODIFICATION 26 FEB 79
MODIFIED FOR MONEYJELL APR 79
.....

.....
NEW YORK STATE
DEPT OF ENVIRONMENTAL CONSERVATION
FLOOD PROTECTION BUREAU

MAIN WILL DAM
DEC 256A-234 CHAMPLAIN -- SARAGUAC RIVER
IMPERIAL PAPER CO.
LAKE CHAMPLAIN BASIN
CLINTON COUNTY
SNYDER WM W/1/ SUGGASIN

	K1	RUNOFF -- LOWER SUBBASIN				
31						
32	M	1	429	608		1
33	P		16	53	74.5	85
34	T					1.0
35	U	19	0.56			0.1
36	X	858	-0.2	1.3		
37	K	2	DAM			1
38	K1	COMBINED HYDROGRAPHS AT DAM -- INFLOW				
39	K	1	DAM			1
40	K1	ROUTED OUTFLOW - DAM - FLOOD GATE CLOSED				
41	Y		1	1		VO FLASHBOARDS
42	Y1	1				-186
43	Y4	174	186	186.5	187	187.5
44	Y4	198.8	191	192	193	193.8
45	Y5	0	0	254	720	1322
46	Y5	7571	8051	18615	13419	15820
47	SS	0	310	761	970	1413
48	SE	164	174	186	188.5	193.8
49	SS	186				
50	SD	193.8	2.63	1.5	330	
51	K	99				
52	A					
53	A					
54	A					
55	A					
56	A					

PREVIEW OF SEQUENCE OF SIMILAR NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT LKFLUH
ROUTE HYDROGRAPH TO SARIV
RUNOFF HYDROGRAPH AT LURBSN
COMBINE 2 HYDROGRAPHS AT DAM
ROUTE HYDROGRAPH TO DAM
END OF NETWORK

.....
 FLOOD HYDROGRAPH PACKAGE (HLC-1)
 DAN SAFETY VERSION JULY 1979
 LAST MODIFICATION 26 FEB 79
 MODIFIED FOR HONEYWELL APR 79

RUN DATE 07/26/81

NY-262

MAIN MILL DAM
 DEC 236A-234 CHAMPLAIN -- SARANAC RIVER
 IMPERIAL PAPER CO.

LAKE CHAMPLAIN BASIN
 CLINTON COUNTY
 SNYDER UM VI/ SUBBASIN

.....
 NEW YORK STATE
 DEPT OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

JOB SPECIFICATION

NO	MMH	MMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	INSTAN
120	5	0	0	0	0	0	0	0	0
			JOPER	NUT	LROUT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED

NPLAN= 1 NATIO= A LRTIO= 1

RTIOS= 0.20 0.21 0.22 0.23 0.24 0.25 0.50 1.00

SUB-AREA RUNOFF COMPUTATION

PMF ROUTED OUTFLOW LAGGED HYDROGRAPH -- LAKE FLOWER DAM -- PHASE 1-OALE
 ISTATG ICOMP IECON ITAPE JPLT JPRT INAME ISTAGE IAUTO
 LKFLUR 0 0 0 0 0 0 0 0 0 0

HYDROGRAPH DATA

INHYG	1UNG	TAREA	SNAP	TRSDA	TRNSPC	RATIO	ISNOW	ISANE	LOCAL
-1	0	179.00	0.	179.00	0.	0.	0	1	0
354.	354.	354.	354.	354.	354.	354.	354.	354.	354.
354.	354.	354.	354.	354.	354.	354.	354.	354.	354.
6929.	9407.	9586.	9626.	9638.	9629.	9603.	9603.	9603.	9563.
9455.	9324.	9254.	9182.	9108.	9034.	8960.	8960.	8960.	8885.
8663.	8589.	8516.	8442.	8367.	8293.	8217.	8217.	8217.	8141.
7987.	7830.	7750.	7669.	7593.	7514.	7435.	7435.	7435.	7353.
7186.	7013.	6925.	6839.	6745.	6653.	6561.	6561.	6561.	6468.
6186.	6091.	5996.	5901.	5806.	5711.	5617.	5617.	5617.	5523.
5336.	5243.	5074.	4991.	4907.	4820.	4732.	4732.	4732.	4642.
4461.	4378.	4188.	4079.	3966.	3856.	3751.	3751.	3751.	3648.
3454.	3361.	3185.	3108.	3033.	2958.	2883.	2883.	2883.	2808.
2658.	2583.	2433.	2358.	2283.	2208.	2133.	2133.	2133.	2058.

INPUT HYDROGRAPH

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
9638.	9633.	9574.	9144.	624698.
273.	273.	271.	259.	17689.
	0.50	1.99	5.78	16.23
	12.72	50.55	144.84	412.36
	4777.	18989.	54411.	154884.
	5892.	23423.	67115.	191046.

CFR
 CMS
 INCHES
 MM
 AC-FT
 THOUS CU M

HYDROGRAPH AT STALKFLUR FOR PLAN 1. RTIO 1

71.	71.	71.	71.	71.	71.	71.	71.	71.	71.
1386.	1743.	1881.	1917.	1925.	1928.	1926.	1921.	1921.	1921.
1491.	1878.	1865.	1851.	1836.	1836.	1807.	1792.	1777.	1777.
1747.	1733.	1710.	1703.	1688.	1673.	1659.	1643.	1628.	1613.
1597.	1582.	1566.	1558.	1544.	1519.	1503.	1487.	1471.	1454.
1437.	1420.	1403.	1385.	1367.	1349.	1331.	1312.	1294.	1275.
1256.	1237.	1210.	1199.	1180.	1161.	1142.	1123.	1105.	1086.
1067.	1049.	1031.	1015.	998.	981.	964.	946.	928.	910.
892.	874.	856.	838.	816.	793.	771.	750.	730.	710.
691.	672.	654.	637.	622.	607.	592.	577.	562.	547.
532.	517.	502.	487.	472.	457.	442.	427.	412.	397.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
1928.	1927.	1915.	1829.	124939.
55.	55.	54.	52.	3538.
	0.10	0.40	1.14	3.25
	2.54	10.11	28.97	82.46
	955.	3798.	10882.	30977.
	1178.	4685.	13423.	38209.

HYDROGRAPH AT STALKFLUR FOR PLAN 1, R110 2

74.	74.	74.	74.	74.	74.	74.	74.	74.	74.
1459.	1830.	1975.	2013.	2021.	2024.	2022.	2017.	2008.	1998.
1986.	1972.	1958.	1943.	1928.	1913.	1897.	1882.	1866.	1850.
1835.	1819.	1804.	1788.	1773.	1757.	1742.	1726.	1710.	1694.
1677.	1661.	1644.	1628.	1610.	1595.	1578.	1561.	1544.	1527.
1589.	1491.	1473.	1454.	1435.	1416.	1397.	1378.	1358.	1339.
1319.	1299.	1279.	1259.	1239.	1219.	1199.	1180.	1160.	1140.
1121.	1101.	1083.	1066.	1048.	1030.	1012.	994.	975.	956.
937.	910.	899.	879.	857.	833.	810.	788.	764.	746.
725.	706.	687.	669.	653.	637.	621.	605.	590.	574.
558.	542.	527.	511.	495.	479.	464.	448.	432.	416.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
2024.	2023.	2010.	1920.	131186.
57.	57.	57.	54.	3715.
	0.11	0.42	1.20	3.41
	2.67	10.62	30.42	86.58
	1003.	3980.	11426.	32526.
	1237.	4919.	14094.	40120.

HYDROGRAPH AT STALKFLUR FOR PLAN 1, R110 3

78.	78.	78.	78.	78.	78.	78.	78.	78.	78.
1524.	1910.	2070.	2189.	2118.	2118.	2113.	2104.	2093.	2089.
2000.	2066.	2051.	2036.	2020.	2004.	1987.	1971.	1955.	1938.
1922.	1906.	1890.	1874.	1857.	1841.	1824.	1808.	1791.	1774.
1757.	1740.	1723.	1705.	1687.	1670.	1653.	1636.	1618.	1599.
1581.	1562.	1543.	1524.	1504.	1484.	1464.	1443.	1423.	1403.
1382.	1361.	1340.	1319.	1298.	1277.	1256.	1235.	1215.	1194.
1174.	1153.	1135.	1116.	1098.	1080.	1061.	1041.	1021.	1001.
981.	961.	941.	921.	897.	873.	848.	825.	803.	781.
768.	739.	720.	701.	684.	667.	651.	634.	618.	601.
585.	568.	552.	535.	519.	502.	486.	469.	453.	436.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
2120.	2119.	2106.	2012.	137433.

1570.	1547.	1523.	1494.	1472.	1452.	1428.	1404.	1381.	1357.
1334.	1311.	1289.	1269.	1248.	1227.	1205.	1183.	1161.	1138.
1115.	1093.	1070.	1047.	1020.	992.	964.	938.	912.	888.
864.	840.	818.	796.	777.	758.	740.	721.	702.	683.
665.	646.	627.	604.	590.	571.	552.	533.	519.	496.

PEAK 2410.
 CFS 2408.
 CMS 68.
 INCHES 0.13
 MM 0.50
 AC-FT 3.18
 THOUS CU M 1194.
 1473.
 5856.
 16779.
 47762.
 TOTAL VOLUME 156174.
 4422.
 4.06
 103.07
 38721.
 47762.

HYDROGRAPH AT STALKFLUR FOR PLAN 1. RTIO 7

177.	177.	177.	177.	177.	177.	177.	177.	177.	177.
177.	177.	177.	177.	177.	177.	177.	177.	177.	177.
3665.	4358.	4784.	4793.	4813.	4819.	4815.	4802.	4782.	4757.
4728.	4696.	4662.	4627.	4591.	4554.	4517.	4480.	4443.	4406.
4347.	4332.	4295.	4258.	4221.	4184.	4147.	4109.	4071.	4033.
3994.	3955.	3915.	3875.	3835.	3797.	3757.	3718.	3677.	3635.
3593.	3550.	3507.	3463.	3418.	3373.	3327.	3281.	3234.	3188.
3140.	3093.	3046.	2998.	2951.	2903.	2856.	2809.	2762.	2715.
2658.	2622.	2579.	2537.	2496.	2454.	2410.	2366.	2321.	2276.
2231.	2185.	2140.	2094.	2048.	1983.	1928.	1876.	1824.	1775.
1727.	1681.	1636.	1593.	1554.	1517.	1479.	1442.	1404.	1367.
1329.	1292.	1254.	1217.	1179.	1142.	1104.	1067.	1029.	992.

PEAK 4819.
 CFS 4816.
 CMS 136.
 INCHES 0.25
 MM 0.36
 AC-FT 2388.
 THOUS CU M 2946.
 11711.
 33558.
 77442.
 206.15
 72.42
 8.12
 8045.
 312349.
 TOTAL VOLUME

HYDROGRAPH AT STALKFLUR FOR PLAN 1. RTIO 8

354.	354.	354.	354.	354.	354.	354.	354.	354.	354.
354.	354.	354.	354.	354.	354.	354.	354.	354.	354.
6229.	8716.	9324.	9584.	9624.	9638.	9629.	9603.	9563.	9513.
9355.	9392.	9324.	9254.	9182.	9108.	9034.	8960.	8885.	8811.
8737.	8663.	8589.	8516.	8442.	8367.	8293.	8217.	8141.	8065.
7987.	7909.	7830.	7750.	7669.	7593.	7514.	7435.	7353.	7278.
7186.	7100.	7013.	6925.	6835.	6745.	6653.	6561.	6468.	6375.
6208.	6186.	6091.	5996.	5901.	5806.	5711.	5617.	5523.	5429.
5356.	5243.	5157.	5074.	4991.	4907.	4820.	4732.	4642.	4552.
4661.	4370.	4279.	4184.	4079.	3966.	3856.	3751.	3648.	3558.
3554.	3361.	3272.	3185.	3100.	3033.	2954.	2883.	2808.	2733.
2658.	2583.	2508.	2433.	2358.	2283.	2208.	2133.	2058.	1983.

PEAK 9638.
 CFS 9633.
 CMS 273.
 INCHES 0.50
 MM 0.50
 AC-FT 4777.
 THOUS CU M 5892.
 23423.
 67115.
 191046.
 154884.
 412.38
 5.78
 16.23
 17609.
 624698.
 TOTAL VOLUME

CHANNEL ROUTING	-- SARANAC RIVER	-- LAKE FLOWER TO OAM				
ISTAQ	I COMP	JPLT	JPRY	INAME	ISAGE	IAUTO
SARRIV	1	0	0	0	1	0
		ROUTING DATA				
		IRCS	ISAME	IOPT	IPMP	LSTR
GLOSS	CLOSS	AVG	1	0	0	
0.	0.	0.				
		NSTOL	LAG	AMSCK	X	ISPRAT
NSTPS	5	0	0	0.	0.	0

QN(1)	QN(2)	QN(3)	ELWVT	ELMAX	RLNTH	SEL
0.0550	0.0450	0.0550	210.0	250.0	280552.	0.00462

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

	9.	1705.59	4617.04	7497.21	10836.10	13533.70	16490.22	19008.62	22789.93	26534.16
STORAGE	29301.30	32711.35	36144.32	39640.20	43196.99	46820.70	50505.32	54252.05	58063.29	61736.65
OUTFLOW	0.	746.94	3570.65	7912.15	13558.96	20395.25	28344.90	37355.83	47391.08	58420.35
	70419.57	83369.27	97253.53	112059.18	127775.25	144392.59	161903.54	180301.68	199581.67	219739.04
STAGE	210.00	212.11	214.21	216.32	218.42	220.53	222.63	224.74	226.84	228.95
	231.05	233.16	235.26	237.37	239.47	241.58	243.68	245.79	247.89	250.00
FLOW	0.	746.94	3570.65	7912.15	13558.96	20395.25	28344.90	37355.83	47391.08	58420.35
	72019.57	83369.27	97253.53	112059.18	127775.25	144392.59	161903.54	180301.68	199581.67	219739.04

STATION' SARRIV. PLAN 1. RTIO 1

OUTFLOW									
0.	2.	4.	8.	14.	21.	28.	35.	41.	
52.	57.	60.	63.	65.	66.	68.	69.	70.	
89.	124.	203.	355.	652.	1275.	1649.	1827.	1888.	
1912.	1908.	1900.	1809.	1877.	1864.	1858.	1836.	1822.	
1792.	1778.	1763.	1748.	1733.	1718.	1704.	1689.	1674.	
1644.	1628.	1613.	1598.	1582.	1566.	1558.	1535.	1519.	
1481.	1471.	1454.	1437.	1428.	1403.	1385.	1367.	1349.	
1313.	1294.	1275.	1257.	1238.	1219.	1208.	1181.	1162.	
1124.	1105.	1087.	1068.	1050.	1033.	1016.	999.	981.	
966.	929.	911.	893.	874.	855.	836.	815.	794.	
759.	749.	744.	740.	733.	725.	714.	703.	690.	
662.	648.	633.	618.	603.	588.	573.	557.	542.	
STOR									
0.	1.	2.	4.	7.	10.	13.	17.	20.	
25.	27.	29.	30.	31.	32.	33.	33.	34.	
45.	60.	98.	171.	313.	463.	543.	578.	587.	

PLAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
4811.	4806.	4767.	4530.	303932.
136.	136.	135.	128.	8606.
CFS	0.25	0.99	2.82	7.90
CMS	6.34	25.17	71.75	200.59
INCHES	2383.	9455.	28954.	75355.
MM	2940.	11663.	33247.	92949.
AC-FT				
THOUS CU M				

MAXIMUM STORAGE = 1086.

MAXIMUM STAGE IS 214.8

STATION SARRIV, PLAN 1, RTIO 8

		OUTFLOW			
8.	2.	42.	70.	103.	139.
214.	262.	314.	324.	332.	338.
484.	762.	8663.	9558.	9614.	9628.
9563.	9515.	9396.	9260.	9188.	9115.
8893.	8818.	8670.	8523.	8449.	8375.
8148.	8072.	7924.	7799.	7724.	7645.
7407.	7325.	7157.	6984.	6895.	6805.
6538.	6437.	6250.	6060.	5965.	5870.
5587.	5493.	5307.	5131.	4963.	4791.
4702.	4612.	4431.	4246.	4146.	3932.
3720.	3627.	3437.	3359.	3277.	3195.
2961.	2886.	2660.	2585.	2510.	2435.

STOR

8.	1.	20.	34.	50.	67.
114.	126.	151.	156.	160.	163.
194.	362.	1578.	1671.	1677.	1678.
1671.	1666.	1647.	1640.	1632.	1625.
1602.	1594.	1571.	1563.	1555.	1548.
1524.	1516.	1493.	1484.	1474.	1464.
1432.	1422.	1388.	1376.	1364.	1353.
1316.	1304.	1279.	1254.	1241.	1229.
1191.	1178.	1142.	1131.	1119.	1108.
1074.	1062.	1025.	1013.	1000.	986.
943.	931.	897.	881.	865.	848.
802.	787.	741.	726.	711.	697.

STAGE

210.0	210.0	210.1	210.2	210.3	210.4
210.0	210.0	210.1	210.2	210.3	210.4
210.7	210.8	210.9	210.9	210.9	211.0
212.1	213.6	216.6	216.9	217.0	217.0
216.9	216.9	216.8	216.8	216.8	216.8
216.7	216.6	216.6	216.5	216.5	216.5
216.4	216.3	216.3	216.3	216.2	216.2
216.1	216.0	215.9	215.9	215.8	215.7
215.6	215.6	215.5	215.4	215.4	215.3
215.2	215.1	215.0	215.0	214.9	214.8
214.8	214.7	214.6	214.5	214.4	214.3
214.3	214.2	214.1	214.1	213.9	213.8
213.8	213.7	213.5	213.5	213.4	213.3

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
9628.	9624.	9560.	9100.	612097.
273.	273.	271.	258.	17333.
CFS	0.50	1.99	5.68	15.90
CMS				
INCHES				

AC-FT
THOUS CU M

12.70 50.46 144.15 403.98
4772. 19962. 54151. 151760.
5886. 23389. 66794. 187193.

MAXIMUM STORAGE = 1678.

MAXIMUM STAGE IS 217.0

SUB-AREA RUNOFF COMPUTATION

RUNOFF -- LOWER SUBBASIN

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

HYDROGRAPH DATA

INYOG IUNG YAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL
1 1 429.00 0. 608.00 0. 0. 0 0 1 0

PRECIP DATA

SPFE PMS R6 R12 R24 R48 R72 R96
0. 16.00 59.00 74.50 85.00 92.00 0. 0.

TRSPC COMPUTED BY THE PROGRAM IS 0.903

LOSS DATA

LROPT STRKR DLTKR RTIOL ERAIN STRKS RTIOK STRTL CNSTL ALSMX RTIMP
0 0. 0. 1.00 0. 0. 1.00 1.00 0.10 0. 0.

UNIT HYDROGRAPH DATA

TP= 19.00 CP=0.56 NTA= 0

RECESSION DATA

STRIG= 858.00 QRCN= -0.20 RTIOK= 1.30
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 7.10 AND R= 7.19 INTERVALS

UNIT HYDROGRAPH 42 END-OF-PERIOD ORDINATES, LAG= 19.02 HOURS, CP= 0.56 VOL= 1.00

448. 1658. 3324. 5174. 7849. 8177. 7630. 6651. 5787.
5035. 4380. 3811. 3315. 2884. 2410. 1900. 1653. 1438.
1251. 1088. 947. 824. 717. 624. 472. 357. 297.
311. 270. 235. 205. 178. 155. 135. 117. 89.
77. 67.

END-OF-PERIOD FLOW

MO,DA	HR,MM	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO,DA	HR,MM	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	3.00	1	0.02	0.	0.02	836.	1.08	15.00	61	0.	0.	0.	7218.
1.01	6.00	2	0.02	0.	0.02	814.	1.08	18.00	62	0.	0.	0.	7031.
1.01	9.00	3	0.09	0.	0.09	793.	1.08	21.00	63	0.	0.	0.	6849.
1.01	12.00	4	0.09	0.	0.09	773.	1.09	0.	64	0.	0.	0.	6472.
1.01	15.00	5	0.23	0.	0.23	753.	1.09	3.00	65	0.	0.	0.	6499.
1.01	18.00	6	0.47	0.	0.47	733.	1.09	6.00	66	0.	0.	0.	6351.
1.01	21.00	7	0.04	0.	0.04	714.	1.09	9.00	67	0.	0.	0.	6167.
1.02	0.	8	0.04	0.	0.04	696.	1.09	12.00	68	0.	0.	0.	6007.
1.02	3.00	9	0.30	0.00	0.30	679.	1.09	15.00	69	0.	0.	0.	5852.
1.02	6.00	10	0.30	0.00	0.30	667.	1.09	18.00	70	0.	0.	0.	5700.
1.02	9.00	11	1.12	0.82	0.30	1028.	1.09	21.00	71	0.	0.	0.	5553.
1.02	12.00	12	1.12	0.82	0.30	2384.	1.10	0.	72	0.	0.	0.	5409.
1.02	15.00	13	2.01	2.51	0.30	5866.	1.10	3.00	73	0.	0.	0.	5269.

1.02	14.00	14.71	9.41	0.30	14.71	1.10	6.00	74	0.	0.	0.	4995.
1.02	21.00	0.46	0.16	0.30	2780.6	1.10	9.00	75	0.	0.	0.	4870.
1.03	0.	0.46	0.16	0.30	4397.2	1.10	12.00	76	0.	0.	0.	4744.
1.03	3.00	0.	0.	0.	5964.0	1.10	15.00	77	0.	0.	0.	4621.
1.03	6.00	0.	0.	0.	7147.7	1.10	18.00	78	0.	0.	0.	4501.
1.03	9.00	0.	0.	0.	7718.4	1.10	21.00	79	0.	0.	0.	4385.
1.03	12.00	0.	0.	0.	7646.9	1.11	0.	80	0.	0.	0.	4271.
1.03	15.00	0.	0.	0.	6991.6	1.11	3.00	81	0.	0.	0.	4161.
1.03	18.00	0.	0.	0.	6124.2	1.11	6.00	82	0.	0.	0.	4053.
1.03	21.00	0.	0.	0.	5341.4	1.11	9.00	83	0.	0.	0.	3948.
1.04	0.	0.	0.	0.	4652.2	1.11	12.00	84	0.	0.	0.	3846.
1.04	3.00	0.	0.	0.	4052.2	1.11	15.00	85	0.	0.	0.	3746.
1.04	6.00	0.	0.	0.	3530.1	1.11	18.00	86	0.	0.	0.	3649.
1.04	9.00	0.	0.	0.	3075.7	1.11	21.00	87	0.	0.	0.	3555.
1.04	12.00	0.	0.	0.	2680.3	1.12	0.	88	0.	0.	0.	3463.
1.04	15.00	0.	0.	0.	2336.2	1.12	3.00	89	0.	0.	0.	3373.
1.04	18.00	0.	0.	0.	2036.7	1.12	6.00	90	0.	0.	0.	3286.
1.04	21.00	0.	0.	0.	1774.0	1.12	9.00	91	0.	0.	0.	3200.
1.05	0.	0.	0.	0.	1549.1	1.12	12.00	92	0.	0.	0.	3118.
1.05	3.00	0.	0.	0.	1504.8	1.12	15.00	93	0.	0.	0.	3037.
1.05	6.00	0.	0.	0.	1465.8	1.12	18.00	94	0.	0.	0.	2958.
1.05	9.00	0.	0.	0.	1427.9	1.12	21.00	95	0.	0.	0.	2882.
1.05	12.00	0.	0.	0.	1390.9	1.13	0.	96	0.	0.	0.	2807.
1.05	15.00	0.	0.	0.	1354.9	1.13	3.00	97	0.	0.	0.	2734.
1.05	18.00	0.	0.	0.	1319.8	1.13	6.00	98	0.	0.	0.	2664.
1.05	21.00	0.	0.	0.	1285.6	1.13	9.00	99	0.	0.	0.	2595.
1.06	0.	0.	0.	0.	1252.3	1.13	12.00	100	0.	0.	0.	2527.
1.06	3.00	0.	0.	0.	1219.9	1.13	15.00	101	0.	0.	0.	2462.
1.06	6.00	0.	0.	0.	1188.3	1.13	18.00	102	0.	0.	0.	2398.
1.06	9.00	0.	0.	0.	1157.6	1.13	21.00	103	0.	0.	0.	2336.
1.06	12.00	0.	0.	0.	1127.6	1.14	0.	104	0.	0.	0.	2276.
1.06	15.00	0.	0.	0.	1098.4	1.14	3.00	105	0.	0.	0.	2217.
1.06	18.00	0.	0.	0.	1069.9	1.14	6.00	106	0.	0.	0.	2159.
1.06	21.00	0.	0.	0.	1042.2	1.14	9.00	107	0.	0.	0.	2103.
1.07	0.	0.	0.	0.	1015.2	1.14	12.00	108	0.	0.	0.	2049.
1.07	3.00	0.	0.	0.	988.9	1.14	15.00	109	0.	0.	0.	1996.
1.07	6.00	0.	0.	0.	963.3	1.14	18.00	110	0.	0.	0.	1944.
1.07	9.00	0.	0.	0.	938.4	1.14	21.00	111	0.	0.	0.	1894.
1.07	12.00	0.	0.	0.	914.1	1.15	0.	112	0.	0.	0.	1845.
1.07	15.00	0.	0.	0.	890.4	1.15	3.00	113	0.	0.	0.	1797.
1.07	18.00	0.	0.	0.	867.4	1.15	6.00	114	0.	0.	0.	1750.
1.07	21.00	0.	0.	0.	844.9	1.15	9.00	115	0.	0.	0.	1705.
1.08	0.	0.	0.	0.	823.0	1.15	12.00	116	0.	0.	0.	1661.
1.08	3.00	0.	0.	0.	801.7	1.15	15.00	117	0.	0.	0.	1618.
1.08	6.00	0.	0.	0.	781.0	1.15	18.00	118	0.	0.	0.	1576.
1.08	9.00	0.	0.	0.	760.7	1.15	21.00	119	0.	0.	0.	1535.
1.08	12.00	0.	0.	0.	741.0	1.16	0.	120	0.	0.	0.	1535.
SUM 13.38 9.89 3.41 1352336.										(338.3)(251.3)(87.3)(38293.89)		

CFS	77184.	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CHS	2186.	75569.	64319.	36799.	1351155.
INCHES		2140.	1821.	1042.	38260.
MM		1.64	5.58	9.58	14.65
AC-FT		41.62	141.70	243.21	372.09
THOUS CU M		37472.	127574.	218965.	334997.
		46221.	157361.	270095.	413213.

	167.	168.	169.	170.	171.	172.	173.	174.	175.	176.	177.	178.	179.	180.
CFS	1537.	1511.	1486.	1463.	1444.	1426.	1406.	1370.	1334.	1300.	1266.	1233.	1201.	1170.
CMS	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.
INCHES	1537.	1511.	1486.	1463.	1444.	1426.	1406.	1370.	1334.	1300.	1266.	1233.	1201.	1170.
MM	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.	437.
AC-FT	1537.	1511.	1486.	1463.	1444.	1426.	1406.	1370.	1334.	1300.	1266.	1233.	1201.	1170.
THOUS CU M	1537.	1511.	1486.	1463.	1444.	1426.	1406.	1370.	1334.	1300.	1266.	1233.	1201.	1170.

HYDROGRAPH AT STALWERSBN FOR PLAN 1, RTIO 2					
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	16289.	15869.	13507.	7728.	283743.
CMS	459.	449.	362.	219.	8035.
INCHES		0.34	1.17	2.01	3.08
M		8.74	29.76	51.07	78.14
AC-FT		7869.	26791.	45984.	70349.
THOUS CU M		9706.	33046.	56720.	86775.

1148.	1352.	1317.	1000.	957.	912.	880.	846.	814.
1048.	1043.	1013.	987.	961.	937.	912.	886.	860.
821.	800.	779.	759.	740.	720.	702.	684.	666.
632.	615.	600.	584.	569.	554.	540.	526.	512.
486.	473.	461.	449.	438.	426.	415.	404.	390.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
19296.	10892.	16080.	9200.	337789.
CFS	535.	455.	261.	9565.
CMS	8.41	1.39	2.39	3.66
INCHES	10.41	35.42	60.80	93.02
MM	9368.	31894.	54742.	83749.
AC-FT	11555.	39340.	67524.	103303.
THOUS CU M				

HYDROGRAPH AT STALURBSM FOR PLAN 1, RTIO 7

418.	407.	397.	386.	376.	367.	357.	348.	340.	334.
514.	1192.	2933.	7107.	13933.	21986.	29820.	35719.	38592.	38235.
34958.	30621.	26707.	23261.	20261.	17631.	15379.	13402.	11681.	10184.
8808.	7746.	7524.	7329.	7139.	6955.	6774.	6599.	6428.	6262.
6108.	5942.	5788.	5638.	5492.	5350.	5211.	5076.	4945.	4817.
4692.	4570.	4452.	4337.	4225.	4115.	4009.	3905.	3804.	3705.
3609.	3516.	3425.	3336.	3250.	3163.	3084.	2926.	2850.	2850.
2776.	2704.	2634.	2564.	2500.	2435.	2372.	2311.	2251.	2192.
2136.	2080.	2026.	1974.	1923.	1873.	1825.	1777.	1731.	1686.
1643.	1608.	1559.	1518.	1479.	1441.	1404.	1367.	1332.	1297.
1264.	1231.	1199.	1168.	1138.	1108.	1080.	1052.	1024.	998.
972.	947.	922.	898.	875.	853.	830.	809.	788.	768.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
38592.	37784.	32159.	18399.	675578.
CFS	1070.	911.	521.	19130.
CMS	0.82	2.79	4.79	7.32
INCHES	28.81	70.83	121.61	186.04
MM	18736.	63787.	109485.	167499.
AC-FT	23111.	78600.	135047.	206606.
THOUS CU M				

HYDROGRAPH AT STALURBSM FOR PLAN 1, RTIO 8

836.	814.	793.	773.	753.	733.	714.	696.	679.	667.
1028.	7384.	5866.	14213.	27866.	43972.	59640.	71437.	77184.	76469.
69916.	61242.	53414.	44522.	40522.	35301.	30757.	26803.	23362.	20367.
17768.	15491.	15048.	14658.	14279.	13909.	13549.	13198.	12856.	12523.
12199.	11883.	11576.	11276.	10984.	10699.	10422.	10152.	9889.	9633.
9384.	9141.	8904.	8674.	8441.	8230.	8017.	7810.	7607.	7410.
7218.	7031.	6849.	6672.	6499.	6331.	6167.	6007.	5852.	5700.
5553.	5409.	5269.	5132.	4999.	4870.	4744.	4621.	4501.	4385.
4271.	4161.	4053.	3948.	3846.	3746.	3649.	3555.	3463.	3373.
3286.	3200.	3118.	3037.	2958.	2882.	2807.	2734.	2664.	2595.
2527.	2462.	2398.	2336.	2276.	2217.	2159.	2103.	2049.	1996.
1944.	1894.	1845.	1797.	1750.	1705.	1661.	1618.	1576.	1535.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
77184.	75569.	64319.	36799.	1351155.
CFS	2140.	1811.	1042.	38260.
CMS	1.64	5.58	9.58	14.65
INCHES	41.62	141.70	243.21	372.89
MM	37472.	127574.	210969.	334997.
AC-FT	46221.	157361.	270095.	413213.
THOUS CU M				

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SUM OF 2 HYDROGRAPHS AT DAWN PLAN 1 RTIO 1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1586.	15183.	12951.	8316.	390549.
CMS	439.	438.	367.1	235.	11059.
INCHES		0.23	0.79	1.53	2.99
MM		5.90	20.13	38.78	75.89
AC-FY		7529.	25687.	4944.	96830.
THOUS. CU YD		9286.	31684.	61037.	119438.

SUM OF 2 HYDROGRAPHS AT DAM PLAN 1 RTIO 2:

SUM OF 2 HYDROGRAPHS AT
DAM FLAW 1 RTIO 3

INCHES
AC-FT
THOUS CU M

0.2H
7.0H
9034
11144

0.9H
24.16
30828
34026

1.8H
46.70
59590
73503

SUM OF 2 HYDROGRAPHS AT

209.	284.	198.	199.	201.	204.	209.	213.	219.
316.	642.	3628.	7045.	11074.	14993.	17944.	19382.	19205.
17572.	15422.	13513.	11911.	10703.	9584.	8889.	8158.	7463.
6829.	6264.	6147.	6039.	5931.	5824.	5613.	5509.	5408.
5309.	5211.	5116.	5022.	4931.	4841.	4753.	4664.	4583.
4419.	4348.	4262.	4185.	4109.	4035.	3962.	3820.	3751.
3683.	3617.	3551.	3486.	3421.	3358.	3295.	3172.	3112.
3052.	2993.	2935.	2877.	2828.	2765.	2709.	2601.	2548.
2496.	2445.	2395.	2345.	2297.	2249.	2198.	2114.	2070.
2026.	1983.	1940.	1898.	1855.	1813.	1771.	1685.	1641.
1598.	1555.	1514.	1473.	1434.	1397.	1360.	1292.	1263.
1230.	1219.	1186.	1167.	1146.	1124.	1101.	1076.	1051.

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

CFS	19382.	16190.	10439.	488219.
CMS	549.	450.	296.	13025.
INCHES	537.	6.29	1.92	3.73
MM	7.38	25.17	48.68	94.87
AC-FT	9411.	32113.	62117.	121046.
THOUS CU M	11608.	39611.	76620.	149308.

SUM OF 2 HYDROGRAPHS AT

418.	488.	397.	397.	401.	409.	417.	426.	437.
632.	3075.	7257.	14078.	22148.	29986.	35888.	38764.	38410.
35146.	27181.	24631.	23134.	21735.	20095.	18280.	16492.	14989.
13671.	12269.	12045.	11823.	11604.	11389.	11178.	10970.	10767.
10567.	10181.	9994.	9811.	9632.	9457.	9285.	9116.	8951.
8788.	8472.	8318.	8166.	8017.	7871.	7727.	7587.	7449.
7313.	7046.	6921.	6808.	6698.	6582.	6463.	6343.	6223.
6183.	5986.	5754.	5641.	5527.	5419.	5310.	5203.	5097.
4993.	4790.	4691.	4593.	4499.	4407.	4316.	4228.	4140.
4053.	3881.	3795.	3711.	3626.	3542.	3456.	3369.	3282.
3195.	3027.	2947.	2869.	2793.	2720.	2650.	2582.	2517.
2453.	2320.	2266.	2205.	2145.	2086.	2027.	1968.	1910.

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

CFS	38764.	37954.	32454.	21112.	979310.
CMS	1898.	1875.	919.	598.	27737.
INCHES	1898.	8.58	1.99	3.88	7.49
MM	14.75	58.45	98.45	190.33	364.32
AC-FT	10821.	64371.	125625.	242854.	299856.
THOUS CU M	23716.	79400.	154957.	299856.	

SUM OF 2 HYDROGRAPHS AT

836.	801.	793.	794.	803.	817.	834.	853.	874.
1265.	6149.	14515.	28179.	44296.	59972.	71775.	77528.	76821.
78320.	56219.	52636.	49185.	44859.	40372.	36432.	32986.	29967.

474.5	414.2	414.0	403.0	374.0	361.0	347.0	301.0	274.0	261.0
3548.	3444.	3471.	3460.	3249.	3239.	3239.	3181.	3123.	3067.
2957.	2903.	2851.	2800.	2748.	2697.	2647.	2597.	2548.	2499.
2452.	2404.	2358.	2311.	2266.	2221.	2177.	2133.	2088.	2048.
2007.	1966.	1926.	1886.	1847.	1809.	1772.	1735.	1700.	1664.
1638.	1595.	1568.	1526.	1492.	1459.	1425.	1391.	1356.	1321.
1298.	1259.	1235.	1216.	1200.	1182.	1162.	1141.	1119.	1096.
1072.	1048.	1024.	999.	975.	951.	927.	903.	879.	856.

STORAGE

785.	788.	788.	787.	787.	787.	788.	788.	788.	789.
795.	816.	843.	938.	1069.	1196.	1293.	1366.	1402.	1402.
1369.	1320.	1273.	1232.	1196.	1178.	1158.	1146.	1126.	1106.
1086.	1067.	1048.	1030.	1014.	1001.	1007.	1043.	1048.	1037.
1033.	1030.	1027.	1024.	1021.	1018.	1015.	1012.	1009.	1006.
1003.	1000.	997.	994.	991.	988.	986.	983.	980.	978.
975.	973.	978.	968.	965.	962.	960.	957.	955.	952.
958.	947.	945.	942.	940.	938.	935.	933.	931.	929.
927.	924.	922.	919.	917.	915.	913.	911.	909.	906.
904.	902.	900.	898.	896.	894.	892.	890.	888.	886.
884.	882.	880.	879.	878.	877.	875.	874.	872.	871.
869.	867.	866.	864.	862.	861.	859.	857.	856.	854.

STAGE

186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
184.4	184.7	184.2	184.3	184.7	184.1	184.2	184.4	184.7	184.3
193.3	192.7	192.1	191.6	191.2	190.9	190.7	190.6	190.4	190.1
189.9	189.7	189.6	189.6	189.5	189.5	189.4	189.4	189.3	189.3
189.3	189.2	189.2	189.1	189.1	189.1	189.0	189.0	189.0	188.9
188.9	188.9	188.8	188.8	188.8	188.7	188.7	188.6	188.6	188.6
188.6	188.5	188.5	188.5	188.4	188.4	188.4	188.3	188.3	188.3
188.3	188.2	188.2	188.2	188.1	188.1	188.1	188.1	188.0	188.0
188.0	187.9	187.9	187.9	187.8	187.8	187.8	187.8	187.7	187.7
187.7	187.7	187.7	187.6	187.6	187.6	187.6	187.5	187.5	187.5
187.5	187.4	187.4	187.4	187.4	187.4	187.4	187.3	187.3	187.3
187.3	187.3	187.3	187.2	187.2	187.2	187.2	187.2	187.1	187.1

PEAK OUTFLOW IS 15438. AT TIME 57.00 HOURS

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
15438.	15139.	12938.	8321.	390284.
437.	429.	366.	236.	11852.
	8.23	8.79	1.53	2.99
	5.88	28.18	38.88	75.84
	7507.	25645.	49313.	96765.
	9260.	31633.	61873.	119357.

STATION DAM. PLAN 1. RATIO 2

END-OF-PERIOD HYDROGRAPH ORDINATES

151.	170.	168.	167.	168.	178.	173.	176.	180.
218.	1032.	2581.	5187.	8829.	12213.	14844.	16213.	16202.
14248.	13143.	10148.	9038.	8220.	7908.	7516.	6987.	6352.
5818.	5348.	5183.	4998.	4911.	4816.	4738.	4642.	4557.
4473.	4311.	4232.	4155.	4079.	4005.	3933.	3862.	3792.
3724.	3639.	3528.	3464.	3401.	3358.	3279.	3220.	3162.
3189.	3049.	2953.	2884.	2831.	2788.	2727.	2676.	2625.
2574.	2427.	2329.	2279.	2232.	2206.	2180.	2155.	2130.

REL.	PHO.	M/H.	M/H.	M/H.	M/H.	M/H.
186.4	186.4	186.4	186.4	186.4	186.4	186.4
186.5	186.8	187.4	188.6	190.3	192.0	194.7
194.3	193.7	193.1	192.5	192.1	191.6	191.1
198.5	198.3	198.2	198.1	198.1	198.0	189.9
189.8	189.7	189.7	189.6	189.6	189.5	189.4
189.3	189.3	189.3	189.2	189.2	189.1	189.0
189.8	188.9	188.9	188.8	188.8	188.7	188.7
188.6	188.6	188.6	188.5	188.5	188.4	188.3
188.3	188.3	188.2	188.2	188.1	188.1	188.0
188.8	187.9	187.9	187.9	187.9	187.8	187.7
187.7	187.6	187.6	187.6	187.6	187.5	187.5
187.4	187.4	187.4	187.4	187.4	187.3	187.3

PEAK OUTFLOW IS 19331. AT TIME 57.88 HOURS

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
19331.	18919.	16167.	10445.	487923.
597.	536.	458.	296.	13816.
CFS	8.29	0.99	1.92	3.73
CMS	7.35	25.13	48.71	94.81
INCHES	9381.	32068.	62153.	120973.
MM	11571.	39555.	76644.	149217.
AC-FT				
THOUS CU M				

STATION DAM, PLAN 1, RATIO 7

END-OF-PERIOD HYDROGRAPH ORDINATES

	OUTFLOW					
396.	416.	403.	398.	486.	414.	433.
551.	1088.	2607.	6413.	29559.	35611.	38499.
35402.	31105.	27398.	24754.	20219.	18360.	15161.
13884.	12654.	12232.	12111.	11406.	11208.	10793.
10598.	18408.	12885.	18028.	9480.	9308.	8972.
8899.	8649.	8492.	8338.	7892.	7747.	7479.
7333.	7198.	7066.	6939.	6608.	6481.	6241.
6122.	6084.	5687.	5772.	5438.	5221.	5115.
5018.	4988.	4886.	4787.	4422.	4331.	4155.
4867.	3981.	3895.	3809.	3558.	3473.	3298.
3212.	3126.	3043.	2962.	2736.	2665.	2531.
2466.	2403.	2341.	2279.	2098.	2039.	1924.

	STORAGE					
816.	816.	816.	816.	816.	816.	816.
829.	878.	958.	1120.	1339.	1554.	1780.
1737.	1676.	1620.	1579.	1503.	1468.	1395.
1357.	1323.	1311.	1307.	1299.	1280.	1268.
1262.	1256.	1249.	1243.	1237.	1226.	1209.
1204.	1198.	1193.	1188.	1178.	1173.	1159.
1154.	1149.	1144.	1139.	1135.	1127.	1114.
1109.	1105.	1100.	1096.	1091.	1082.	1069.
1064.	1060.	1056.	1052.	1048.	1040.	1029.
1025.	1022.	1018.	1015.	1011.	1003.	991.
987.	983.	979.	975.	972.	964.	954.
958.	947.	944.	941.	938.	931.	922.

STAGE

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	38697.	37876.	32427.	21123.	979100.
CMS	1096.	1073.	918.	598.	27725.
INCHES		0.58	1.98	3.08	7.49
MM		14.72	50.41	98.50	190.25
AC-FT	18781.	64318.		125690.	242752.
THOUS CU M	23167.	79335.		155037.	299430.

END-OF-PEPID HYDROGRAPH ORDINATES

	898.	806.	809.	794.	794.	800.	813.	829.	848.	868.
	2249.	5405.	5379.	43379.	59285.	713175.	733175.	77421.	76969.	
	62368.	56428.	52787.	49378.	40403.	36636.	33174.	30135.	21530.	
	25145.	24458.	24145.	23592.	23234.	22739.	21911.	18215.	17885.	
	28737.	28342.	19978.	19404.	19252.	18896.	18555.	15205.	14929.	
	17249.	16926.	16340.	16623.	16058.	15771.	15488.	12956.	12352.	
	14387.	14121.	13859.	13608.	13345.	13093.	12843.	10950.	10094.	
	11875.	11641.	11409.	11182.	10957.	10735.	10520.	8363.	8187.	
	9680.	9479.	9281.	9089.	8902.	8720.	8541.	6622.	6445.	
	7830.	7664.	7494.	7324.	7153.	6979.	6801.	5322.	5055.	
	6112.	5975.	5859.	5735.	5599.	5459.	5322.	3186.	3040.	
	4801.	4676.	4553.	4431.	4310.	4191.	4073.	3956.	3840.	

STAGE											
857.	851.	751.	850.	856.	858.	851.	852.	853.	855.		
873.	939.	761.	1339.	1618.	1845.	2046.	2184.	2253.	2248.		
2178.	2081.	2019.	1765.	1922.	1868.	1808.	1754.	1706.	1661.		
1621.	1585.	1574.	1569.	1560.	1554.	1546.	1546.	1532.	1526.		
1519.	1512.	1505.	1498.	1491.	1485.	1478.	1471.	1465.	1458.		
1452.	1445.	1438.	1432.	1426.	1419.	1412.	1404.	1396.	1388.		
1381.	1373.	1366.	1358.	1351.	1344.	1336.	1329.	1322.	1314.		
1307.	1300.	1293.	1286.	1279.	1273.	1266.	1259.	1252.	1246.		
1239.	1232.	1219.	1213.	1207.	1201.	1195.	1189.	1183.	1183.		
1178.	1172.	1165.	1159.	1153.	1147.	1141.	1134.	1128.	1121.		
1115.	1109.	1104.	1099.	1094.	1089.	1083.	1077.	1072.	1066.		
1061.	1056.	1050.	1045.	1040.	1035.	1030.	1026.	1021.	1016.		

[illegible]

190.1	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0
194.3	194.2	194.1	194.0	193.9	193.8	193.7	193.6	193.5	193.4
193.4	193.3	193.2	193.1	193.0	192.9	192.8	192.7	192.6	192.5
192.5	192.4	192.3	192.2	192.1	192.0	191.9	191.8	191.7	191.6
191.7	191.6	191.5	191.4	191.3	191.2	191.1	191.0	190.9	190.8
191.0	190.9	190.8	190.7	190.6	190.5	190.4	190.3	190.2	190.1
190.2	190.1	190.0	189.9	189.8	189.7	189.6	189.5	189.4	189.3
189.6	189.5	189.4	189.3	189.2	189.1	189.0	188.9	188.8	188.7

PEAK OUTFLOW IS 77421. AT TIME 57.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	77421.	75785.	65328.	42645.	1962628.
CMS	2192.	2146.	1850.	1208.	55575.
INCHES		1.16	4.00	7.63	15.01
MM		29.45	101.55	198.87	381.36
AC-FT		37579.	129376.	253755.	486602.
THOUS CU M		46354.	159829.	313002.	608215.

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULIPLE 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	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	RATIO 7	RATIO 8
				0.20	0.21	0.22	0.23	0.24	0.25	0.50	1.00
HYDROGRAPH AT LKFLWR	(.....)	179.00	1	1928.	2024.	2120.	2217.	2313.	2410.	4819.	9638.
				(54.58)(	(57.31)(	(60.04)(	(62.77)(	(65.50)(	(68.23)(	(136.46)(	(272.92)(
ROUTED TO SARRIV	(.....)	179.00	1	1912.	2008.	2104.	2199.	2295.	2391.	4811.	9628.
				(54.14)(	(56.85)(	(59.57)(	(62.28)(	(65.00)(	(67.71)(	(136.22)(	(272.64)(
HYDROGRAPH AT LWRBWN	(.....)	429.00	1	15437.	16209.	16981.	17752.	18524.	19296.	38592.	77184.
				(437.12)(	(450.98)(	(460.84)(	(502.64)(	(524.55)(	(546.41)(	(1092.81)(	(2185.62)(
2 COMBINED	DAM	608.00	1	15506.	16281.	17056.	17831.	18607.	19382.	38764.	77528.
				(439.07)(	(461.02)(	(482.97)(	(504.93)(	(526.88)(	(548.83)(	(1097.67)(	(2195.34)(
ROUTED TO	DAM	608.00	1	15438.	16215.	17010.	17798.	18569.	19351.	38697.	77421.
				(437.15)(	(459.09)(	(481.66)(	(503.99)(	(525.81)(	(547.39)(	(1095.78)(	(2192.31)(

PLAN 1 STATION SARRIV

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	1912.	213.0	96.00
0.21	2008.	213.0	96.00
0.22	2104.	213.1	96.00
0.23	2199.	213.2	96.00
0.24	2295.	213.3	96.00
0.25	2391.	213.3	96.00
0.50	4811.	214.8	87.00
1.00	9628.	217.0	84.00

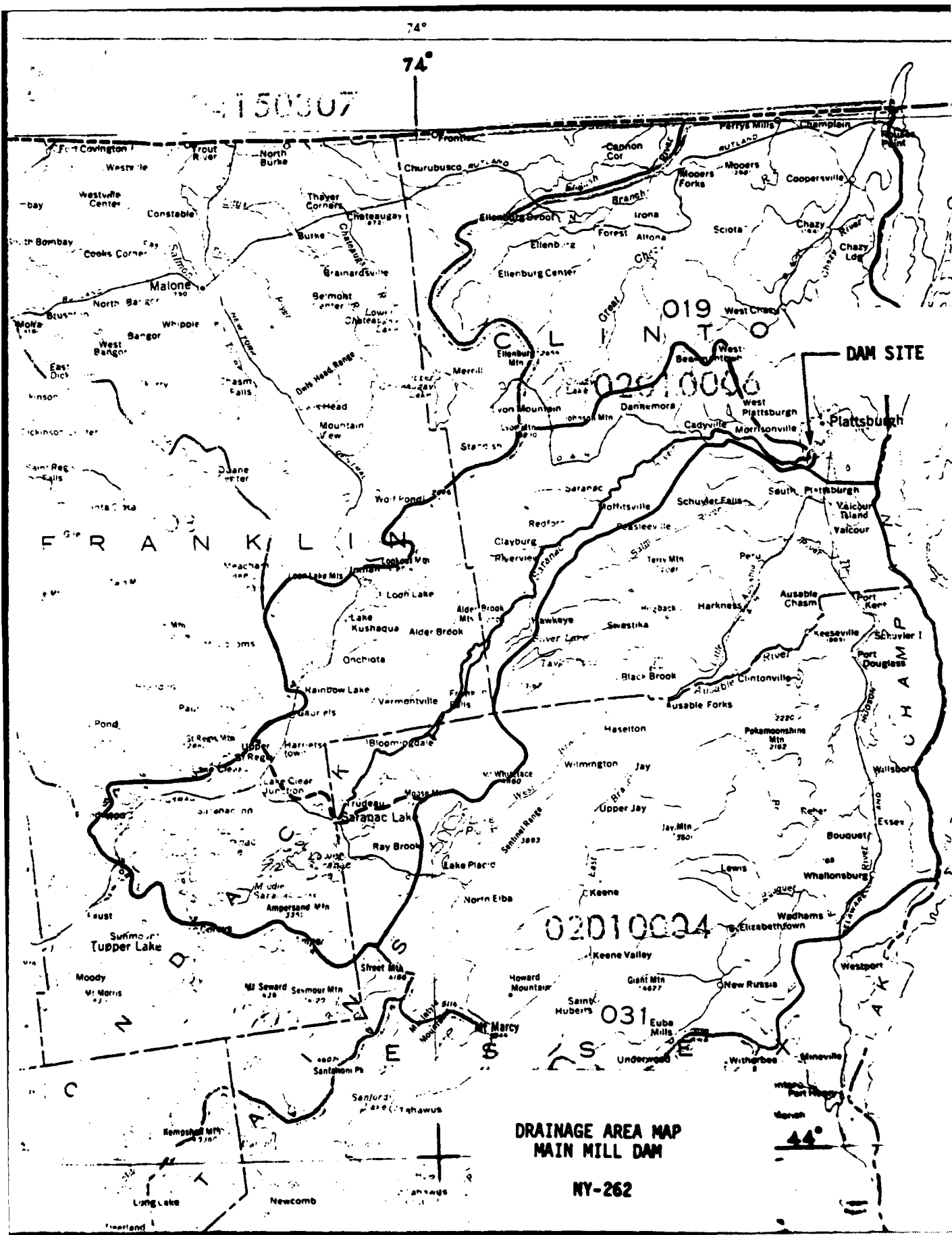
SUMMARY OF DAM SPLIT ANALYSIS

PLAY 1
 ELEVATION
 STORAGE
 OUTFLOW
 INITIAL VALUE
 186.00
 761.
 0.
 SPILLWAY CREST
 186.00
 761.
 0.
 TOP OF DAM -- [@ LEFT EMBANKMENT]
 193.80
 1413.
 15820.

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
0.20	193.67	0.	1402.	15438.	0.	57.00	0.
0.21	193.92	0.12	1423.	16213.	6.00	57.00	0.
0.22	194.13	0.33	1440.	17010.	6.00	57.00	0.
0.23	194.32	0.52	1456.	17798.	12.00	57.00	0.
0.24	194.50	0.70	1472.	18569.	12.00	57.00	0.
0.25	194.68	0.88	1486.	19331.	12.00	57.00	0.
0.50	198.22	4.42	1783.	38697.	42.00	57.00	0.
1.00	203.85	10.05	2253.	77421.	126.00	57.00	0.

NO FLASHBOARDS
 FLOOD GATE CLOSED

MAIN MILL DAM
 NY-362



DRAINAGE AREA MAP
MAIN MILL DAM

NY-262

AD-A110 162

NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/6 13/13
NATIONAL DAM SAFETY PROGRAM. MAIN HILL DAM (INVENTORY NUMBER N.--ETC(U)
SEP 81 G KOCH

DACW51-79-C-0001

NL

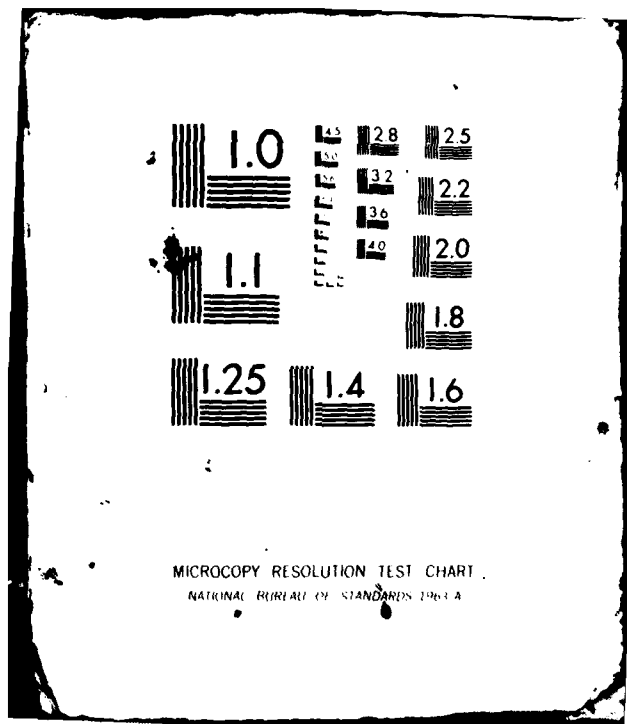
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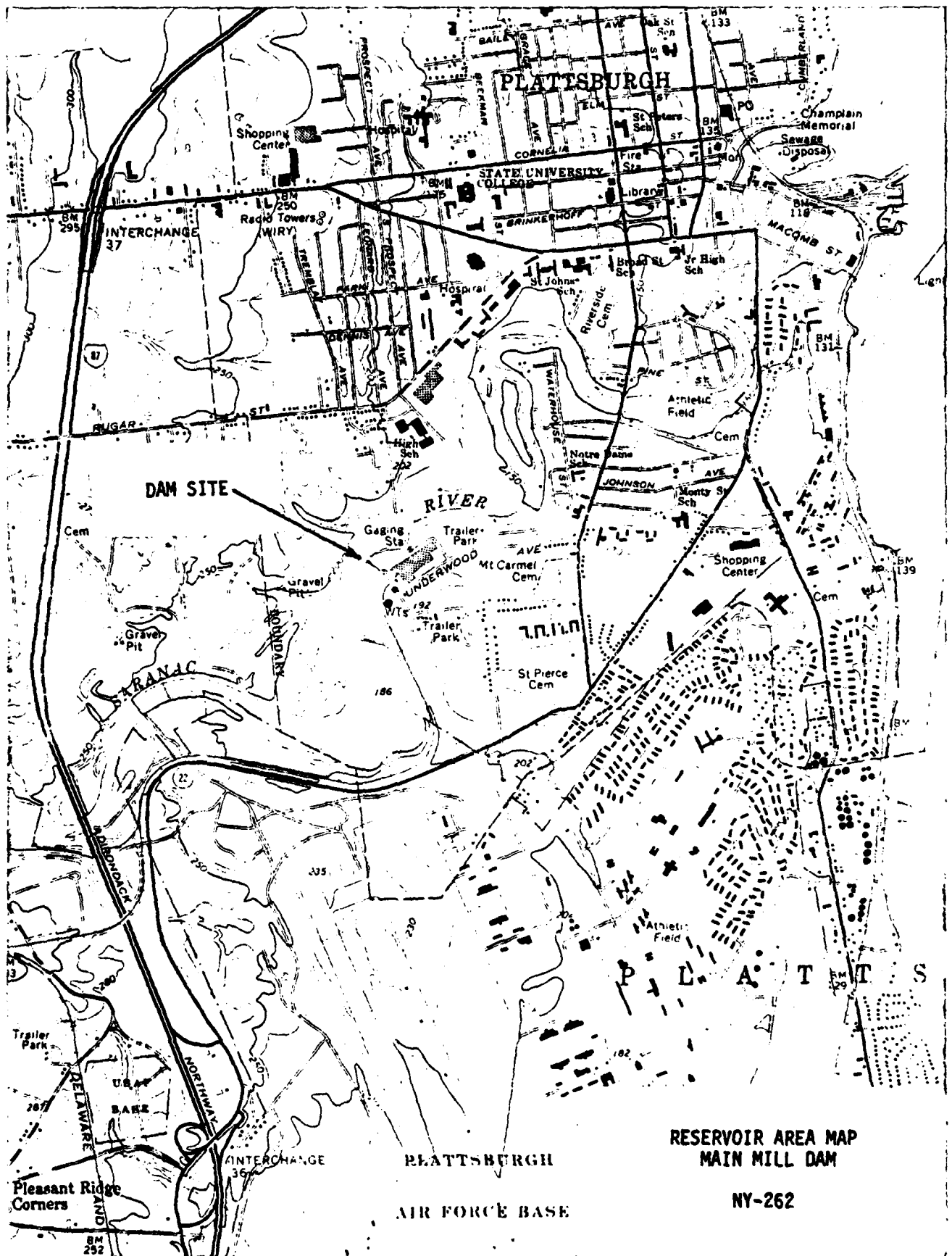
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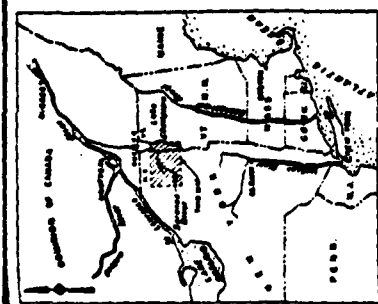
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PLATE 28
CHAPTER 1



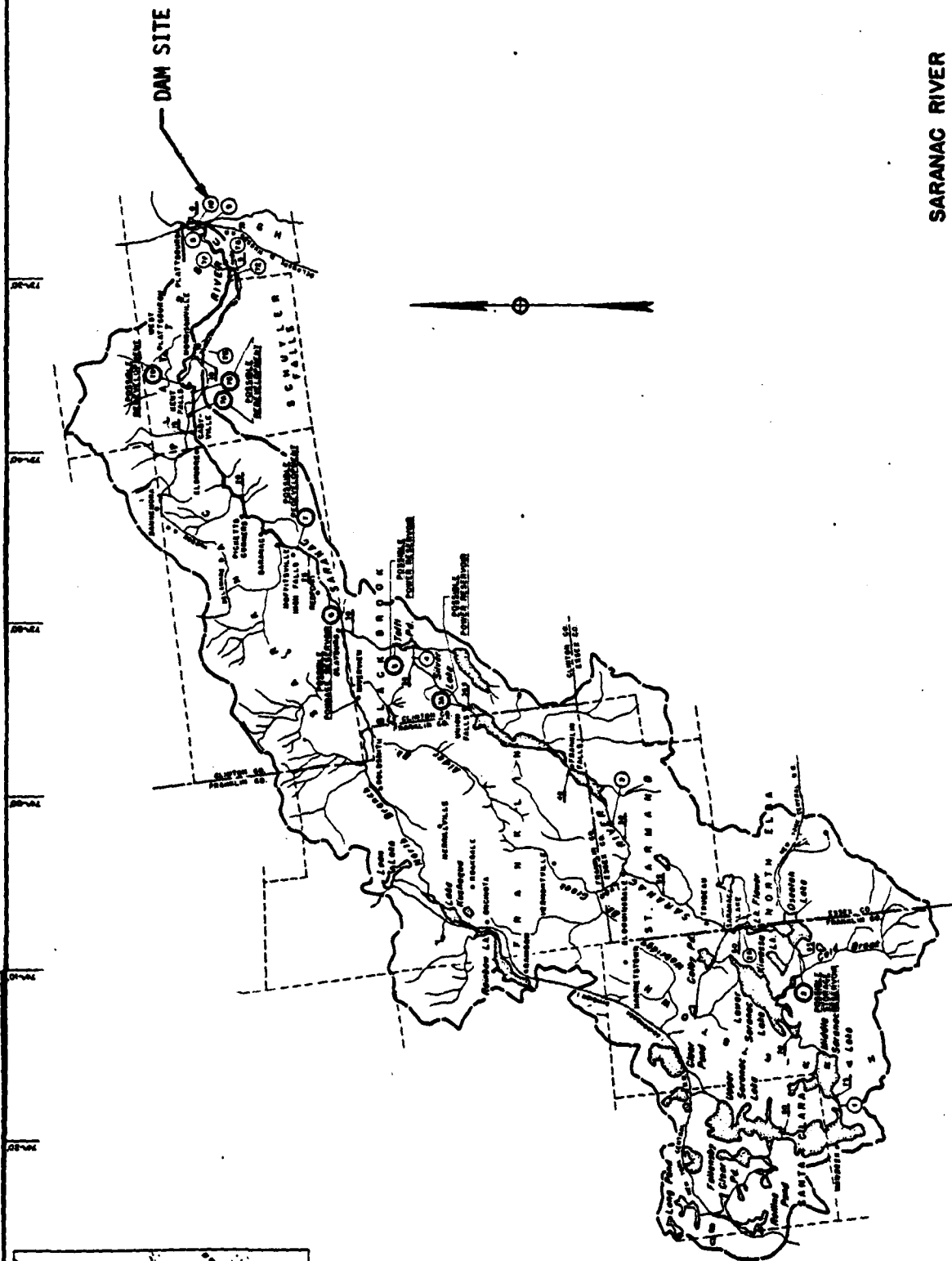
VICINITY MAP

63 West 17th St

- | NO. | TITLE | EXTENSION |
|-----|-------------------------|-----------|
| 1 | Upper Standard Link and | Standard |
| 2 | Lower Standard Link and | Standard |
| 3 | Standard Link | Standard |
| 4 | Standard Link | Standard |
| 5 | Standard Link | Standard |
| 6 | Standard Link | Standard |
| 7 | Standard Link | Standard |
| 8 | Standard Link | Standard |
| 9 | Standard Link | Standard |
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| 99 | Standard Link | Standard |
| 100 | Standard Link | Standard |

62103

100-443886-100



STREAMS TRIBUTARY TO ST. LAWRENCE RIVER

435

04273500 SARANAC RIVER AT PLATTSBURGH, NY

LOCATION.--Lat 44°40'54", long 73°28'18", Clinton County, Hydrologic Unit 02010006, on right bank at Plattsburgh, 600 ft (183 m) downstream from Imperial Paper and Color Corp. dam, 3.0 mi (4.8 km) upstream from mouth, and 5.5 mi (8.8 km) downstream from Mead Brook.

DRAINAGE AREA.--608 mi² (1,575 km²). Prior to Nov. 12, 1919, 607 mi² (1,572 km²).

PERIOD OF RECORD.--March 1903 to September 1930, October 1943 to current year. Published as "near Plattsburgh," 1903-30.

REVISED RECORDS.--WSP 345: Drainage area. WSP 384: 1909-10 (monthly discharge only). WSP 1387: 1907-8. WSP 1437: 1908 (minimum daily only).

GAGE.--Water-stage recorder. Datum of gage is 155.74 ft (47.470 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 12, 1919, nonrecording gage and Nov. 12, 1919 to Sept. 30, 1930, water-stage recorder, at site 1.5 mi (2.4 km) upstream at different datum.

REMARKS.--Records good except those for winter periods, which are fair. Considerable diurnal fluctuation caused by power and industrial operations. Slight regulation by storage in Upper and Lower Saranac Lakes and elsewhere. During year, city of Plattsburgh diverted an average of 3.43 ft³/s (0.097 m³/s) from Saranac River and Mead and West Brooks, tributaries above station, for municipal supply. About 1 ft³/s (0.028 m³/s) diverted from Great Chazy River basin into Saranac River for water supply of State Institutions at Dannemora.

AVERAGE DISCHARGE.--63 years, 935 ft³/s (23.65 m³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s (326 m³/s) Apr. 8, 1928, from computation of flow over dam and through waste gates and powerplant; minimum daily, 3.6 ft³/s (0.102 m³/s) June 26, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,930 ft³/s (168 m³/s) Apr. 3, gage height, 7.92 ft (2.414 m); minimum gage height, 0.64 ft (0.195 m) June 24; minimum daily discharge, 3.6 ft³/s (0.102 m³/s) June 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	246	582	375	582	593	545	3470	2546	1230	89	291	599
2	393	529	346	657	681	616	3160	2210	1100	89	246	534
3	397	523	291	1240	588	599	4960	1990	999	124	397	472
4	443	513	149	1880	561	593	3700	2040	888	112	443	477
5	425	513	221	946	427	724	3160	1990	762	162	371	488
6	388	506	261	840	540	1050	2730	1800	795	96	367	498
7	440	513	363	849	548	1940	2410	1600	717	104	440	1480
8	480	518	503	864	560	1650	2100	1500	711	69	338	1430
9	470	523	463	893	580	1560	1940	1440	693	89	268	1240
10	450	518	468	855	620	1550	1850	1380	681	67	313	976
11	360	443	503	856	600	1540	1730	1300	693	89	290	968
12	331	415	472	781	600	1340	1720	1250	687	58	295	886
13	415	477	492	760	580	1130	1730	1260	633	91	534	795
14	546	622	508	730	700	1120	1940	1240	562	64	397	768
15	621	711	518	864	540	1140	2100	1170	548	57	264	1020
16	991	582	518	893	590	1170	2350	1130	483	42	295	1040
17	871	705	583	828	480	1110	2630	1030	313	221	304	983
18	922	838	448	762	470	991	2440	885	482	487	331	907
19	1010	740	463	878	480	1020	2330	760	429	411	291	835
20	888	530	385	856	411	1050	2210	717	137	363	305	795
21	717	523	331	762	518	1150	2130	724	61	305	393	795
22	828	518	545	775	448	1400	2140	795	45	295	327	740
23	904	487	534	880	477	1860	2180	616	72	233	290	711
24	622	463	487	762	563	2500	2100	640	54	105	305	693
25	472	530	508	667	488	4180	2040	762	5.1	206	305	693
26	446	482	530	762	534	4390	2050	1050	3.6	295	300	693
27	327	472	518	775	530	3400	2160	1010	47	245	393	683
28	327	295	518	784	545	2620	3160	1110	82	375	688	577
29	402	230	513	755	---	2000	3350	1140	62	367	657	546
30	599	367	550	784	---	2040	2930	1200	60	258	534	590
31	610	---	518	663	---	2440	---	1340	---	309	593	---
TOTAL	17695	15054	13741	25220	19183	30518	75070	30090	13771.7	5000	12236	23640
MEAN	570	520	443	814	618	1030	2502	1277	459	150	395	769
MAX	1010	835	580	1240	700	4390	4960	2540	1230	487	688	1480
MIN	246	230	149	562	411	545	1720	616	3.6	42	245	488
CAL YR 1978	TOTAL	340036.0	MEAN	955	MAX	4710	MEAN	70				
UTR YR 1979	TOTAL	308410.7	MEAN	845	MAX	4960	MEAN	3.6				

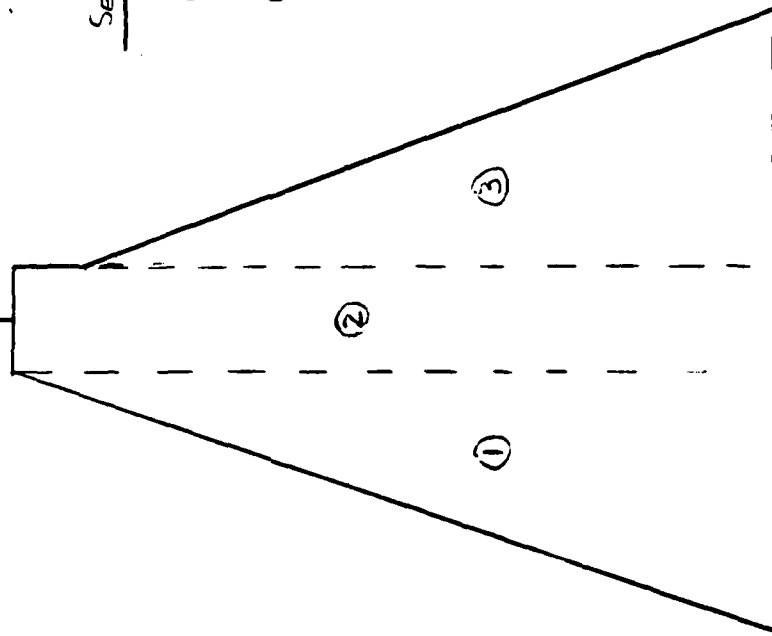
APPENDIX D
STABILITY COMPUTATIONS

MAIN MILL DAM

APPROXIMATE CROSS SECTION OF SPILLWAY PORTION

SCALE 1" = 5'

(BASED ON SKETCH FROM CONSERVATION COMMISSION REPORT)



SEGMENT	AREA (ft ²)	DISTANCE FROM CENTROID TO DOWNSTREAM TOE (ft)
①	$\frac{1}{2}(7.5)(22) = 82.5$	13
②	$(3)(22) = 66$	9
③	$\frac{1}{2}(7.5)(20) = 75$	5

STRUCTURAL STABILITY ANALYSIS

This analysis was based on an approximate cross section of the spillway section shown on a 1913 Conservation Commission inspection report. A normal analysis was performed including both overturning and sliding analyses. Since the foundation conditions were unknown, full uplift was assumed at the upstream toe, decreasing to the tailwater pressure at the downstream toe.

ANALYSIS CONDITIONS

1. Normal conditions; 2.5 feet of flashboards in place; water surface at top of flashboards
2. Water surface at spillway crest (no flashboards) with an ice load of 5,000 pounds per linear foot
3. Flood flows; water surface at top of embankment section; 7.8 feet above spillway crest
4. Normal condition as in case No. 1, with a seismic coefficient of 0.10.

STABILITY ANALYSIS PROGRAM - WORK SHEET

W.S.
Total of
Lines

INPUT ENTRY

ANALYSIS CONDITION

		1	2	3	4	5
Unit Weight of Dam (K/ft ³)	0	0.15	0.15	0.15	0.15	
Area of Segment No. 1 (ft ²)	1	82.5	82.5	82.5	82.5	
Distance from Center of Gravity of Segment No. 1 to Downstream Toe (ft)	2	13	13	13	13	
Area of Segment No. 2 (ft ²)	3	66	66	66	66	
Distance from Center of Gravity of Segment No. 2 to Downstream Toe (ft)	4	9	9	9	9	
Area of Segment No. 3 (ft ²)	5	75	75	75	75	
Distance from Center of Gravity of Segment No. 3 to Downstream Toe (ft)	6	5	5	5	5	
Base Width of Dam (Total) (ft)	7	18	18	18	18	
Height of Dam (ft)	8	22	22	22	22	
Ice Loading (K/L ft.)	9	—	5	—	—	
Coefficient of Sliding	10	0.65	0.65	0.65	0.65	
Unit Weight of Soil (K/ft ³) (deduct 10)	11	0.055	0.055	0.055	0.055	
Active Soil Coefficient - Ka	12	—	—	—	—	
Passive Soil Coefficient - Kp	13	—	—	—	—	
Height of Water over Top of Dam or Spillway (ft)	14	—	—	5.3	—	
Height of Soil for Active Pressure (ft)	15	—	—	—	—	
Height of Soil for Passive Pressure (ft)	16	—	—	—	—	
Height of Water in Tailrace Channel (ft)	17	2	2	2	2	
Weight of Water (K/ft ³)	18	0.0624	0.0624	0.0624	0.0624	
Area of Segment No. 4 (ft ²)	19	—	—	—	—	
Distance from Center of Gravity of Segment No. 4 to Downstream Toe (ft)	20	—	—	—	—	
Height of Ice Load or Active Water (ft) (does not include 14)	46	24.5	22	24.5	24.5	
Seismic Coefficient (g)	50	—	—	—	0.1	1
<u>RESULTS OF ANALYSIS</u>						
Factor of Safety vs. Overturning		0.94	0.81	0.76	0.88	
Distance From Toe to Resultant		-0.99	-3.46	-5.28	-2.10	
Factor of Safety vs. Sliding		0.65	0.65	0.47	0.51	

APPENDIX E

REFERENCES

APPENDIX E

REFERENCES

- 1) H.W. King and E. F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963
- 2) The Resources of the New England-New York Region; Part 2 - Chapter 27; Lake Champlain Drainage Basin, NY-VT; by New England- New York Inter-Agency Committee, 1954
- 3) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

U. S. Army Corps of Engineers:

- 4) HEC-1 Flood Hydrograph Package - Dam Safety Version, September 1978
- 5) Engineering Manual 1110-2-1405; Flood-Hydrograph Analyses and Computations, August 1959.

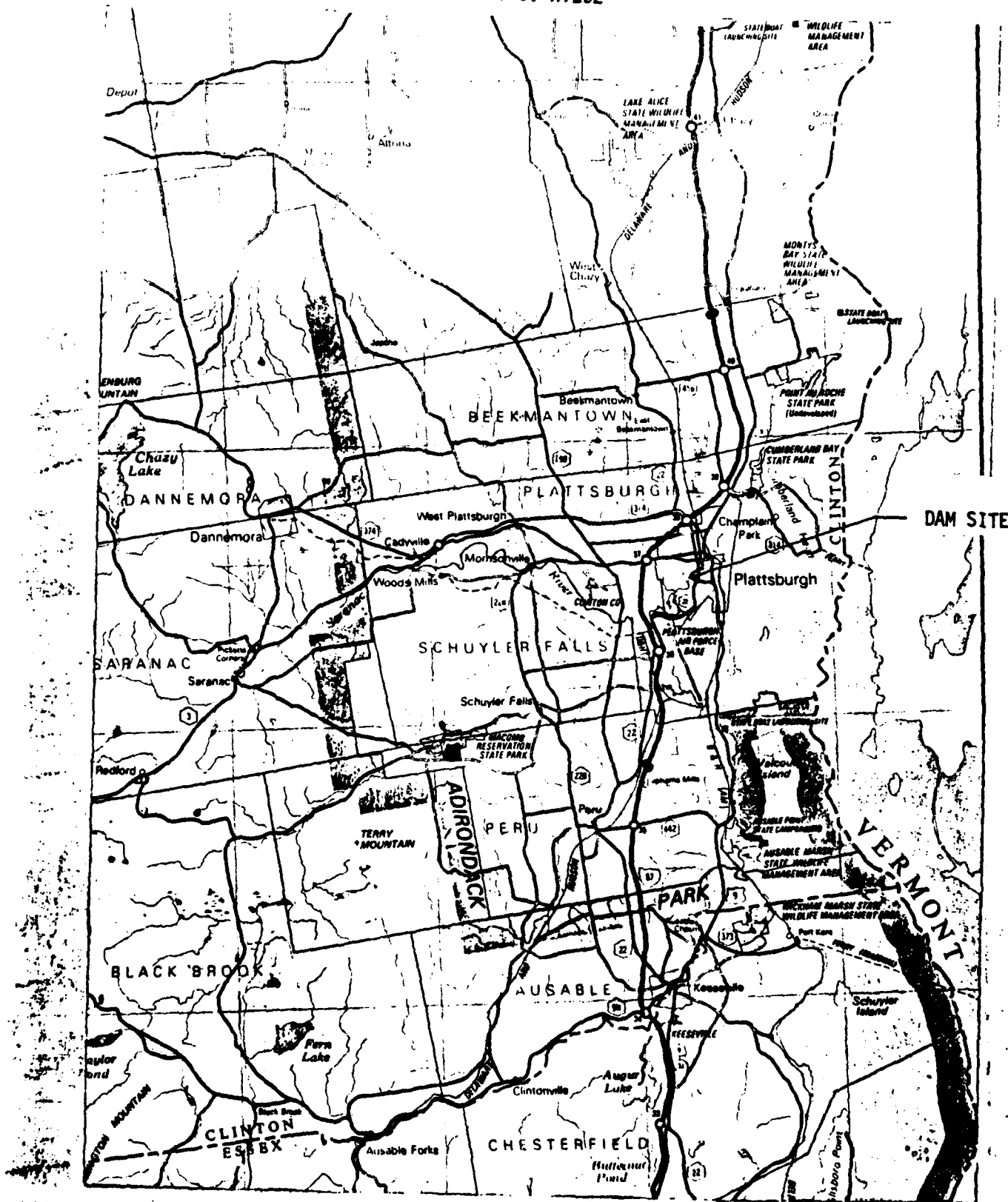
U.S. Army Corps of Engineers; New York District:

- 6) Phase I Inspection Report - Lake Flower Dam; by Dale Engineering Co., September 1980.
- 7) Upper Hudson and Mohawk River Basins Hydrologic Flood Routing Models, Resource Analysis, Inc., October 1976.
- 8) U.S. Department of Agriculture, Soil Conservation Service; National Engineering Handbook; Section 4 - Hydrology, August 1972.
- 9) U.S. Department of Commerce; Weather Bureau: Hydrometeorological Report No. 33: 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, April 1956.
- 10) U.S. Department of Interior; BUREC: Design of Small Dams. 2nd edition, (rev. reprint), 1977
- 11) U.S. Geological Survey; Water Resources Data for New York, Water Year 1979, Volume 1; Report NY-79-1, 1980.

APPENDIX F

DRAWINGS

VICINITY MAP
MAIN MILL DAM
I.D.NO. NY262



234

Cham

NOTICE: After filling out one of these forms as completely as possible for each dam in your district, return it at once to the Conservation Commission, Albany.

STATE OF NEW YORK
CONSERVATION COMMISSION
ALBANY

DAM REPORT

October 9th, 1913

CONSERVATION COMMISSION,

DIVISION OF INLAND WATERS,

COLUMBIANA:

I have the honor to make the following report in relation to the structure known as the ~~Progressive Paper & Paper Co.~~ ^{Main} Dam.

The dam is situated upon the ~~Carance River~~ ^{Carance River} $1\frac{3}{4}$ miles from outlet of ~~into Lake Champlain at Plattsburg N.Y.~~ ^{into Lake Champlain at Plattsburg N.Y.}
in the town of ~~Plattsburg~~ ^{Plattsburg} ~~Clinton~~ ^{Clinton} County,
about ~~1/4~~ ^{1/4} mile from the Village ~~or City of~~ ^{or City of} ~~Plattsburg~~ ^{Plattsburg}.

The distance ~~down~~ ^{down} stream from the dam to the ~~Lake Champlain~~ ^{Lake Champlain} is about ~~1 1/4~~ ^{1 1/4} miles.

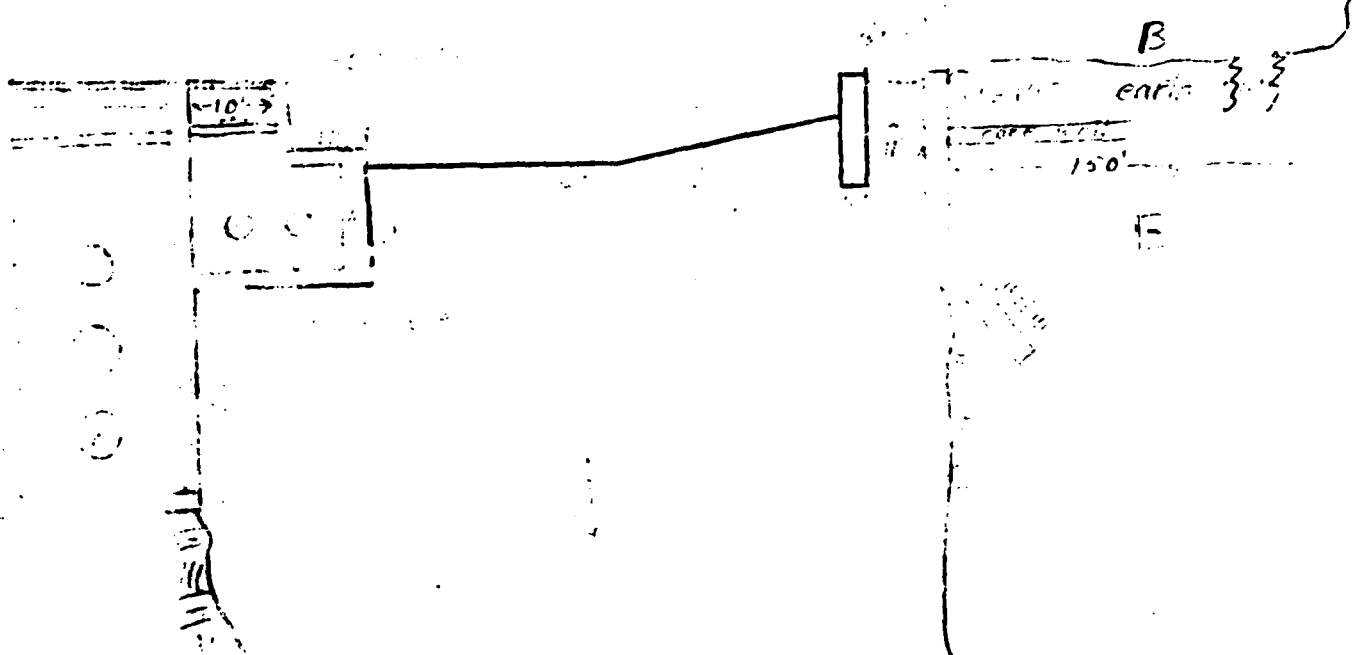
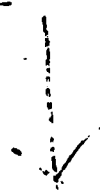
The dam is now owned by ~~Progressive Paper & Paper Co.~~ ^{Underwood Paper Mills Inc., Plattsburg, N.Y.}

and was built in or about the year, ~~1907~~ ¹⁹⁰⁹, and was extensively repaired or reconstructed during the year ~~1907~~ ¹⁹⁰⁹ by ~~J. Cunningham~~ ^{J. Cunningham}.

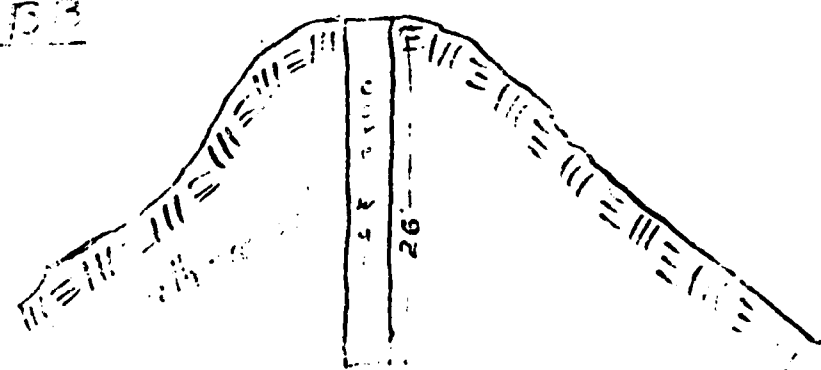
As it now stands, the spillway portion of this dam is built of ~~Stone~~ ^{Stone} and the other portions are built of ~~Stone & Earth on Shore portion~~ ^{Stone & Earth on Shore portion}.

As nearly as I can learn, the character of the foundation bed under the spillway portion of the dam is ~~Prime Stone~~ ^{Prime Stone} and under the remaining portions such foundation bed is ~~all other, no E. Hard Pan or Gravel~~ ^{all other, no E. Hard Pan or Gravel}.

Plan



BB



The total length of this dam is about 600 ft feet. The spillway or waste-weir portion, is about 185 300 feet long, and the crest of the spillway is about 4 feet below the top of the dam.

The number, size and location of discharge pipes, waste pipes or gates which may be used for drawing off the water from behind the dam, are as follows: 3 Gates at North End of Dam about 3-10" wide and openings of gates
 State briefly, in the space below, whether, in your judgment, this dam is in good condition, or bad condition, describing particularly any leaks or cracks which you may have observed.)

Large masonry dam, 18' thick at bottom 6' thick at top, in first-class condition
Aug. 4, 1920

Structure in good condition. Danger in case of break.
& in banks at ends.

Richard S. Meyer,
Quincy Park, N. Y.

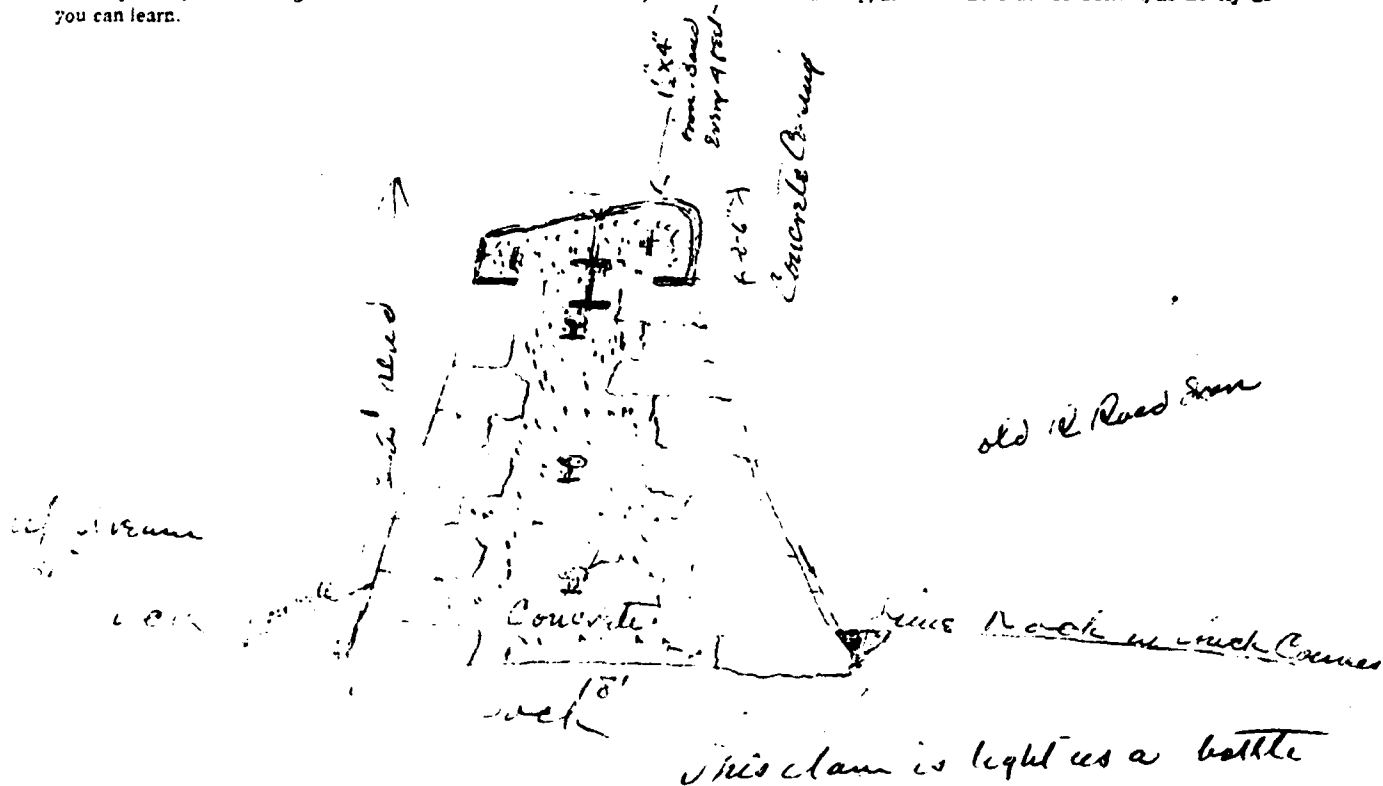
Reported by John C. Cunningham
 (Signature)

Watkinsburg, N. Y.
 (Address - Street and number, P. O. Box or R. F. D. route)

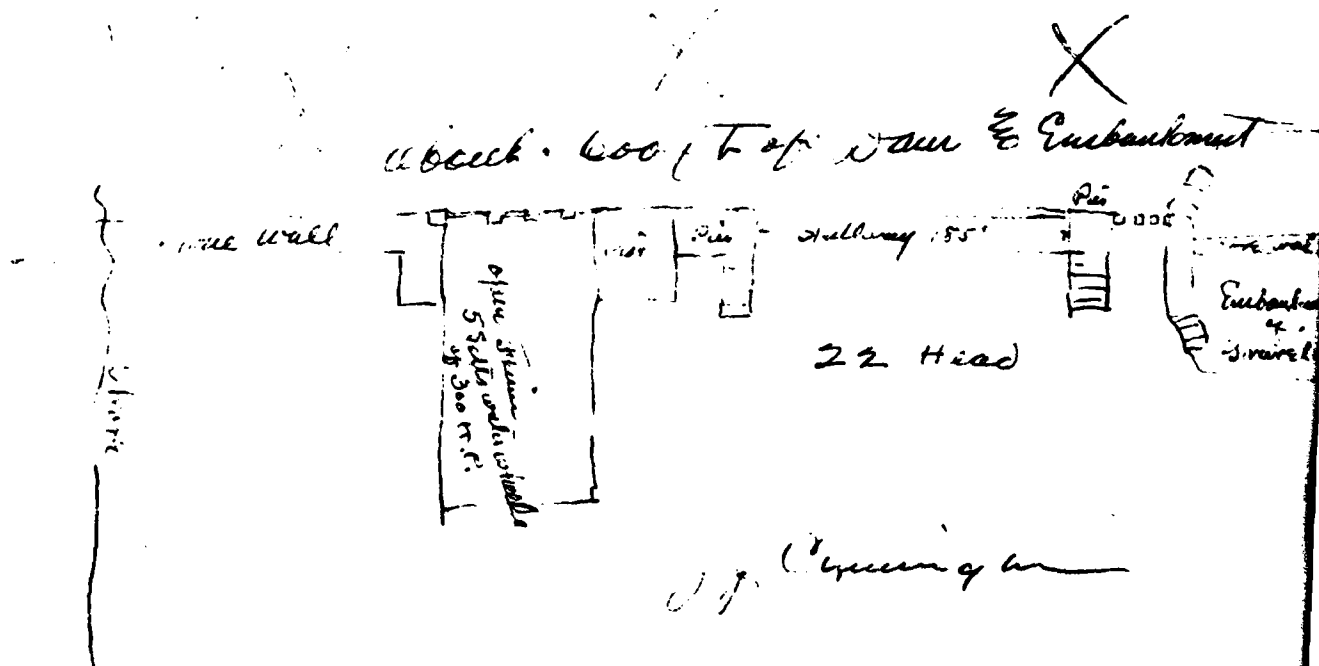
 (Name of place)

(SEE OTHER SIDE)

In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the stream bed, its thickness at the top, and thickness at the bottom, as nearly as you can learn.



In the space below, make a third sketch showing the general plan of the dam, and its approximate position in relation to buildings or other prominent objects in the vicinity.



C 236

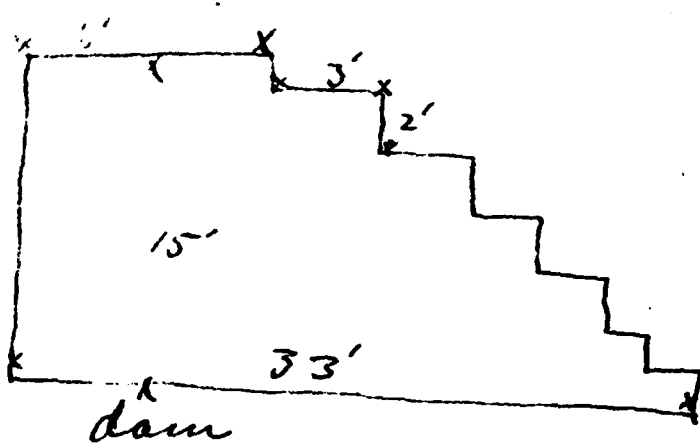
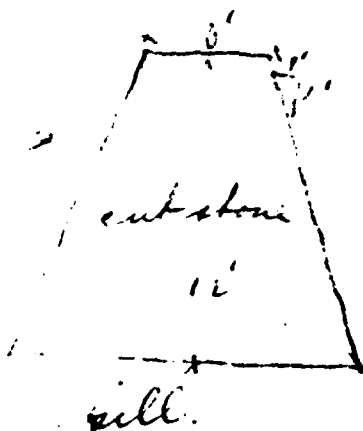
1/2

12-2-11-2000 (10-10-21)

Fill out a form as complete as possible for each dam in your district and send to State Conservation Commission, Albany, N. Y.

1. Name and address of owners *Progressive Pulp & Paper Co. Plattsburgh N. Y.*
2. Date of construction.....
3. Uses of impounded water *paper mill*
4. Character of foundation bed *rock*
5. Material of waste spill *cut stone*
6. Length of waste and depth below dam *100' 3' below dam*
7. Total length of dam including waste *350'*
8. Material of dam *cut stone*
9. Discharges, size and location *pipe 8" in diameter 25' sluice*

Below sketch section of waste and section of dam, with greatest heights and top thickness of section the less. On opposite side sketch general plan of dam and give distance from bridge or from a tributary stream.



Plattsburgh N. Y.

(signature, address and date.)

July 29, 1912.

