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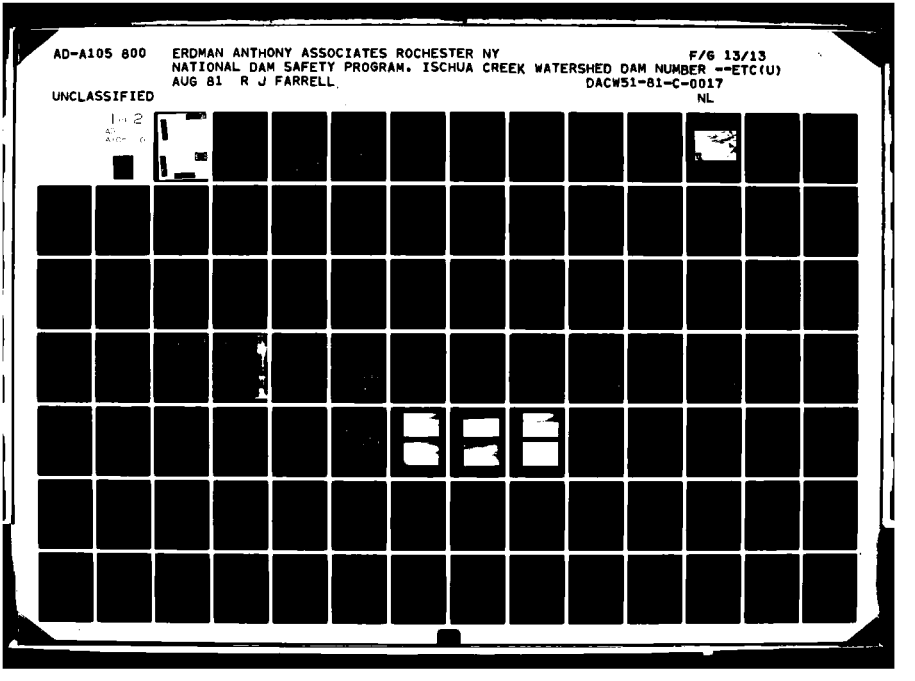

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Ischua Creek Watershed Dam #5
Cattaraugus County
Allegheny River Basin

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

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

Examination of available documents and visual inspection of the Ischua Creek Watershed Dam No. 5 and appurtenant structures did not reveal conditions which constitute a hazard to human life or property. However, the dam has some deficiencies which require further investigation and remedial action.

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Ponded water was observed on the emergency spillway and the berm on the downstream face of the dam. In addition, sloughing on the upstream slope to the left of the intake structure was observed. It is recommended that these conditions be evaluated further by a qualified registered professional engineer.

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would not be overtopped under full PMF conditions. The PMF routed through the reservoir required 58 percent of the spillway outflow capacity. The spillway capacity is, therefore, judged to be adequate.

The investigations recommended should be completed within 12 months of notification to owner, and remedial actions resulting from these investigations completed in the subsequent 12 months.

The following remedial measures should be performed within 1 year of notification to owner:

- Install ladder rungs on the riser to provide access to the drain gate housing.

- Regrade and fill in the erosion gullies on the upstream slope.

- Remove vegetation on the slopes and crest of the embankment and the immediate downstream channel. Provide a program of periodic cutting and mowing of these surfaces.

- Clear debris from the trash racks and upstream slopes periodically.

- Implement a program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the gate system. Document this information for future reference.

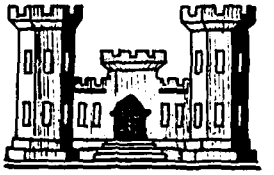
- Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.

ALLEGHENY RIVER BASIN

ISCHUA CREEK WATERSHED
DAM No. 5

CATTARAUGUS COUNTY, NEW YORK
INVENTORY No. N.Y. 565

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM



NEW YORK DISTRICT, CORPS OF ENGINEERS

AUGUST 1981

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed 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 aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Ischua Creek Watershed Dam No. 5
State Located:	New York
County Located:	Cattaraugus
Basin:	Allegheny River
Date of Inspection:	April 2, 1981

ASSESSMENT

Examination of available documents and visual inspection of the Ischua Creek Watershed Dam No. 5 and appurtenant structures did not reveal conditions which constitute a hazard to human life or property. However, the dam has some deficiencies which require further investigation and remedial action.

Ponded water was observed on the emergency spillway and the berm on the downstream face of the dam. In addition, sloughing on the upstream slope to the left of the intake structure was observed. It is recommended that these conditions be evaluated further by a qualified registered professional engineer.

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- Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.

Robert J. Farrell

Robert J. Farrell, P.E.
New York No. 55983

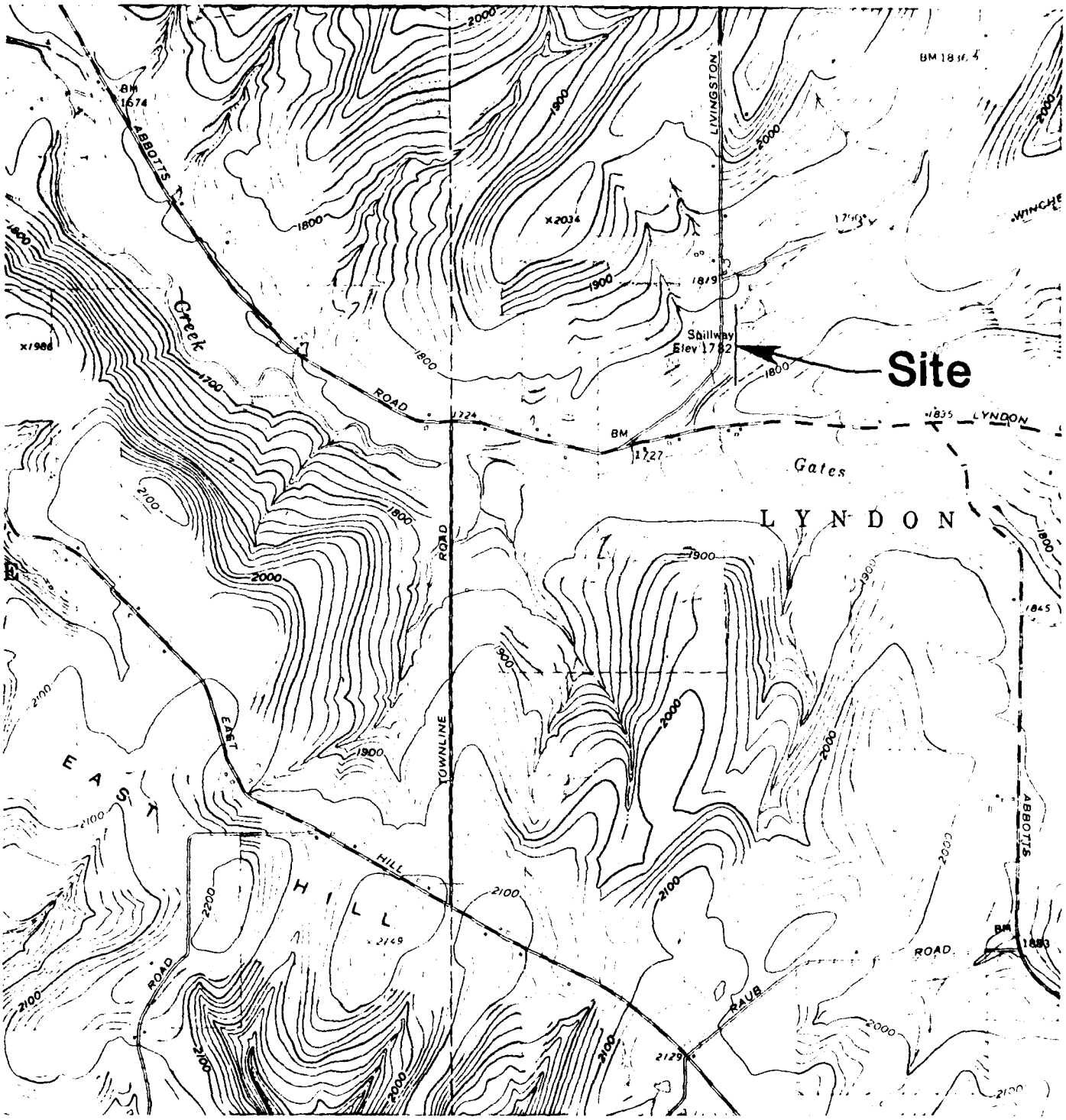
Approved by:

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

Date: 18 Aug 81

Ischua Creek Watershed
Dam No. 5

AERIAL VIEW



Ischua Creek Watershed
Dam No. 5

LOCATION PLAN

Scale: 1"=2000'

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

ISCHUA CREEK WATERSHED DAM NO. 5

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I Inspection reported herein was authorized by the New York District Corps of Engineers in a letter dated 24 February 1981, in fulfillment of the requirements of the National Dam Inspection Act, Public Law 92-367, dated 8 August 1972.

b. Purpose of Inspection

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

1.2 DESCRIPTION OF THE PROJECT

a. Location

The dam is located on a tributary of Gates Creek in the Town of Lyndon, 3.5 miles southeast of Franklinville, New York. It can be reached from Livingston Rd. which intersects Abbotts Rd. out of Franklinville. The dam is shown on U.S.G.S. Franklinville, New York quadrangle with coordinates at N42° 18' 47", W 78° 23' 43" (see location plan). Page B4 of Appendix B is a site plan for this dam.

b. Description of Dam and Appurtenances

The dam consists of a homogeneous earthfill embankment with an earthfill cutoff trench below; a principal spillway with a reinforced concrete riser structure and outlet pipe; and a vegetated earth channel emergency spillway located to the south of the dam embankment. The length of the dam embankment is approximately 1300 ft. The emergency spillway is 350 ft. wide.

1) Dam Embankment

The embankment is constructed of semi-pervious silty sand and gravel. It is approximately 1300 ft. long and a maximum of 54 ft. high.

The upstream slope is 3 horizontal to 1 vertical and the downstream slope is 2.5 horizontal to 1 vertical. The crest width is 18 ft.

There are berms on the upstream and downstream slopes approximately 10 ft. wide. The berm on the upstream slope extends the full length of the dam at elevation 1752.0 ft. (MSL). The berm on the downstream slope varies in elevation over the length of the dam. However, it is approximately at elevation 1770 ft. (MSL).

Beneath the embankment is an earthfill cutoff trench which is 14 ft. wide at the bottom. According to available plans, it is constructed of the same material as the embankment.

The dam is founded on silty sand and gravel (designated GM using the Unified Soil Classification System).

2) Emergency Spillway

The emergency spillway is cut into silty sand and gravel in the south abutment. Diversion berms of compacted fill have been constructed on both sides with side slopes of 3 horizontal to 1 vertical. The grass covered channel curves around the south end of the dam embankment.

The control section is 350 ft. wide and 30 ft. long and the downstream channel is roughly 700 ft. long.

3) Principal Spillway

The principal spillway consists of a reinforced concrete drop inlet structure with a 48 in. diameter reinforced concrete water pipe supported on a concrete cradle, and a stone lined plunge pool.

The inside dimensions of the riser structure are 34.5 ft. high and 12.0 ft. wide normal to the axis of the dam. It is 4.0 ft. long parallel to the embankment and flares to 17.0 ft. at the top. The walls of the structure are 20 in. thick for the bottom 12 ft., 16 in. thick for the next 12 ft., and 12 in. thick for the top section. The structure is founded on a 9.3 ft. by 18.3 ft. spread footing. The "low stage inlet" is an uncontrolled opening 2.0 ft. long and 1.5 ft. high with a crest elevation at 1752.0. It is protected by a trash rack fabricated from galvanized steel angle sections and reinforcing bar.

The "high stage inlet" consists of two openings 33.0 ft. above the invert of the riser. They are 12.0 ft. wide and 1.5 ft. high and are located in the left and right sides of the flared portion of the riser structure. They are protected by four galvanized steel pipes placed in the sloping section below each opening. A 2.0 ft. by 2.0 ft. manhole permits access into the riser structure.

The riser structure is drained by a 48 inch diameter reinforced concrete pressure pipe. It is approximately 316 ft. long and drops approximately 3 ft. over that length. The pipe penetrates the downstream side of the riser structure and is supported by a 12 in. thick reinforced concrete cradle within the embankment. Plans indicate 7 anti-seep collars cast around the pipe within the embankment.

The plunge pool is 28 ft. long parallel to the axis of the outlet pipe and has a base 8 ft. wide with slopes of 2.5 horizontal to 1 vertical rising on both sides. The pool is lined with rip rap 1.5 ft. thick.

4) Reservoir Drain

The reservoir drain consists of a 12 in. diameter bituminous coated corrugated metal (BCCMP) pipe extending 48 ft. upstream from the riser. At the riser is a 12 in. diameter vertical lift gate; it is controlled by a stem extending to the top of the riser and can be operated by a wheel. At the upstream end of the pipe is a 24 in. diameter vertical BCCMP 8 ft. long perforated for the top 6 ft. which acts as the drop inlet.

5) Foundation and Embankment Drainage

A 2 ft. thick blanket drain is located below the downstream slope ; it extends from 40 ft. downstream of the centerline of the dam to the downstream toe of the dam. This drain outlets into a cobble drain which extends along the downstream toe and drains into the outlet channel.

c. Size Classification

The dam's height of 54 ft. places it in the INTERMEDIATE size category according to the Corps of Engineers Recommended Guidelines.

d. Hazard Classification

The hazard potential classification for this dam is HIGH because of the significant economic losses and high potential for loss of life downstream in the event of dam failure. Section 5 of this report presents more detailed discussion of the hazard potential.

e. Ownership

The dam is owned and operated by:

Cattaraugus County
James M. Cash, Chairman of Oversight Committee
RD #2
Maple Grove Road
Franklinville, New York 14737
Tele: (716) 767-3604

f. Purpose of Dam

The purpose of this dam is to reduce downstream flooding by providing temporary storage for the runoff from 4,096 acres. The temporary storage is released gradually through the two-stage principal spillway system.

g. Design and Construction History

The dam was built under the Watershed Protection and Flood Prevention Act by the Ischua Creek County Small Watershed Protection District with the assistance of the Soil Conservation Service. It was completed in 1961.

h. Normal Operating Procedures

The dam is normally self-regulating.

1.3 Pertinent Data

a. Drainage Area

The drainage area for this dam covers 6.4 square miles. It is made up primarily of rolling pasture and woodland and minor development.

b. Discharge at Dam Site

1) Outlet Works

Normal discharge at the site is through the 48 in. diameter outlet pipe. In the event of severe flooding, water would flow over the emergency spillway at elevation 1782.0 ft. (MSL). The invert of the low stage orifice is at elevation 1752.0 ft. (MSL). The invert of the high stage orifice is at elevation 1772.0 ft. (MSL)

2) Maximum Known Flood

There is no data available for the maximum known flood at dam site. Recent high water was observed at elevation 1769.7 ft. (MSL).

3) Ungated Spillway Capacity at Top of Dam

The capacity of the principal spillway with the reservoir at top of dam elevation (1789.2 ft MSL) is 431 cfs. The capacity of the emergency spillway is 21,706 cfs at this level.

4) Ungated Spillway Capacity at Test Flood

The capacity of the principal spillway with the reservoir at test flood elevation (1786.9 ft. MSL) is 401 cfs. The capacity of the emergency spillway is 12,114 cfs at this level.

5) Gated Spillway Capacity at Normal Pool

There are no gated spillways.

6) Gated Spillway Capacity at Test Flood

As previously mentioned, there are no gated spillways.

7) Total Spillway Capacity at Test Flood

The total spillway capacity at test flood elevation (1786.9 ft. MSL) is 12,515 cfs.

c. Elevation (ft. above NGVD)

1) Streambed at toe of dam: 1735.3

2) Bottom of cutoff: variable, approximately 1735 minimum

3) Maximum tailwater - unknown, outlet conduit invert 1736.0

4) Normal pool: 1752.0

5) Full flood control pool: 1782.0

6) Spillway crest - Low level orifice: 1752.0
High level orifice: 1772.0
Emergency spillways: 1782.0

7) Design surcharge (original Design): 1787.2

8) Top of Dam: 1789.2

9) Test flood surcharge: 1786.9

d. Reservoir (Length in feet)

1) Length of maximum pool: 4,000^{+} ft.

2) Length of normal pool: 1700^{+} ft.

3) Length of flood control pool: 3700^{+} ft.

e. Storage (acre-feet)

1) Normal pool: 45.0

2) Flood control pool: 1029.0

3) Spillway crest pool:
a) Low stage inlet: 45.0
b) High stage inlet: 471.0
c) Emergency spillway: 1029.0

4) Top of dam: 1643

5) Test flood pool: 1389

f. Reservoir Surface (acres)

1) Normal pool: 8.5

2) Flood control pool: 74.0

3) Spillway crest pool

a) Low stage inlet: 8.5
b) High stage inlet: 42.0
c) Emergency spillway: 74.0

4) Test flood: 91.5

5) Top of dam: 98.5

g. Dam

1) Type: Earth Embankment

2) Length: 1300 ft.

3) Height: 54 ft.

4) Top Width: 18 ft.

5) Side Slopes:
Upstream: 3H:1V
Downstream: 2.5H:1V

6) Zoning: Homogeneous semi-pervious silty sand and gravel, blanket type seepage drain under 70% of downstream embankment.

7) Impervious Core: None

8) Cutoff: 14 ft. width, earthfill

9) Grout Curtain: None

h. Diversion and Regulating Tunnel

Not applicable

i. Spillways

1) Type:

a) Principal Spillway: Reinforced concrete drop inlet

b) Emergency Spillway: Grass covered earth channel cut in south abutment

2) Length of Weir:

a) Low Level Orifice: 24 in.

b) High Level Orifice: 24 ft.

c) Emergency Spillway: 350 ft.

3) Crest Elevation: (feet above NGVD)

a) Low Level Orifice: 1752.0

b) High Level Orifice: 1772.0

c) Emergency Spillway: 1782.0

4) Gates: None

5) Upstream Channel: Tributary of Gates Creek, narrow stream to reservoir through farm and woodland

6) Downstream Channel: Tributary of Gates Creek, narrow stream through farm and woodland

j. Regulating Outlet:

There is a reservoir drain consisting of 8 ft-24 in. diameter drop inlet with the top 6 ft. perforated. The inlet drains through a 12 in. diameter pipe equipped with a 12 in. lift gate and rising stem at the riser structure. The invert of the inlet is 1740.0 (NGVD)

SECTION 2 - ENGINEERING DATA

2.1 GEOLOGY

Bedrock at the dam site is upper Devonian Age (345-375 million years ago) interbedded shales, siltstones, and sandstones. These relatively underformed sedimentary rocks are medium hard. Regionally, the rock forms a homocline which dips southward to southwestward at approximately 40 feet per mile. Small terraces and low folds modify this dip to essentially flat-lying over short distances. Only minor folding and faulting are found in the region with no major or active faults known to exist in the area.

The Ischua Creek Watershed Dam No. 5 is located in a region classified as Zone 2 seismicity, as shown on Figure No. 1 of the Recommended Guidelines for Safety Inspections of Dams.

Pleistocene glaciation (beginning approximately 2 million years ago) has modified the topography by means of erosion and deposition. The thick continental ice sheet advanced and receded many times in south western New York smoothing terrain by glacial scour and mantling the uplands with till deposits.

The pleistocene geology of the dam site consists of glacial ground moraine deposits. Dense clayey glacial tills with moderate amounts of siltstone and sandstone channers comprising the coarse fraction of the till, and overlying alluvial glacial deposits comprise the overburden of the dam site. In recent times, alluvium from upland erosion, has been deposited on the glacial material.

2.2 SUBSURFACE INVESTIGATION

Test hole logs are contained in the "As-Built" drawings. A number of test pits and drill holes were dug to determine subsurface conditions.

2.3 DESIGN RECORDS

The records available for the project consists of 10 contract drawings which show the plans, sections and details of the dam, appurtenant structures, impact basin details and grating, fencing details, and logs of test holes; and a design report issued by the U.S. Soil Conservation Service dated April 4, 1961.

2.4 CONSTRUCTION RECORDS

Construction records and specifications are available at the U.S. Soil Conservation Service, Design Section, Syracuse, New York.

2.5 OPERATION RECORDS

No written maintenance or operation records exist for the dam.

2.6 EVALUATION OF DATA

Information obtained from the "As-Built" drawings is consistent with observations made during this inspection. The information obtained from available data was considered adequate for the Phase I inspection and evaluation.

SECTION 3 - VISUAL INSPECTION

3.1 Findings

a. General

The Ischua Creek Watershed Dam No. 5 is in good condition at the present time.

b. Dam

1) Earth Embankment (See Photos 2, 4 and 5)

The brush growth is light on this embankment and no animal burrows were noted during the inspection of this dam. The entire dam shows a relatively high moisture content. However, this is believed to be the result of the recent spring thaw. The high moisture condition is not considered a problem with the exception of two areas noted below.

A berm approximately 10 ft. wide located on the downstream slope has been constructed in such a way that it collects surface runoff. As a result there is ponded water all along the top of this berm. Provision should be made to provide a drainage path for this ponded water.

Erosion gullies up to 6 inches deep were noted in the left upstream abutment contact. These are the result of high concentrations of surface runoff from the adjacent emergency spillway section. Some form of drainage path should be provided to prevent erosion in this area.

The crest of the dam is in good condition with no evidence of vertical or horizontal movement.

There is no slope protection on the upstream slope other than the vegetative cover and a 10 ft. berm at the waterline. Approximately 1 to 2 inches of erosion due to wave action was noted at the water line on the upstream slope.

The blanket type toe drain under the downstream slope appears to be functioning properly as no seepage was noted at the dam. The cobble drain is moist over its entire length, but it is not clear whether this water is emanating from the drain or surface runoff.

A small area to the left of the intake structure on the upstream slope has been subjected to sloughing on the order of 2 to 3 ft. in diamater.

2) Emergency Spillway (See Photos 3 and 6)

The emergency spillway is generally in good condition with the exception of a large area of ponded runoff or natural groundwater. This area appears to be entirely upstream of the control section of the channel and encompasses the entire upstream end of the emergency spillway. Drainage of this impounded water has caused erosion gullies along the upstream end of the channel leading into the reservoir as well as the gullies discussed in the previous section.

c. Principal Spillway

The water surface was at the top of the orifice opening in the riser (elevation 1753.5 ft. MSL) and protected with an effective trash rack. The riser was in excellent condition with no evidence of spalling, cracking, or efflorescence. The gate which could be used to drain the reservoir was covered with water at the time of observation so the mechanism was not visible.

d. Reservoir Area (See Photo 1)

The shore of the reservoir is generally shallow sloping pasture or woodland. It appears to be stable and in good condition.

e. Downstream Channel

The downstream channel is a narrow channel passing over relatively a flat flood plain. There is rip rap protection of the plunge pool, but erosion of the banks has taken place above the level of the rip rap 300 ft. downstream of the outlet.

3.2 Evaluation

The dam is generally in good condition. The potential problems noted during the visual inspection are listed below:

a. Drainage gullies on the main dam and upstream of the emergency spillway,

b. Ponded water in the emergency spillway channel and the berm on the downstream slope,

c. Erosion of the downstream channel banks above the level of the rip rap,

d. Sloughing of the upstream slope to the left of the intake structure,

e. Operation of the drain gate could not be checked due to its location below the water surface,

f. The inaccesibility of the drain gate.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

No written operation and maintenance procedures exist for the project. The normal operation of the project consists of allowing water to flow through the service spillway outlet pipe.

4.2 MAINTENANCE OF DAM

Maintenance of the dam is performed when the need arises. Maintenance is not considered adequate.

4.3 WARNING SYSTEM IN EFFECT

No warning system is in effect or in preparation.

4.4 EVALUATION

The overall condition of the dam and appurtenant structures appears to be good. Recommendations in connection with regular maintenance are discussed in Section 7.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 Drainage Area Characteristics

The Ischua Creek Dam No. 5 is located on a tributary of Gates Creek, a tributary of Ischua Creek, in the Allegheny River basin, and has a drainage area of 6.4 square miles. The dam is situated approximately 3.5 miles southeast of Franklinville, New York with its confluence with Ischua Creek about 1 miles south of Franklinville. Dam NY00571 is located on Gates Creek approximately 2.8 miles downstream of the dam. The topography of the watershed varies between steep and gentle sloping hills.

5.2 Design Data

This dam was designed as a class (c) structure in accordance with criteria as established in Washington Engineering Memorandum SCS-27. Under this classification the emergency spillway is designed for a rainfall equal to P(100) + 0.26 [PMP-P(100)] , while the freeboard pool is designed for the PMP rainfall.

The Soil Conservation Service (SCS) design calculations have been reviewed. The dam was designed to pass the 100-year flood with antecedent moisture condition III, without discharging through the emergency spillway. The peak inflow is 3577 cfs, peak outflow is 305 cfs and peak elevation is 1782.0 ft. (MSL). The SCS design allowed for a 50-year sediment accumulation with a surface area of 8.5 acres, elevation of 1752.0 ft. (MSL) and a storage of 45.0 acre-ft. The principal spillway consists of a 48" diameter reinforced concrete water pipe and a 4' x 12' reinforced concrete riser. The riser has a low orifice elevation of 1752.0 ft. (MSL) and a crest elevation of 1772.0 ft. (MSL). The emergency spillway control cross section is 350 ft. wide with side slopes of 3 horizontal to 1 vertical and a crest elevation of 1782.0 ft. (MSL). The dam crest elevation is 1789.2 ft. (MSL).

5.3 Analysis Criteria

The analysis of the spillway capacity of the dam and the storage of the reservoir was performed using the Corps of Engineers HEC-1 Dam Safety Version computer model. The unit hydrograph was defined by the Snyder Synthetic Unit Hydrograph method, and the Modified Puls routing procedure was incorporated. The Probable Maximum Precipitation (PMP) was 22.5 in. (24 hrs., 200 sq. miles) from Hydrometeorological Report #33 in accordance with recommended guidelines of the Corps of Engineers. The dam is 54 ft. high and impounds approximately 1643 acre-ft. at the top of the dam. The dam is classified as a HIGH hazard and INTERMEDIATE in size, according to the Recommended Guidelines of the Corps of Engineers. The spillway design flood is the PMF. The floods selected for analysis were 20, 40, 50, 60, 80 and 100% of the Probable Maximum Flood (PMF) flows. The PMF inflow of 12,597 cfs was routed through the reservoir and the peak outflow was determined to be 12,515 cfs. The peak PMF outflow would produce an eroding velocity of 11.2 ft./sec. on the emergency spillway.

5.4 Reservoir Capacity

The reservoir capacities at the crest of the emergency spillway, and at the top of the dam are 1029 acre-ft. and 1643 acre-ft., respectively. Surcharge storage between the emergency spillway crest and the top of the dam is equivalent to 1.80 in. of runoff from the drainage area.

5.5 Experience Data

There are no flood records for the dam site. However, during the field investigation, evidence of recent high water was observed at elevation 1769.7 ft. (MSL). This reservoir elevation corresponds to a peak outflow of 57 cfs.

5.6 Overtopping Potential

The maximum capacity of the spillways is 22,137 cfs which is greater that the PMF peak outflow of 12,515 cfs. The dam is not overtopped by the PMF, the peak elevation being 2.3 ft. below the top of dam.

5.7 Analysis of Downstream Impacts

During the field investigation, dwellings and highways located downstream of the dam were identified and referenced to the channel invert. The cross section locations used in the downstream channel routing are shown on Page D-2, Appendix D. The impacts of the PMF on dwellings located downstream of the dam are shown in Table 5.1. For the purposes of this analysis, a danger of loss of life was assumed to exist if the computed PMF water surface was above the first floor elevation of a structure. The drainage area of Gates Creek upstream of the confluence of tributary leading downstream from the dam was modeled into the analysis. The impacts shown in Table 5.1 are a result of the discharges from both Gates Creek and the dam. This situation occurs with two structures at location 1 and 1 structure at location 2. The road crossing at location 1 would be overtopped with the PMF.

5.8 Evaluation

The spillway of the Ischua Creek Watershed Dam No. 5 will safely pass the PMF without overtopping. The spillway is, therefore, assessed as "Adequate". Potential problems include:

a. Erosion of the emergency spillway for the test flood condition. Because of the low probability of occurence of the PMF, and because there is no cost effective means of preventing the erosion, no preventative recommendations are deemed necessary.

b. The danger of loss of life and economic damage downstream of the dam for the test flood conditions

TABLE 5.1

SUMMARY OF DOWNSTREAM IMPACTS FOR PMF

Location # (see page D-2 Appendix D)	Location	# of Dwellings	Structure Height above Streambed* (ft)	Peak Flow (cfs)	Peak Stage (ft)	Comments
1	2100' d/s of dam & just d/s of confluence w/Gates Creek	2 1	9 17	23,893 23,893	12' 12'	Danger of loss of life Road overtopped
2	200' d/s of of Location #1	1 2	7 ±30	23,897 23,902	12' -	Danger of loss of life Road overtopped
3	3300' d/s of #2	2	±30	23,895	10'	-

*The structure height above the streambed is the difference between the first floor elevation and the channel invert.

SECTION 6 - STRUCTURAL STABILITY

6.1 Visual Observations

There does not appear to be significant displacement or distress associated with the embankments at this site. The dam appears to be in good condition at the present time.

6.2 Design and Construction Data

Analyses carried out during the design and construction phase included a slope stability analysis by the Swedish circle method. The parameters assumed were:

Upstream slope: 3H:1V, full drawdown, 8 ft. berm at 1771 ft, $\phi = 13^{\circ}$, c = 650 psf.

Downstream slope: 2.5H:1V, blanket drain, no berm, $\phi = 13^{\circ}$, c = 650 psf.

The factors of safety calculated were 1.64 for the upstream slope and 1.57 for the downstream slope. They are considered adequate according to the recommended Phase I guidelines.

6.3 Post Construction Changes

There have been no known changes to any of the embankments or structures at this dam.

6.4 Seismic Stability

The dam is located in seismic zone No. 3 and, in accordance with the recommended Phase I guidelines, a seismic stability analysis is warranted. This should be accomplished by a qualified registered professional engineer and should be made part of the record for this dam.

SECTION 7 - ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

Examination of the available documents and visual inspections of Ischua Creek Watershed Dam No. 5 and appurtenant structures did not reveal any conditions which constitute a hazard to human life or property. The dam and its appurtenances are considered to be in good condition at the present time.

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would not be overtopped for the spillway design flood of the full PMF. The principal and auxiliary spillway capacity are, therefore, judged as adequate.

b. Adequacy of Information

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

c. Need for Additional Investigations

It is recommended that the services of a qualified registered professional engineer be retained to evaluate:

a. the source of the ponded water on the emergency spillway and the berm on the downstream face of the dam.

b. the sloughing on the upstream slope to the left of the intake structure.

d. Urgency

The recommended investigation should be completed within 12 months of notification to owner and remedial actions resulting from these investigations completed in the subsequent 12 months. The remedial measures or actions listed below should be completed within one year from notification to owner.

7.2 RECOMMENDED MEASURES

a. The results of the aforementioned investigations will determine the remedial measures concerning the ponded water on the emergency spillway and the berm on the downstream face of the dam, as well as the sloughing on the upstream slope.

b. Install ladder rungs on the riser to provide access to the drain gate housing.

c. Regrade and fill in the erosion gullies on the upstream slope.

d. Remove vegetation on the slopes and crest of the embankment and the immediate downstream channel. Provide a program of periodic cutting and mowing of these surfaces.

e. Clear debris from the trash racks and upstream slopes periodically.

f. Implement a program of periodic inspection and maintenance of the dam and appurtenances including yearly operation and lubrication of the gate system. Document this information for future reference.

g. Develop a formal written downstream warning system to alert the appropriate officials and residents in the event of an emergency.

APPENDIX A

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Ischua Creek Watershed Dam No. 5

Fed. I.D. # NY 00565 DEC Dam No. 25-2980

River Basin Allegheny

Location: Town Franklinville County Cattaraugus

Stream Name Gates Creek

Tributary of Ischua Creek

Latitude (N) 42° 18.8' Longitude (W) 78° 24.1'

Type of Dam Earth Embankment

Hazard Category High

Date(s) of Inspection April 2, 1981

Weather Conditions Sunny, Windy, 50°

Reservoir Level at Time of Inspection Approximately elevation 1753.5 ft.

b. Inspection Personnel Mr. Robert Farrell, Mr. Ken Avery, Mr. James Reynolds, Mr. Jeff Hardin

c. Persons Contacted (including Address & Phone No.)

U.S. Soil Conservation Service, Rm 771-Federal Bldg., So. Clinton St., Syracuse, N.Y.

State Construction Engineer: Philip "Skip" Nelson 1-315-423-5502

Area 1 Project Engineer (Batavia): Pete Wright 1-716-343-3664

Contracting Ofc. for Ischua Creek Watershed: Ed Smith - contacted through Pete Wright

d. History:

Date Constructed 1961 Date(s) Reconstructed

Designer U.S.D.A. Soil Conservation Service

Constructed by

Owner Ischua Creek County Small Watershed Protection District

2) Embankment

a. Characteristics

(1) Embankment Material Silty sand and gravel. Homogeneous

(2) Cutoff Type Trench cut into natural ground, variable depth, generally 12 feet wide at bottom. Cut into silty sand and gravel

(3) Impervious Core None

(4) Internal Drainage System Blanket drain two feet thick from 40 downstream of centerline to the downstream toe. Drains to a cobble drain along the downstream toe.

(5) Miscellaneous Side slopes 2.5H:1V downstream and 3H:1V upstream

b. Crest

(1) Vertical Alignment Good

(2) Horizontal Alignment Good

(3) Surface Cracks Not noted

(4) Miscellaneous

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1 vertical to 3 horizontal

(2) Undesirable Growth or Debris, Animal Burrows Brush and grass growth light. No animal burrows noted

(3) Sloughing, Subsidence or Depressions 3 sloughs approximately 3 feet in diameter located approximately 30 feet left of the intake structure, approximately 5 to 10 feet above the low level inlet

(4) Slope Protection Grass, no riprap on upstream slope, 10 feet berm at waterline. Approximately 2 inches of wave erosion at waterline

(5) Surface Cracks or Movement at Toe None noted

d. Downstream Slope

(1) Slope (Estimate - V:H) 1 vertical to 2.5 horizontal

(2) Undesirable Growth or Debris, Animal Burrows None noted

(3) Sloughing, Subsidence, or Depressions None noted

(4) Surface Cracks or Movement at Toe None noted

(5) Seepage None noted. Entire slope was moist but no flow was observed

(6) External Drainage System (Ditches, Trenches, Blanket) A cobble drain extends along the downstream slope to the left of the outlet conduit. The drain was moist but no flow was observed. Drainage should be provided for the 10 foot berm crest

(7) Condition Around Outlet Structure Generally good

(8) Seepage Beyond Toe None noted

e. Abutments - Embankment Contact

Some erosion due to natural ground or surface water flow

(1) Erosion at Contact Erosion gullies up to 6" deep at left upstream abutment contact resulting from surface runoff. Drainage path should be provided

(2) Seepage Along Contact None noted

3) Drainage System

(a) Description of System 2 ft. thick blanket drain from 40 ft. downstream of centerline to downstream toe. Drains to a cobble drain along the toe which drains to the outlet channel.

(b) Condition of System Appears to be functional. Cobble drain slightly overgrown.

(c) Discharge from Drainage System None noted

4) Instrumentation (Momumentation/Surveys, Observation Wells, Weirs, Piczometers, etc.) None installed

5) Reservoir

a. Slopes Appear stable and in good condition

b. Sedimentation Very minor accumulation

c. Unusual Conditions Which Affect Dam Heavy moisture in emergency spillway channel

6) Area Downstream of Dam

a. Downstream Hazard (No. of homes, highways, etc) Refer to Table 5.1 for a summary of downstream dwellings and highways

b. Seepage, unusual growth None noted

c. Evidence of movement beyond toe of Dam None noted

d. Conditions of Downstream Channel Generally good. Some erosion above rip rap, should be repaired.

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

Principal spillway: Drop inlet structure with outlet conduit to impact basin. Vegetated earth emergency spillways: 350 ft. wide at right abutment.

a. General Good

b. Condition of Service Spillway Excellent

c. Condition of Emergency Spillway Generally good, spillway (left) shows heavy concentration of ponded water. This is probably the result of natural groundwater and spring thaw

d. Condition of Discharge Conveyance Channel Channel banks eroded above rip rap

8) Reservoir Drain/Outlet

Type: Pipe X Conduit _____ Other _____

Material: Concrete _____ Metal X Other _____

Size: 12" Length 48'

Invert Elevations: Entrance _____ Exit _____

Physical Condition (Describe): Unobservable X

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve X Uncontrolled _____

Operation: Operable _____ Inoperable X Other _____

Present Condition (Describe): No handle

9) Structural

a. Concrete Surfaces N/A

b. Structural Cracking N/A

c. Movement - Horizontal & Vertical Alignment (Settlement) N/A

d. Junctions with Abutments or Embankments N/A

e. Drains - Foundation, Joint, Face N/A

f. Water Passages, Conduits, Sluices N/A

g. Seepage or Leakage N/A

h. Joints - Construction, etc. N/A

i. Foundation N/A

j. Abutments N/A

k. Control Gates N/A

l. Approach & Outlet Channels N/A

m. Energy Dissipators (Plunge Pool,etc) N/A

n. Intake Structures N/A

o. Stability N/A

p. Miscellaneous N/A

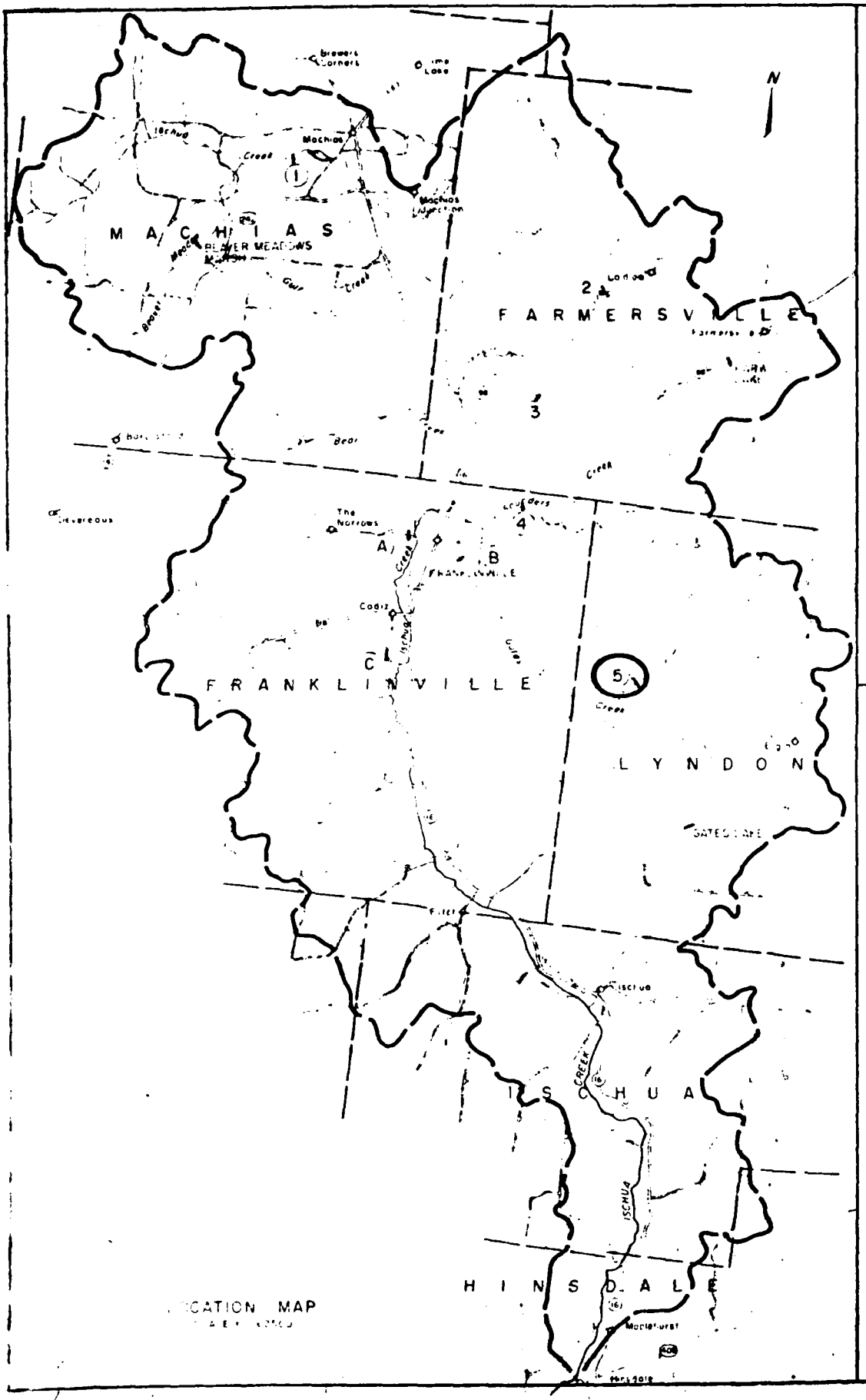
10) Appurtenant Structures (Power House, Lock, Gatchouse, Other)

a. Description and Condition None

APPENDIX B

ENGINEERING DATA

APPENDIX B



ISCHUA

FL

DRAINA
TOTAL
WATER
HEIGHT
VOLUM

BUILT

IS

SHEET 1 COVER S
SHEET 2 PLAN OF
SHEET 3 DAMSITE
SHEET 4 PROFILE
SHEET 5 SEEPAGE
SHEET 6 PLAN-PR
SHEET 7 RISER D
SHEET 8 CRADLE,
SHEET 9 GATE W
SHEET 10 FENCE

CATION MAP

ISCHUA CREEK WATERSHED PROJECT

FLOODWATER RETARDING DAM NO. 5

565

DRAINAGE AREA	4096	Acres
TOTAL STORAGE	1085	Acre ft.
WATER SURFACE AREA	8.5	Acres
HEIGHT OF DAM	52	Feet
VOLUME OF FILL	214000	Cubic Yards

BUILT UNDER THE WATERSHED PROTECTION AND FLOOD PREVENTION ACT

by

ISCHUA CREEK SMALL WATERSHED DISTRICT

with the assistance of

SOIL CONSERVATION SERVICE

of the

U.S. DEPARTMENT OF AGRICULTURE

AS BUILT

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
COVER SHEET
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

H L WALL Apr '61

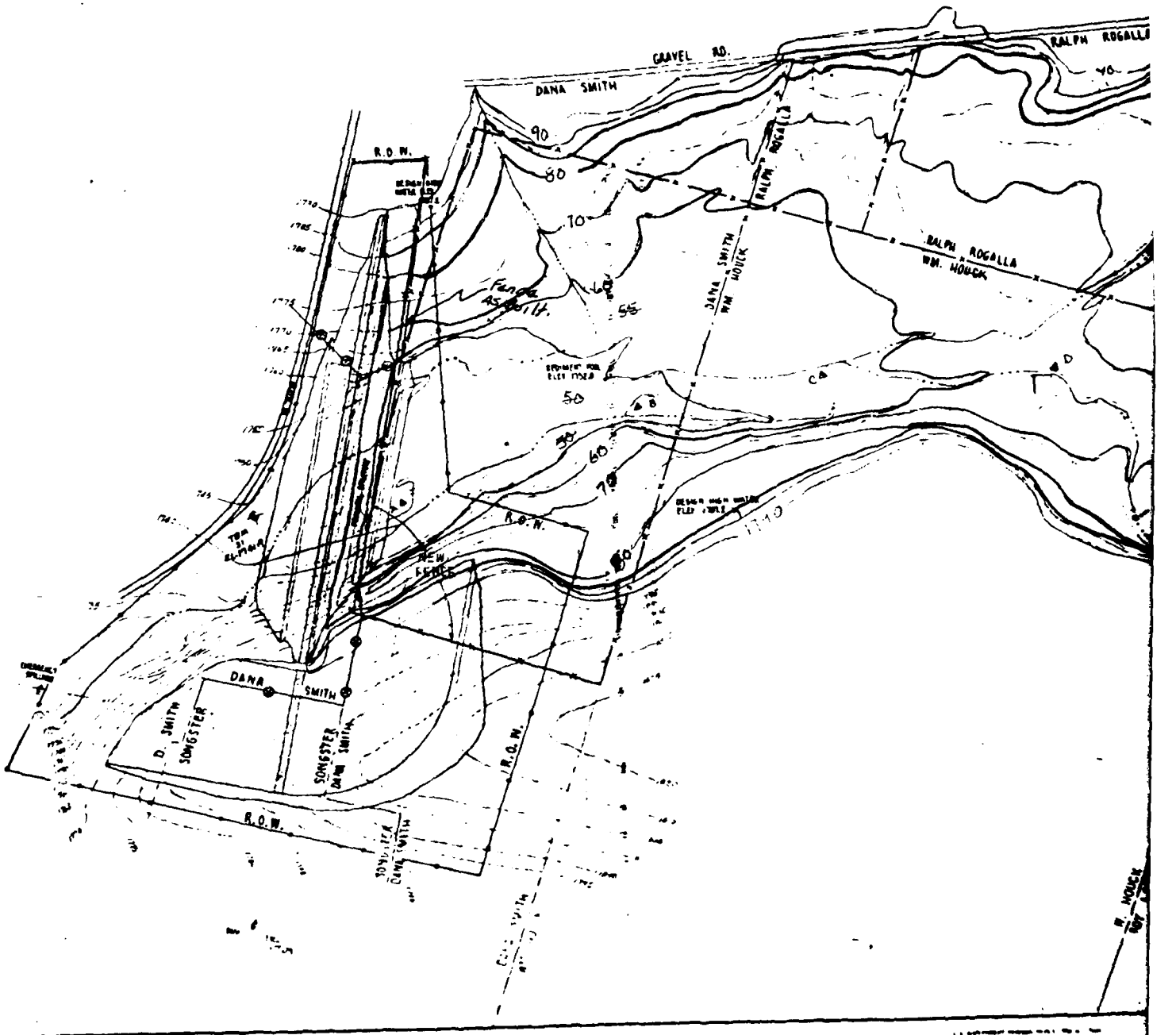
M NIKOLICH

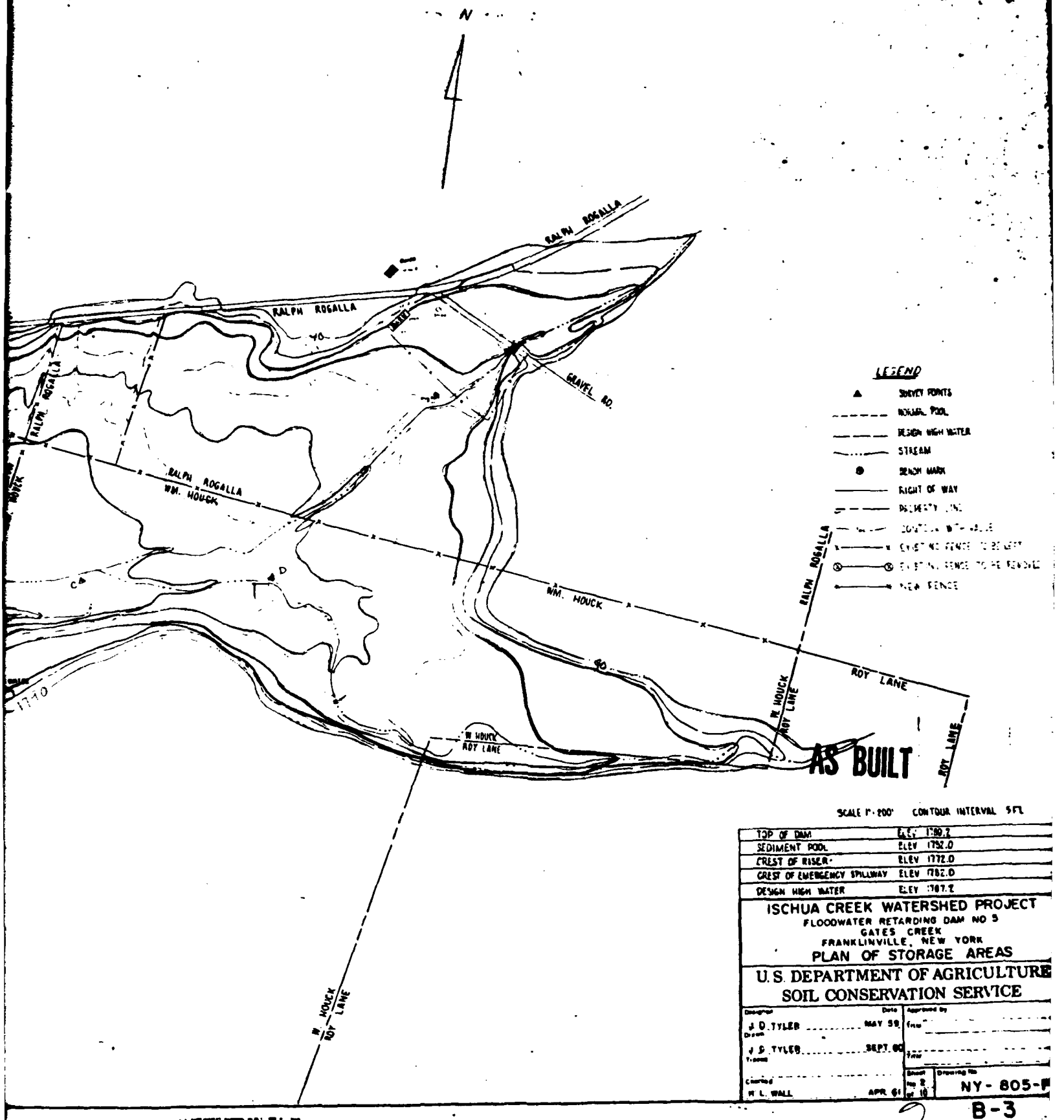
HEAD OF E & [illegible]

STATE CONSERVATION ENGR

NY - 805 - P

2 B-2


GRAVEL RD.
DANA SMITH
RALPH ROGALLA
R.O.W.
90
80
70
60
50
55
40
DANA SMITH
WM. HOUCK
RALPH ROGALLA
WM. HOUCK
Fence
As Built
NEW
FENCE
DANA
SMITH
D. SMITH
SONGSTER
DANA SMITH
SONGSTER
DANA SMITH
R.O.W.
R.O.W.
R.O.W.
1110
A
B
C
D



SCALE 1" = 200' CONTOUR INTERVAL 5 FT.

TOP OF DAM	ELEV. 1780.2
SEDIMENT POOL	ELEV. 1752.0
CREST OF RISER	ELEV. 1772.0
CREST OF EMERGENCY SPILLWAY	ELEV. 1782.0
DESIGN HIGH WATER	ELEV. 1787.2

ISCHUA CREEK WATERSHED PROJECT

FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK

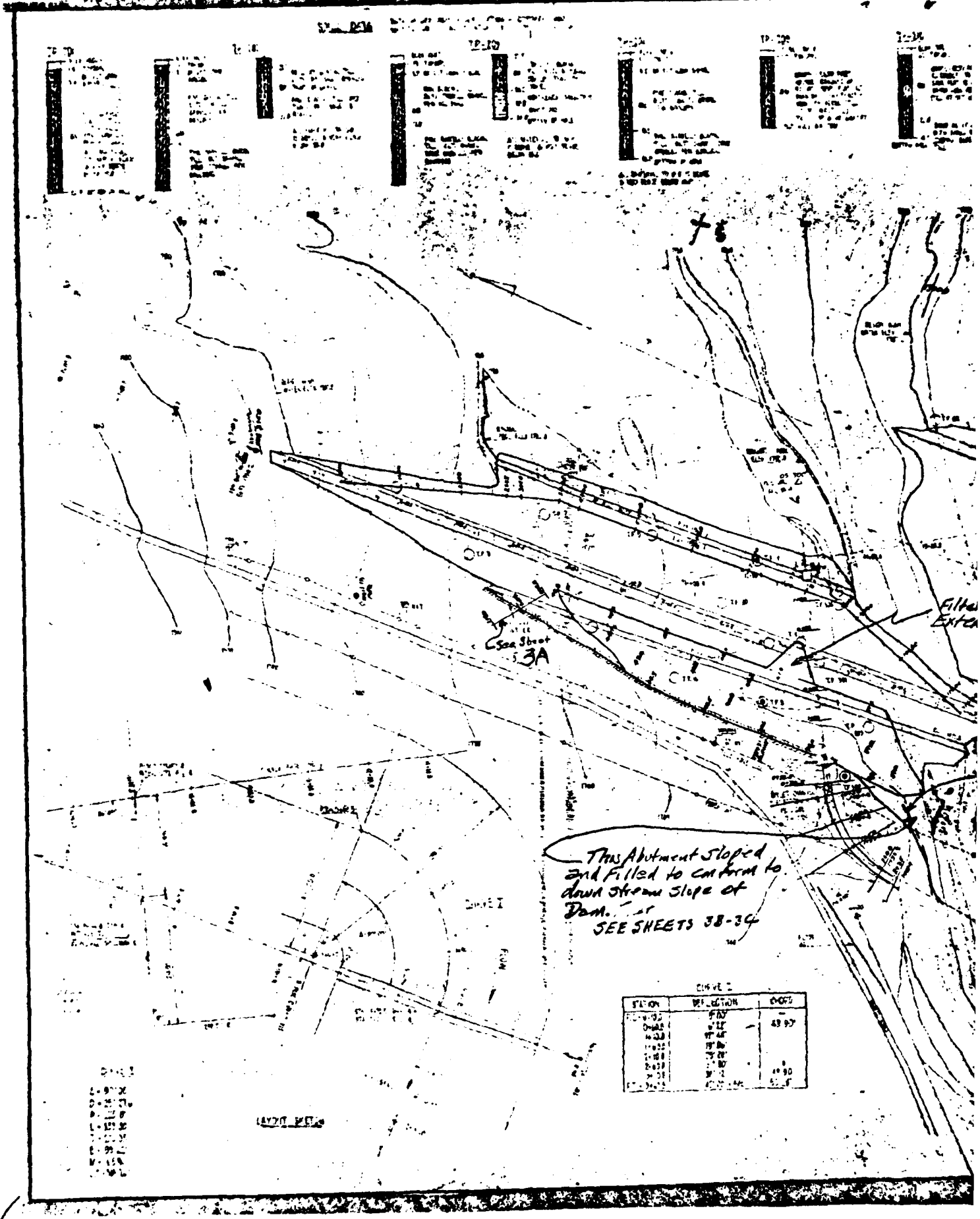
PLAN OF STORAGE AREAS

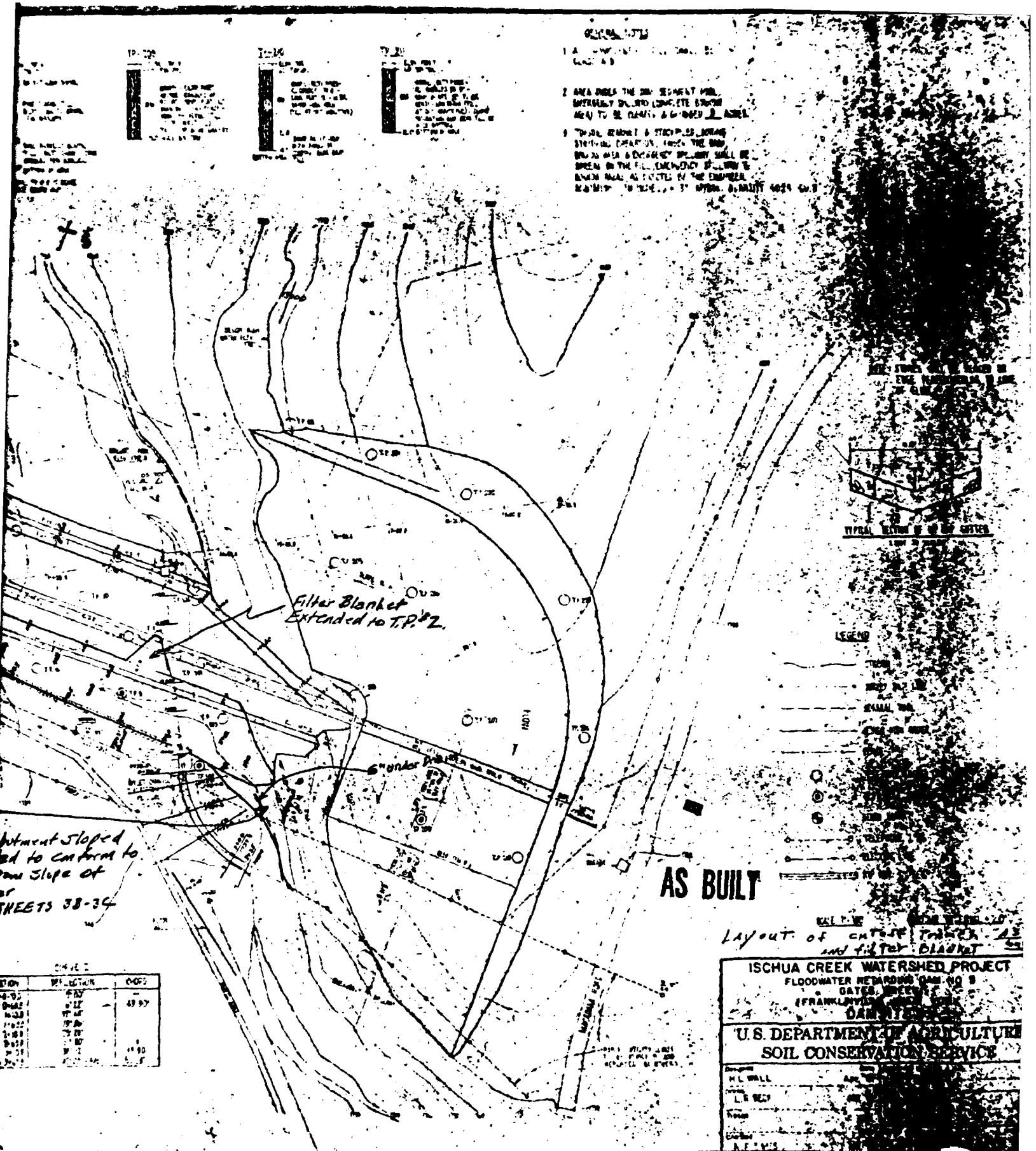
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

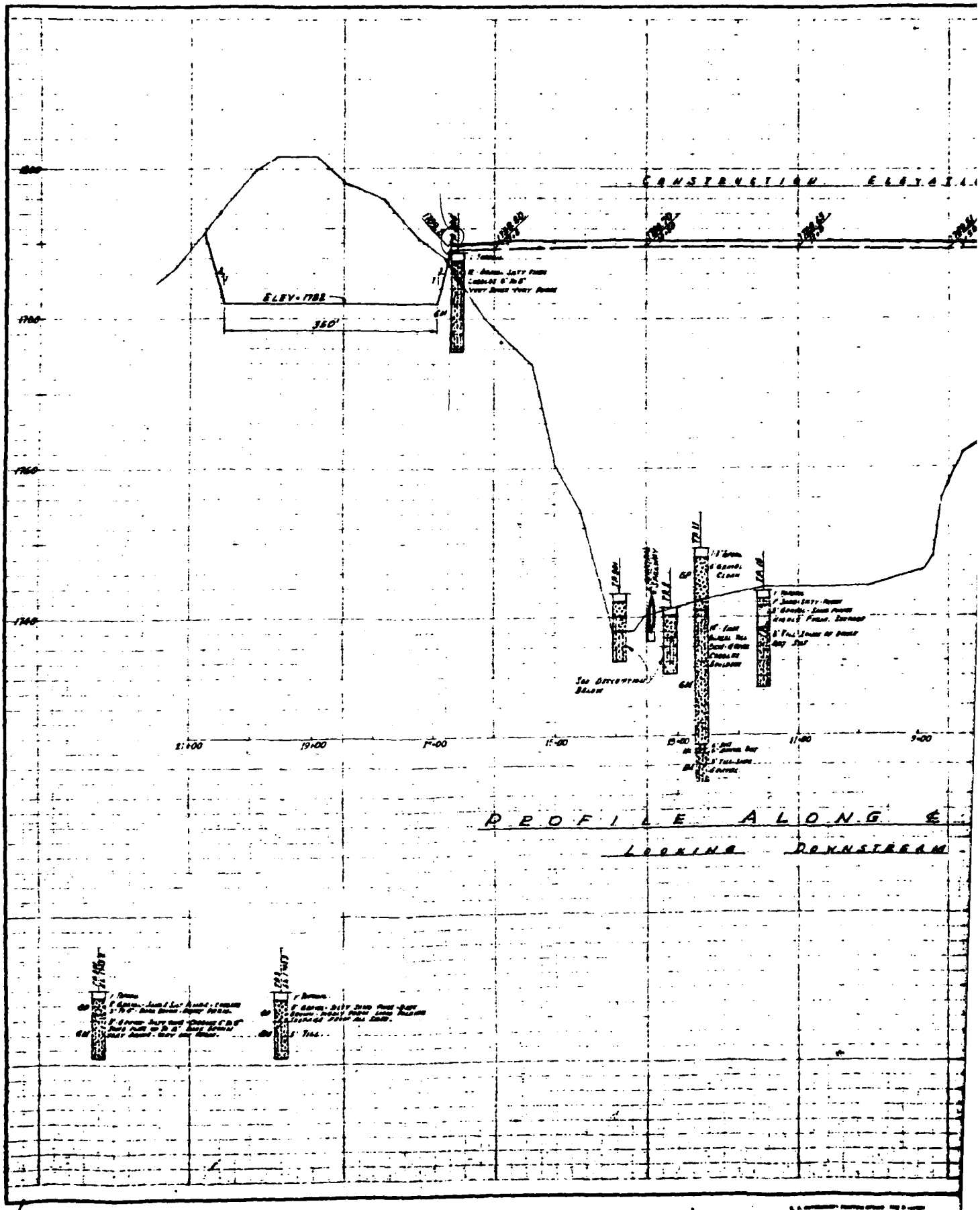
	Date		
Designed J. D. TYLER	MAY 59	Approved by	
Drawn J. D. TYLER	SEPT. 60	Title	
Traced		Date	
Checked W. L. WALL	APR. 61	Sheet No. 2 of 10	Drawing No. NY-805-F

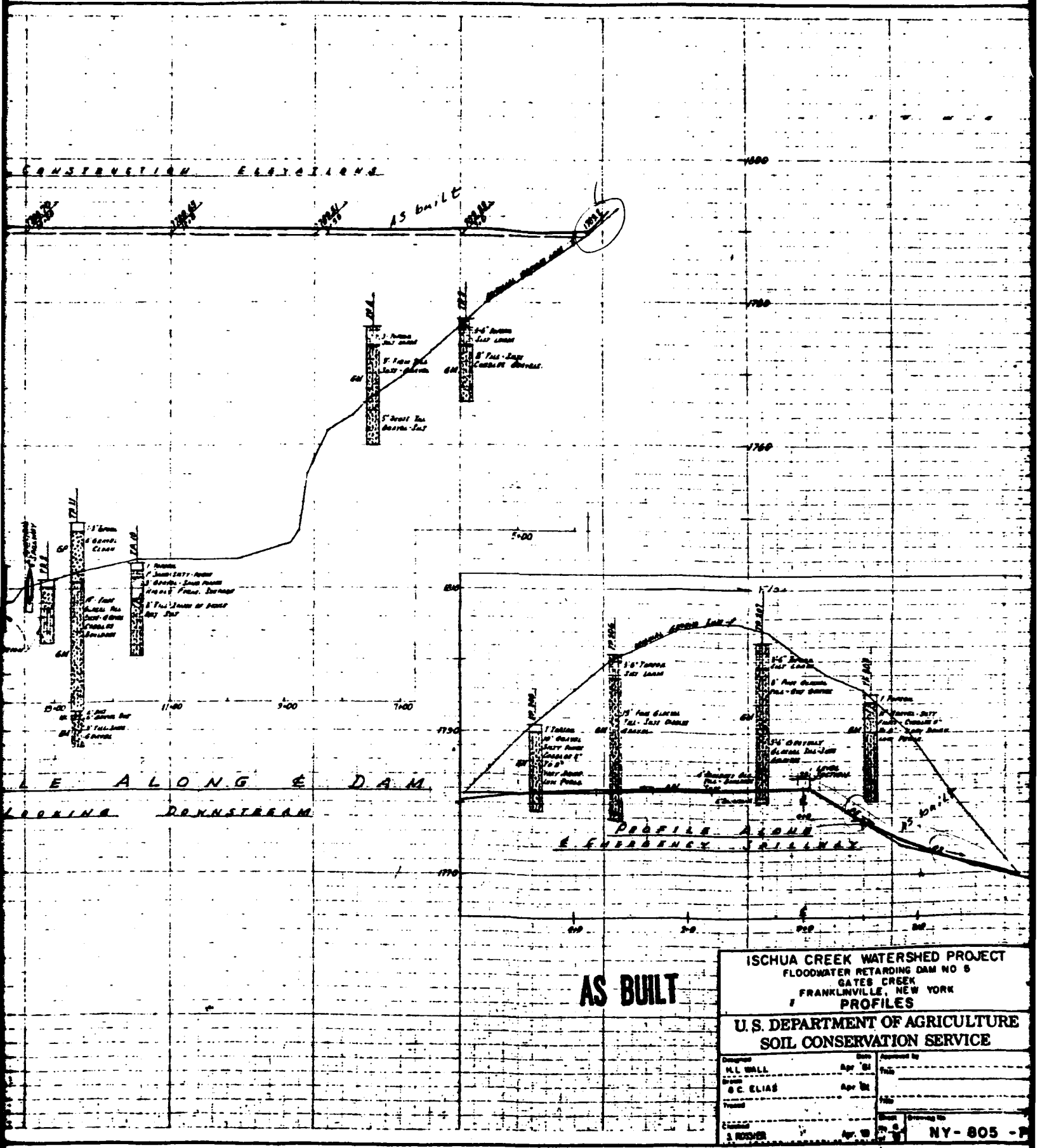
B-3

2


See Sheet 3A
This Abutment Sloped and Filled to conform to down Stream Slope of Dam. -
SEE SHEETS 38-34


Filter Blanket Extended to T.P. #2.
AS BUILT
Layout of cut-off trench and filter blanket
ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 8
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE


CONSTRUCTION ELEVATION
ELEV. 1782
350'
1780
1760
1740
PROFILE ALONG
LOOKING DOWNSTREAM



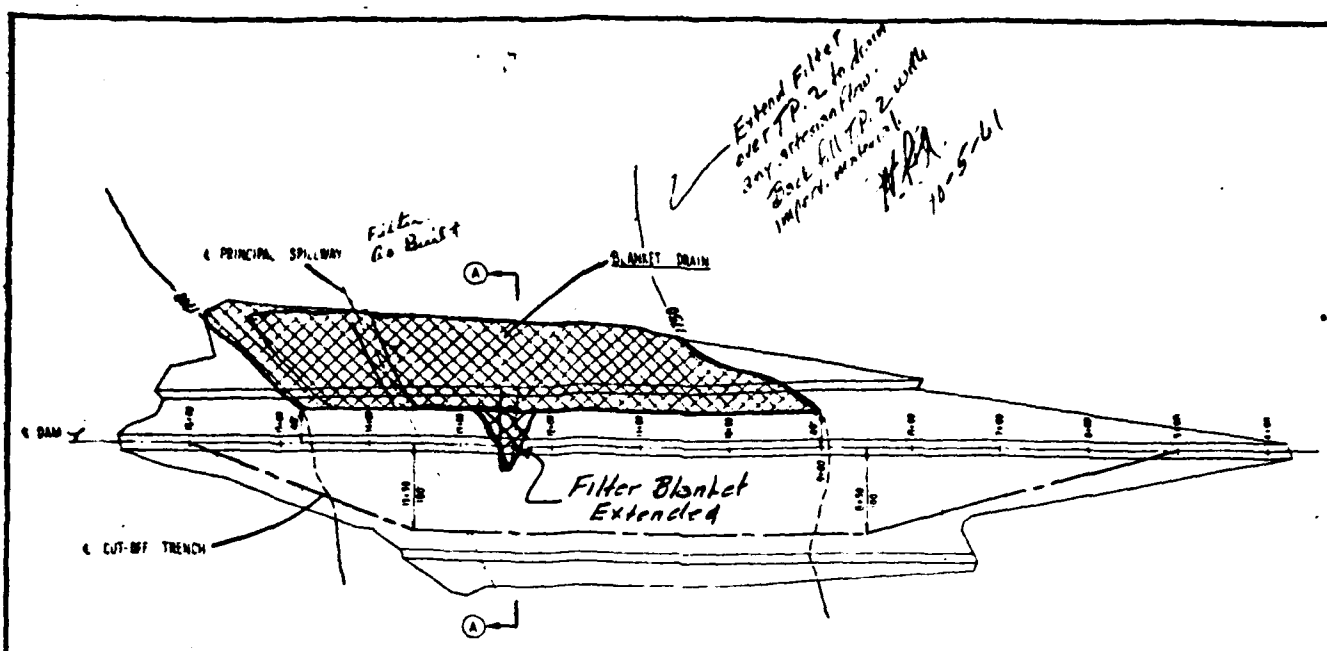
AS BUILT

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
PROFILES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

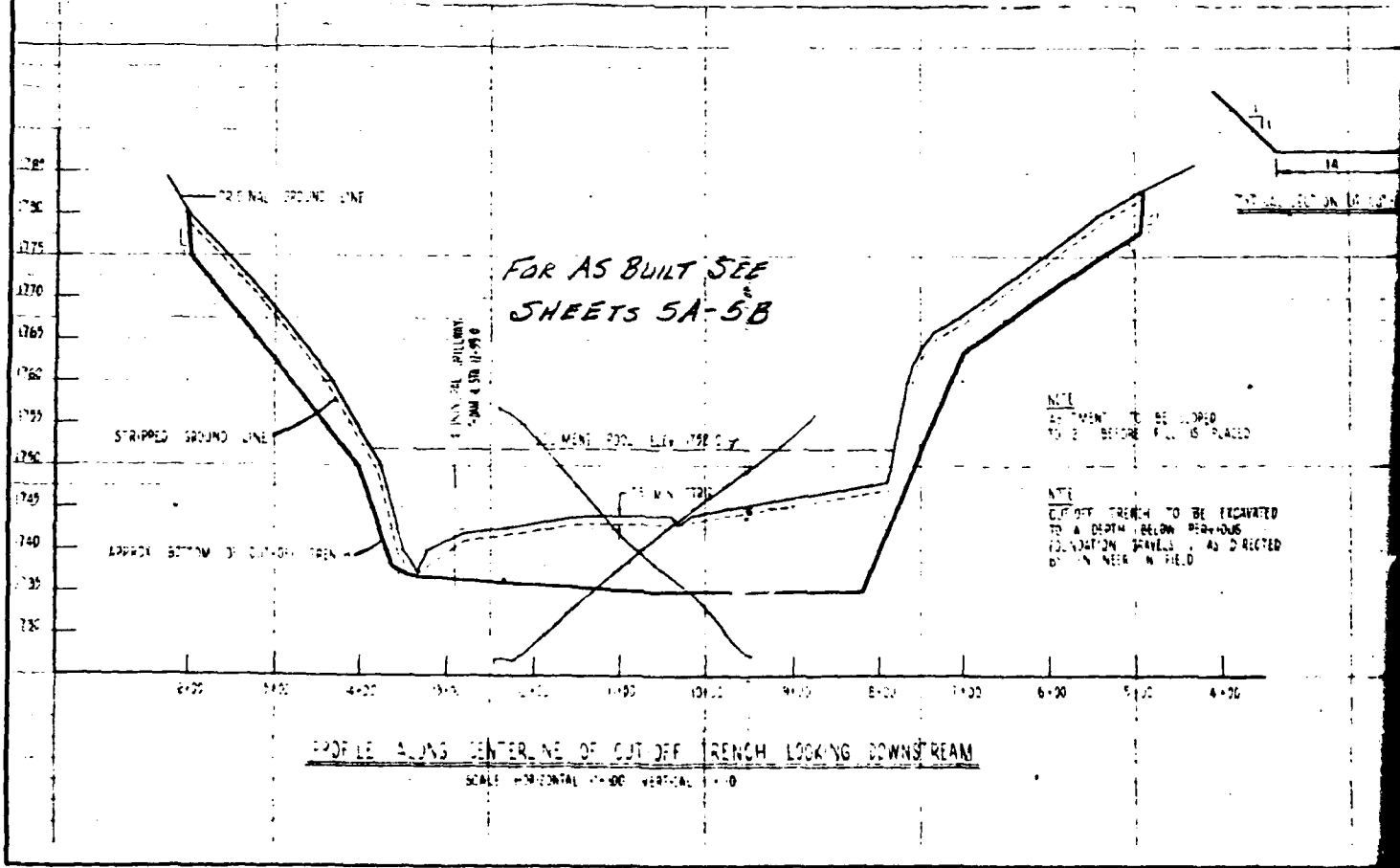
Designed	K.L. WALL	Date Apr '61	Approved by
Drawn	G.C. ELIAS	Apr '61	Title
Traced			Title
Checked	J. ROSNER	Apr '61	Sheet No. Drawing No. NY-805-P

B-5



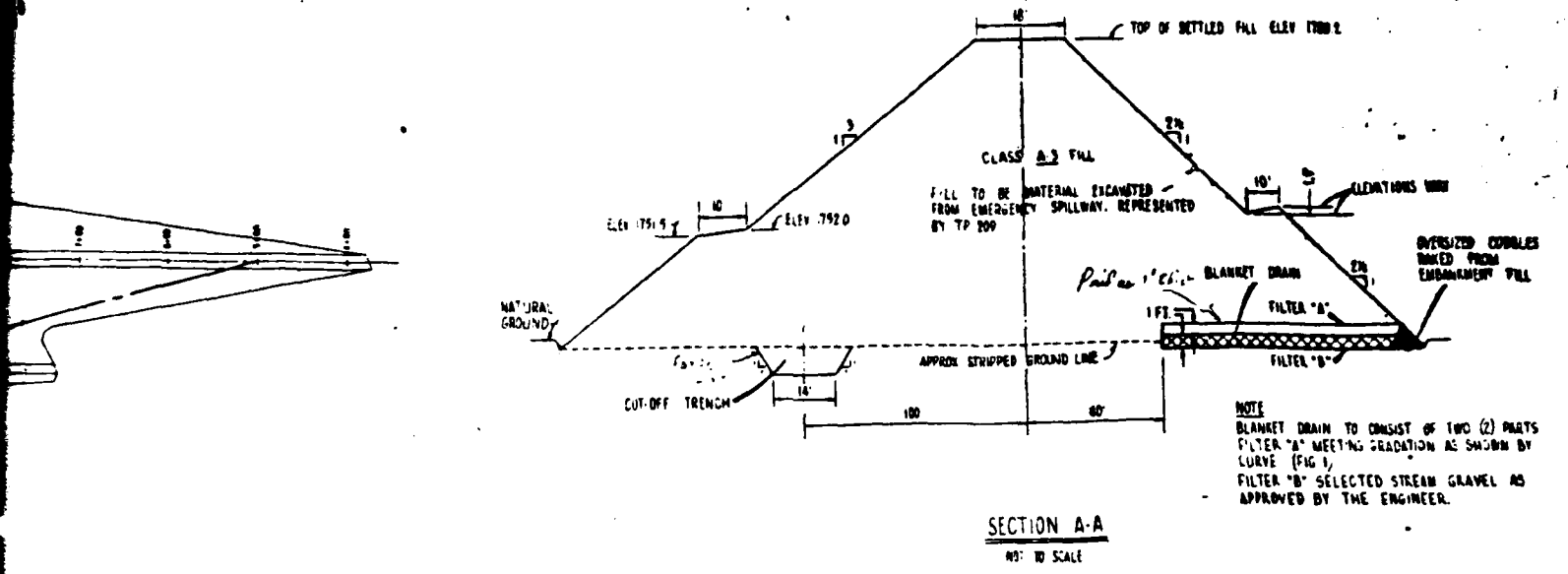
PLAN

SCALE 1" = 100'



PROFILE ALONG CENTERLINE OF CUT OFF TRENCH LOOKING DOWNSTREAM

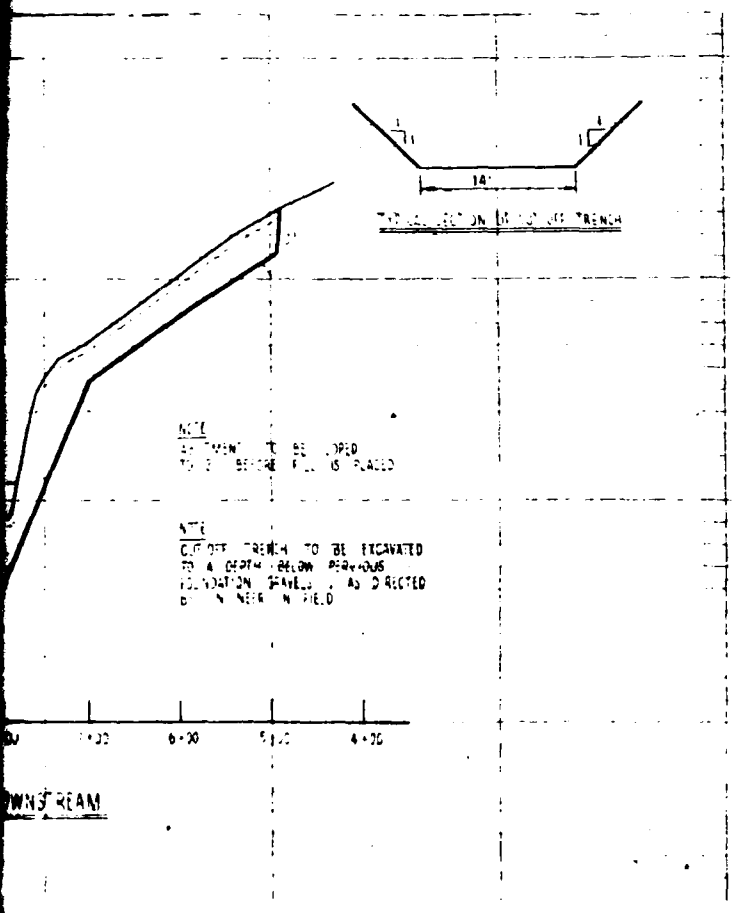
SCALE HORIZONTAL 1" = 100' VERTICAL 1" = 10'

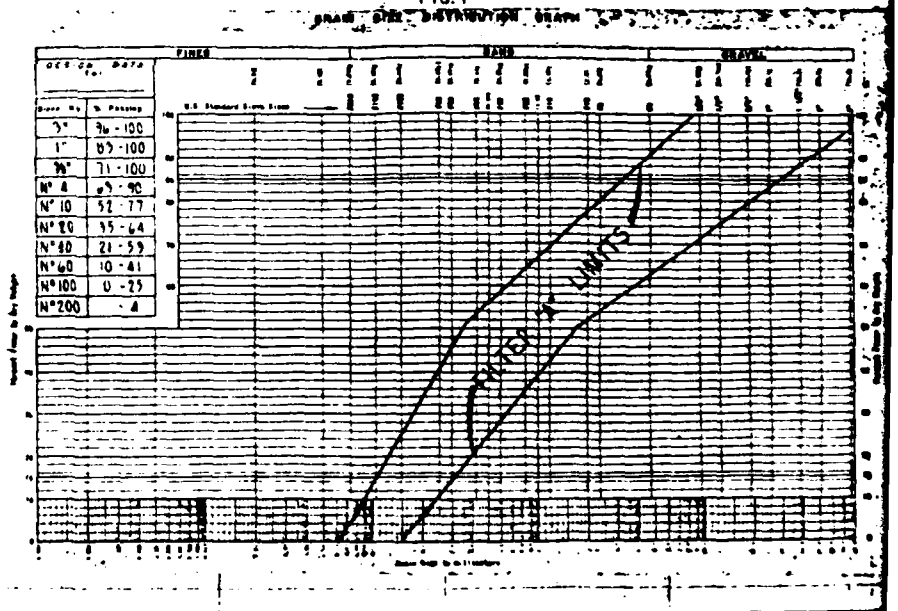


NOTE
BLANKET DRAIN TO CONSIST OF TWO (2) PARTS
FILTER "A" MEETING GRADATION AS SHOWN BY CURVE (FIG 1)
FILTER "B" SELECTED STREAM GRAVEL AS APPROVED BY THE ENGINEER.

SECTION A-A
NOT TO SCALE

FIG. 1





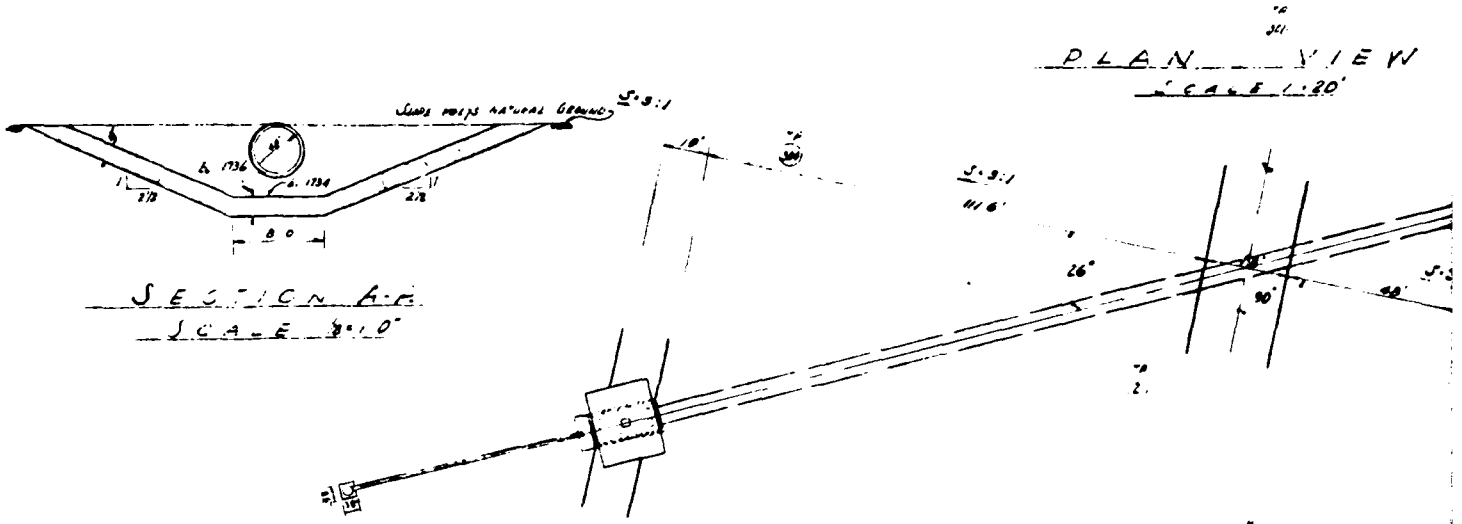
AS BUILT

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
SEEPAGE DRAIN DETAILS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

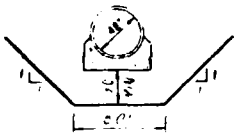
Designed: A F SIMES	Date: APR 61	Approved by: Title
Drawn: B J SERMENA	APR 61	Title
Traced		
Checked: E ROSSIER	APR 61	Sheet No. 9 of 10 sheets; Drawing No. NY-805

B-6



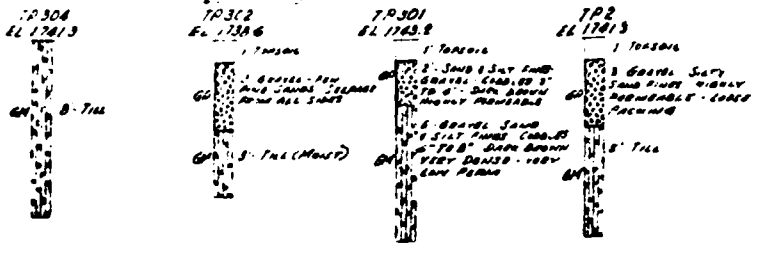
SECTION A-A
SCALE 1" = 10'

PLAN VIEW
SCALE 1:20'



TYPICAL SECTION
PRINCIPAL SPILLWAY EXCAVATION

SOILS DATA



DATE OF GEOLOGICAL INVESTIGATION OCT. 1960
UNIFIED SOIL CLASSIFICATION - BY VISUAL INSPECTION.

PROFILE ALONG ℄ PRINCIPAL

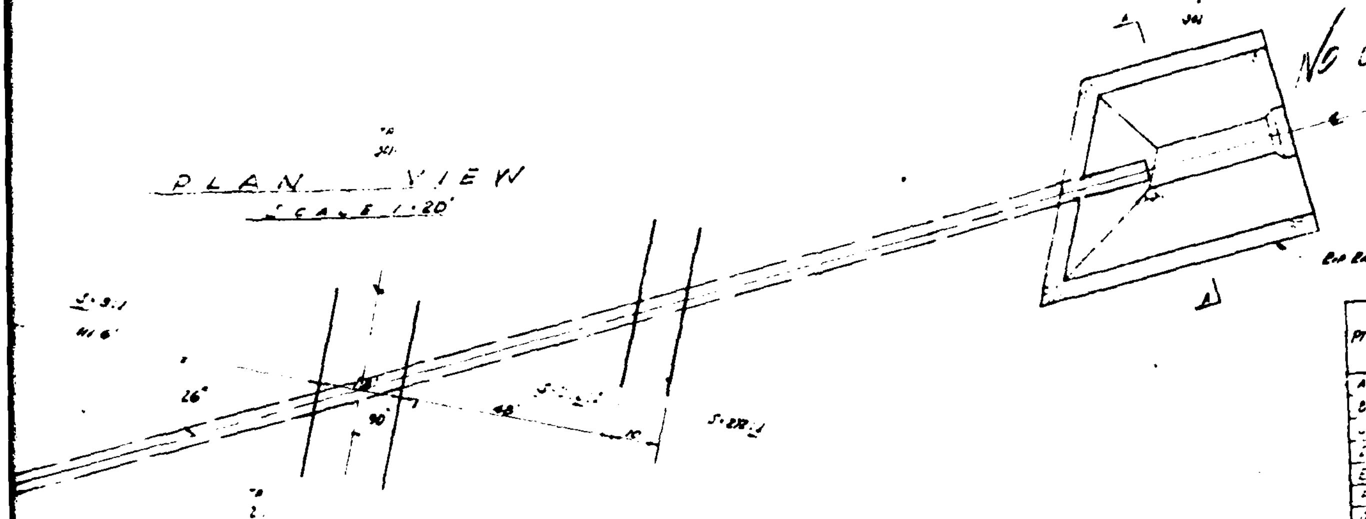
SCALE HOR 1"=20'
VERT 1"=8'

NOTE:
ALL GRAVELS (GP), AS REPRESENTED ON THE LOGS OF T.P.'S FROM 1' TO 6', SHALL BE REMOVED FROM UNDER THE C... WITH COMPACTED FILL (CLASS A-3), IF NECESSARY PRIOR TO THE PLACING OF THE CRADLE.

No Change.

PLAN VIEW

SCALE 1"=20'

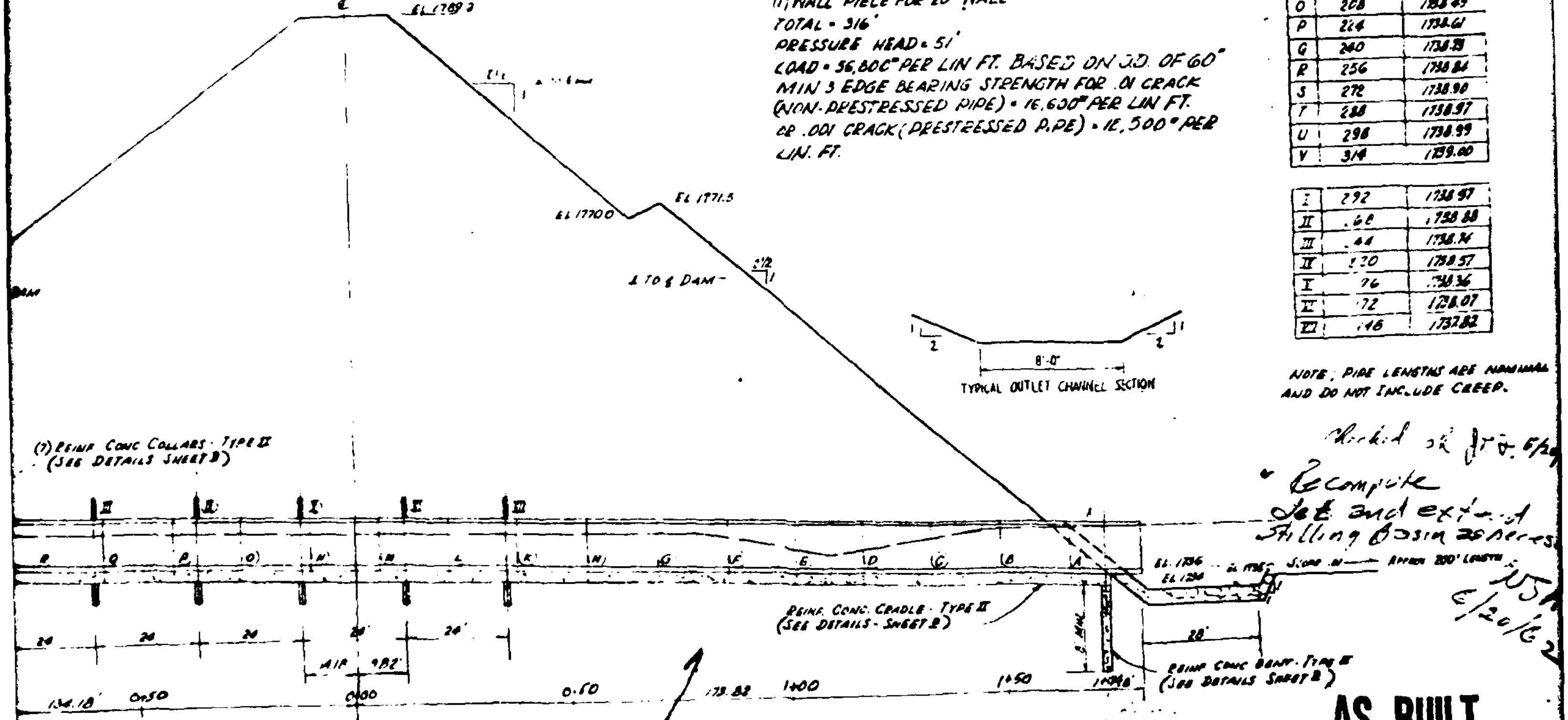


PT	DIST FROM OUTLET OF 48" PIPE	INVERT 48" PIPE
A	16	1736.20
B	32	1736.42
C	48	1736.64
D	64	1736.85
E	80	173[illegible]
F	96	173[illegible]
G	112	1737.45
H	128	1737.65
K	144	1737.84
L	160	1738.00
M	176	1738.18
N	192	1738.34
O	208	1738.49
P	224	1738.61
Q	240	1738.[illegible]
R	256	1738.84
S	272	1738.90
T	288	1738.97
U	298	1738.99
V	314	1739.00

I	292	1738.97
II	.68	1738.88
III	.44	1738.74
IV	120	1738.57
V	76	1738.36
VI	72	1738.07
VII	48	1737.82

NOTE: PIPE LENGTHS ARE NOMINAL AND DO NOT INCLUDE CREEP.

48" INSIDE DIA CONCRETE WATER PIPE
(19) 16' SECTIONS
(1) 10' SECTION
(1) WALL PIECE FOR 20' WALL
TOTAL = 316'
PRESSURE HEAD = 51'
LOAD = 56,800# PER LIN FT. BASED ON O.D. OF 60"
MIN 3 EDGE BEARING STRENGTH FOR .01 CRACK
(NON-PRESTRESSED PIPE) = 16,600# PER LIN FT.
OR .001 CRACK (PRESTRESSED PIPE) = 16,500# PER LIN. FT.



Checked by [illegible]

Recompute Set and extend Stilling Basin as necess.

PROFILE ALONG ℄ PRINCIPAL SPILLWAY

SCALE HOR 1"=20' VERT 1"=8'

SEE SHEETS 6A-6B Excav. & Backfill Princ. Spillway

NOTE

ALL GRAVELS (GP), AS REPRESENTED ON THE LOGS OF TP 2 & TP 302 FROM ℄ TO ℄, SHALL BE REMOVED FROM UNDER THE CONDUIT & REPLACED WITH COMPACTED FILL (CLASS A-2), IF NECESSARY PRIOR TO PLACEMENT OF THE CRADLE.

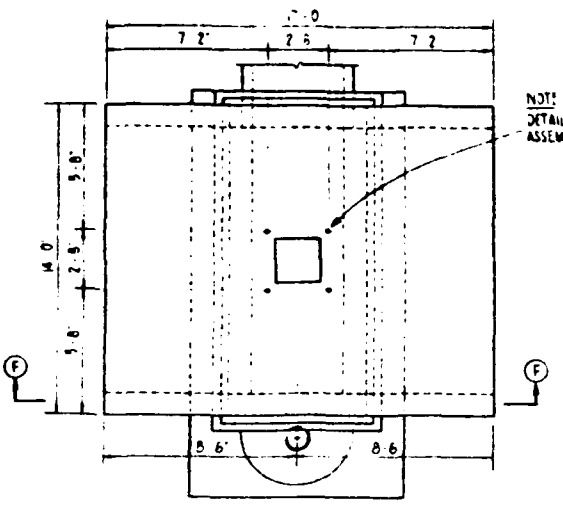
AS BUILT

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
PLAN-PROFILE OF PRINCIPAL SPILLWAY

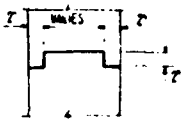
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed H L WALL	Apr '61	Approved by
Drawn B C ELIAS	Apr '61	Title
Traced		
Checked S KOSSIER & R.F. SIMES	Apr '61	Sheet No 6 of 16 · Drawing No NY-605-[illegible]

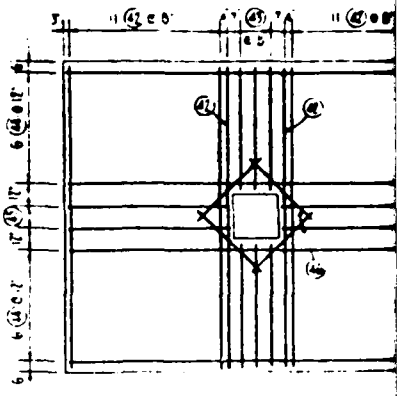
B-7



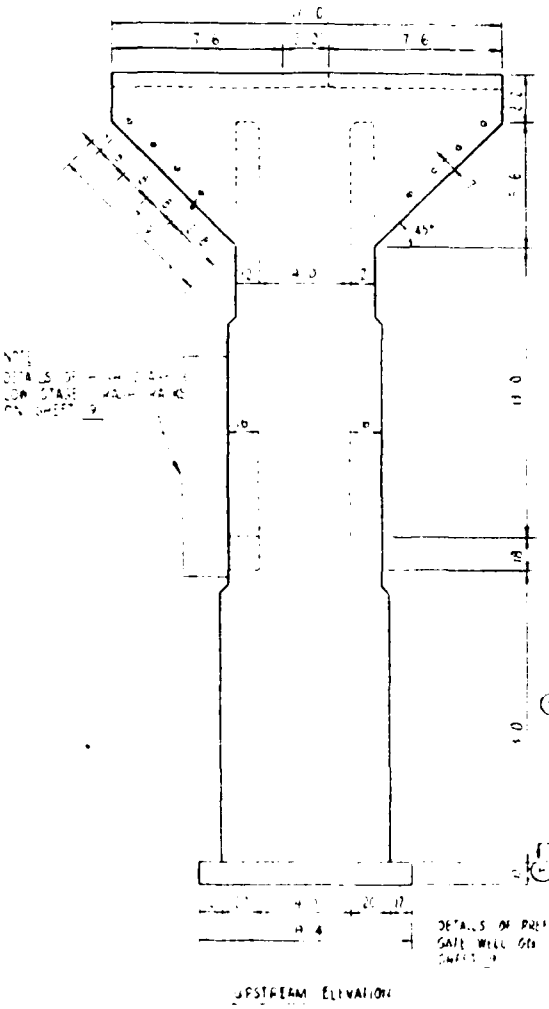
PLAN VIEW



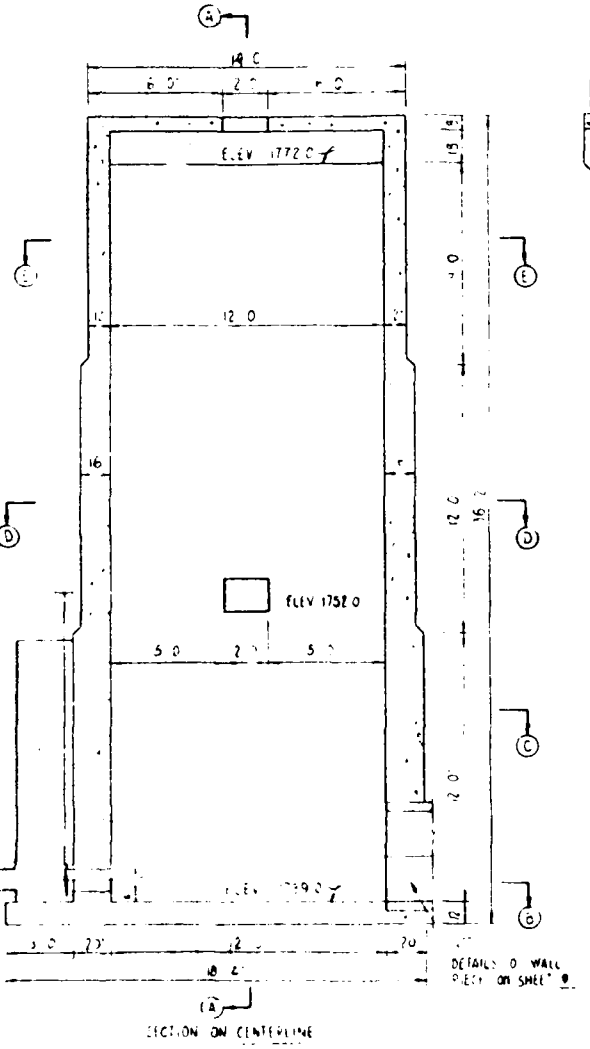
TYPICAL CONSTRUCTION JOINT



SLIDE GATE DETAILS
14" SLIDE GATE ARMCO MODEL 55 DSC OR APPROVED EQUAL
REMOVABLE LIFT HOOK
OPERATING HEAD 12 FEET
STEM LENGTH 3 FEET
FRAME HEIGHT MINIMUM
BRONZE SEAT FACINGS & LIFT NUTS
ISOLATE STEM GUIDES & ANCHOR BOLTS ACCORDING TO MANUFACTURERS RECOMMENDATIONS



UPSTREAM ELEVATION



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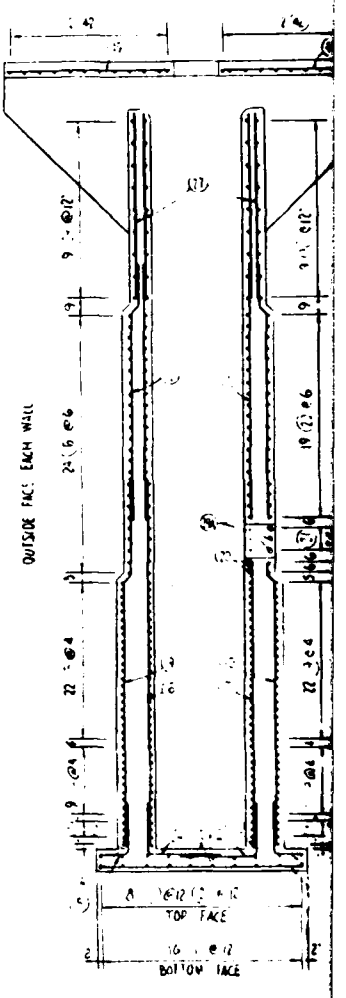
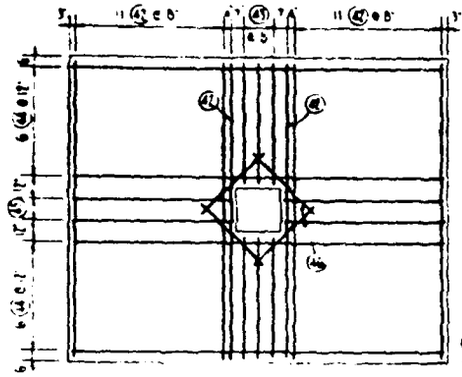
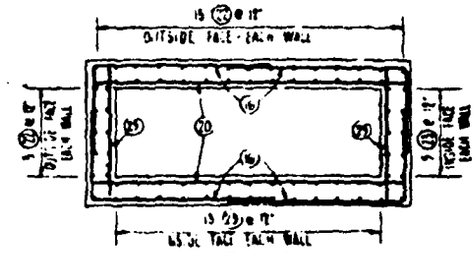
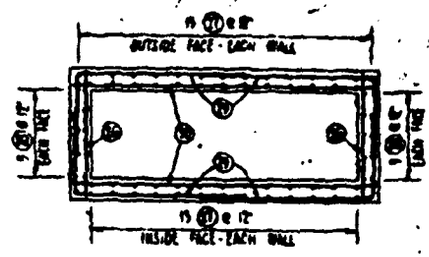
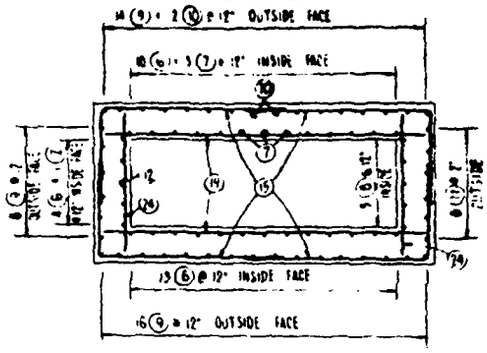


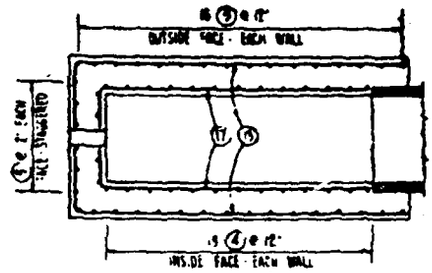
SECTION A-A

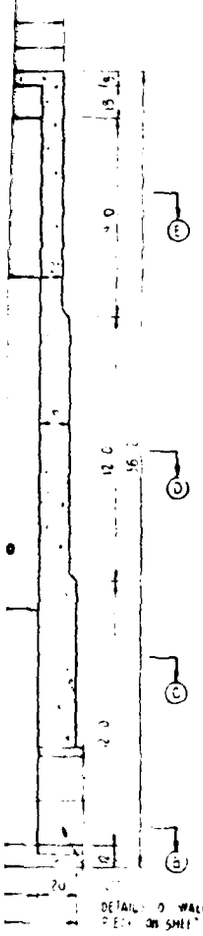


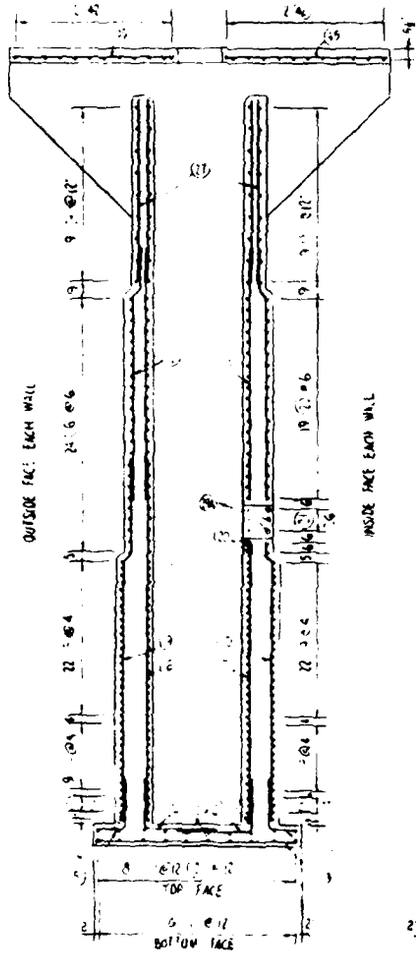


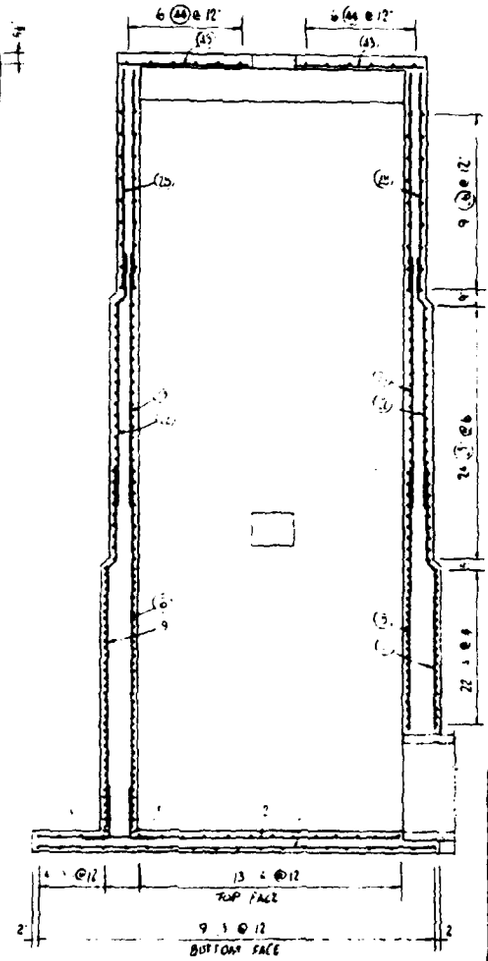


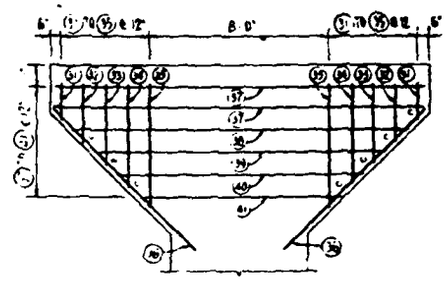


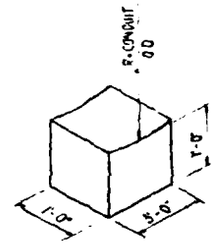












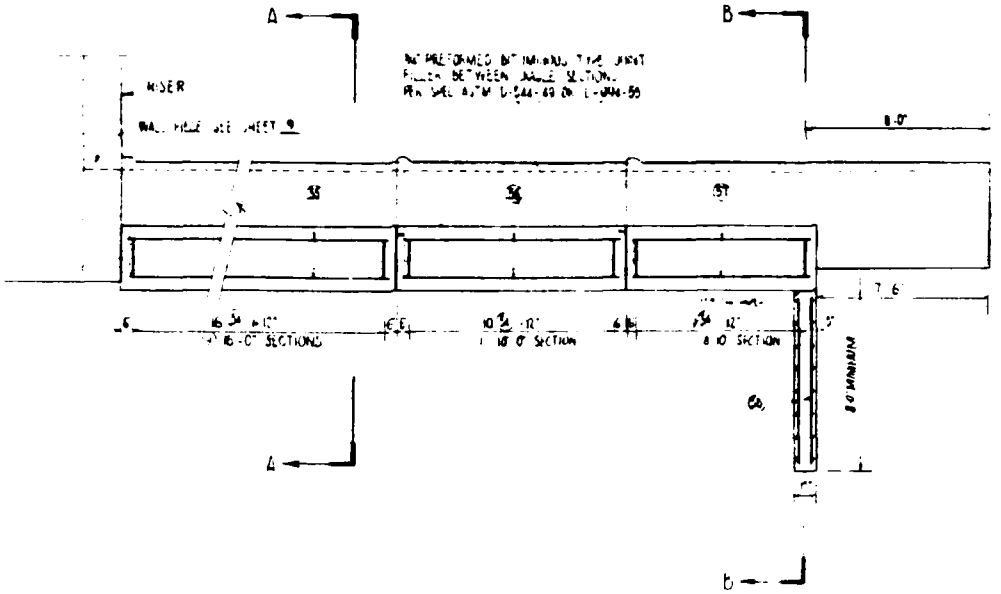
AS BUILT

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
RISER DETAILS

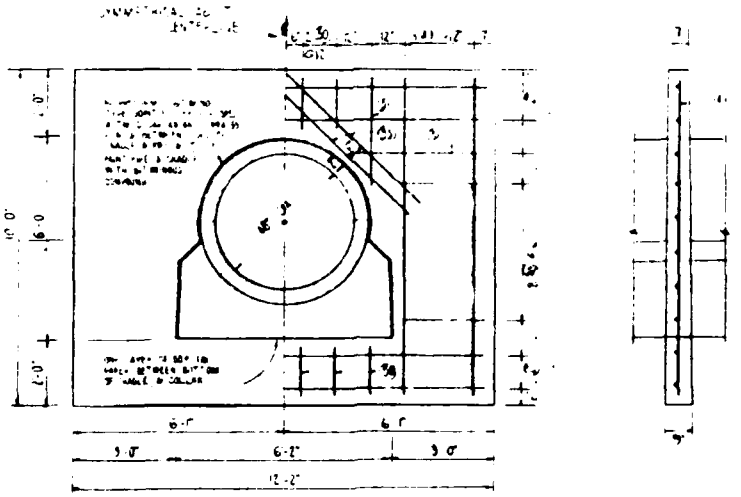
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NY-805

B-8



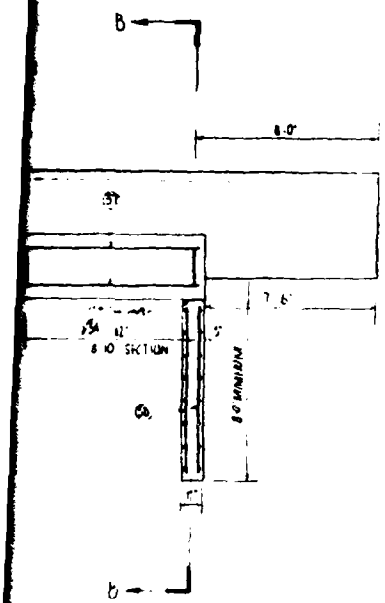
DETAIL OF REINFORCED CONCRETE CRADLE & BUN

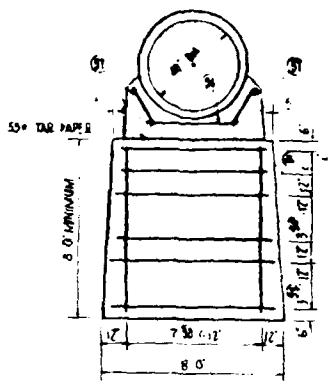


DETAIL OF REINFORCED CONCRETE ANTI-SEEP COLLAR — 7 REQ'D

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS 'B' & OF THE
2. PORTLAND CEMENT, TYPE I WITH AN AIR-EN
ADMIXTURE OR TYPE IA, SHALL BE USED
3. ALL REINFORCING STEEL SHALL BE LAPPED
OF 30 BAR DIAMETERS
4. ALL REINFORCING STEEL, PLACED IN CONCRETE
THAT SHOULD, SHALL HAVE A MINIMUM OF 3"
WHERE FORMS ARE USED, BARS SHALL HAVE
2" OF CONCRETE.
5. ALL EXPOSED EDGES OF CONCRETE WILL HAV
UNLESS OTHERWISE NOTED





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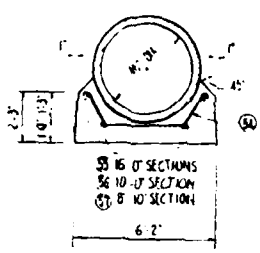

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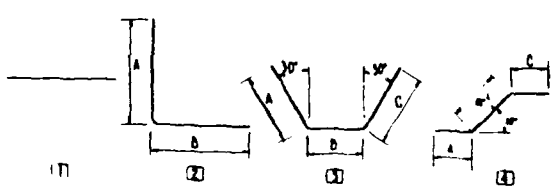


BAR TYPES

STEEL SCHEDULE

MARK	LOCATION	BAR	SIZE	LENGTH	TYPE	A	B	C	TOTAL
1	BOTTOM SLAB	18	5	8'-0	1	—	—	—	
2	"	7	5	14'-3	1	—	—	—	
3	"	73	5	9'-0	1	—	—	—	
4	"	36	5	3'-0	2	2'-0	5'-0	—	
5	"	42	6	5'-0	2	2'-0	1'-0	—	
6	WEST END WALL	17	6	16'-6	1	—	—	—	
7	"	3	6	12'-6	1	—	—	—	
8	"	3	6	11'-6	1	—	—	—	
9	"	9	6	11'-0	1	—	—	—	
10	"	36	6	16'-8	8	11'-9	0'-6	4'-5	
11	"	1	6	12'-9	4	11'-9	0'-6	0'-6	
12	"	1	6	11'-1	4	7'-6	0'-6	4'-5	
13	"	1	6	14'-9	1	—	—	—	
14	HORIZONTAL	8	6	18'-0	1	3'-0	15'-0	—	
15	"	20	6	19'-3	2	6'-9	15'-0	—	
16	"	84	6	8'-0	2	6'-9	1'-3	—	
17	"	96	6	12'-3	2	6'-6	6'-1	—	
18	"	8	6	17'-0	2	3'-0	15'-0	—	
19	"	20	6	16'-3	2	5'-3	12'-9	—	
20	"	44	6	15'-7	1	—	—	—	
21	"	44	6	14'-3	1	—	—	—	
22	"	8	6	8'-0	1	—	—	—	
23	VERTICAL	88	6	11'-0	8	3'-3	0'-6	1'-9	
24	VERTICAL	96	6	11'-6	1	—	—	—	
25	HORIZONTAL	44	6	7'-8	1	—	—	—	
26	"	44	6	8'-9	1	—	—	—	
27	"	8	6	7'-6	1	—	—	—	
28	VERTICAL	36	5	8'-3	1	—	—	—	
29	"	20	5	9'-9	1	—	—	—	
30	HORIZONTAL	96	6	11'-6	8	5'-9	7'-9	—	
30A	"	8	6	11'-0	8	4'-1	8'-11	—	
31	"	18	6	13'-6	1	—	—	—	
32	ANTI-VORTEX	8	5	1'-9	1	—	—	—	
33	"	8	5	2'-9	1	—	—	—	
34	"	8	5	3'-9	1	—	—	—	
35	"	8	5	4'-9	1	—	—	—	
36	"	8	5	5'-9	1	—	—	—	
37	"	8	5	6'-9	1	—	—	—	
38	"	8	5	7'-9	1	—	—	—	
39	"	4	5	8'-9	1	—	—	—	
40	"	4	5	9'-9	1	—	—	—	
41	"	4	5	10'-9	1	—	—	—	
42	"	4	5	11'-9	1	—	—	—	
43	TOP SLAB	24	6	15'-6	1	—	—	—	
44	"	6	6	5'-6	1	—	—	—	
45	"	18	5	16'-6	1	—	—	—	
46	"	4	5	1'-8	1	—	—	—	
47	"	4	6	2'-0	1	—	—	—	
48	ANTI-SEEP COLLARS (7)	28	4	11'-9	1	—	—	—	
49	"	70	4	9'-6	1	—	—	—	
50	"	42	4	8'-6	1	—	—	—	
51	"	10	4	1'-6	1	—	—	—	
52	"	14	4	9'-9	1	—	—	—	
53	"	14	4	6'-0	1	—	—	—	
54	"	28	4	5'-6	1	—	—	—	
55	CRADLE	323	4	7'-0	9	1'-9	3'-6	1'-9	
56	"	76	4	15'-6	1	—	—	—	
57	"	4	4	9'-6	1	—	—	—	
58	"	4	4	8'-6	1	—	—	—	
59	BENT	14	4	7'-6	1	—	—	—	
60	"	6	4	7'-3	1	—	—	—	
61	"	8	4	6'-9	1	—	—	—	
62	"	4	4	6'-6	1	—	—	—	

STEEL

#4 BARS 6989.5 LIN.FT 9993.8 LBS.
#5 BARS 7248.8 LIN.FT 7946.9 LBS.
#6 BARS ~~10,276.6~~ LIN.FT ~~18,944.0~~ LBS 12610.0
8935.6 TOTAL ~~18,940.0~~ LBS
18288.0

CONCRETE

CLASS 'B' TYPE I 77.9 CU.YDS.
CLASS 'B' TYPE II 91.0 CU.YDS.

AS BUILT

GENERAL NOTES

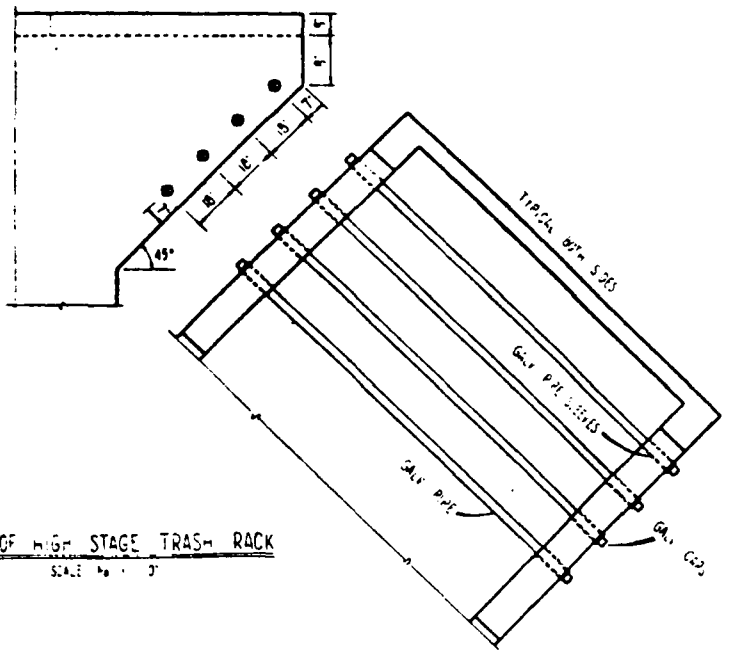
1. ALL CONCRETE SHALL BE CLASS 'B' & OF THE TYPE NOTED
2. PORT. AND CEMENT, TYPE I WITH AN AIR-ENTRAINING ADMIXTURE OR TYPE IA, SHALL BE USED
3. ALL REINFORCING STEEL SHALL BE LAPPED A MINIMUM OF 30 BAR DIAMETERS
4. ALL REINFORCING STEEL, PLACED IN CONCRETE POURED AGAINST THE GROUND, SHALL HAVE A MINIMUM OF 3" OF CLEAR COVER WHERE FORMS ARE USED, BARS SHALL HAVE A MINIMUM COVER OF 2" OF CONCRETE.
5. ALL EXPOSED EDGES OF CONCRETE WILL HAVE A ¾" CHAMFER, UNLESS OTHERWISE NOTED

ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
CRADLE, COLLAR & BENT DETAIL

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

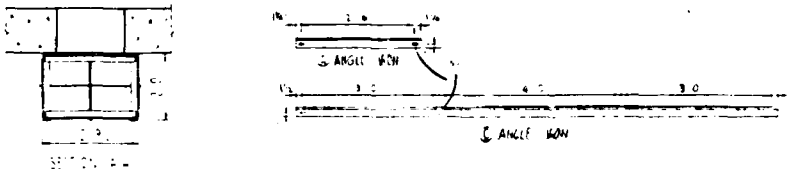
Designed H.L. WALL	Date Apr. '81	Approved by Title	
Drawn L.B. BOOR	Date APR '81	Title	
Traced			
Checked D.J. BERMAN	Date APR '81	Sheet No. 8 of 10	Drawing No. NY-805

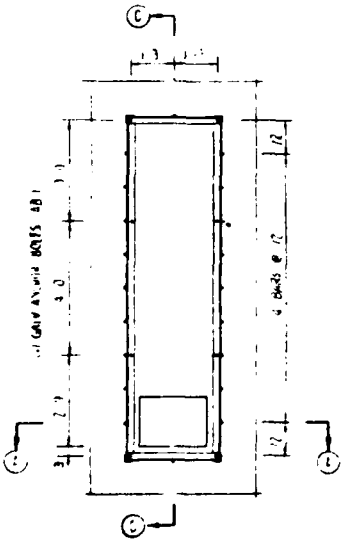
B-9

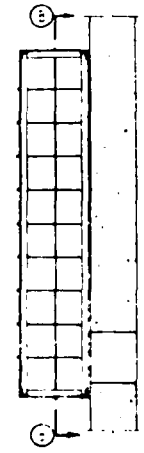


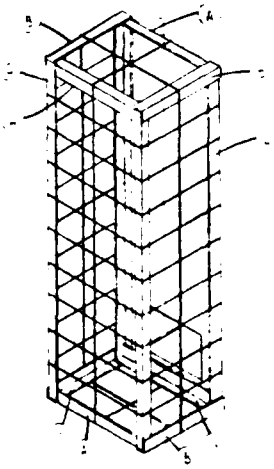
DETAILS OF HIGH STAGE TRASH RACK

SCALE 1/2" = 1'



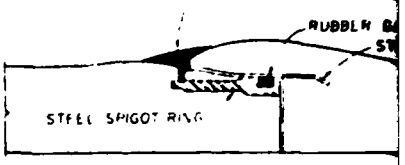




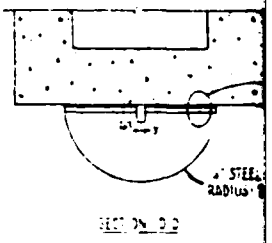


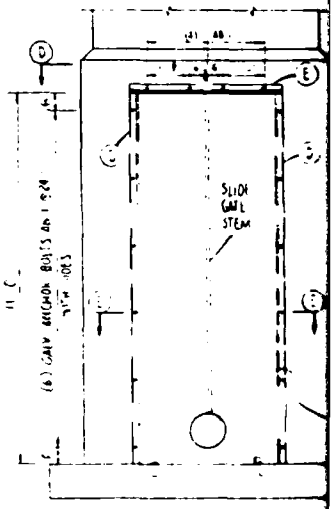
DETAILS OF LOW STAGE TRASH RACK

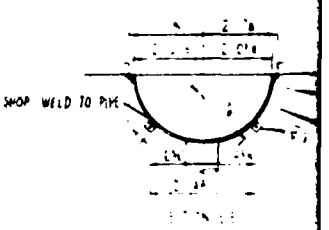
PACK WITH DRY JUTE
SEAL WITH COLD APPLIED
CEMENT, COMMERCIAL



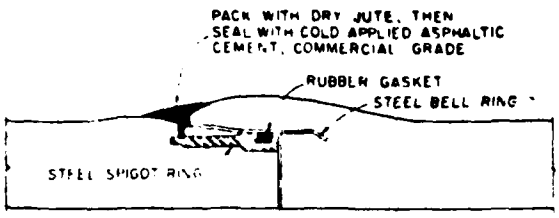
DETAIL OF REINFORCED
CONCRETE WATER PIPE



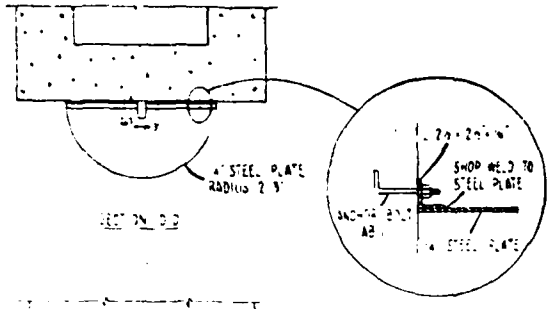


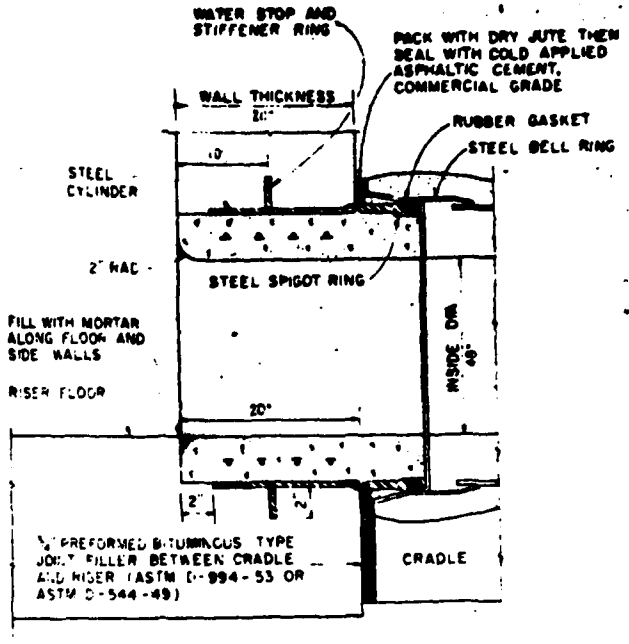


DETAILS OF GATE WE

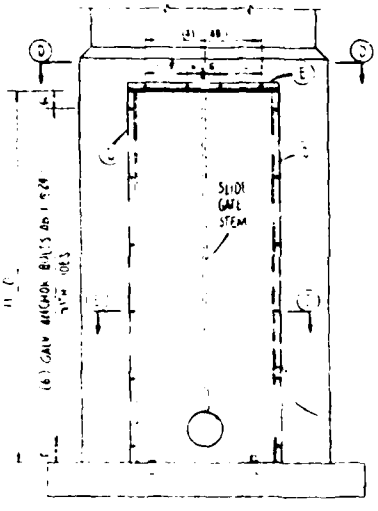


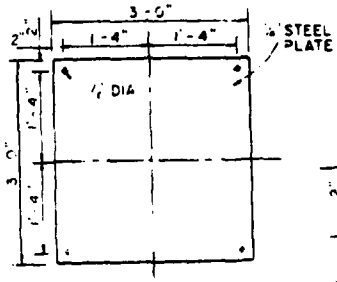
DETAIL OF REINFORCED CONCRETE WATER PIPE JOINT



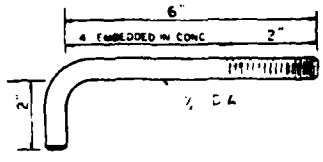


DETAIL OF WALL PIECE IN RISER



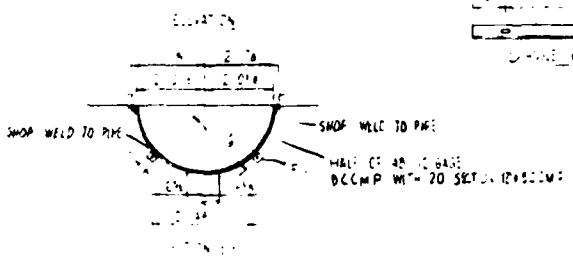


COVER PLATE



GALV. ANCHOR BOLT, AB-1

MANHOLE ASSEMBLY



DETAILS OF GATE WELL

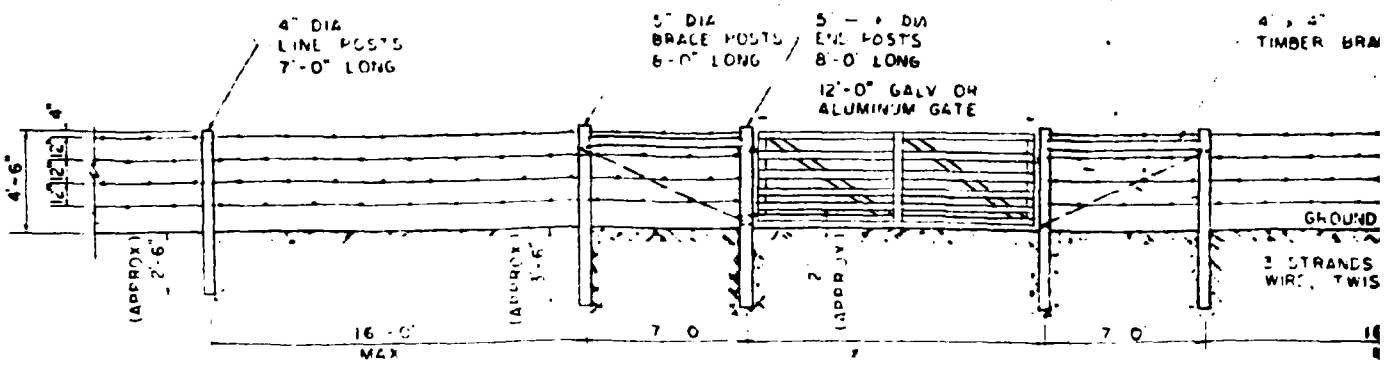
AS BUILT

BILL OF MATERIAL

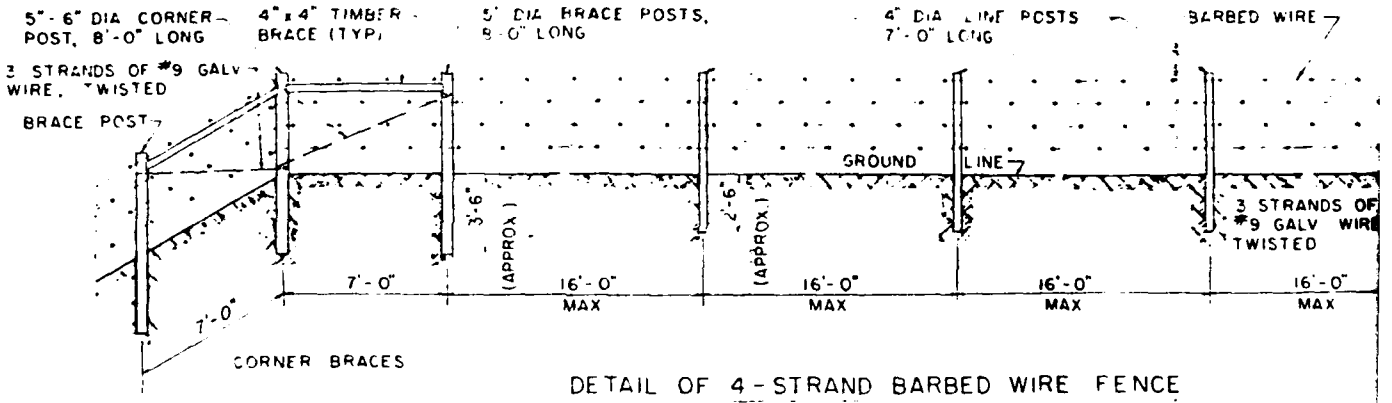
ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
GATE WELL, TRASH RACKS & MISC. DETAILS
U.S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NY-805-P

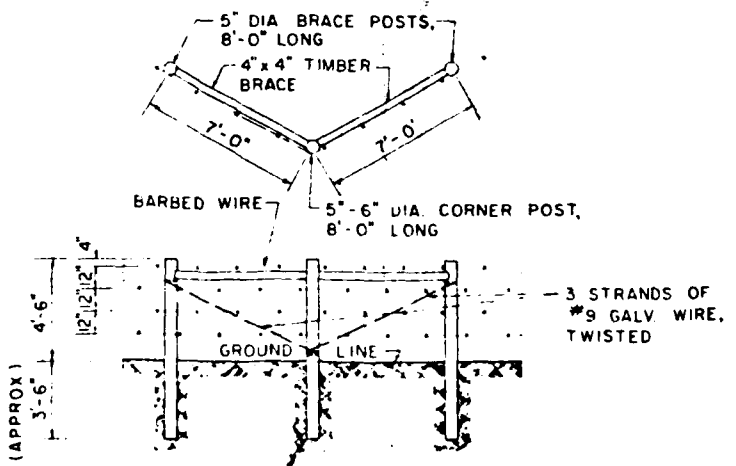
B-10



TYPICAL GATE SECTION



DETAIL OF 4-STRAND BARBED WIRE FENCE



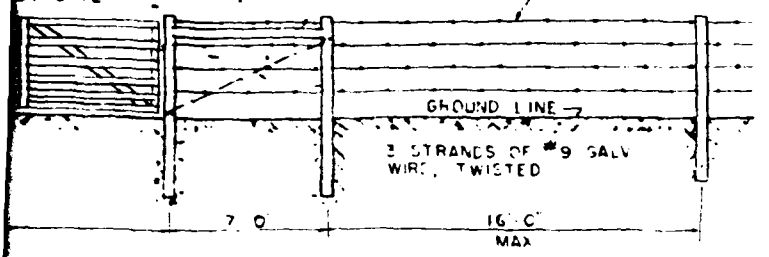
TYPICAL CORNER
AND DIRECTION CHANGE BRACING

NOTES

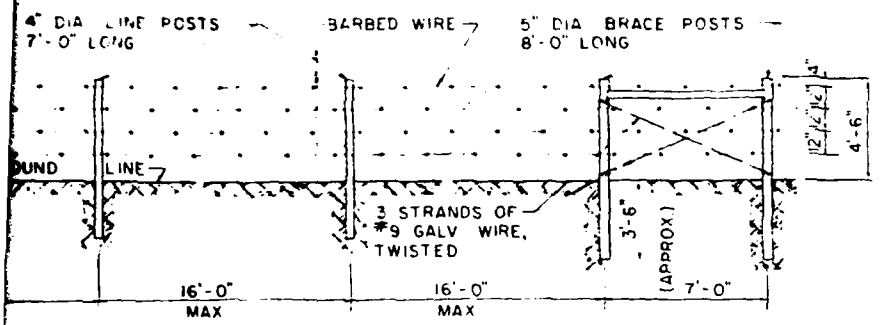
1. ALL POSTS AND BRACES PRESSURE TREATED WITH CREOSOTE
2. BRACE POSTS, MAXIMUM SPACING 7'-0" CENTER TO CENTER
3. LINE POSTS, MAXIMUM SPACING 16'-0" CENTER TO CENTER
4. STEEL POSTS MAY BE SUBSTITUTED FOR LINE POSTS.
5. NOTCH POSTS 3/4 INCH FOR TIMBER BRACE

DM
TS
ALV OR
M GATE

4" x 4" TIMBER BRACE — BARBED WIRE



ATE SECTION



LINE BRACES

D BARBED WIRE FENCE

POST.

— 3 STRANDS OF #9 GALV WIRE, TWISTED

B

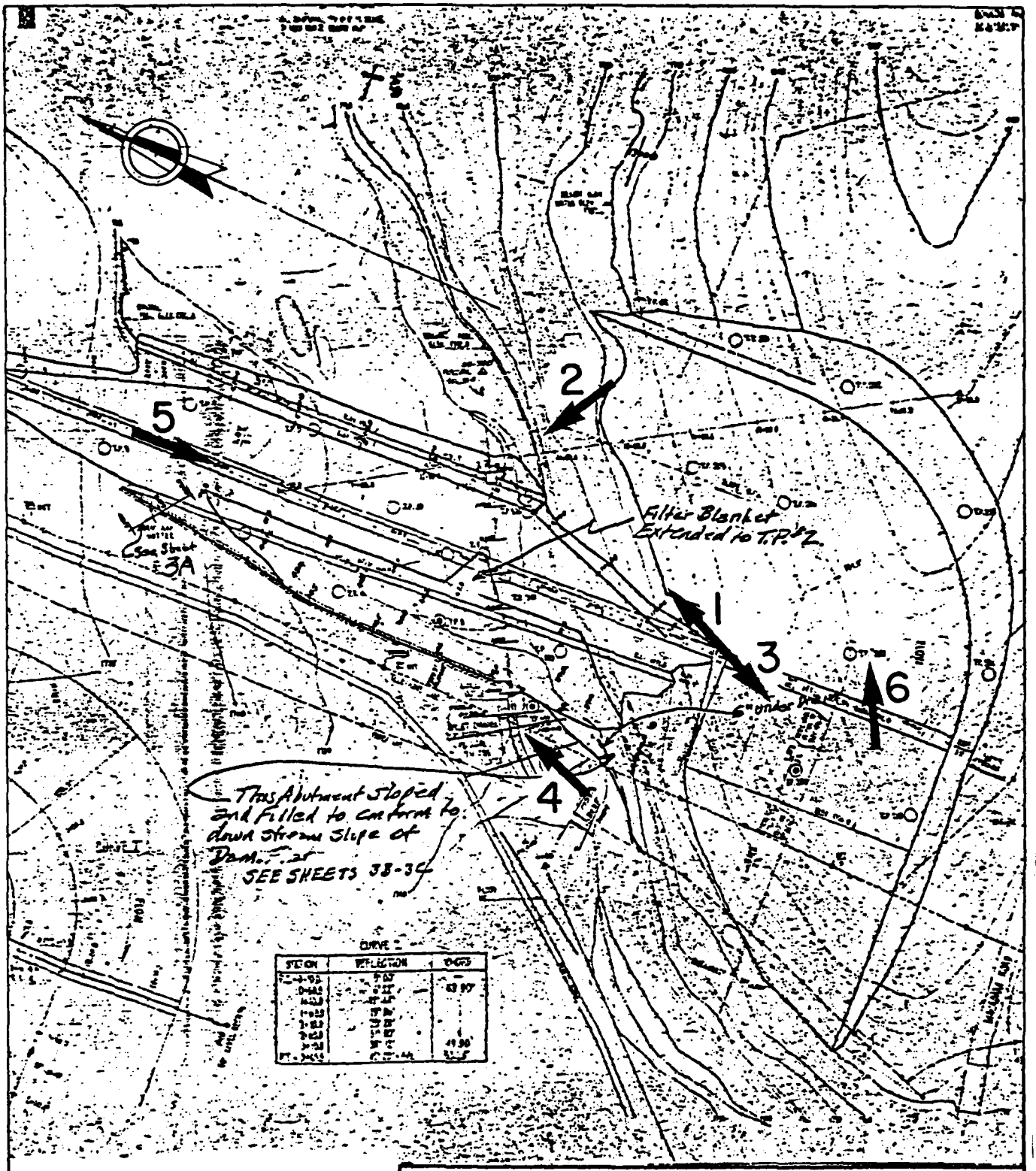
AS BUILT

FENCE DETAILS
ISCHUA CREEK WATERSHED PROJECT
FLOODWATER RETARDING DAM NO 5
GATES CREEK
FRANKLINVILLE, NEW YORK
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by	
WM A ALLABAND		Title	
Drawn			
CHAS B FORD	5-31-60	Title	
Traced			
Checked		Sheet No. 10 of 10 sheets	Drawing No. NY - 805 - B-11
NORMAN W WILSON	5-12-60		

APPENDIX C

PHOTOGRAPHS



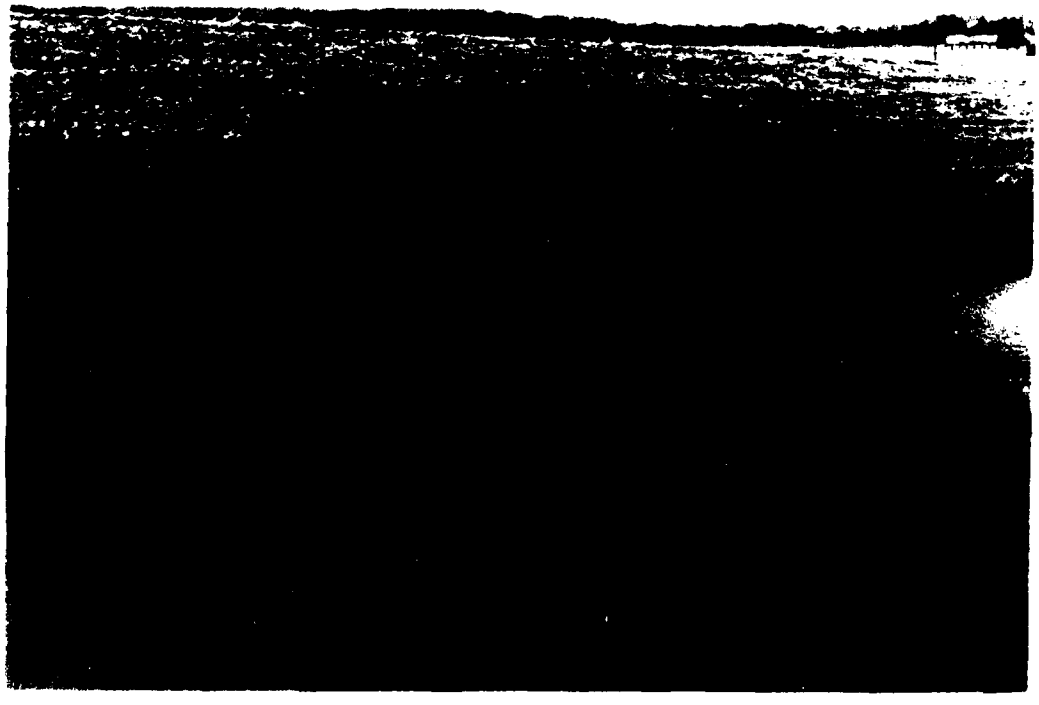
ISCHUA CREEK WATERSHED DAM #5

NY00565

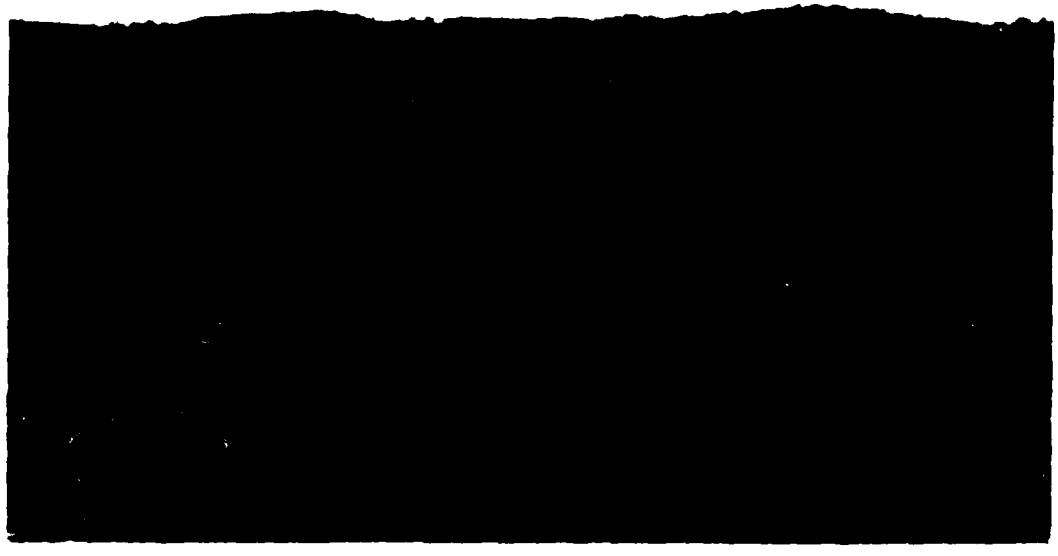
PHOTO ORIENTATION PLAN

ERDMAN, ANTHONY, ASSOCIATES CONSULTING ENGINEERS & PLANNERS	DATE MAY 1981	C-1

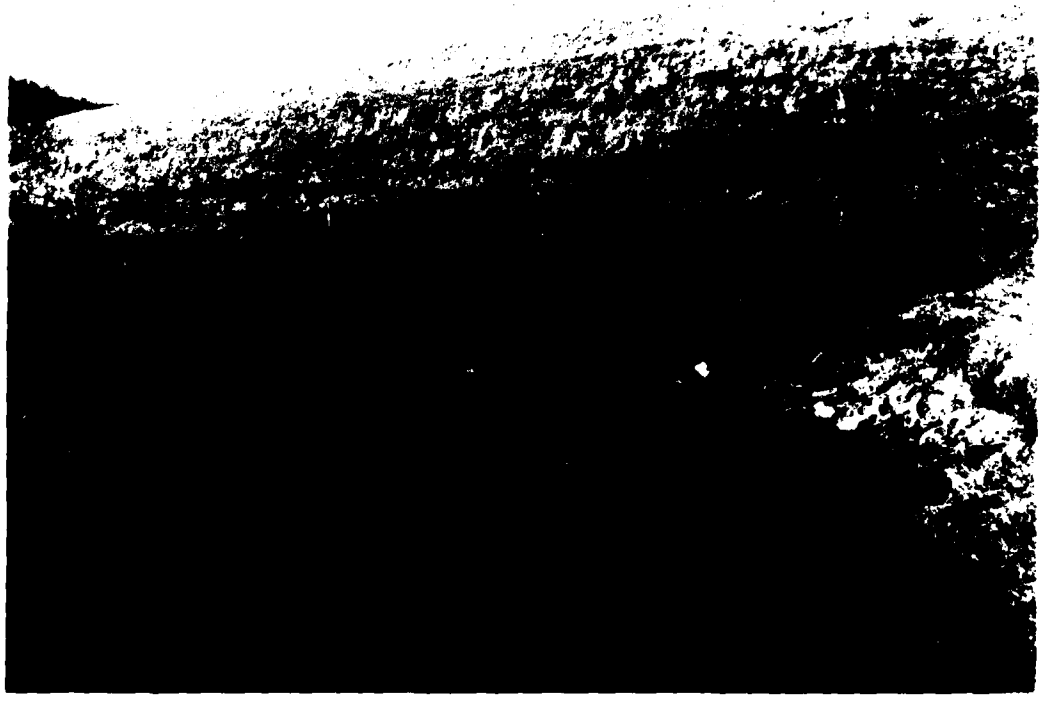
1. Principal spillway inlet structure and impoundment



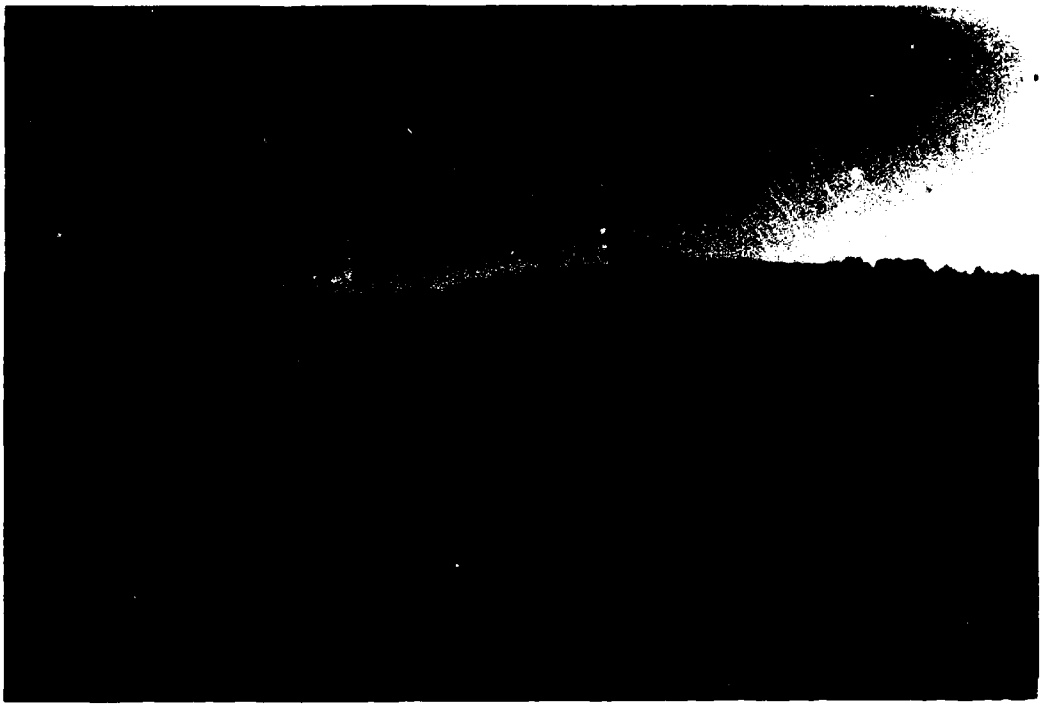
2. Principal spillway inlet structure and upstream face of dam



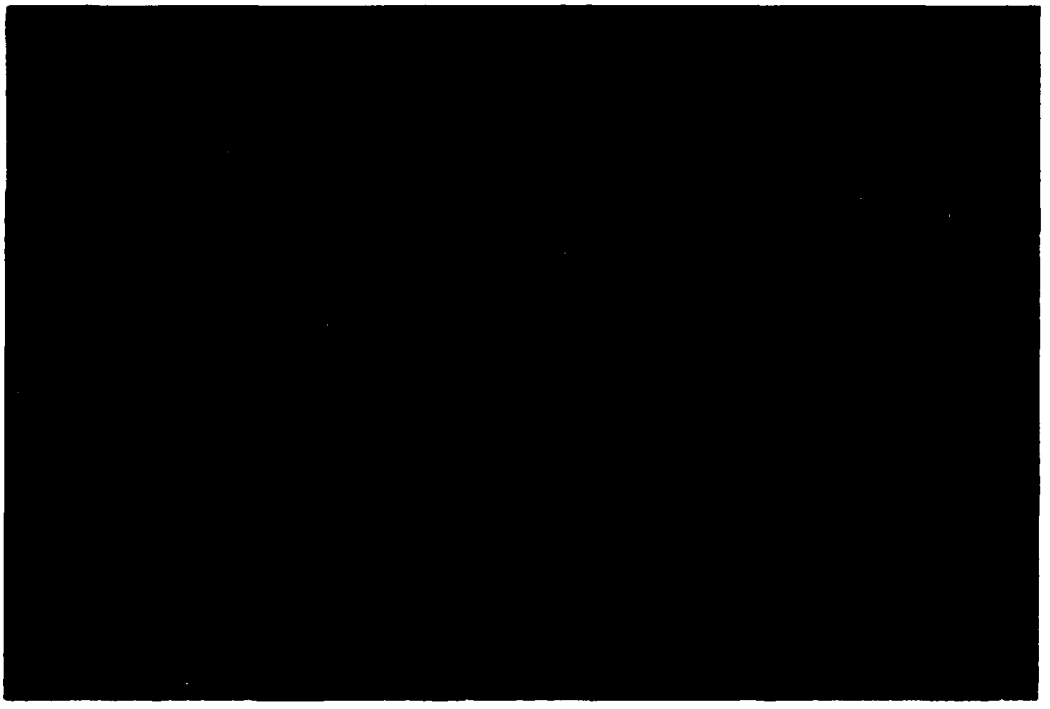
3. Emergency spillway



4. Principal spillway outlet pipe and plunge pool



5. Crest of dam

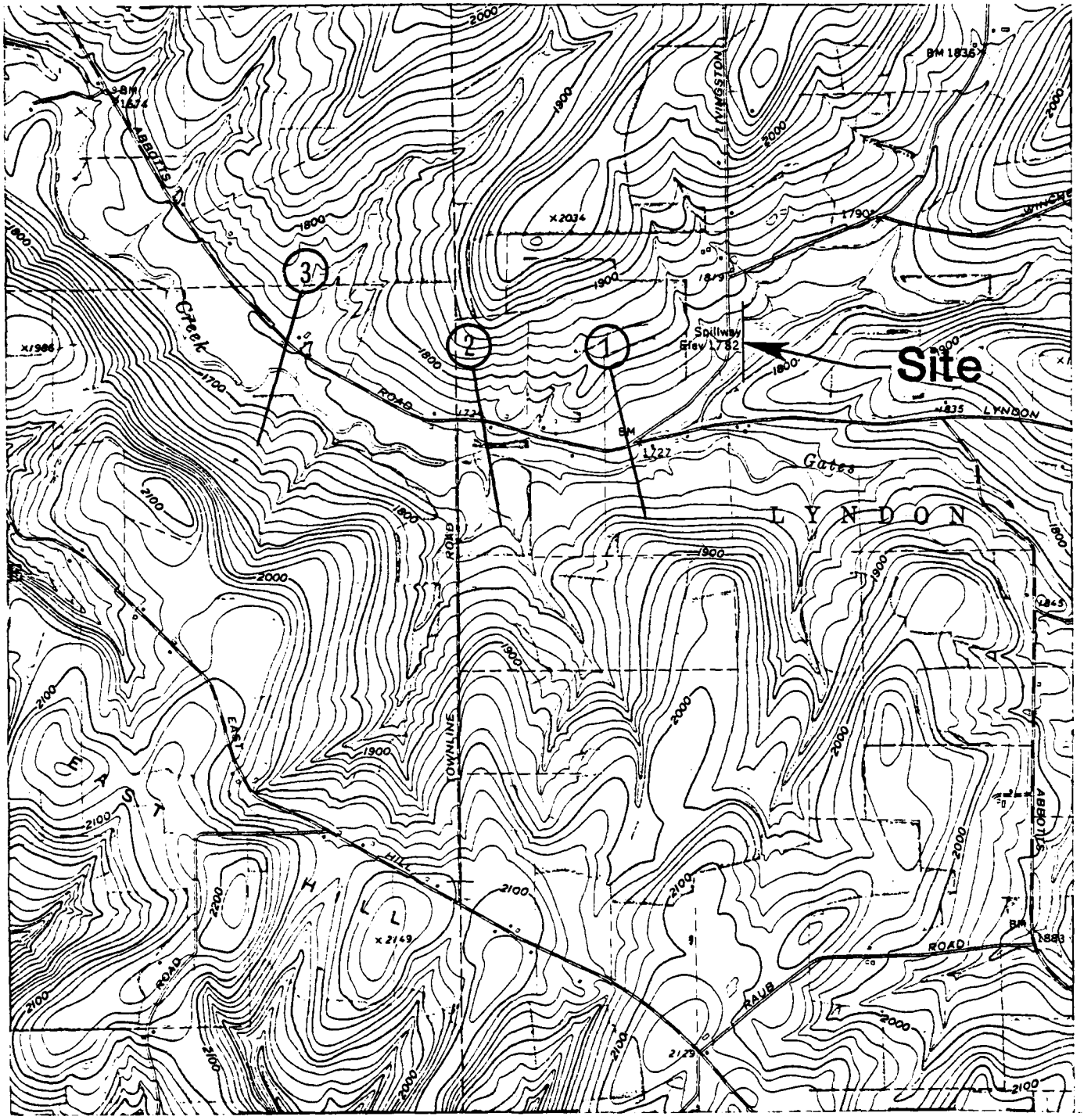


6. Emergency spillway

APPENDIX D

HYDRAULIC AND HYDROLOGIC COMPUTATIONS

APPENDIX D



Ischua Creek Watershed
Dam No. 5

CROSS SECTION LOCATION PLAN

Scale: 1"=2000'

```
A1      ANALYSIS OF DAM OVERTOPPING USING RATIOS OF PMF                 DAM NY 565
A2      HYDROLOGIC-HYDRAULIC ANALYSIS OF SAFETY OF ISCHUA CREEK DAM NO. 5
A3      RATIOS OF PMF ROUTED THROUGH THE RESERVOIR AND DOWNSTREAM
B    100                15                                  0      -1        4
B1     5
J      1        6        1
J1   0.2      0.4      0.5      0.6      0.8      1.0
K      0  INFLOW                          0        0        1
K1       CALCULATION OF INFLOW HYDROGRAPH TO RESERVOIR
M      1        1      6.4               13.04       0                        1
P      0     22.5      117      127      141      151
T                                                        1.0      0.1                0
W   3.45     0.63
X    2.0     -.10      2.0
K      1 OUTFLOW                                         1
K1       CALCULATION OF OUTFLOW HYDROGRAPH FROM RESERVOIR
Y                                    1        1
Y1     1                                                -1772.0      -1
Y4  1772     1775     1778   1780.6     1781     1782     1783     1784     1785     1786
Y4  1787     1788     1789   1789.2     1790     1791     1792
Y5    64      145      270      305      312      328     1434     3459     6104     9209
Y5 12807    16824    21236    22137    26021    31166    36657
Y5     0       45      470      920     1410     1616     1716
YE  1739     1752     1772   1780.6   1787.2   1788.9     1790
YS  1782
3D1789.2      2.7      1.5     1300
K      1        A                                         1
K1     CHANNEL ROUTING -MOD PULS RESERVOIR -A
Y                                    1        1
Y1     1
Y6   .08      .04      .04     1719     1780     1900   0.0081
Y7     0     1780      150     1760      660     1725    667.5     1719    682.5     1719
Y7   690     1725     1790     1760     2000     1780
K      0   GATES                                         1
K1       COMPUTE GATES CREEK HYDROGRAPH                                          1
M      1        1     6.64               13.04
P              22.5      114      124      138      148
T                                                        1      0.1                0
W   4.11     0.63
X      2     -0.1        2
K      2
K1       COMPINE OUTFLOW FROM DAM 565 WITH RUNOFF FROM GATES CREEK
K      1        1                                         1
K1     CHANNEL ROUTING - MOD PULS   A-1
Y                                    1        1
Y1     1
Y6   .04      .04      .04     1719     1780      250   .0081
Y7     0     1780      150     1760      625     1724    667.5     1719    682.5     1719
Y7   725     1724     1790     1760     2000     1780
K      1        2                                         1
K1     CHANNEL ROUTING -MOD PULS PEACH 1-2
Y                                    1        1
Y1     1
Y6   .04      .04      .04     1779     1730     2150   0.0065
Y7     0     1750      675     1723      [illegible]     1710    842.5     1705    857.5     1715
Y7   900     1719      900     1729     1104     1730
K      1        3                                         1
```

```
K1    CHANNEL ROUTING -MOD PULS REACH 2-3
Y                                  1       1
Y1      1
Y6    .04      .04      .04     1683    1720    3600  0.0061
Y7      0     1720      100     1700     655    1688   697.5    1683   712.5    1683
Y7    755     1688     1050     1700    1500    1720
K      99
```

```
OK, SEG #HEC1DB
ENTER PROJECT NUMBER
80166-00.04
INPUT FILE ? NY565
1**********
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION      JULY 1978
   LAST MODIFICATION  26 FEB 79
 **********
1                          PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS
                                  RUNOFF HYDROGRAPH AT       INFLOW
                                  ROUTE HYDROGRAPH TO        UTFLOW
                                  ROUTE HYDROGRAPH TO             A
                                  RUNOFF HYDROGRAPH AT       GATES
                                  COMBINE  2 HYDROGRAPHS AT
                                  ROUTE HYDROGRAPH TO             1
                                  ROUTE HYDROGRAPH TO             2
                                  ROUTE HYDROGRAPH TO             3
                                  END OF NETWORK

1**********
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION      JULY 1978
   LAST MODIFICATION  26 FEB 79
 **********

 RUN  DATE: 4/30/
      TIME: 8:01 AM
```

D-5

ANALYSIS OF DAM OVERTOPPING USING RATIOS OF PMF — DAM NY 565
HYDROLOGIC-HYDRAULIC ANALYSIS OF SAFETY OF ISCHUA CREEK DAM NO. 5
RATIOS OF PMF ROUTED THROUGH THE RESERVOIR AND DOWNSTREAM

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	15	0	0	0	0	-1	4	0
			JOPER	NWT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 6 LRTIO= 1
RTIOS= 0.20 0.40 0.50 0.60 0.80 1.00

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

SUB-AREA RUNOFF COMPUTATION

CALCULATION OF INFLOW HYDROGRAPH TO RESERVOIR

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

HYDROGRAPH DATA

IHYDG	IUNG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL

1	1	6.40	0.00	13.04	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.50	117.00	127.00	141.00	151.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.809

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 3.49 CP=0.63 NTA= 0

RECESSION DATA
STRTQ= 2.00 QRCSN= -0.10 RTIOR= 2.00

UNIT HYDROGRAPH 77 END-OF-PERIOD ORDINATES, LAG= 3.52 HOURS, CP= 0.64 VOL= 1.00

14.	54.	111.	177.	250.	328.	409.	492.	571.	638.
691.	730.	756.	766.	760.	729.	678.	627.	580.	537.
496.	459.	425.	393.	363.	336.	311.	288.	266.	246.
228.	210.	195.	180.	167.	154.	142.	132.	122.	113.
104.	96.	89.	82.	76.	71.	65.	60.	56.	52.
48.	44.	41.	38.	35.	32.	30.	28.	26.	24.
22.	20.	19.	17.	16.	15.	14.	13.	12.	11.
10.	9.	9.	8.	7.	7.	6.			

END-OF-PERIOD FLOW

0 MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	27.49	23.74	3.75	336826.
										(658.)	(603.)	(95.)	(9537.84)

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

HYDROGRAPH ROUTING

CALCULATION OF OUTFLOW HYDROGRAPH FROM RESERVOIR

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

ROUTING DATA

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

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1772.	-1

STAGE	1772.00	1775.00	1778.00	1780.00	1781.00	1782.00	1783.00	1784.00	1785.00	1786.00
	1787.00	1788.00	1789.00	1789.20	1790.00	1791.00	1792.00			
FLOW	64.00	145.00	270.00	305.00	312.00	328.00	1434.00	3455.00	6104.00	9205.00
	12867.00	16824.00	21236.00	22137.00	26021.00	31166.00	36657.00			
CAPACITY=		0.	45.	470.	926.	1410.	1616.	1716.		

ELEVATION= 1739. 1752. 1772. 1781. 1787. 1789. 1790.

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
1782.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
1789.2	2.7	1.5	1300.

PEAK OUTFLOW IS 1851. AT TIME 45.00 HOURS

PEAK OUTFLOW IS 4953. AT TIME 43.50 HOURS

PEAK OUTFLOW IS 6228. AT TIME 43.25 HOURS

PEAK OUTFLOW IS 7494. AT TIME 43.25 HOURS

PEAK OUTFLOW IS 10015. AT TIME 43.25 HOURS

PEAK OUTFLOW IS 12515. AT TIME 43.25 HOURS

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

HYDROGRAPH ROUTING

CHANNEL ROUTING -MOD PULS RESERVOIR -A

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

ROUTING DATA

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

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

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0850	0.0400	0.0400	1719.0	1780.0	1900.	0.00810

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
0.00 1780.00 150.00 1760.00 660.00 1725.00 667.50 1719.00 682.50 1715.00
690.00 1725.00 1790.00 1760.00 2000.00 1780.00

STORAGE	0.00	2.66	6.62	23.87	61.80	120.41	195.71	295.68	421.33	561.67
	723.68	906.38	1109.75	1333.47	1569.03	1812.68	2064.42	2324.25	2592.17	2867.19
OUTFLOW	0.00	369.32	1315.91	4302.67	12168.47	27222.55	51410.70	88479.17	134035.50	185002.78
	272601.44	366403.44	478322.13	614321.88	785555.38	975625.88	1184383.00	1411758.75	1657747.50	1923885.75
STAGE	1719.00	1722.21	1725.42	1728.63	1731.84	1735.05	1738.26	1741.47	1744.68	1747.89

	1751.10	1754.31	1757.53	1760.74	1763.95	1767.16	1770.37	1773.58	1776.79	1781.00
FLOW	0.00	368.32	1315.91	4302.67	12168.47	27222.55	51410.70	86479.17	134039.50	195602.78
	272601.44	366403.44	478322.13	614321.88	785555.38	975625.88	1184383.00	1411758.75	1657746.50	1923855.75

MAXIMUM STAGE IS 1726.8

MAXIMUM STAGE IS 1728.9

MAXIMUM STAGE IS 1729.4

MAXIMUM STAGE IS 1729.9

MAXIMUM STAGE IS 1731.0

MAXIMUM STAGE IS 1731.9

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

SUB-AREA RUNOFF COMPUTATION

COMPUTE GATES CREEK HYDROGRAPH

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

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	6.64	0.00	13.04	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.50	114.00	124.00	138.00	148.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.009

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.00

UNIT HYDROGRAPH DATA

TP= 4.11 CP=0.63 NTA= 0

RECESSION DATA

STRTQ= 2.00 QRCSN= -0.10 RTIOR= 2.00

UNIT HYDROGRAPH 90 END-OF-PERIOD ORDINATES, LAG= 4.10 HOURS, CP= 0.63 VOL= 1.00

10.	38.	79.	127.	175.	236.	298.	358.	422.	484.
539.	585.	622.	650.	669.	678.	678.	660.	626.	587.
549.	514.	481.	451.	422.	395.	370.	346.	324.	303.
284.	266.	249.	233.	218.	204.	191.	179.	168.	157.
147.	138.	129.	121.	113.	106.	99.	93.	87.	81.
76.	71.	67.	62.	58.	55.	51.	48.	45.	42.
39.	37.	34.	32.	30.	28.	26.	25.	23.	22.
20.	19.	18.	17.	16.	15.	14.	13.	12.	11.
11.	10.	9.	9.	8.	8.	7.	7.	6.	6.

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW COMP Q
			SUM	26.94	23.19	3.76	318474.
				(684.)(	589.)(	95.)(	9018.17)

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

COMBINE HYDROGRAPHS

COMBINE OUTFLOW FROM DAM 565 WITH RUNOFF FROM GATES CREEK

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

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

HYDROGRAPH ROUTING

CHANNEL ROUTING - MOD PULS A-1

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

ROUTING DATA

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

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

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0400	0.0400	0.0400	1719.0	1780.0	200.	0.00810

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

0.00 1780.00 150.00 1760.00 625.00 1724.00 667.50 1719.00 682.50 1719.00
725.00 1724.00 1790.00 1760.00 2000.00 1780.00

STORAGE	0.00	0.62	2.17	5.55	10.96	18.39	27.85	39.33	52.83	68.36
	85.91	105.49	127.09	150.68	175.48	201.13	227.63	254.98	283.18	312.23
OUTFLOW	0.00	708.18	3906.27	12299.80	28350.94	54277.51	92039.09	143434.03	210144.22	293761.19
	395803.31	517727.75	660939.75	831776.25	1042034.50	1274395.75	1528801.75	1805274.50	2103896.00	2424793.50
STAGE	1719.00	1722.21	1725.42	1728.63	1731.84	1735.05	1738.26	1741.47	1744.68	1747.89
	1751.10	1754.31	1757.53	1760.74	1763.95	1767.16	1770.37	1773.58	1776.79	1780.00
FLOW	0.00	708.18	3906.27	12299.80	28350.94	54277.51	92039.09	143434.03	210144.22	293761.19
	395803.31	517727.75	660939.75	831776.25	1042034.50	1274395.75	1528801.75	1805274.50	2103896.00	2424793.50

MAXIMUM STAGE IS 1725.3

MAXIMUM STAGE IS 1727.6

MAXIMUM STAGE IS 1728.5

MAXIMUM STAGE IS 1729.0

MAXIMUM STAGE IS 1730.0

MAXIMUM STAGE IS 1730.9

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

HYDROGRAPH ROUTING

CHANNEL ROUTING -MOD PULS REACH 1-2

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

ROUTING DATA

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

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

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0400	0.0400	0.0400	1705.0	1730.0	2100.	0.00660

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

0.00 1730.00 675.00 1720.00 800.00 1710.00 842.50 1705.00 857.50 1705.00
900.00 1710.00 960.00 1720.00 1100.00 1730.00

STORAGE	0.00	1.66	4.74	9.24	15.16	22.58	31.55	42.06	54.11	67.71
	82.85	99.54	118.71	144.26	176.62	215.77	261.72	314.48	374.04	440.40
OUTFLOW	0.00	98.48	413.39	1016.57	2027.67	3693.03	5892.48	8689.06	12135.40	16296.92
	21212.74	26936.18	32440.34	39264.75	48181.96	59309.91	72866.63	89090.02	108218.31	130484.39
STAGE	1705.00	1706.32	1707.63	1708.95	1710.26	1711.58	1712.89	1714.21	1715.53	1716.84
	1718.16	1719.47	1720.79	1722.10	1723.42	1724.74	1726.05	1727.37	1728.68	1730.00
FLOW	0.00	98.48	413.39	1016.57	2027.67	3693.03	5892.48	8689.06	12135.40	16296.92
	21212.74	26936.18	32440.34	39264.75	48181.96	59309.91	72866.63	89090.02	108218.31	130484.39

MAXIMUM STAGE IS 1711.6

MAXIMUM STAGE IS 1714.5

MAXIMUM STAGE IS 1715.4

MAXIMUM STAGE IS 1716.2

MAXIMUM STAGE IS 1717.6

MAXIMUM STAGE IS 1718.8

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

HYDROGRAPH ROUTING

CHANNEL ROUTING -MOD PULS REACH 2-3

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

ROUTING DATA

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

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

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0400	0.0400	0.0400	1683.0	1720.0	3600.	0.00610

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
0.00 1720.00 100.00 1700.00 655.00 1688.00 697.50 1683.00 712.50 1683.00
755.00 1688.00 1050.00 1700.00 1500.00 1720.00

STORAGE	0.00	5.08	15.48	32.79	69.58	128.56	209.75	313.13	438.70	581.98
	745.50	913.64	1090.39	1275.77	1469.76	1672.36	1883.59	2103.43	2331.89	2568.97
OUTFLOW	0.00	209.76	948.04	2625.51	6215.86	12640.38	22761.54	37332.99	57042.88	83398.19
	118160.75	158896.09	205586.69	258256.66	316956.88	381756.50	452737.31	529989.63	613611.88	703706.38
STAGE	1683.00	1684.95	1686.89	1688.84	1690.79	1692.74	1694.68	1696.63	1698.58	1700.53
	1702.47	1704.42	1706.37	1708.31	1710.26	1712.21	1714.16	1716.10	1718.05	1720.00
FLOW	0.00	209.76	948.04	2625.51	6215.86	12640.38	22761.54	37332.99	57042.88	83398.19
	118160.75	158896.09	205586.69	258256.66	316956.88	381756.50	452737.31	529989.63	613611.88	703706.38

MAXIMUM STAGE IS 1689.5

MAXIMUM STAGE IS 1691.8

MAXIMUM STAGE IS 1692.5

MAXIMUM STAGE IS 1693.1

MAXIMUM STAGE IS 1694.0

MAXIMUM STAGE IS 1694.8

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

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.20	RATIO 2 0.40	RATIO 3 0.50	RATIO 4 0.60	RATIO 5 0.80	RATIO 6 1.00
HYDROGRAPH AT	INFLOW	6.40	1	2519.	5039.	6298.	7558.	10077.	12597.
		(16.58)		(71.34)(	142.68)(	178.35)(	214.02)(	285.36)(	356.70)(
ROUTED TO	OUTFLOW	6.40	1	1851.	4953.	6228.	7494.	10015.	12515.
		(16.58)		(52.41)(	140.24)(	176.37)(	212.21)(	283.58)(	354.40)(
ROUTED TO	A	6.40	1	1845.	4955.	6222.	7485.	10006.	12508.
		(16.58)		(52.26)(	140.32)(	176.19)(	211.94)(	283.32)(	354.18)(
HYDROGRAPH AT	GATES	6.64	1	2285.	4570.	5713.	6856.	9141.	11426.
		(17.20)		(64.71)(	129.42)(	161.78)(	194.13)(	258.84)(	323.55)(
2 COMBINED		13.04	1	3804.	9526.	11935.	14331.	19116.	23893.
		(33.77)		(107.72)(	269.74)(	337.96)(	405.82)(	541.31)(	676.58)(
ROUTED TO	1	13.04	1	3803.	9530.	11939.	14334.	19118.	23893.
		(33.77)		(107.68)(	269.87)(	338.08)(	405.90)(	541.36)(	676.57)(
ROUTED TO	2	13.04	1	3808.	9526.	11937.	14335.	19125.	23901.
		(33.77)		(107.84)(	269.75)(	338.01)(	405.93)(	541.55)(	676.81)(
ROUTED TO	3	13.04	1	3791.	9503.	11909.	14319.	19111.	23895.
		(33.77)		(107.34)(	269.09)(	337.22)(	405.47)(	541.16)(	676.62)(

1

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1772.00	1782.00	1789.20
STORAGE	470.	1029.	1643.
OUTFLOW	64.	328.	22137.

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	1783.21	0.00	1117.	1951.	0.00	45.00	0.00
0.40	1784.56	0.00	1217.	4953.	0.00	43.50	0.00

0.50	1785.04	0.00	1252.	6228.	0.00	43.25	0.00
0.60	1785.45	0.00	1282.	7494.	0.00	43.25	0.00
0.80	1786.22	0.00	1338.	10015.	0.00	43.25	0.00
1.00	1786.92	0.00	1389.	12515.	0.00	43.25	0.00

PLAN 1 STATION A

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	1845.	1726.0	45.00
0.40	4955.	1728.9	43.50
0.50	6222.	1729.4	43.50
0.60	7485.	1729.9	43.25
0.80	10006.	1731.0	43.25
1.00	12508.	1731.9	43.25

PLAN 1 STATION 1

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	3803.	1725.3	44.75
0.40	9530.	1727.6	43.50
0.50	11939.	1728.5	43.50
0.60	14334.	1729.0	43.50
0.80	19118.	1730.0	43.50
1.00	23893.	1730.9	43.50

PLAN 1 STATION 2

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	3808.	1711.6	45.00
0.40	9526.	1714.5	43.50
0.50	11937.	1715.4	43.50
0.60	14335.	1716.2	43.50
0.80	19125.	1717.6	43.50
1.00	23901.	1718.8	43.50

PLAN 1 STATION 3

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.20	3791.	1689.5	45.00
0.40	9503.	1691.8	43.75
0.50	11909.	1692.5	43.50
0.60	14319.	1693.1	43.50
0.80	19111.	1694.0	43.50
1.00	23895.	1694.8	43.50

DAM 565 ISCHUA CREEK DAM # 5 REFF. QUAD. FRANKINVILLE N.Y.
RAWSON N.Y.

DRAINAGE DISTANCE

DISTANCE L & Lca MEAS. WITH A MAP MEASURING WHEEL (1" = 2000')

COMPUTATIONS FOR L DISTANCE

RUN	MEAS. DIST.	AVG. DIST.	COEF.	L- DISTANCE
A	1 = 8.8"			
	2 = 8.7"			
	17.5	÷ 2 = 8.75"	x 2000' =	17500 FT. *
D	1 = 8.65"			
	2 = 8.75"			
	17.40	÷ 2 = 8.7"	x 2000' =	17400 FT.
C	1 = 7.95"			
	2 = 7.90"			
	15.85	÷ 2 = 7.93"	x 2000' =	15860 FT
D	1 = 7.9"			
	2 7.8"			
	15.7"	÷ 2 = 7.85"	x 2000' =	15700 FT.
E	1 = 7.2"			
	2 = 7.3"			
	14.5	÷ 2 = 7.25	x 2000 =	14500 FT.

* L = 17500 FT (USED RUN A)

COMPUTATIONS FOR Lca DISTANCE

RUN				
A	1 = 4.65"			
	2 = 4.65"			
	9.30	÷ 2 = 4.65"	x 2000' =	9300 FT.

Lca = 9300 FT

DAM 565 ISCHUA CREEK DAM #5 REFF. QUADS
RAWSON, NY
FRANKLINVILLE, NY

[GATES CREEK WATERSHED]

DISTANCE FOR L & Lca MEASURED WITH MAP MEASURING WHEEL (1" = 2000')

COMPUTATION FOR L DISTANCE

RUN		MEAS. DIST.	AVG. DIST.	COEF.	L DISTANCE
A	1 =	10.3			
	2 =	10.2			
		20.5 ÷ 2 =	10.25 ×	2000' =	20,500 FT.
B	1 =	10.85			
	2 =	10.85			
		21.70 ÷ 2 =	10.85 ×	2000' =	21,700 FT.
C	1 =	11.26			
	2 =	11.25			
		22.45 ÷ 2 =	11.23 ×	2000' =	*22,460 FT.

* L = 22,460 FT (USED RUN C)

COMPUTATION FOR Lca DISTANCE

RUN		MEAS. DIST	AVG DIST	COEF.	Lca DISTANCE
C	1 =	6.5			
	2 =	6.5			
		13.0 ÷ 2 =	6.5 ×	2000' =	*13,000 FT

* Lca = 13,000 FT.

$$T_p = C_t (L L_{ca})^{0.3}$$

$C_t = 2.00$ ✓

$$T_r = \frac{T_p}{5.5}$$

$C_p = 0.63$ ✓

$$T_{PR} = T_p + 0.25 (T_R - T_r)$$

$L = 17500 \text{ ft} = 3.31 \text{ Mi}$ ✓

$L_{ca} = 9300 \text{ ft} = 1.76 \text{ Mi}$ ✓

$T_p = 2(3.31 \times 1.76)^{0.3} = 3.39 \text{ hr.}$

$T_r = \frac{3.39}{5.5} = 0.62 \text{ hr.} \Longrightarrow T_R = 1.00 \text{ hr.}$

$T_{PR} = 3.39 + 0.25 (1.00 - 0.62) = 3.49 \text{ hr}$

GATES CREEK WATERSHED

Gate creek watershed area $= 46.3\ IN^2$ on scale 1/24000

$$= 46.3 \times 24000^2\ IN^2$$

$$= \frac{46.3 \times 24000^2\ IN^2}{12^2\ \frac{IN^2}{ft^2} \times 27878400\ \frac{ft^2}{MILE^2}} = 6.64\ MILE^2$$ ✓

TRSDA for M card :

$$TRSDA = 6.64 + 6.4 = 13.04\ MILE^2$$ ✓

PMS for P card

$$T_p = C_t (L L_{ca})^{0.3}$$

$$T_r = \frac{T_p}{5.5}$$

$C_t = 2.0$

$C_p = 0.63$

$$T_{PR} = T_p + 0.25 (T_R - T_r)$$

$L = 22,460$ ft $= \frac{22460}{5280} = 4.25$ mile ✓

$L_{ca} = 13,000$ ft $= \frac{13000}{5280} = 2.46$ mile ✓

$T_p = 2 (4.25 \times 2.46)^{0.3} = 4.04$ hr. ✓

$T_r = \frac{4.04}{5.5} = 0.73$ hr. ✓ $\Longrightarrow$ $T_R = 1.00$ hr. ✓

$T_{PR} = 4.04 + 0.25 (1 - 0.73) = 4.11$ hr. ✓

DAM 565 HYDRAULICS

SERVICE SPILLWAY

4' or 48" ϕ RCP ✓ w/ 12'x4' RISER ✓

FROM DESIGN REPORT : $Q_s = 305$ cfs @ ELEV. 1780.6

$Q_s = 0$ cfs @ ELEV. 1772
(Ignore 24"x18" orifice in riser)

$Q_s = C_o A_o \sqrt{2g H_o}$

$A_o = 4\pi$ ft^2 ✓

note: the cross sectional area of RCP is assumed to control.

$H = 1780.6 - 1772 = 8.6'$ ✓

$$C_o = \frac{Q_s}{A_o \sqrt{2g H_o}} = \frac{305}{4\pi\sqrt{2 \times 32.2 \times 8.6}} = 1.03$$ ✓

SERVICE SPILLWAY		
ELEV.	H_o	Q_s
1772	0	
1775		
1778		
1780.6	8.6	305 ✓
1781	9.0	312 ✓
1782	10	328 ✓
1783	11	345 ✓
1784	12	360 ✓
1785	13	375 ✓
1786	14	389 ✓
1787	15	402 ✓
1788	16	415 ✓
1789	17	428 ✓
1790.2	17.2	431 ✓

For elevation higher than the crest of riser.

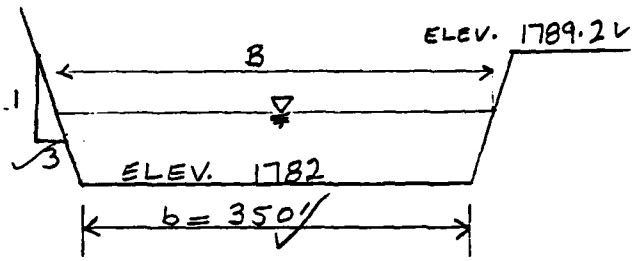
$Q_s = 1.03 \times 4\pi \sqrt{2g}\ H_o^{\frac{1}{2}}$

$Q_s = 103.87\ H_o^{\frac{1}{2}}$ ✓

ELEV.	H_o	Q_s
1790	18	441 ✓
1791	19	453 ✓
1792	20	465 ✓

EMERGENCY SPILLWAY

$$Q_c = \sqrt{\frac{g A^3}{B}}$$



EMERGENCY SPILWAY SECTION

$S_o = 0.05$ ✓

For $y = 1'$

$B = (2 \times 3) + 350 = 356'$ ✓

$A = \frac{1}{2}(356 + 350)(1) = 353$ ✓ ft^2

$Q_c = \sqrt{\frac{32.2\,(353)^3}{356}} = 1995$ cfs ✓

$$k = \frac{1.49}{n} AR^{2/3} = \frac{1.49}{0.035}(353)\left[\frac{353}{350 + 2(1+9)^{0.5}}\right]^{2/3}$$

$k = 14934.1$

$$S_c = \left(\frac{Q_c}{k}\right)^2 = \left(\frac{1995}{14934.1}\right)^2 = 0.018$$ ✓

spillway slope > critical slope

$0.05 > 0.018$

∴ Flow goes through critical depth for $y = 1'$ and also for $y > 1'$. Use Table 8-7 from "King & Brater"

ISCHUA CREEK DAM # 5

$A RAREA RESERVOIR SURFACE AREA IN ACRES
$E RELEV RESERVOIR ELEVATIONS IN FEET
REFF. U.S. DEPT. OF A.S.CA. AS BUILT PLAN DWG. NY-805-P
SCALE 1" = 200' x 1/2 REDUCTION = 1" = 400'

Eq. $in^2 \times \frac{400^2 ft^2}{in^2} \times \frac{1 AC}{43560 ft^2}$ AC.

ELEV 1752. = 8.5 AC. GIVEN.

1760 = $5.35\ in^2 \times \frac{400^2 ft^2}{in^2} \times \frac{1 AC}{43560 ft^2}$ = 19.65 AC.

1770 $10.28\ in^2 \times \frac{400^2 ft^2}{in^2} \times \frac{1 AC}{43560 ft^2}$ = 37.76 AC.

1772 = 42.0 Ac GIVEN.

1780.6 = 70.0 Ac GIVEN

1785 = $23.37\ in^2 \times \frac{400^2 ft^2}{in^2} \times \frac{1 AC}{43560 ft^2}$ = 85.84 AC.

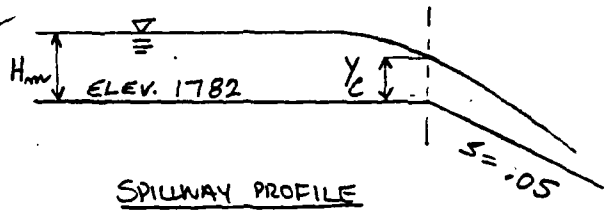
1790 = $27.46\ in^2 \times \frac{400^2 ft^2}{in^2} \times \frac{1 AC}{43560 ft^2}$ = 100.86 AC.

Used storage-elevation relationship from SCS design report for the computer model.

$Z = 3/1 = 3.0$ ✓

$b = 350'$ ✓

$Q_E = C_2 \, b \, H_m^{1.5}$



SPILLWAY PROFILE

EMERGENCY SPILLWAY, Q – ELEV. RELATIONSHIP

H_m	$\frac{H_m Z}{b}$	C_2	Q_E	ELEV.
0.0	0	3.09	0	1782 ✓
1	0.01	3.11	1089 ✓	1783 ✓
2	0.02	3.13	3099 ✓	1784 ✓
3	0.03	3.15	5729 ✓	1785 ✓
4	0.03	3.15	8820 ✓	1786 ✓
5	0.04	3.17	12405 ✓	1787 ✓
6	0.05	3.19	16409 ✓	1788 ✓
7	0.06	3.21	20808 ✓	1789 ✓
7.2	0.06	3.21	21706 ✓	1789.2 ✓
8	0.07	3.23	25580 ✓	1790
9	0.08	3.25	30713 ✓	1791 ✓
10	0.09	3.27	36192 ✓	1792

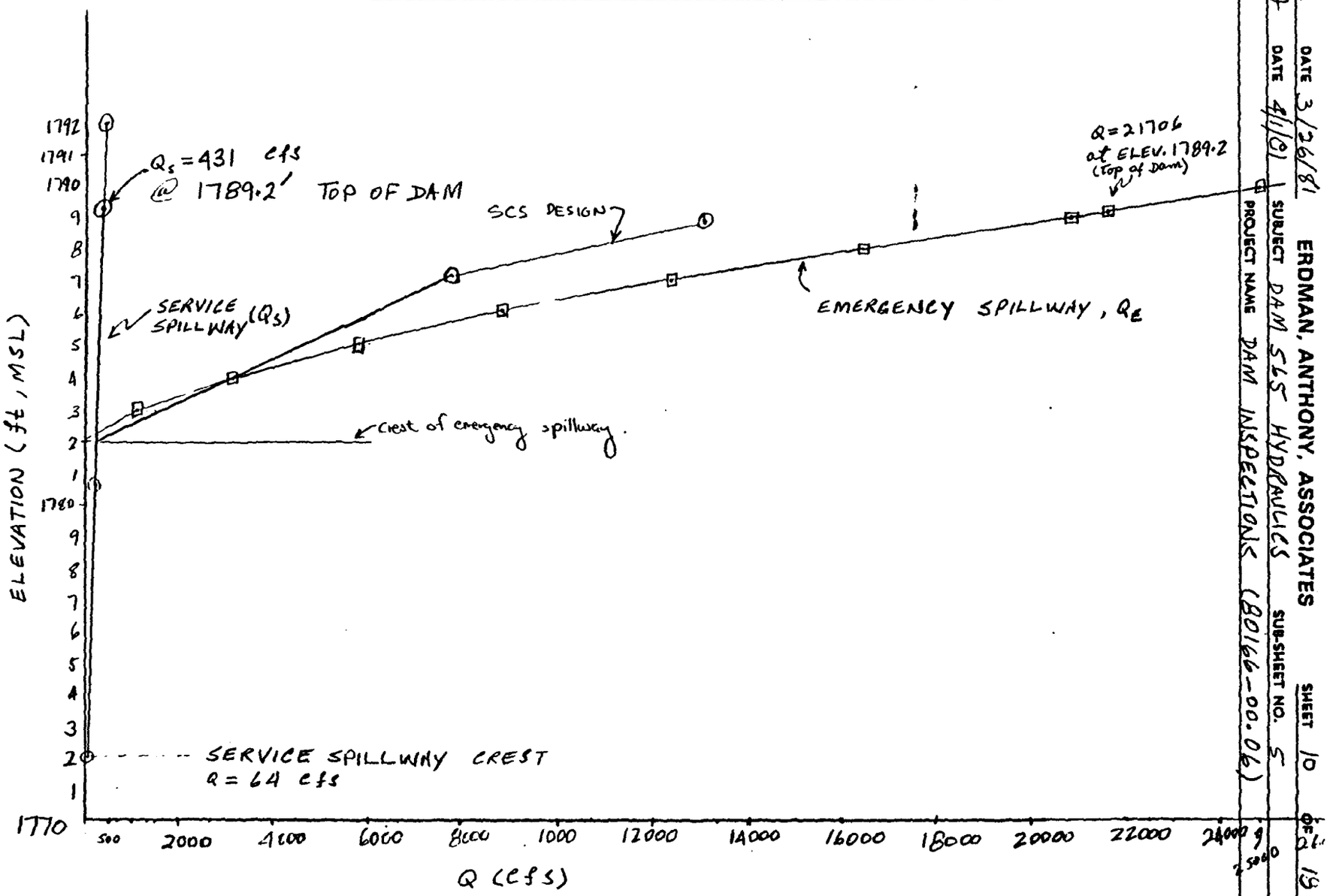
TOTAL SPILLWAYS DISCHARGE

	ELEV.	$Q_S + Q_E$	RESERVOIR SURFACE AREA
	1772	@ 64 ✓	42.0 ✓
	1775	@ 145 ✓	
	1778	@ 270 ✓	
	1780.6	305 ✓	70.0 ✓
	1781	312 ✓	
*	1782	328 ✓	
	1783	1434 ✓	
	1784	3459 ✓	
	1785	6104 ✓	85.84 ✓
	1786	9209 ✓	
	1787	12807 ✓	
	1788	16824 ✓	
	1789	21236 ✓	
**	1789.2	22137 ✓	
	1790	26021 ✓	100.86 ✓

ELEV.	$Q_S + Q_E$	RESERVOIR SURFACE AREA
1791	31166 ✓	
1792	36657 ✓	

@ SCS DESIGN FLOW IS ADAPTED
* EMERGENCY SPILLWAY CREST
** TOP OF DAM

SPILLWAY RATING CURVE - DAM 565



BY B.R. DATE 3/26/81 ERDMAN, ANTHONY, ASSOCIATES SHEET 10 OF 19

TO RRA DATE 4/1/81 SUBJECT DAM 565 HYDRAULICS SUB-SHEET NO. 5

OWNER PROJECT NAME DAM INSPECTIONS (80166-00.06)

VALUES ON $D CARD OF HEC-1 PROGRAM

FIELD	VARIABLE	VALUE
0	ID	$D
1	TOPEL	1789.2 ✓
2	COQD	2.7 ✓
3	EXPD	1.5 ✓
4	DAMWID	1300 ✓

Ungated Spillway Capacity @ Test Flood Elev. 1786.9

	Elev	Q
Principal	1786.0	389 ✓
	1787.0	402 ✓
Emergency	1786.0	8820
	1787.0	12,405

Emergency

$(.4)(12{,}405 - 8820) + 8820 = 12{,}047$ cfs

Principal

$(.9)(402 - 389) + 389 = 401$ cfs ✓

Q_{Total} @ 1786.9 = 12,515 cfs (from computer output)

$-$ $Q_{service}$ @ 1786.9 401 cfs

Q_{ES} @ 1786.9 12,114 cfs ✓

Elev.	Reservoir Surface Area
1785	85.84 ✓
1790	100.86 ✓

Reservoir SA @ 1786.9

$$\frac{5'}{15.02^{\#}} = \frac{1.9}{x} \qquad x = 5.71^{\#} \checkmark$$

$SA = 85.84 + 5.71 = 91.55^{\#} \checkmark$

Reservoir SA @ 1789.2

$$\frac{5'}{15.02^{\#}} = \frac{4.2}{x} \qquad x = 12.62 \checkmark$$

$SA = 85.84 + 12.62 = 98.46^{\#} \checkmark$

Emergency Spillway Velocities

Flood	Q_{TOTAL}	ELEV	Q_{ES}	A	V	Comments
PMF	12515 ✓	1786.92 ✓	12,114 ✓	1077 ✓	11.2 ✓	>8 ft/sec ∴ erosion ✓
½ PMF	6228 ✓	1715.04 ✓	5853	690	8.5	>8 ft/sec ✓ ∴ erosion

PMF

Assume $y_n/b < 0.02 \Rightarrow$ ∴ $y_n = 0.789\left(\frac{Qn}{b S_o^{1/2}}\right)^{0.6}$

$y_n = 0.789\left(\frac{12,114\,(0.06)}{350\,(0.05)^{1/2}}\right)^{0.6} = 3.00'$ ✓ $y_n/b = 3.0/350 = 0.008 < 0.02$ OK

$A = (3.0)(350') + \frac{1}{2}\left(\frac{1}{2}(3.0)(9.0)\right) = 1077\ ft^2$ ✓

$V = \frac{Q}{A} = \frac{12,114}{1077} = 11.2$ ft/sec.

½ PMF

$6228\ cfs - 375\ cfs = 5853\ cfs$ ✓

Assume $y_n/b < 0.02 \Rightarrow$ ∴ $y_n = 0.789\left(\frac{Qn}{b S_o^{1/2}}\right)^{0.6}$

$y_n = 0.789\left(\frac{5853\,(0.06)}{350\,(0.05)^{1/2}}\right)^{0.6} = 1.94'$ ✓ $y_n/b = 1.94/350 = 0.005 < 0.02$ OK

$A = (1.94')(350') + \frac{1}{2}\left(\frac{1}{2}(1.94)(30)(1.94')\right) = 690\ ft^2$ ✓

$V = \frac{Q}{A} = \frac{5853}{690} = 8.5$ ft/sec. ✓

Stage vs. Storage Relationship

Instead of a surface area vs. elevation relationship developed on sub-sheet 3, the storage vs. elevation relationship provided by SCS in the design report will be used.

Elevation	Storage
1739	0
1752	45
1772	470
1780.6	926
1787.2	1410
1788.9	1616
1790	1716 – extrapolated value

B.R. 4/13/81
PRA 4/13/81

ISCHUA CREEK DAM 5

DAM DATA FROM AS-BUILT PLAN

DAM TOP ELEV. = 1790.1
DAM INV. ELEV. = 1736.

1780 / 0	1760 / 150	1725 / 660	1719 / 667.5	1719 / 682.5	1725 / 690	1760 / 1790	178. / 200

REACH 1 LENGTH = 2100'

Y6 - Ycol
Y7 1-10

CROSS SECT.	1780 / 0	1760 / 150	1740 / 400	1719 / 670	1719 / 680	1740 / 1500	1760 / 1790	1780 / 2000

SLOPE: DAM INV. - REACH 1 INV. = h ÷ L = SLOPE
1736. - 1719 = 17 ÷ 2100 = 0.0081 ✓

Y6 - Ycol ✓

REACH 2 LENGTH = 2100'

1730 / 0	1720 / 675	1710 / 800	1705 / 842.5	1705 / 857.5	1710 / 900	1720 / 960	1730 / 1100

CROSS SECT.	1730 / 0	1720 / 675	1705 / 895	1705 / 895	1720 / 960	1730 / 1100

SLOPE: REACH 1 INV. - REACH 2 INV. = h ÷ L = SLOPE
1719 - 1705 = 14' ÷ 2100 = 0.0066 ✓

REACH 3 LENGTH = 3600'

1720 / 0	1700 / 100	1688 / 655	1683 / 697.5	1683 / 712.5	1688 / 755	1700 / 1050	1720 / 1500

CROSS SECT.	1720 / 0	1700 / 100	1683 / 700	1683 / 710	1700 / 1050	1720 / 1500

SLOPE: REACH 2 INV. - REACH 1 INV. = h ÷ L = SLOPE
1705 - 1683 = 22' ÷ 3600' = 0.0061 ✓

REACH 4 LENGTH = 6700'

CROSS SECT.	1700 / 0	1660 / 500	1639 / 1250	1639 / 1260	1660 / 1600	1700 / 1700

SLOPE: REACH 3 INV. - REACH 4 INV. = h ÷ L = SLOPE
1683 - 1639 = 44' ÷ 6700' = 0.0066

NOT BEING USED (REACHES 4, 5, 6, 7, 8) ✓

REACH 5 LENGTH = 5400'

CROSS SECT.	1640 / 0	1620 / 75	1600 / 100	1598 / 120	1598 / 130	1600 / 225	1620 / 1300	1640 / 1350

SLOPE: REACH 4 INV. - REACH 5 INV. = h ÷ L = SLOPE
1639 - 1596 = 41' ÷ 5400' = 0.0076

CONTINUED ON SHEET 2

ISCHUA CREEK DAM 5

REACH 6 LENGTH = 2000'

CROSS SECT.	1585	1580	1579	1579	1580	1585
	0	15	50	60	110	1050

SLOPE: REACH 5 INV. - REACH 6 INV. = h ÷ L = SLOPE

1596 - 1579 = 19' ÷ 2000' = 0.0095 ✓

REACH 7 LENGTH = 1600'

CROSS SECT.	1585	1580	1570	1570	1580	1585
	0	75	150	160	200	400

SLOPE: REACH 6 INV. - REACH 7 INV. = h ÷ L = SLOPE.

1579 - 1570 = 9' ÷ 1600' = 0.0056 ✓

REACH 8 LENGTH = 3800'

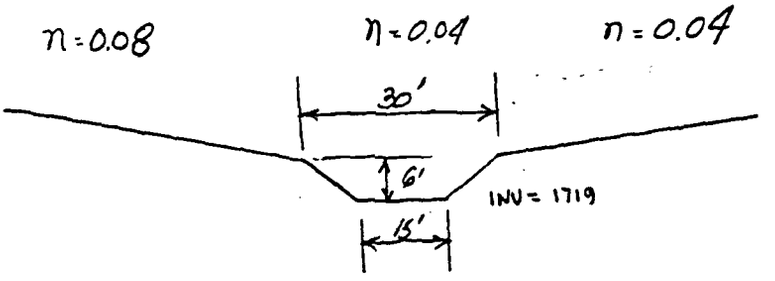
CROSS SECT.	1580	1560	1560	1563	1559	1559	1560	1580
	0	75	100	150	205	250	275	1475

SLOPE: REACH 7 INV. - REACH 8 INV. = h ÷ L = SLOPE.

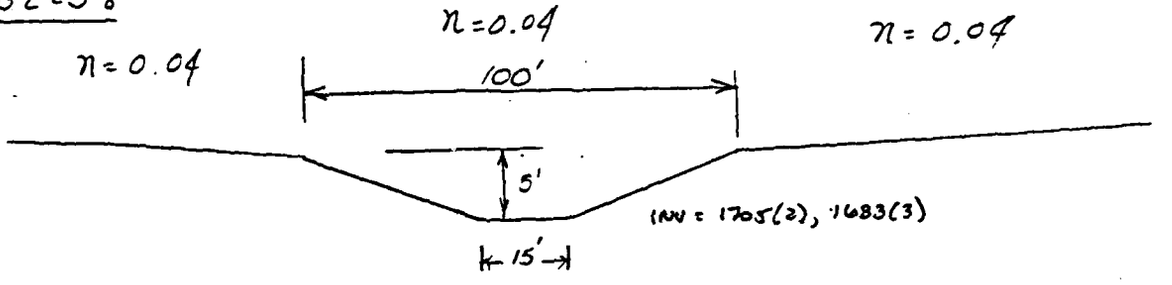
1570 - 1559 = 11' ÷ 3800' = 0.0029 ✓

DAM 565 - CHANNEL SECTIONS

SECTION 1:



SECTIONS 2 & 3:



APPENDIX E

INFORMATION AS CONTAINED IN
THE NATIONAL INVENTORY OF DAMS

AD-A105 800 ERDMAN ANTHONY ASSOCIATES ROCHESTER NY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. ISCHUA CREEK WATERSHED DAM NUMBER --ETC(U)
AUG 81 R J FARRELL DACW51-81-C-0017
UNCLASSIFIED NL

INVENTORY OF DAMS

80/11/14. PAGE 126

FORM 4674 ITEM	NOMENCLATURE	DATA
1	ID	NY00565
2	DIVISION	NAD
3	STATE	33
4	COUNTY	009 (CATTARAUGUS)
5	CONGR. DIST.	16
6	2ND STATE	
7	2ND COUNTY	
8	2ND CONGR	
9	OFF. DAM NAME	ISCHUA CREEK WATERSHED DAM #5
10	LATITUDE	42-16.8
11	LONGITUDE	078-24.1
12	REPORT DATE	80/09/14.
13	POPULAR NAME	NONE
14	IMPOUND. NAME	UNKNOWN
15	REGION	05
16	BASIN.	01
17	RIVER/STREAM	TR-GATES CREEK
18	D/S CITY-TOWN	FRANKLINVILLE
19	DISTANCE	004
20	POPULATION	00002850
21	TYPE OF DAM	RE
22	YEAR COMPLETED	1961
23	PURPOSES	C
24	STR. HEIGHT	~~0057~~ 54
25	HYD. HEIGHT	~~0047~~ 47 1643
26	MAX CAPACITY	~~00001650~~
27	NORMAL CAP.	~~00001650~~ 45
27A	CORPS DIST.	ORP
27B	OWNER CODE	N
27C	FED. REGULATED	N
27D	PVT. ON FED.	N
27E	SCS AID	N
27F	VERIFY DATE	80/09/25.
28A	REMARK 1	10-25-2980
56	REMARK 30	[redacted]

FORM 4674 ITEM	NOMENCLATURE	DATA
28	(SEE BELOW)	
29	D/S HAZARD	I
30	CREST LENGTH	~~01300~~ 1300+393 = 1693
31	SPILLWAY TYPE	~~U~~ U
32	SPILLWAY WIDTH	~~0000~~ 350+43 = 393
33	MAX DISCHARGE	~~00009314~~ 22,137
34	VOLUME	~~00231000~~ 214000
35	POWER INSALLED	
36	POWER PROPOSED	
37	NO. OF LOCKS	0
38-45	LOCK LEN/WID	
46	OWNER NAME	CATTARAUGUS COUNTY ISCHUA CREEK COUNTY SMALL WATERSHED PROTECTION DISTRICT
47	ENGINEERING	
48	CONSTRUCTION	
49	REG. DESIGN	DEC
50	REG. CONST	DEC
51	REG. OPER.	DEC SCS
52	REG. MAINT.	DEC
53	INSPECTOR	
54	INSP. DATE	
55	INSP. AUTH.	EN CON LAW SECT 15-0507
56	(SEE BELOW)	
57	INSP. INIT.	OLAPR81
58	UNSAFE	
59	URGENCY	
60	INSP. COMPL.	15 MAY 81
61	RPT. APPR.	
62	GOV. NOTIF.	
63	INSPECTOR	DC
64	GOV. RPT.	
65	DEFICIENCY	OP

TOTAL OF EMERGENCY AND PRINCIPAL SPILLWAYS !-

INSP. REMARK

EMERGENCY SPILLWAY; PRINCIPAL SPILLWAY IS 48IN. CONDUIT AND 4'x12' RISER

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